TEORIJA IN PRAKSA UREJANJA PROSTORA

IGRA USTVARJALNOSTI

THE CREATIVITY GAME

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THEORY AND PRACTICE OF SPATIAL PLANNING

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THEORY AND PRACTICE OF SPATIAL PLANNING

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EDITORIAL

Alenka Fikfak
SPOŠTOVANI BRALEC

Revija Igra ustvarjalnosti postaja stalnica tako v življenju urednikov, uredniškega odbora, mednarodnega odbora, avtorjev predhodnih številk in avtorjev izdaje, ki je pred nami. Številka 6, vezana na leto 2018. Kaj smo raziskovali in ustvarjali v tem letu? Predvsem postajamo interdisciplinarni in mednarodni. Svoje delovanje smo razširili na Balkan, Bližnji vzhod in Baltik. Bralec se bo takoj vprašal, ali imajo te poteze kaj skupnega ali je to zgolj namen znanstvene uspešnosti in želja obdržati revijo pri življenju. Tako kot revijo premetava po vsebini z enega področja na drugo, se tudi o vsebini stroke sprašujem, kje smo v Sloveniji in kaj je drugačnega v tujini. Nič ni drugače, pa vseeno vse. Objekti so prav tako barviti, nedokončani, razmetani v prostoru, parcele neurejene … vse je skupek individualnosti, kompozicije brez kompozicije (vse dokler ne bo ta nova kompozicija drugačen red v neredu), z obenem ravnimi, poševnimi, dvokapnimi strehami, z dodanimi materiali od vsepovsod. Lahko bi rekli, da postajamo vse bolj globalni, saj ni več lokalne identitete. Vendar pa, ko v prostor vstopimo, se srečujemo s povsem različnim kulturološkim kontekstom. Ta na nas prenaša občutenja varnosti, spoštovanja, prijaznosti, sproščenosti, ugodja in tudi vse nasprotujoče občutke (zaznavni, izkustveni in doživljajski prostor). Pod vtisom različnih lokacij ugotavljam, da niso objekti, poselitev, okolica tisti, ki ustvarjajo te občutke, temveč ljudje, kultura, tradicija. V nadaljevanju dodajam štiri slike, ki so nastale na potepanju, raziskovanju in pedagoškem delu na različnih lokacijah v letu 2018: Nemčija, Kosovo, Libanon in Japonska. Vsak raziskovalec bi z natančnostjo dela podal točne podatke, kje se katera slika nahaja in kakšen je njen pomen. Jaz pa prepuščam vam, bralcem, da si ustvarite mnenje o teh štirih vtisih. Vsak od teh »trenutkov, zajetih na mobitel« ima nepozabno doživetje življenja v sebi. Pa ne zaradi lepote ambienta, temveč zaradi doživetja, trenutka, prepletenega s počutjem in občutjem. Raziskovalno bi vsak trenutek razčlenili z datumom, uro, vremenskimi pogoji, lokacijo, okoljskimi parametri, kot so veter, sonce, dež; in tudi počutjem človeka v prostoru: glavobol, nepresnanost, zainteresiranost za okolico, želja po hoji, pasivnost dojemanja ter grajenega prostora v odnosu do naravnega ... Prav takšni so letošnji prispevki. Navidezno z vseh vetrov. A vsak v sebi skriva ne samo raziskave, temveč doživetje spoznanja in spoznavanja z revijo ter potovanje v pisanju znanstvenega prispevka. Uživajte v branju nepozabnih zgodb, ki smo jih raziskovalci ustvarjali in zapisali – v letu 2018.

izr. prof. dr. **Alenka Fikfak**
urednica revije IU

DEAR READER

The *Igra ustvarjalnosti/The Creativity Game* journal has become a constant in the lives of its editors, the Editorial Board, the International Board, and its contributors, past and present. The current volume (2018) is Volume 6. What did we study and create this past year? We are becoming an interdisciplinary and international journal. We spread our activities to the Balkans, Middle East, Baltic. The reader will immediately wonder about the common denominator. Is it only about fulfiling scientific performance and the desire to keep the journal alive? Similarly to the journal's content changing from one field to another, I also wonder about the profession's content – where do we stand in Slovenia and what is different abroad. Nothing is different yet everything is different. Buildings are colourful, unfinished, scattered, land plots disorganised – a mix of individuality, composition without composition (until this new composition becomes a different kind of order in disorder), with flat, pitched, gable roofs at the same time, with materials added from everywhere. We are becoming increasingly global, the local identity no longer exists. But when we enter a space we come across a completely different cultural context. It gives us a sense of security, respect, friendliness, relaxation, comfort, and contrasting feelings as well (cognitive, experiential space). Under the impression of various places I find that rather than buildings, settlement, and surroundings, it is people, culture, and tradition that cause these feelings. Below you will find four photos that were taken during my travels, explorations, and teaching in various places in 2018: Germany, Kosovo, Lebanon, and Japan. Any other researcher would provide accurate information about where a photo was taken and about its significance. But I leave this to you, readers, to create your own opinions about these four impressions. Each of this "moments captured with phone" carries an unforgettable experience of life in itself. But not because of the beauty of the ambience, but rather because of the experience, a moment mixed with one's well-being and feelings. Each moment could be broken down in terms of date, hour, weather conditions, location, environmental parameters, such as wind, sun, rain; and a person's condition: headache, lack of sleep, interest in one's surroundings, the desire to walk, passivity of looking at the built environment versus the natural surroundings. This year's papers are exactly like that. At first sight they have nothing in common. But each hides in itself not only a study, but the experience of becoming involved with the journal, the journey of writing a scientific paper. 2018 has been another year of unforgettable stories that we, researchers, created and wrote – enjoy reading about them.

Assoc. Prof. **Alenka Fikfak**, PhD
Editor-in-chief

II.

ČLANKI

ARTICLES

Andreja Cirman, Nataša Pichler-Milanović, Melita Balas Rant: PREGLED EKONOMSKIH POTENCIALOV SLOVENSKIH MEST ZA OPREDELITEV KLJUČNIH UKREPOV URBANEGA RAZVOJA

OVERVIEW OF ECONOMIC POTENTIALS OF SLOVENIAN URBAN AREAS FOR DEFINING KEY URBAN POLICIES

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IZVLEČEK

Proces urbanega razvoja je vse bolj pod pritiskom ekonomske preobrazbe, družbenih, demografskih in okoljskih sprememb ter tehnoloških inovacij. Ekonomska aktivnost se bo geografsko locirala tako, da bo tudi preko svoje lokacije poskušala maksimirati svojo konkurenčnost, kjer imajo pomembno vlogo tudi priložnosti izkoriščanja ekonomij obsega, s katerimi si podjetja lahko pridobijo stroškovne prednosti na trgu. V raziskavi preučujemo ekonomske razvojne potenciale izbranih mestnih območji (občin) v Sloveniji in želimo poleg ugotavljanja razlik med njimi prikazati tudi ključne razvojne dejavnike, ki te razlike povzročajo. Opredelitev posameznih dejavnikov ekonomskega potenciala urbanih območij, preko katerih se lahko manifestirajo različne oblike in viri zunanjih ekonomij, izbiro primernih kazalnikov in njihovo obdelavo smiselno povzemamo po metodologiji ESPON II POLYCE (2010-2012) projekta. Rezultati nakazujejo na razlike v založenosti z gospodarskimi dejavniki med izbranimi urbanimi območji v Sloveniji. V splošnem v izsledkih analiz gospodarskega vidika prednjači glavno mesto Ljubljana z najvišjo koncentracijo nadpovprečnih rezultatov, sledijo pa ji regionalna središča nacionalnega pomena - Nova Gorica in Novo mesto. Opredelitev tovrstnih profilov posameznega urbanega območja daje snovalcem politik in drugima deležnikoma verodostojna osnova za presojanje teritorialne konkurenčnosti in vključujočega razvoja, ter empirično utemeljeno izhodišče za oblikovanje strateških predlogov in ključnih ukrepov urbanega razvoja v prihodnosti.

KLJUČNE BESEDE

razvojni ekonomski potencial, mestna območja, ekonomija aglomeracije, konkurenčnost mest

ABSTRACT

The urban development process has been under intensive economic restructuring, socio-demographic and environmental transformations with technological innovations. Economic activities are geographically located to improve territorial competitiveness of companies as they have important role and possibilities of the economy of scale with cost effective market advantages. In this research the economic development potentials of selected urban areas (69 municipalities) in Slovenia have been defined through key development factors that are also causing the development gap as sources of external economies between selected urban areas. The selection of individual development factors of the economic potential of urban areas is based on the most important economic indicators (28) as initially implemented in the methodology of the ESPON II POLYCE project (2010-2012) **Metropolisation & Polycentric Development in Central Europe** for defining the potentials of MEGA (Metropolitan European Growth Areas) in Europe. The results of our analysis of economic potential of urban areas in Slovenia has emphasized the role of the capital city of Ljubljana (and functional urban area) with the highest concentration of the above average results followed with two regional urban areas (of national importance, SPRS 2004) – Nova Gorica and Novo mesto. The profiles of individual towns and urban areas are important empirically supported instrument for policy makers and other stakeholders for enhancing territorial competitiveness and cohesion, and strategic recommendations for further key urban policies.

KEY-WORDS

development economic potential, urban areas, economies of agglomeration, city competitiveness

1. UVOD

V svetovnem merilu danes v mestih živi več kot polovica svetovnega prebivalstva in mesta prispevajo 80% globalnega bruto domačega proizvoda (McKinsey Global Institute, 2011), zato je pomembno razumeti, zakaj so mesta tako močen sedež ekonomske aktivnosti. Krugman (1995) urbanizacijo in neenakomeren prostorski razvoj pojasnjuje kot proces, ki ga sooblikujeta dve skupini nasprotujočih si silnic z vplivom na razporeditev prebivalstva in produkcije v prostoru. Krugman (1995) jih razdeli na centripetalne silnice, ki povzročajo koncentriranje prebivalstva in produkcije na določenih območjih (aglomeracijo) ter na centrifugalne silnice, ki delujejo proti aglomeracijam.

Proces urbanega razvoja je vse bolj pod pritiskom ekonomske preobrazbe, družbenih, demografskih in okoljskih sprememb ter tehnoloških inovacij. Mesta se (pre)oblikujejo preko procesov urbanizacije in aglomeracije, ki so izid tekmovanja na osnovi velikosti in rasti prebivalstva, konkurence pri zaposlitvah, investicijah in v prometu, kar vodi do razvoja različnih funkcij in specializacije v prostoru. Ekonomska aktivnost se bo geografsko locirala tako, da bo tudi preko svoje lokacije poskušala maksimirati svojo konkurenčnost, kjer imajo pomembno vlogo tudi priložnosti izkoriščanja ekonomij obsega, s katerimi si podjetja lahko pridobijo stroškovne prednosti na trgu. Ekonomije obsega so bodisi notranje podjetju in njegovemu proizvodnemu procesu, lahko pa so zunanje in se nanašajo na ekonomije lokalizacije in aglomeracije. Vpliv slednjih na podjetje je pogojeno z lokacijo podjetja, lokacijo primerljivih podjetij in velikostjo lokalnega gospodarstva.

Naša hipoteza je, da so današnje in prihodnje zmogljivosti (potenciali) izbranih urbanih območij v Sloveniji izraženi v vrednostih razvojnih dejavnikov in izbranih kazalnikov, ki opisujejo značilnosti ključnih razvojnih področij (gospodarstvo, ljudje, mobilnost, okolje, bivanje) in ustvarjajo teritorialni kapital in razvojni potencial območja. Namreč bolj verjetno je, da se teritorialni kapital oblikuje tam, kjer so privlačne službe, višje plače, dobra infrastrukturna opremljenost, široko razpoložljive javne storitve, visoka kvaliteta naravnega okolja, pestre kulturne ustanove, zdravstvene ustanove, dobri bivalni pogoji in nastanitvene zmogljivosti.

V članku identificiramo razvojne dejavnike, ki vplivajo na razlike v potencialu za gospodarski prispevek k blaginji območja (ekonomski potencial) med izbranimi 69 slovenskimi urbanimi območji (občinami). Predpostavljamo, da so razlike odraz ekonomskih učinkov aglomeracije in lokalizacije – ter (bolj ali manj) policentričnega razvoja in specializacije aglomeracijskih funkcij. Uvodu članka sledi kratka predstavitev zunanjih ekonomij obsega, predstavitev uporabljene metodologije in rezultatov analize ekonomskega potenciala slovenskih urbanih območij. Sklepne misli podajamo v zadnjem delu prispevka.

2. EKONOMIJE LOKALIZACIJE IN EKONOMIJE URBANIZACIJE

Zunanje ekonomije obsega so prihranki stroškov, ki jih uživajo podjetja zaradi z velikostjo povezanih dejavnikov, viri teh prihrankov pa so izven samega podjetja. Ločimo jih na **ekonomije lokalizacije** in **ekonomije urbanizacije** (O'Sullivan, 2003). **Ekonomije lokalizacije** so prednosti, ki jih podjetja sorodnih področij črpajo iz bližine drugih sorodnih podjetij in izhajajo iz **velikosti lokalnega gospodarstva**. Podjetja se naselijo drugo zraven drugega, da bi izkoriščala prednosti ekonomije lokalizacije in aglomeracije, ki imajo vire v (1) **vhodno izhodnih povezavah med podjetji** (t.i. input-output povezave), kjer se več proizvajalcev naseli skupaj, saj jim uporaba skupnih dobaviteljev prinaša prednosti kot so ekonomije obsega pri vhodnih dejavnikih, možnosti specializacije ali zmanjšanje transportnih stroškov; (2) **delitvi bazena delovne sile**, saj koncentracija več podjetij na eni lokaciji omogoča združen trg za delavce s panožno specifičnimi znanji, zagotavlja manjšo verjetnost brezposelnosti za delavce in manjšo verjetnost pomanjkanja ustrezne delovne sile za podjetja, učinkovitejšo alokacijo dela ob šokih v produktivnosti, manjšo kompenzacijo negotovosti pri zaposlitvi z višino plače, več in bolj raznolike veščine; (3) **delitvi informacij med podjetji**, saj osebni stiki in socialna omrežja v formalnem in neformalnem okolju omogočajo širjenje idej ter prenos znanja in dobrih praks, zaradi česar se podjetja v bližini lahko učijo hitreje od bolj oddaljenih konkurentov. Geografska koncentracija, preko katere delujejo zunanje ekonomije obsega, podjetjem pomagajo pri treh procesih – **delitve** (ang. *sharing*), **ujemanja** (angl. *matching*) in **učenja** (angl. *learning*) (Duranton & Puga, 2004). Prednosti velike koncentracije ekonomske aktivnosti v mestnih naseljih se kaže tudi pri podjetništvu in v inovacijskih procesih. Velika mesta pogosto služijo kot inkubatorji novonastalim idejam in podjetjem (Duranton & Puga 2001). Nova podjetja imajo v urbanih območjih prednost učenja od obstoječih podjetij, mesta omogočajo delitev nabavnih trgov, razpoložljivega znanja, idej in dobrih poslovnih praks (Tabela 1).

Številne empirične študije so testirale obstoj eksternih ekonomij. Pregled empiričnih raziskav na temo relacije med velikostjo mest in produktivnostjo, opravljen s strani Svetovne banke, kaže, da se s podvojitvijo velikosti mesta produktivnost poveča med 3 in 8 odstotki in obratno - da z večanjem razdalje od mesta produktivnost pada (The World Bank, 2008). Glede na študijo Angeriza s soavtorji (2008) bi podvojitev gostote ekonomskih aktivnosti na ravni NUTS1 v Evropi povečala skupno faktorsko produktivnost za 0,42 odstotne točke letno.

Pomembnost posameznih zunanjih ekonomij je med panogami različna. Jofre-Monseny s soavtorji (2014) na primeru Španije ugotavljajo, da so ekonomije urbanizacije bolj prisotne v panogah, ki so intenzivnejše glede potreb po znanju (angl. *knowledge intensive*; merjeno z deležem visoko izobraženih ljudi) - podjetja se locirajo v večjih mestih zaradi prednosti prelivanja znanja in idej. Učinki lokalizacije so močnejši v panogah, ki zaposlujejo ljudi s panožno specifičnimi znanji. Tovrstna podjetja se locirajo skupaj, da bi si delila skupen bazen specializirane delovne sile. V splošnem raziskave kažejo, da so v zrelih panogah ekonomije lokalizacije bolj pomembne kot ekonomije urbanizacije, obratno pa velja za visoko-tehnološko panoge (Viladecans-Marsal, 2004; The World Bank, 2008; Jofre-Monseny, 2009).

Tabela 1: Ekonomije obsega kot viri konkurenčnih prednosti podjetij.

Vrste ekonomije obsega				Primer
Notranje	(1) Denarne			Nakup vstopnih surovin s popustom za večje nakupe.
	Tehnološke	(2) Statično tehnološke		Padajoči povprečni stroški zaradi porazdelitve stalnih stroškov.
		(3) Dinamično tehnološke		Zaradi učenja postaja proizvodnja v času učinkovitejša
Zunanje – ekonomije aglomeracije	**Lokalizacije**	Statične	(4) Input-output	Kupci prihajajo tja, kjer je mnogo proizvajalcev (in obratno).
			(5) Specializacija	Možnost nakupa/prodaje na trgu (outsourcing) omogoča članom v vertikalni verigi povečati produktivnost na račun specializacije.
			(6) Bazen delovne sile	Delavce s specifičnimi znanji in podjetja, ki jih potrebujejo, privlačijo območja z večjo koncentracijo delavcev in podjetij.
		Dinamične	(7) Kontinuitano izvajanje in učenje	Znižanje stroškov učenja ter prenosa idej in informacij med podjetji ob kontinuirani proizvodnji na istem mestu.
	Urbanizacije	Statične	(8) Ideje in inovacije	Ob več različnih aktivnostih je več možnosti za prenos idej med področji, več možnosti za opazovanje in adaptiranje idej od drugih.
			(9) Bazen delovne sile	Podobno kot (6), večja kot je ponudba/povpraševanje po delovni sili, bolj je področje privlačno za podjetja in delavce.
			(10) Specializacija	Podobno (5), specializacijo omogoča prisotnost raznovrstnih panog
		Dinamične	(11) Endogena rast	Večji kot je trg, višji so dobički podjetij; višji kot so dobički, več podjetij lokacija privlači; več podjetij privlači več delavcev in večji je trg itn.
	(12) Čiste ekonomije aglomeracije			Porazdelitev fiksnih stroškov infrastrukture na večje število davkoplačevalcev.

Prirejeno po: World Development Report 2009, 2008.

3. METODOLOGIJA RAZISKAVE

V članku proučujemo različne vidike, preko katerih se lahko manifestirajo viri zunanjih ekonomij. Ti služijo kot vzvod h konkurenčnosti posameznih podjetij in s tem k gospodarskemu gradniku blaginje urbanega območja**.** Predpostavljamo, da so razlike v ekonomskem potencialu med urbanimi območji odraz ekonomskih učinkov aglomeracije in lokalizacije – ter (bolj ali manj) policentričnega razvoja in specializacije aglomeracijskih funkcij. Opredelitev posameznih dejavnikov ekonomskega potenciala urbanih naselji, preko katerih se lahko manifestirajo različne oblike in viri zunanjih ekonomij, izbiro primernih kazalnikov in njihovo obdelavo smiselno povzemamo po metodologiji ESPON II POLYCE (2010-2012) projekta, **Metropolisation & Polycentric Development in Central Europe.** Skladno z izbrano metodologijo ekonomski potencial pojasnjujejo naslednji dejavniki:

- **produktivnost** posameznih mestnih območij (občin), ki so lahko tudi posledica delovanja aglomeracijskih ekonomij,
- **podjetniška naravnanost**, ki pooseblja inkubacijski vidik mest,
- **inovativni duh**, kjer se odražajo prednosti delitve informacij, specializiranega bazena delovne sile in inkubacijski vidik mest,
- **prilagodljivost trga dela**, kjer se odražajo predvsem prednosti skupnega bazena delovne sile,
- **javne investicije**, ki kažejo na sposobnost podjetij in drugih subjektov pri pridobivanju javnih sredstev (delitev znanja) iz (državnega) proračuna in pridobivanja javnih sredstev iz naslova razvojnih programov EU (ESRR - Evropski sklad za regionalni razvoj, ESS - Evropski socialni sklad, KS - Kohezijski sklad),
- **internacionalizacija**, s katero merimo stopnjo vključenosti ekonomskih in drugih subjektov v mednarodne tokove (izvoz blaga in storitev) vključno z okvirnimi programi EU (npr. izvoz znanja in ekspertize…) in tujimi obiskovalci v Sloveniji,
- **strukturna neravnovesja**, ki merijo stopnjo razlike v splošni ravni razvitosti med lokalnimi skupnostmi.

Izbrana slovenska urbana območja tako analiziramo z 28 kazalniki ekonomskega potenciala, razvrščenimi v zgoraj navedenih sedem ekonomskih razvojih dejavnikov. Empirično je urbano območje opredeljeno z izborom (normiranih) kazalnikov in dejavnikov, ki opisujejo posebne značilnosti ekonomskega razvoja od leta 2008 dalje (vključujoč obdobje ekonomske in finančne krize) ter so pomembne z vidika procesov aglomeracije in lokalizacije. Kazalnike, ki jih vključujemo v posamezne dejavnike, in prostorsko raven njihovega merjenja prikazujemo v Tabeli 2.

TV analizo je izbranih 72 mestnih naselij v 69 občinah, ki so zadostila naslednjim kriterijem: (1) naselja so v Strategiji prostorskega razvoja Slovenije (SPRS, 2004) opredeljena kot mednarodna, nacionalna in regionalna središča; (2) naselja so po vseh predstavljenih veljavnih definicijah (zakonska, statistična in SPRS) opredeljena kot mestna, dodatno pa mora naselje biti tudi občinsko središče; (3): naselje ima minimalno 3000 prebivalcev, minimalno gostoto prebivalstva 150 preb./km2 in minimalno 1000 delovno aktivnega prebivalstva v naselju.

Analize temelji na (ne)hierarhičnem statističnem pristopu, ki je bil razvit in uporabljen v kar nekaj evropskih projektih; npr. pri projektih *European*

Tabela 2: Razvojni dejavniki in kazalniki ekonomskega potenciala mestnih območij v Sloveniji.

	DEJAVNIKI	KAZALNIKI	Prostorska raven
GOSPODARSTVO	**Produktivnost**	Regionalni BDP na prebivalca v letu 2016	Regionalna
		Regionalni BDP na prebivalca na SI povprečje v letu 2016	Regionalna
		Regionalni BDP na prebivalca na SI povprečje v obdobju 2008-2016	Regionalna
		Dodana vrednost vseh podjetij v občini v letu 2017	Občinska
		Dodana vrednost v občini na zaposlenega v letu 2017	Občinska
		Dodana vrednost v občini na zaposlenega v obdobju 2008-2017	Občinska
		Neto plača na zaposlenega v obdobju 2008-2017	Občinska
		Zaposleni v poslovnih dejavnostih v letu 2017	Občinska
	Podjetništvo	Novo registrirana podjetja v obdobju 2013-2017	Občinska
		Insolventna podjetja v obdobju 2013-2017	Občinska
		Podjetja registrirana na (ljubljanski) borzi v letu 2018	Občinska
		Zaposleni v zasebnem sektorju v letu 2017	Občinska
		Samozaposleni (brez kmetov) v obdobju 2009-2017	Regionalna
	Inovativni duh	Zaposleni v strokovni, znanstveni in tehnični dejavnosti v letu 2017	Občinska
		Zaposleni v kulturni, razvedrilni in rekreacijski dejavnosti v letu 2017	Občinska
		Investicije v neopredmetna sredstva v obdobju 2013-2016	Občinska
		Registrirani patenti v obdobju 2007-2017	Občinska
	Trg dela	Registrirana stopnja brezposelnosti v občini v obdobju 2007-2016	Občinska
		Registrirana stopnja brezposelnosti v občini v odnosu na SI v obdobju 2007-2016	Občinska
		Stopnja aktivnosti prebivalstva v letu 2016	Občinska
		Razlika v stopnji aktivnosti v občini med letoma 2016-2007	Občinska
		Zaposleni v javnem sektorju v letu 2017	Občinska
	Javne investicije	Pridobljena javna sredstva v podjetjih v obdobju 2013-2017	Občinska
		Pridobljena EU razvojna sredstva v programskem obdobju 2007-2013 & 2014-2020 (2007-2017)	Občinska
	Internacionalizacija	Sodelovanje v 6-8. Okvirnem programu EU v obdobju 2004-2017	Občinska
		Prihodki podjetij na tujih trgih v obdobju 2008-2017	Občinska
		Prenočitve tujih turistov v obdobju 2008-2017	Občinska
	Strukturna neravnovesja	Indeks razvitosti občin 2016-2017	Občinska

Smart-City (glej Giffinger et al., 2007, European Smart Cities) in ESPON II POLYCE *Metropolisation and Policentric Development in Central Europe* (2010-2012). Izbrana metodologija omogoča opredelitev urbanih razvojnih profilov, ki- so izvedeni iz primerjalne analize kazalcev, dejavnikov in ostalih značilnosti na ključnih razvojnih področjih (gospodarstvo, ljudje, mobilnost, okolje in bivanje). Primerljivost med izbranimi urbanimi območji omogoča standardizacija vrednosti (preko z-transformacije) na ravni kazalnikov in na ravni dejavnikov po naslednji formuli:

$$z_i = \frac{x_i - \overline{x}}{s}$$

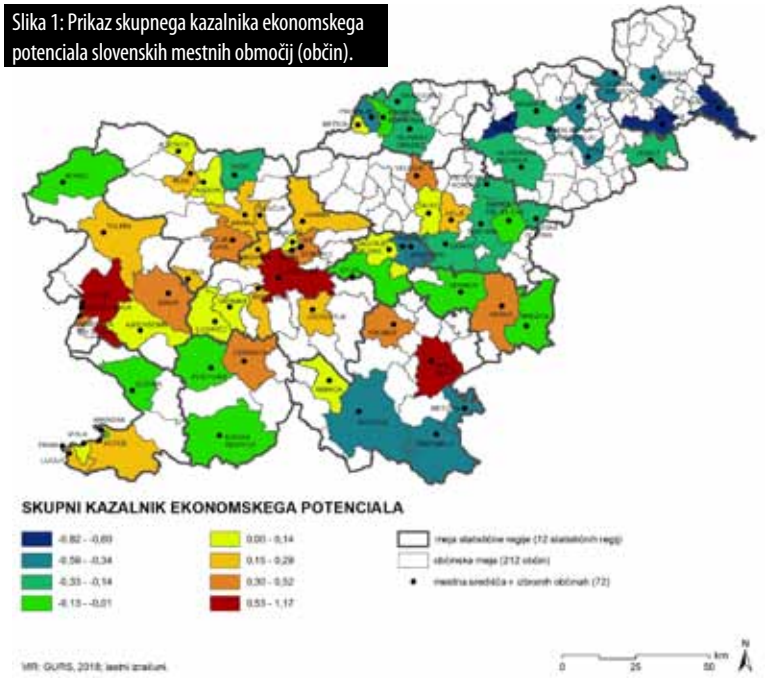
kjer z_i predstavlja standardizirano vrednost dejavnika, x_i vrednost posameznega kazalnika v izbranem območju, $\overline{x}$ povprečno vrednost kazalnika v naboru proučevanih območij in s standardni odklon vrednosti posameznega dejavnika v naboru proučevanih področij. V primeru naših 69 primerjanih občin z mestnim naseljem (občinsko središče) so bile utežene z-vrednosti kazalnikov nato združene v sumarne z-vrednosti na ravni dejavnikov (pri kazalnikih so z-vrednosti utežene z -1 oziroma +1 glede na njihov pozitiven ali negativen vpliv na opazovani pojav) in nazadnje v skupni zbirni indeks za vsako proučevanih 69 občin. V zadnjem koraku so bile občine razvrščene na osnovi vrednosti skupnega kazalnika. Uporabljena metodologija (z-transformacija in razvrščanje dobljenih vrednosti) je omogočila evalvacijo profilov posameznih mestnih naselij in izvedbo primerjalne analize med proučevanimi mestnimi območji.[1]

1 Podoben nabor in struktura kazalnikov in dejavnikov je bil uporabljen tudi v drugih ESPON projektih; v ta namen bi posebej izpostavili (urbane) projekte kot so FOCI (2008-2010), ATTREG (2010-2012) in nekatere podatkovne datoteke kot so URBAN AUDIT / EUROSTAT in ESPON 2013 DB. Predstavljeni instrument predstavlja osnovo za razvrščanje 50 MEGA (Metropolitan European Growth Areas, vključno z Ljubljano oz. ljubljansko urbano regijo) in petih POLYCE metropol (Dunaj, Praga, Budimpešta, Bratislava, Ljubljana) v urbanem sistemu v Evropi.

4. EKONOMSKI POTENCIAL MESTNIH OBMOČIJ V SLOVENIJI

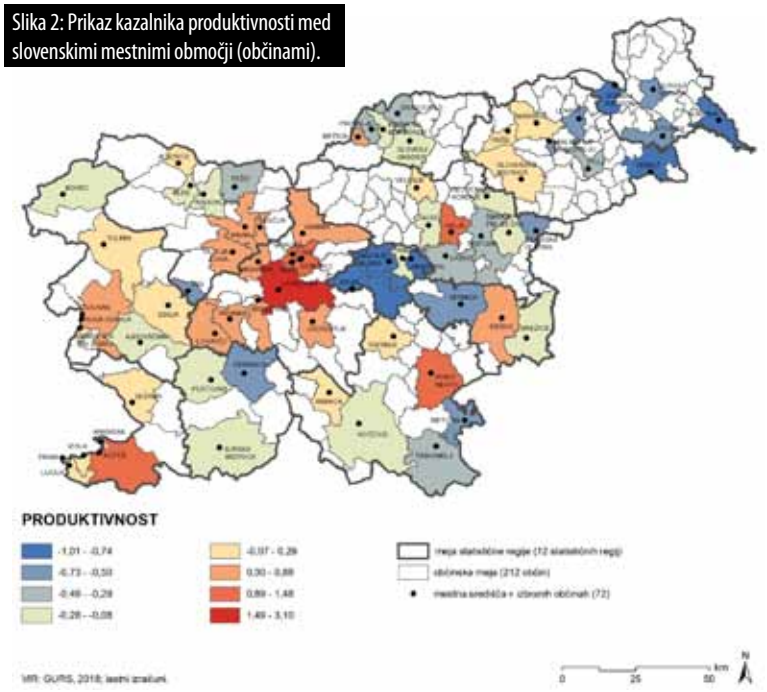
Z ekonomskim potencialom mestnih območij merimo razvojne faktorje kot potencial za prispevek gospodarske dejavnosti k oblikovanju teritorialnega kapitala in s tem k blaginji določenega območja. Rezultati nakazujejo na razlike v založenosti z gospodarskimi dejavniki med izbranimi urbanimi območji v Sloveniji. V splošnem v izsledkih analiz gospodarskega vidika prednjači glavno mesto Ljubljana z najvišjo koncentracijo nadpovprečnih rezultatov, sledijo pa ji regionalni centri (Nova Gorica, Novo mesto). Med prvih deset občin po ekonomskem potencialu se uvrščajo še Domžale, Trzin, Škofja Loka in Šempeter-Vrtojba. Slovenska občine oziroma izbrana mestna območja, pri katerih analiza kazalnikov kaže najslabši ekonomski potencial, so Lendava, Ljutomer, Ruše, Gornja Radgona in Črnomelj (Tabela 3). Uvrstitev Ljubljane na prvo mesto ne preseneča, saj je bila v zadnjem desetletju Ljubljana v korenitem preoblikovanju ekonomskih aktivnosti, soočena z močnimi konkurenčnimi izzivi kot eno glavnih srednjeevropskih mest, obdana z bližino primerljivih, konkurenčnih in privlačnih (srednje)evropskih mest. Tudi srednje velika in manjša urbana območja v Sloveniji so bila v zadnjih dvajsetih letih vpeta v intenzivne procese ekonomsko-družbenega in političnega preoblikovanja, soočena z ekonomski pritiski tekmovanja za investicije, za prebivalce in za obiskovalce (Slika 1).

Slika 1: Prikaz skupnega kazalnika ekonomskega potenciala slovenskih mestnih območij (občin).



Med slovenskimi mestnimi območji so precejšnje razlike tudi znotraj posameznih kazalnikov ekonomskega potenciala. Pri kazalniku **produktivnosti** (Slika 2), v katerem opazujemo absolutne in relativne razlike v BDP na prebivalca v regiji izbranih mest (občin) ter absolutne in relativne razlike v ustvarjeni dodani vrednosti v občini, **Ljubljana** z vrednostjo z-kazalnika 3,10 odstopa izrazito navzgor. Ljubljani sledijo Novo mesto, Domžale, Trzin in Koper. Najslabše kazalnike produktivnosti zasledimo v treh **zasavskih** občinah - Litiji, Hrastniku in Zagorju ob Savi ter **pomurskih** občinah – Lendavi in Gornji Radgoni.

Slika 2: Prikaz kazalnika produktivnosti med slovenskimi mestnimi območji (občinami).



Dimenzija podjetništva spremlja podjetniško dinamiko oziroma poosebljа inkubacijski vidik izbranih mestnih območij (Slika 3). Območja smo spremljali po dinamiki nastajanja novih podjetij in stopnji insolventnosti obstoječih, številu podjetij, kotirajočih na ljubljanski borzi, deležu zaposlenih v zasebnem sektorju ter deležu samozaposlenih (brez kmetov) v regiji. Najvišje uvrščeno mestno območje je **Ljubljana**, sledijo manjša mestna območja Litije, Sevnice, Izole in Brežic. Najmanjše vrednosti kazalnika so v Rušah, Dravogradu, Murski Soboti, Ljutomeru in Lenartu.

Dimenzija **»Inovativni duh«** v naši analizi poosebljа prednosti, ki jih nosilci ekonomske aktivnosti v mestnih območjih črpajo preko delitve informacij, specializiranega bazena delovne sile in inkubacijske vloge mestnih območji (Slika 4). Indikator vsebuje kazalnike deleža zaposlenih v strokovni, znanstveni in tehnični dejavnosti, deleža zaposlenih v kulturni, razvedrilni in rekreacijski dejavnosti, povprečnih letnih investicij v neopredmetena sredstva na podjetje in število registriranih patentov. Po kazalniku inovacijskega duha se najvišje uvrščajo **Velenje,** Nova Gorica, Žalec, Ljubljana in Cerknica, najnižje pa Ormož, Mežica, Prevalje, Žiri in Ljutomer.

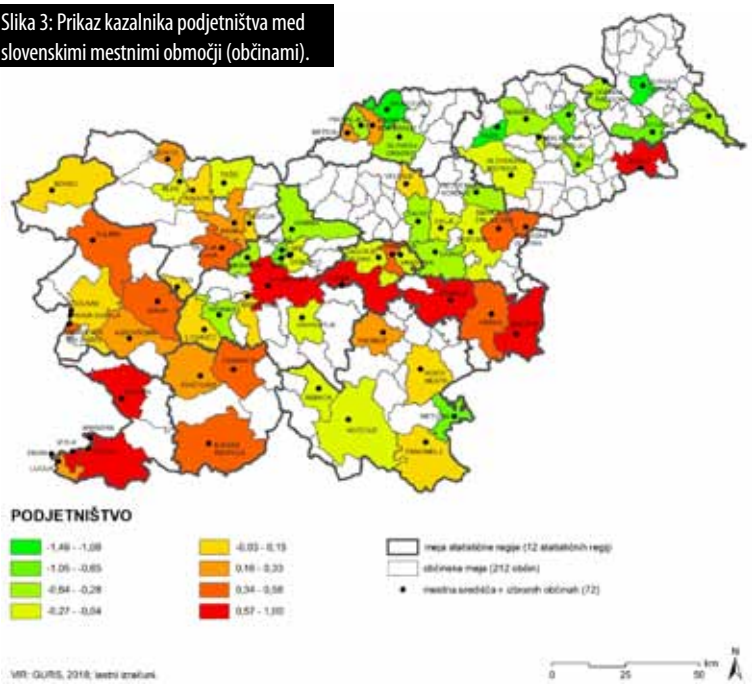
Tabela 3: Rezultati empirične analize izbranih kazalnikov ekonomskega potenciala slovenskih mestnih območij (občin).

Občina	Produktivnost	Podjetništvo	Inovativni duh	Trg dela	Javne investicije	Internacionali-zacija	Strukturna neravnovesja	Ekonomski potencial - skupaj
Ajdovščina	-0,14	0,21	0,15	0,27	-0,31	1,45	-0,92	**0,10**
Ankaran	0,07	0,65	-0,08	0,12	-1,06	-0,52	0,58	**-0,03**
Bled	-0,08	-0,15	0,63	0,25	-0,31	0,92	0,19	**0,21**
Bovec	-0,25	0,04	0,32	-0,01	-0,31	1,64	-2,02	**-0,08**
Brezovica	0,65	-0,01	0,63	0,81	1,04	-0,72	-0,36	**0,29**
Brežice	-0,23	0,65	-0,31	-0,20	0,23	-0,18	-0,68	**-0,10**
Celje*	1,10	-0,04	-0,09	-0,32	0,86	-0,36	0,66	**0,26**
Cerknica	-0,61	0,40	0,97	0,73	0,64	0,08	0,19	**0,34**
Črnomelj	-0,38	0,09	-0,59	-0,18	-0,24	-0,56	-1,71	**-0,51**
Domžale	1,16	-0,12	0,33	0,37	-0,42	-0,03	1,92	**0,46**
Dravograd	-0,35	-1,16	-0,36	-0,73	1,69	-0,37	-0,52	**-0,26**
Gornja Radgona	-0,74	-0,39	-0,42	-1,28	0,38	0,02	-1,31	**-0,53**
Grosuplje	0,77	-0,21	0,08	0,35	-0,59	-0,09	1,45	**0,25**
Hrastnik	-0,88	-0,18	-0,44	-0,53	-0,34	-0,03	-0,60	**-0,43**
Idrija	0,07	0,41	0,72	1,20	0,55	-0,03	0,82	**0,53**
Ilirska Bistrica	-0,18	0,52	-0,50	0,44	-0,22	-0,01	-0,92	**-0,13**
Izola	0,05	0,75	0,02	-0,49	-0,82	0,65	0,42	**0,08**
Jesenice	0,08	0,27	-0,02	-0,04	-0,38	0,22	0,27	**0,06**
Kamnik	0,72	-0,36	0,13	0,42	-0,24	-0,30	0,74	**0,16**
Kočevje	-0,20	-0,06	-0,29	-0,77	0,24	0,14	-2,10	**-0,43**
Koper*	1,15	0,61	0,11	0,00	-0,47	-0,19	0,58	**0,26**
Kranj*	0,51	0,33	-0,12	0,33	-0,37	-0,08	0,98	**0,22**
Krško	0,68	0,51	-0,12	0,22	1,77	0,18	0,42	**0,52**
Laško	-0,32	-0,28	-0,21	0,39	0,19	-0,47	-0,36	**-0,15**
Lenart	-0,66	-0,85	-0,54	-0,65	0,20	-0,09	0,19	**-0,34**
Lendava	-0,78	-0,47	-0,36	-1,38	-0,37	-0,27	-2,18	**-0,83**
Litija	-1,01	0,84	-0,08	0,30	-0,22	-0,25	0,35	**-0,01**
Ljubljana*	3,10	1,00	1,02	-0,70	1,44	0,87	1,61	**1,19**
Ljutomer	-0,69	-0,94	-0,60	-0,59	-0,31	-0,17	-1,23	**-0,65**
Logatec	0,84	0,04	-0,28	0,47	-0,51	-0,63	0,90	**0,12**
Maribor*	0,27	-0,31	0,15	-1,55	0,78	-0,23	-0,76	**-0,24**
Medvode	0,88	-0,32	0,58	0,32	-0,67	-0,35	0,66	**0,16**
Mengeš	1,10	-0,71	-0,39	0,35	-0,87	-0,33	1,21	**0,05**
Metlika	-0,51	-0,65	-0,47	-0,36	-0,52	0,07	-0,76	**-0,46**
Mežica	0,40	0,17	-0,82	-0,08	-0,26	0,68	0,58	**0,10**
Miklavž na Dravskem polju	-0,54	-0,15	-0,46	-0,31	-0,95	-0,64	-0,44	**-0,50**
Murska Sobota*	-0,50	-1,06	-0,47	-1,24	0,75	-0,56	-0,13	**-0,46**
Nova Gorica*	0,66	0,11	1,36	-0,43	2,84	0,36	0,35	**0,75**
Novo mesto*	1,48	-0,01	0,70	0,44	0,18	0,55	1,69	**0,72**
Ormož	-0,74	0,61	-0,82	0,01	1,02	-0,08	-1,23	**-0,18**
Piran	0,05	0,33	0,54	-0,45	-0,47	1,82	-0,52	**0,18**
Postojna	-0,24	0,21	-0,23	0,24	0,09	-0,20	-0,13	**-0,04**
Prevalje	-0,40	-0,54	-0,74	-0,21	-0,77	-0,35	0,03	**-0,43**
Ptuj*	-0,47	-0,28	-0,31	-0,17	-0,27	-0,32	-0,92	**-0,39**
Radovljica	-0,21	0,14	0,56	0,66	-0,36	0,02	0,03	**0,12**
Ravne na Koroškem	-0,13	0,21	-0,20	-0,38	-0,12	0,03	0,42	**-0,02**
Ribnica	-0,04	-0,14	-0,52	1,08	-0,45	0,11	0,11	**0,02**
Rogaška Slatina	-0,61	0,50	-0,55	0,20	-0,35	-0,05	-0,36	**-0,18**
Ruše	0,29	-1,49	-0,48	-0,87	-0,79	0,28	-1,23	**-0,61**

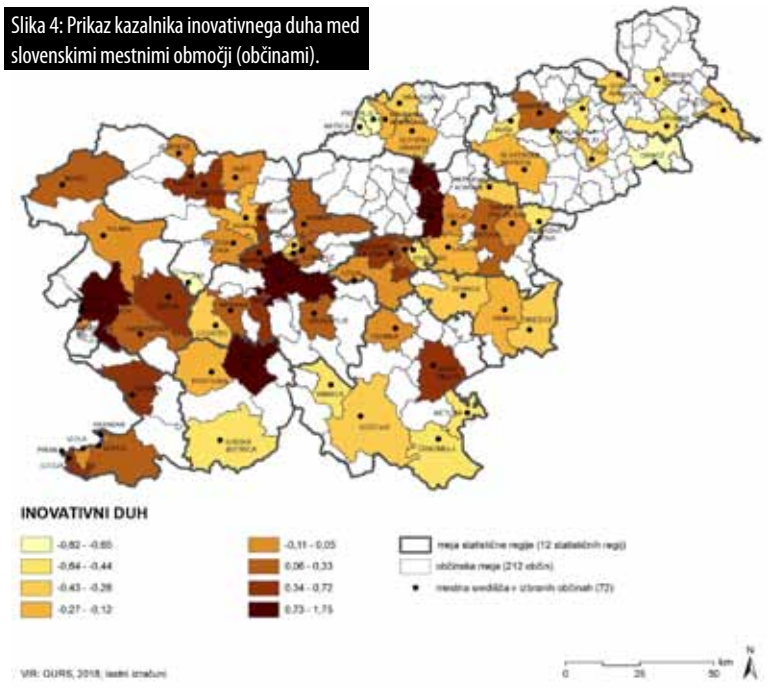
Občina	Produktivnost	Podjetništvo	Inovativni duh	Trg dela	Javne investicije	Internacionali-zacija	Strukturna neravnovesja	Ekonomski potencial - skupaj
Sevnica	-0,60	0,79	-0,36	0,26	-0,10	0,09	-0,60	**-0,07**
Sežana	0,28	0,62	0,55	-0,60	0,01	-0,33	-0,76	**-0,03**
Slovenj Gradec*	-0,24	-0,43	-0,22	-0,14	0,03	0,03	-0,05	**-0,14**
Slovenska Bistrica	0,03	-0,13	-0,12	-0,24	-0,24	0,11	-0,84	**-0,20**
Slovenske Konjice	-0,23	-0,53	-0,37	0,30	-0,43	-0,11	0,11	**-0,18**
Šempeter-Vrtojba	0,18	0,40	-0,01	0,19	0,69	0,17	1,13	**0,39**
Šenčur	0,59	0,02	0,51	0,43	-0,69	-0,62	1,21	**0,21**
Šentjur	-0,41	-0,13	0,20	0,13	-0,03	-0,49	-0,52	**-0,18**
Škofja Loka	0,48	0,40	-0,10	0,72	-0,14	0,44	0,98	**0,40**
Šmarje pri Jelšah	-0,24	0,56	-0,05	0,26	-0,17	-0,62	-0,44	**-0,10**
Tolmin	0,00	0,44	-0,03	-0,03	1,22	0,19	-0,44	**0,19**
Trbovlje	-0,14	0,38	0,11	-0,63	-0,37	-0,66	-1,39	**-0,38**
Trebnje	0,00	0,23	-0,02	0,99	0,28	0,25	0,90	**0,38**
Trzin	1,15	-0,79	0,05	0,49	-0,33	-0,41	2,95	**0,44**
Tržič	-0,29	-0,04	-0,08	0,26	-0,56	-0,39	-1,07	**-0,31**
Velenje*	-0,04	0,12	1,75	-0,51	1,10	0,36	0,90	**0,53**
Vrhnika	0,76	-0,32	0,16	0,24	-0,65	-0,34	0,50	**0,05**
Zagorje ob Savi	-0,85	-0,16	0,39	0,37	0,08	0,90	0,27	**0,14**
Žalec	-0,16	-0,30	1,19	-0,27	0,22	-0,05	-0,05	**0,08**
Žiri	-0,50	0,15	-0,65	1,70	-0,50	-0,16	1,29	**0,19**

**mestne občine (11)*

Slika 3: Prikaz kazalnika podjetništva med slovenskimi mestnimi območji (občinami).

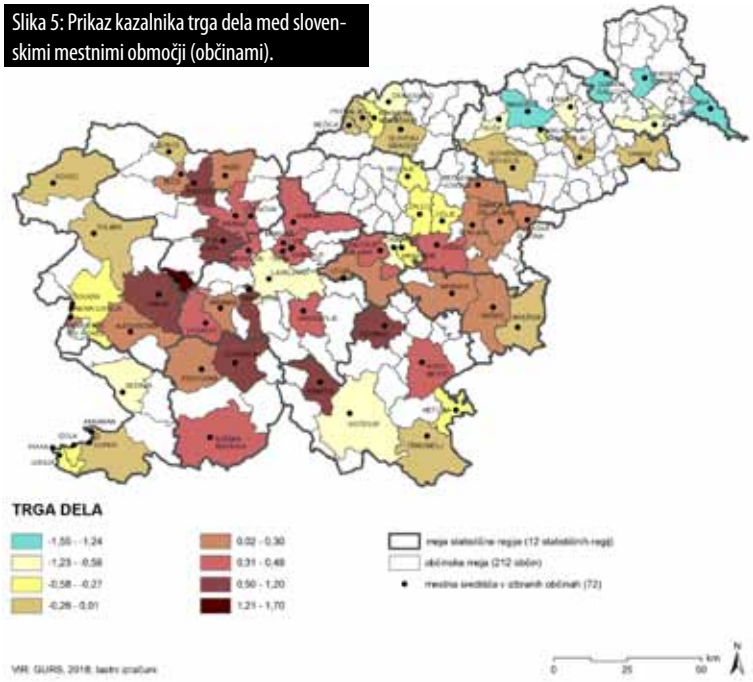


Slika 4: Prikaz kazalnika inovativnega duha med slovenskimi mestnimi območji (občinami).

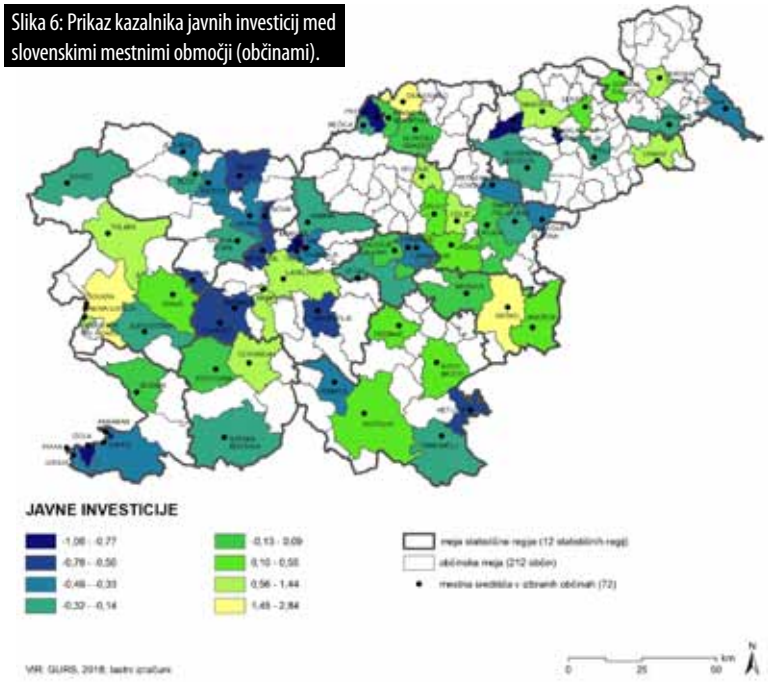


Kazalnik **trga dela** kaže razpoložljivost delovne sile in obenem tudi prilagodljivost lokalnega trga in vključuje stopnjo brezposelnosti prebivalstva v mestnem območju in v odnosu na državno povprečje in stopnjo delovne aktivnosti (Slika 5). Podatki razkrivajo visoko stopnjo zaposlenosti predvsem v industrijskih središčih manjših občin, saj najvišja mesta pri tem kazalniku zasedajo mestna območja z močnim industrijskim jedrom: **Žiri, Idrija,**

Slika 5: Prikaz kazalnika trga dela med slovenskimi mestnimi območji (občinami).



Slika 6: Prikaz kazalnika javnih investicij med slovenskimi mestnimi območji (občinami).



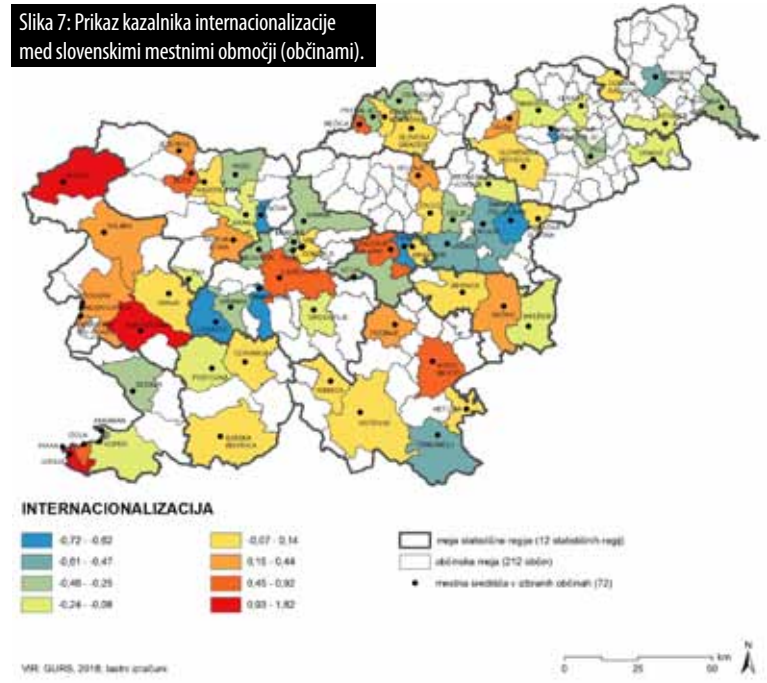
Ribnica in Trebnje. Najnižjo vrednost kazalnika imajo mestna območja Maribora, Lendave, Gornje Radgone in Murske Sobote z visoko brezposelnostjo ali nizkim deležem aktivnega prebivalstva.

Kazalec **javnih investicij** nam v analizi služi kot indikator sposobnosti podjetij in drugih subjektov v občini pri pridobivanju javnih sredstev iz proračuna in pridobivanja javnih sredstev iz naslova evropskih razvojnih programov (delitev znanja). V tem oziru (Slika 6) glede na svojo velikost močno navzgor odstopa **Nova Gorica**, ki ji sledijo Krško, Dravograd, Ljubljana in Tolmin. Najslabšo sposobnost pridobivanja javnih sredstev izkazujejo mestna območja Ankarana, Miklavža na Dravskem polju, Mengša, Izole in Ruš.

Z **internacionalizacija** merimo stopnjo vključenosti ekonomskih in drugih subjektov v mednarodne tokove ter mednarodno konkurenčnost menjalnega sektorja v občini (Slika 7). Kazalnik vsebuje delež ustvarjenih prihodkov na tujih trgih, število nočitev tujih gostov glede na prebivalstvo občine in pridobljena sredstva iz raziskovalno-aplikativnih projektov okvirnih programov EU. Pri internacionalizaciji zaradi močne vpetosti v turizem navzgor precej odstopata **Piran in Bovec**, močna mednarodna vpetost industrije in sposobnost pridobivanja evropskih sredstev postavljajo na tretje mesto **Ajdovščino**, ki ji sledi turistično naravnan **Bled.** Zadnja mesta zasedajo mestna območja oziroma občine Brezovica, Trbovlje, Miklavž na Dravskem polju in Logatec.

Kazalnik **strukturnih neravnovesij** je povzet po sestavljenem kazalniku, ki ga za raven razvitosti občin uporablja Ministrstvo za finance (Slika 8). Sestavljen je iz različnih indikatorjev razvitosti občine, njene ogroženosti in razvojnih možnosti. Višina koeficienta je podlaga za občini pripadajoči

Slika 7: Prikaz kazalnika internacionalizacije med slovenskimi mestnimi območji (občinami).



del sofinanciranja investicij iz državnega proračuna. Najbolj razvita mestna območja so v občinah **Trzin, Domžale, Novo mesto, Ljubljana in Grosuplje**, razvojni zaostanek pa je največji v Kočevju, Lendavi, Bovcu, Črnomlju in Trbovljah.

5. SKLEP

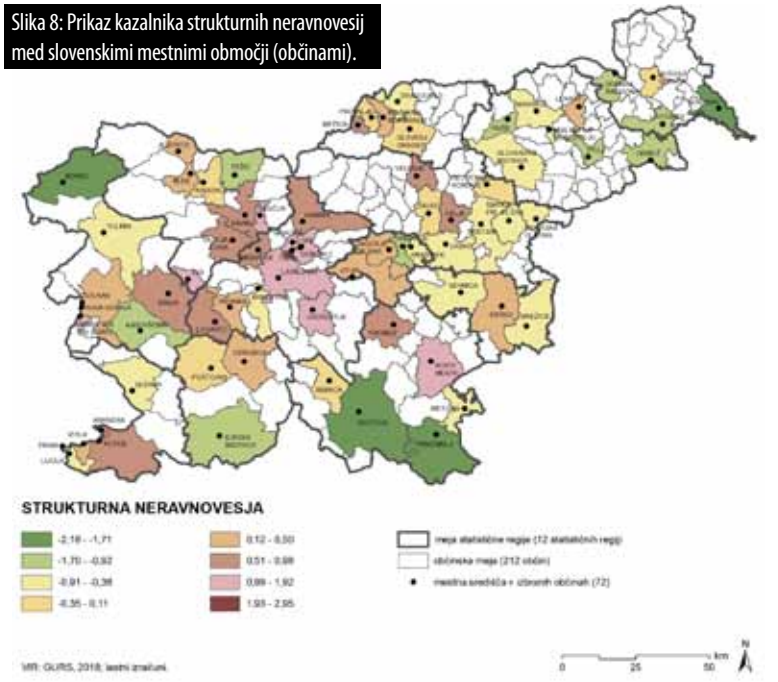
V raziskavi smo pozornost namenili preučevanju razvojnih (ekonomskih) potencialov izbranih mestnih območji (občinami) v Sloveniji, kjer želimo poleg ugotavljanja razlik med njimi prikazati tudi ključne razvojne dejavnike, ki te razlike povzročajo. Pri izbiri kazalnikov je bilo pomembno, da kazalnik prispeva k pojasnitvi stanja oziroma potenciala razvitosti med občinami in nakazuje na dejavnike, ki pomembno določajo stanje ekonomske uspešnosti ožjega (občina) in širšega mestnega območja. Z izbranimi kazalniki smo izmerili razvojne dejavnike (7) kot gospodarski potencial k oblikovanju teritorialnega kapitala in s tem k blaginji izbranih (69) mestnih območji v Sloveniji. V izsledkih analiz gospodarskega vidika in aglomerativnih učinkov prednjači glavno mesto **Ljubljana** (Mestna občina Ljubljana) z najvišjo koncentracijo nadpovprečnih rezultatov, skupaj z vsemi izbranimi (9) mestnimi območji v Ljubljanski urbani regiji (Osrednjeslovenski) - Domžale, Trzin, Brezovica, Grosuplje, Kamnik, Medvode, Logatec, Mengeš, Vrhnika. Ljubljani sledijo sosednja mestna občina **Kranj** z bližnjo Škofja Loko na Gorenjskem, ter mestna občina **Nova Gorica** z obmestnim območjem Šempeter-Vrtojba na Goriškem.

Slovenska občine oziroma izbrana mestna območja, pri katerih analiza kazalnikov kaže najslabši ekonomski potencial, so Lendava, Ljutomer, Gornja Radgona, Murska Sobota (Pomurska regija), vsa mestna območja v Podravski regiji, na Koroškem (z izjemo Mežice), Zasavju (z izjemo Zagorja), ter Črnomelj-Metlika in Kočevje v Jugovzhodni regiji. Učinki lokalizacije so najmočnejši v mestnem območju **Idrije**, ki zaposlujejo ljudi s panožno specifičnimi znanji.

V splošnem se v globalni ekonomiji vsa mesta in (urbane) regije soočajo s potrebo po tekmovanju z drugimi mesti in regijami. Tudi slovenska mesta se soočajo s tem izzivom, saj se prostorska alokacija investicij v okviru gospodarskih dejavnosti izvaja v največji meri na osnovi ekonomskih načel odločanja in primerjalnih prednosti (ali potencialov) med mesti. Mestna območja, uvrščena visoko na različnih lestvicah privlačnosti mest, bodo z večjo verjetnostjo pritegnila osnovne ekonomske funkcije na medregionalni in nacionalni ravni ter z uspešnim tekmovanjem na mednarodni in globalni oz. nadnacionalni ravni pretvorila svoj potencial v otipljiva in neotipljiva sredstva, ki bodo nadalje povečevala primerjano prednost in konkurenčnost teh mest (Camagni, 2009). Zaradi navedenega je sistematično razmišljanje o izboljšanju konkurenčnosti in primerjalnih prednosti (ožjih) in širših (funkcionalnih) urbanih območjih strateškega pomena za policentrični in uravnoteženi razvoj omrežja mest na regionalni in državni ravni.

Ob vsem tem pa se je potrebno tudi zavedati, da globalizacija in naraščajoča konkurenca usmerjata tudi družbeno-ekonomske tokove brezposelnosti in družbeno razslojevanje ter vplivata na razvoj prekarnih oblik dela za vse večje število prebivalstva. Čeprav je alokacija različnih funkcij predpogoj za strukturno in funkcijsko povezanost med različnimi mesti (v somestju ali v urbani regiji) in policentrični razvoj urbanega sistema, je lahko sočasno tudi vzrok za nenačrtovano razraščanje urbanih območij. V nekaterih primerih lahko postane celo vzrok za fragmentacijo prostora, s čimer lahko urbana konkurenčnost celo ogrozi gospodarsko in socialno kohezijo in negativno vpliva na prostorski razvoj posameznega območja.

Slika 8: Prikaz kazalnika strukturnih neravnovesij med slovenskimi mestnimi območji (občinami).



Ob soočenju teh dveh (različnih) pogledov na konkurenčnost in vključujoč razvoj mest in mestnih območji postane izziv strateškega upravljanja jasen ter podpira »pametni« urbani razvoj v skladu z njegovo opredelitvijo, ki nakazuje sposobnost urbanega območja za soočanje z izzivi konkurenčnosti in vključujočega razvoja, ki temelji na teritorialni koheziji z vidika policentričnosti in uravnoteženega razvoja v prostoru. profila posameznega urbanega območja omogoči snovalcem politik in drugima deležnikoma osredotočeno razpravo tudi o pametnem prostorskem razvoju z vidika krepitve konkurenčnosti mestnih območji in o učinkih konkurenčnosti na prostorsko kohezivnost. Iz takšne opredelitve *»pametnega urbanega razvoja«* je za mesta razvidna potreba po strateških instrumentih, ki bodo spodbudili zgoščevanje različnih (in relevantnih) zmogljivosti in dejavnosti v prostoru, ter hkrati učinkovito opredelili pomembne strateške projekte, ki bodo usmerjali razvoj urbanih območji na različnih prostorskih ravneh.

Iz tega vidika so primerjalni pristopi razvrščanja mest vse bolj priljubljen instrument, saj lahko primerjave med mesti in mestnimi območji služijo kot podpora odločanju potencialnim investitorjem pri izbiri lokacije ter so lahko obenem pomemben priročnik mestom in občinam pri presoji njihovega položaja v urbanem sistemu in vloge v omrežju mest ter pri določanju razvojnih ciljev in prostorskih strategij (Giffinger et al., 2009). Žal so bile (vsaj) do sedaj razprave o razvrščanju mest prepogosto osredotočene zgolj na zbirne rezultate razvrščanja, pri čemer pa se je zanemarilo razmišljanje o metodah in kazalnikih, uporabljenih za razvrščanje ter namen in učinkovitost metode za potrebe strateškega razvoja in prostorskega načrtovanja. Rezultati tovrstnih primerjav so verodostojna osnova za presojanje teritorialne konkurenčnosti in vključujočega razvoja, ter empirično utemeljeno

izhodišče za oblikovanje strateških predlogov in razvojnih ukrepov. Na empiričnih izsledkih utemeljeno odločanje pa je predpogoj za uravnotežen, pameten, vzdržen in vključujoč razvoj urbanih območji na različnih prostorskih ravneh.

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LITERATURA IN VIRI

Angeriz, A., McCombie, J., and Roberts, M.. (2008). New Estimates of Returns to Scale and Spatial Spillovers for EU Regional Manufacturing, 1986–2002. International Regional Science Review 31 (1), str. 62–87.

Camagni, R. (2009): Territorial capital and regional development. In R. Capello and P. Nijkamp (eds.) Handbook of Regional Growth and Development Theories. P. 118-132, Northampton, Mass.: Edward Elgar Publ.

Duranton, G., Puga, D. (2001). Nursery Cities: Urban Diversity, Process Innovation and The Life Cycle of Products. American Economic Review, 91(5), str. 1454–1477.

Duranton, G., Puga, D. (2004). Micro-foundations of urban agglomeration economies, v J. Vernon Henderson and Jacques-François Thisse (ur.), Handbook of Urban and Regional Economics. Amsterdam: North Holland, str. 2063–2117.

European smart cities. http://www.smart-cities.eu/

ESPON (2005): Potentials for polycentric development in Europe. ESPON 1.1.1 Final report.http://www.espon.eu/mmp/online/website/content/projects/259/648/file_1174/fr-1.1.1_revised-full.pdf

ESPON (2010): New Evidence on Smart, Sustainable and Inclusive Territories. First ESPON 2013 Synthesis Report. Luxembourg. www.espon.eu

ESPON 2013 DB (2010): Draft Final Report. www.espon.eu

ESPON ATTREG (2010): Attractiveness of European Regions and Cities for Residents and Visitors (2010-2012), Draft Interim Report. www.espon.eu

ESPON FOCI (2009) FOCI Future Orientations for Cities, http://www.espon.eu/main/ Menu_ Projects/Menu_ AppliedResearch/foci.html

ESPON POLYCE (2012) Metropolisation and Policentric Development in Central Europe. http://www.espon.eu/main/ Menu_ Projects/Menu_AppliedResearch/foci.html

Giffinger, R., Fertner, C., Kramar, H., Kalasek, R., Pichler-Milanovic N. and Meijers E. (2007): http://www.smart-cities.eu/

Jofre-Monseny, J., Marín-López, R. & Viladecans-Marsal, E. (2014): Determinants Of Localization And Urbanization Economies. Journal of Regional Science, Vol. 54, No. 2, str. 313–337.

Jofre-Monseny, J. (2009). The Scope of Agglomeration Economies: Evidence from Catalonia, Papers in Regional Science, 88, str. 575–590.

Krugman, P. (1995). Urban Concentration: The Role of Increasing Returns and Transport Costs. Proceedings of the World Bank Annual Conference on Development Economics 1994. Washington: The World Bank.

McKinsey Global Institute (2011): Urban world: Mapping the economic power of cities. New York: McKinsey Global Institute.

O'Sullivan, A. (2003): Urban Economics. Boston, MA: Irwin McGraw-Hill.

URBAN AUDIT: http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/city_urban

Viladecans-Marsal, E. (2004). Agglomeration Economies and Industrial Location: City-Level Evidence, Journal of Economic Geography, 4, str. 565–582.

The World Bank (2008): World Development Report 2009: Reshaping Economic Geography. Washington: The World Bank Publications.

Peter Mikša, Matija Zorn: NACIONALNO 'MARKIRANJE' SLOVENSKIH GORA PRED PRVO SVETOVNO VOJNO

NATIONAL "MARKING" OF SLOVENIAN MOUNTAINS BEFORE WORLD WAR I

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IZVLEČEK

Slovenske gore so v drugi polovici 19. stoletja postajale vedno bolj obiskane. S krepitvijo meščanstva in industrijske družbe je namreč vse več ljudi imelo čas (»prosti čas«) za njihovo obiskovanje. Je pa to bil tudi čas po pomladi narodov (1848), ko pride do afirmacije slovenstva in uveljavljanja nacionalnih teženj. Z obiskovanjem gora so se nacionalne težnje prenesle iz mest tudi v visokogorje in so se kazale zlasti v obliki tekme za osvajanje vrhov, gradnjo poti in koč. Planinstvo je postalo orodje za simbolno prilaščanje gora. Lahko bi rekli, da je šlo za tekmo pri »markiranju« gora. Osrednje območje te »tekme« so bile Julijske Alpe, zlasti njihov osrednji del, Triglavsko pogorje. Od zadnje četrtine 19. stoletja sta bili pri »markiranju« glavni dve nemški organizaciji (na Slovenskem sta bili s svojimi podružnicami prisotni od leta 1874), Nemško-avstrijsko planinsko društvo (DÖAV) in Avstrijski turistovski klub (ÖTC). Skupaj sta razvijali mrežo zavetišč in gorskih poti, ki sta jih markirali izključno z nemškimi napisi (kažipotne table, imena koč itd.). Proti koncu 19. stoletja (1893) so tudi Slovenci ustanovili svoje Slovensko planinsko društvo (SPD) ter se s tem uprli nemškemu markiranju. Z uporabo slovenskih imen, gradnjo poti, drugačnim načinom označevanja poti ter gradnjo slovenskih koč so želeli Nemce onemogočiti pri prisvajanju gora, ki so jih smatrali za slovenske. Izbruhnilo je tekmovanje v gradnji planinske infrastrukture, ki je prešlo tudi v medsebojno obračunavanje. Slednje je obsegalo uničevanje imetja, pa tudi fizične spopade, ki so bili kmalu poimenovani kot »boj za gore«. Največji uspeh slovenske strani je bil nakup vrha Triglava (1895), kjer je župnik Jakob Aljaž postavil stolp – najvišjo slovensko markacijo.

KLJUČNE BESEDE

Triglav, planinstvo, markiranje prostora, gradnje koč, Slovensko planinsko društvo, Nemško-avstrijsko planinsko društvo

ABSTRACT

In the second half of the 19th century, Slovenian mountains became increasingly popular. By strengthening the bourgeoisie and the industrial society, more and more people had time ("leisure time") to visit the mountains. This was, however, also the time after the Spring of Nations (1848), when slovenianism is affirmed and national aspirations become realized. By mountaineering, national aspirations were moved from towns to high mountains and were particularly evident in the form of a competition to conquer the summits, build trails and huts. Mountaineering became a tool for a symbolical conquest of mountains. One could say that it was a race of "marking" the mountains. The central area of this competition were the Julian Alps, particularly their central part, the Triglav mountain range. From the last quarter of the 19th century, the "marking" champions were the main two German organizations (present in Slovenian territory through their branches since 1874), the German-Austrian Alpine Society (DÖAV), and the Austrian Tourist Club (ÖTC). Together they developed a network of shelters and mountain trails that were marked exclusively with German inscriptions (signboards, hut names, etc.). Towards the end of the 19th century (1893), the Slovenes founded their own Slovene Mountaineering Society (SPD) as well, resisting the German branding. By using Slovenian names, constructing trails and employing a different way of marking them, and building Slovenian huts, they wanted to prevent the Germans from conquering the mountains they deemed Slovene. A race in constructing the alpine infrastructure started, which eventually turned into arguments. The latter included destruction of property, as well as physical confrontations, which were later called "the battle for the mountains". The greatest success of the Slovenian side was the purchase of the Triglav summit (1895), where the priest Jakob Aljaž built a tower - the highest Slovenian marking

KEY-WORDS

Triglav, mountaineering, territory marking, hut building, Slovene Mountaineering Society, German-Austrian Alpine Society

1. INTRODUCTION

Today, mountaineering is part of the Slovene national identity and a true Slovenian national sport. Slovenian mountains and hills are visited by almost 1.5 million people every year and there are at least 2,000 marked alpine paths with a total length of more than 10,000 kilometeres. Accommodation, rest and refreshments are provided by a network of alpine posts consisting of 181 huts, shelters and bivouacs, with around 7,400 available beds (Letopis ..., 2017). All alpine infrastructure is, naturally, equipped with Slovenian inscriptions. Few people realize that wasn't the case a hundred years ago. At that time, significantly rarer marked trails were branded with German inscriptions with mountain huts being dominated by the Germans.

As mentioned, mountaineering is part of Slovenian national identity and an inseparable component of Slovenian culture. It also played an important historical role in the national struggle. Mountains are visited by crowds today, while alpine motifs have an important place in Slovenian culture and art (Kristan, 1993). The highest mountain, Triglav, became the symbol of slovenianism (Mikša, 2018).

What was the situation in the 19th century? Mountaineering or, as it was called at that time among Slovenes, "touristry" (Svn. *turistika*), was a domain of the few (Mikša and Zorn, 2016), mostly enjoyed by the wealthy individuals, industrialists, merchants, officials, professors, clergy, etc, that could afford longer trips outside the towns to the mountains. Since such professions were mostly occupied by the Germans in the Slovene provinces of the Hapsburg Empire, the German alpine organizations were the first ones to appear in the Slovenian alpine world and in accordance with their then thinking took it for itself (Mikša, 2014).

The German influence in the Slovene mountains was the main reason mountaineering was closely connected to the development of the Slovenian national consciousness and the national struggle of that time (Mikša, 2011). Organized mountaineering was one of the tools to resist and defy the Germans. As the writer Janko Mlakar put it on the 60th anniversary of the Slovene Mountaineering Society (SPD), the association was founded *"… not as much out of love for the mountains, but primarily as a defence against the German wave …"*, because *"… the foreigner felt at home in our mountains, while we felt like strangers on our own land."* (Mlakar, 1953b, p.213) SPD's founding purpose was to "liberate" Slovenian mountains, even if it wasn't explicitly stipulated in the rules (Mlakar, 1953b).

2. MOUNTAINEERING AS A GLOBAL CULTURAL PHENOMENON

Organized mountaineering emerges simultaneously with the rise of sport and emotion-experience motives for alpine activities. The first alpine association in the world, called Alpine Club, was established in London in 1857. Soon, other countries followed with their own national alpine associations (Table 1). The first alpine association in the Alps was founded in 1862, namely the Austrian Alpine Society (ÖAV). The very next year, the Swiss and the Italian societies were founded, while the German society, soon the largest in the world, was established in 1869 (Mikša and Ajlec, 2015).

Table 1: First alpine societies (Mikša and Ajlec, 2015).

Year of establishment	Original name of the alpine society (place of establishment)	Country (today)
1857	Alpine Club (London)	United kingdom
1862	Österreicher Alpenverein (ÖAV; Vienna)	Austria
1863	Club Alpino Italiano (CAI; Torino)	Italy
1863	Schweitzer Alpen Club (SAC; Olten)	Switzerland
1869	Deutscher Alpenverein (DAV; München)	Germany
1873	Magyar Karpati egyesület (Tátrafüreden)	Hungary
1873	Unification of ÖAV and DAV into Deutscher und Österreichicher Alpenverein (DÖAV)	
1874	Club Alpine Francais (CAF; Paris)	France
1874	Hrvatsko planinarsko društvo (HDP; Zagreb)	Croatia
1892	Bosansko-hercegovački turistički klub	Bosnia and Herzegovina
1893	Slovensko planinsko društvo (SPD; Ljubljana)	Slovenia

National alpine organizations mainly connected small groups of intelligentsia in the beginning. Mountaineering originated in intellectualism and did not arise among the commoners. The accelerated modernization, however, made an increasing number of people recognize their alienation from nature. The need for physical exercise complemented by the aesthetic pleasures of enjoying the mountain nature appeared. The development of mountaineering as a modern cultural phenomenon was also influenced by the changing social conditions. Visiting the mountains demanded free time and disposable income, which were provided to larger groups of mountaineers by the introduction of an eight-hour workday and free Saturdays. When primary needs were satisfied, people could actually spend their savings for active leisure time.

Figure 1: Shelter on Prodi (near the present-day Planika hut) was known as the 'Triglav Temple' due to its astonishing views. It was built in one month by Jože Škantar-Šest and his son Lovrenc in 1871 on the initiative of enthusiasts from the clique of 'Friends of Triglav'. The small stone building was built at an altitude of 2,404 meters, surfaced with sand on the outside and covered with shingles. There was a bunk bed for six people and a small open fireplace. On September 18, 1871, it was ceremoniously opened by a handful of mountaineers. Photo archive: Peter Mikša.

3. GERMAN ALPINE SOCIETIES AND THE CONSTRUCTION OF FIRST MOUNTAIN HUTS

The first alpine societies to appear in the Slovene provinces were the declarative German societies. The first official one was the Carniolan branch of the German-Austrian Alpine Society (Ger. *Deutscher und Österreichischer Alpenverein*), founded on March 30, 1874, in Ljubljana (Festschrift …, 1901). The association established five branches in the Slovene provinces, namely in Carniola, Maribor, Celje, Villach and the littoral one in Trieste. In addition to the said organization, other alpine societies were active in Slovenia, such as the Austrian Tourist Club (Ger. *Österreichischer Touristen Club*), founded in Vienna in 1869, which also branched out all over the Slovenian provinces, but unlike the German-Austrian Alpine Society, it spread to smaller towns. Seven branches were founded in the territories of Carniola and Styria before 1886 (Mikša and Ajlec, 2015).

If the Germans were the first ones to organize mountaineering, the Slovenes overtook them with constructing the first mountain huts, or mountain shelters. The mountain guide Jožef Škantar – Šest from Srednja vas in Bohinj constructed a trail and built a small stone hut (Figure 1) under Mount Triglav on Prodi (near the present-day Planika hut) on the initiative of Slovenian patriots from Bohinj and their club called 'Friends of Triglav'. The hut was equipped with a table, two benches and a bunk bed. The hut, which was almost ruined by 1875, was called the 'Triglav home', but was mostly known as the 'Triglav Temple' (Lovšin, 1944). The journal *Kmetijske in rokodelske novice* wrote the following: *"… We would prefer if people of Ljubljana came and visited our swiss-like and beautiful Bohinj, Savica, and Triglav. The roads are smooth and the trail to Triglav is quite handy. What snow and rime might damage, it will be fixed come spring, while Belempolje [Velo polje] is already equipped with pens for the accommodation; under Mali Triglav, a small stone hut shall welcome the guests. Everything is right; may the gracious God keep our lungs healthy and legs fast."* (Škantar-Šest, 1871, p.88)

The 'Triglav Temple' was, however, just a flash in the pan during the German domination, which persisted in our mountains for the following couple of decades. The branches of the German-Austrian Alpine Society and the Austrian Tourist Club started building trails and huts, focusing their activities mainly on Mount Triglav and its surroundings.

First, they renovated the deteriorated Triglav Temple and renamed it into Triglav-Hütte, later renamed again into Maria-Theresien Hütte (the present Planika) (Hoch …, 2016). The German societies, mainly the German-Austrian Alpine Society, strongly opposed the bilingual signposts and thus installed German signs only. Mountain hut keepers only spoke German and prioritized the German mountaineers. *"The main purpose of the branches of DÖAV in Slovene provinces was Germanization; […] They made the German mountaineers feel at home in our mountains, as if they walk on German soil – which, in part, they succeeded, since there was nobody to obstruct them."* (Mlakar, 1953b, p.213

The next project was the construction of the hut in Ute in Zajezerska valley (the Triglav Lakes valley) called Erzherzog Franz Ferdinand Hütte (the present-day Triglav Lakes hut; Debelak-Deržaj, 1948), and the Triglav-Hütte build in 1887 (Hoch …, 2016), soon renamed into Dechmannhaus (Figure 2) – it was named after Karl Dežman, the president of the Carniolan branch of the German-Austrian Alpine Society (Pirjevec, 1925). The construction of said hut and the parallel creation of the trail through the Kot valley to the foot of Mount Triglav meant a *"new era, an era of mountaineering in broader terms…"* (Debelak-Deržaj, 1949, p.45) for visiting Mount Triglav. If the Maria Theresia hut was mostly visited by the individuals who took the trail over Komarča and the Triglav Lakes valley, *"the cosy hut at the top of Pekel, the trail through Kot and the trail to the top, Triglav became the lookout mountain and a trip destination for the masses…"* (Debelak-Deržaj, 1949, p.45). The hut was opened on July 31, 1887 and the inscription on it said: *"Triglav-Hütte – errichtet von der Section Krain – eroffnet am 31. Juli 1887. 2200 Meter Seehohe!"* (Od Triglavskega …, 1887, p.3). The bitter aftertaste for the Slovenians was mostly the final part of the ceremony, the Dežman's speech, who reportedly said: *"Und du, Altvater Triglav, strecke deine Hand schützend über unsere Deutsche Erde"* [And you, Father Triglav, protect with your hand our German land.] (Debelak-Deržaj, 1949, p.46).[1] This was the occasion when the representative of the German-Austrian Alpine Society from Berlin named Mount Triglav as the German King of the Julian Alps.

Figure 2: Deschmann-Haus under Triglav (the present-day Stanič hut). The hut was opened in 1887 by the Carniolan branch of the German-Austrian Alpine Society and was named after the German politician, archaeologist and curator of the Museum of Ljubljana Karel (Dragotin) Dežman. It was acquired by SPD after World War I and renamed to Stanič hut, after Valentin Stanič, the greatest mountaineer in Europe at the time. Photo archive: Peter Mikša.

1 Henrik Tuma remembers the event slightly differently: *"Dežman's words echoed in my memory when he held his ceremonial speech and, gesturing towards Triglav, called: Und du hehrer Triglav, blicke auf uns deutsche Söhne und schüttele beschützend dein Haupt über unsere deutsche Erde!"* (Tuma, 1910, p.193).

Figure 3: An example of a signpost used by the German alpine societies. The signpost of the DÖAV littoral branch near Škocjan Caves is still visible today. Photo: Matija Zorn

4. THE SLOVENES FOUND THEIR OWN ALPINE SOCIETY AND DECLARE THE BATTLE FOR THE MOUNTAINS

The Slovenes did not have their own alpine organization that could resist the German pressure. The first attempt of organizing the Slovenian mountaineering, the mountain society 'Friends of Triglav' from Bohinj, failed quickly, just like the modest shelter, the 'Triglav Temple' (Strojin, 2009).

The Slovene Mountaineering Society (SPD) was founded 21 years later. On February 27, 1893, in the garden saloon of the Malič hotel in Ljubljana (where Nama store stands today) a founding assembly of the first Slovenian mountaineering society was held. SPD's main objective was national defence, as a stronghold of the Slovenian language, since it's goal was to mark the trails in Slovene and use Slovenian geographical names. SPD's motto was *"preserve the Slovenian face of Slovenian mountains"* (Mikša and Ajlec, 2015, p.35).

By building huts, using Slovenian names for the summits, constructing trails and marking them in Slovene, especially in the Triglav mountain range, where the national confrontations were the most intense, SPD wanted to hinder the Germans in conquering the Slovenian mountain world as soon as possible. The Germans called the Slovenian huts *Trutzhütte* (Ravnikar, Dolar and Dolar, 2009, p.7) – the truculence huts, since they were built explicitly to defy the aggressive German nationalistic activities in the Slovenian mountains; while they called their own huts *Schutzhütte* – shelter huts (Mikša, 2017).

The newly established society started working immediately. First, they had to take care of and mark the mountain trails. They established a marking division for that purpose. They introduced two branches in the first year,

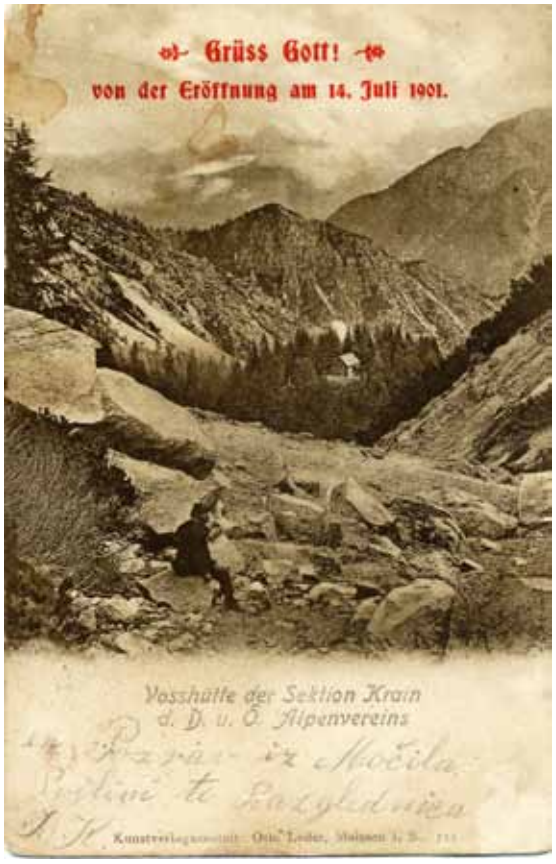


Figure 4: Vosshüte on Vršič Pass (the present-day Erjavec hut). The first wooden hut was opened on July 14, 1901, by the Carniolan branch of the German-Austrian Alpine Society. It was acquired by SPD after World War I, who opened a renovated and expanded hut on July 30, 1922. It was named after the natural scientist and writer Fran Erjavec. After World War II, it was acquired by the mountaineers from Jesenice. Mountaineering club Jesenice tore down the old wooden hut in the spring of 1987 and started constructing the present building, opened on August 1, 1993. Photo archive: Peter Mikša.

the Kamnik and the Savinja one. Numerous additional branches followed, including in Radovljica, Tolmin, Pazin in Croatian Istra, the Czech branches in Prague, the one in Trieste, etc.

4.1 The first mountain hut above Bohinj

It was its second year of operating when SPD already built the first Slovenian mountain hut, the Orožen hut under Črna prst in the Julian Alps (Figure 5), named after Fran Orožen, the head of the central society in Ljubljana. Just a few weeks later, SPD opened the Kocbek hut on Molička planina under Ojstrica in Kamnik–Savinja Alps (Dobnik, 1992). Both huts were built near the existing mountain huts owned by the German-Austrian Alpine Society, which was a sort of a dress rehearsal for the main "battle" – the Battle for Triglav.

Figure 5: The Orožen hut on the Lisec mountain pasture under the summit of Črna prst was the first mountain hut built by SPD. It was built in 1894, one year after SPD was established. The hut was built of thick plates and covered with shingles. Its length was 11.5 meters, while the width and height measured 6.5 meters. There was an entrance porch under the roof and they assumed it would be sufficient for accommodating twenty people. The opening was very festive and magnificent, and the event was quite important for that time. The guests were welcomed by an inscription saying "The first mountain hut opens, the entire valley of Bohinj rejoices!" in Bohinjska Bistrica. Photo archive: Peter Mikša.

When the German nationalism was getting more intense, every Slovenian hut opened by SPD, was a proper national demonstration. Members and committee members of SPD, guests and other attendees of the opening were welcomed by mortars and triumphal arches at the starting point under the hill where a new hut was standing. They were also welcomed by enchanted inscriptions such as: *"We welcome you, the sons of mountains, who work for the glory of your homeland!"* or *"The first mountain hut opens, the entire valley of Bohinj rejoices!"* (Ravnihar, Dolar and Dolar, 2009, p.7). Every opening was followed by SPD, their branches or individuals issuing postcards with images of newly built Slovenian huts – which were numerous and popular. They were the evidence of Slovenian presence in the mountains.

4.2 The Battle for Triglav

In the first year of SPD, another story was taking place simultaneously, closely connected to the activities of the association and the battle for the Slovenian mountains. In 1889, the parish of Dovje beneath Mount Triglav got a new priest: Jakob Aljaž, a great patriot (Mikša, 2015). He remembered his arrival to Dovje thusly: *"A new field was introduced to me in Dovje: touristry and Slovenian mountaineering. Unfortunately, everything was German, when I arrived; Alpenverein is putting up German signs, employing and paying handsomely German guides (born Slovenians). When I encourage people to establish a fire brigade, they want German language for its command; I can't win with the Slovene language! A giant cement factory is being built with foreign capital in 1890, and the officials are Germans, the Slovene can only be a worker."* (Aljaž, 1923, p.146).

He was the founding member of SPD Radovljica branch in 1895 and he also became its deputy head. His striving for Triglav was even more evident after that. Aljaž managed to buy the land on top of Triglav from the municipality of Dovje for one gulden, which was the price for 50 eggs or 10 litres of milk. Together with Anton Belec, the tinman from Šentvid pri Ljubljani, he managed to erect a steel tower on the summit of Triglav, less than two meters high and one meter wide, made of thick galvanized sheet metal and iron pillars, reinforced with concrete (Mikša, 2015; Mikša and Ajlec, 2015). The tower, which was immediately christened as 'Aljaž Tower' (Figure 6) became the national symbol for most of the Slovenians in the following decades. In the first days, however, it was the "lighting rod" for the battle for the mountains between the Germans and the Slovenes. Aljaž's action was not the only grandstanding of the struggle in the Triglav mountain range. He also built two additional mountain huts in 1896 – the Triglav hut on Mount Kredarica, which is still the highest Slovenian mountain hut (Mikša and Vehar, 2016) and the Aljaž hut in the Vrata Valley (Table 2). By doing that, he shook the German alpine societies in the Slovene territory. He caught the Germans by surprise and the hut on Mount Kredarica infuriated them especially. Jakob Aljaž was even sued for ruining a geodetic triangulation point of the first order by building the tower, but he managed to ward off all accusations, and both the tower and the huts remained where they were (Mikša, 2015).

The construction of the tower poses a question, though: why did Aljaž decide to erect a tower on top of Triglav, and not a cross? He was a mountaineer, so he knew a shelter would come handy, but he was also a great patriot, which could also be a reason to choose the tower, and not the cross. The tower was an important blaze as it marked Mount Triglav as Slovene. The words "Aljažev stolp" (Aljaž Tower) were the first Slovenian words written in the Triglav mountain range (Mikša, 2017).

Table 2: Jakob Aljaž's constructions in the surroundings of Triglav.

Construction	Date of construction/ renovation
Aljaž Tower on Mount Triglav	August 7, 1895
Stanič shelter under the Triglav's summit	1895
Aljaž hut in the Vrata Valley	July 9, 1896
Triglav home on Mount Kredarica	August 10, 1896
The chapel of Our lady of Lourdes on Mount Kredarica	August 12, 1897
Aljaž hut I. in the Vrata Valley (destroyed by avalanche in March 1909)	August 7, 1904
Renovated Triglav hut on Mount Kredarica	September 8, 1909
Aljaž hut II. in the Vrata Valley	July 17, 1910

4.3 Building the highest hut

Building "Kredarca" (Figure 7) was prompted by an event in the nearby German Deschmannhütte (the present-day Stanič hut), while erecting the tower in August 1895, which was described by Aljaž thusly: *"We slept over*

Figure 6: In 1895, Jakob Aljaž, the parish priest in Dovje, bought the summit of Triglav (16m2) for one gulden and erected a tin tower that was less than two meters high and one meter wide. It had two main functions: serve as a shelter that could accommodate a few mountaineers in the event of bad weather; and serve as the highest Slovenian blaze during the battle for the mountains between the Slovenes and Germans. Photo archive: Slovenian Alpine Museum in Mojstrana.

in the old, small Dežman hut, since the Slovenes did not have our own hut. The fog was thick, so I didn't climb Triglav, but stayed in the hut, where I could hear them hammering the individual parts of the tower together. I was talking to the keeper of the hut […]. He told me kindly and in confidence: 'You're in luck there are no Germans here tonight, otherwise I wouldn't be able to accommodate you.' […] The German tourists, the members of the 'Alpen-Verein' obviously came before the Slovenians. But if the Slovene Mountaineering Society wakes up, we shall build a giant hut – the location of which I will inspect the following week; if I won't be able to find a place and nobody helps me, I will build my hut next to the Dežman hut, 10 feet away…: my national pride was so hurt." (Aljaž, 1922, p.84-85).

In September, soon after the opening of the tower, Aljaž was on Mount Triglav once again to find a place for the hut. When he descended, he stopped on Mount Mali Triglav and inspected the world beneath. He saw two chamois running over Mount Kredarica, so he thought: *"The hut must stand there. Kredarica called for a mountain shelter the way a bald head calls for a hat!"* (Mikša, 2015, p.120). He bought the land on Mount Kredarica in the following days and on September 9, 1895, he signed the contract with the municipalities of Dovje and Mojstrana (the buyer was SPD). He bought a fair amount of jucharts for five guldens (Mlakar, 1953a). The hut was fes-

Figure 7: The first hut on Mount Kredarica was at first a humble mountain building. On the land bought by Jakob Aljaž, it was built by SPD according to his designs. It was opened on August 10, 1896. On request of numerous priests who were members of SPD, they also built a chapel of Our Lady of Lourdes next to the hut in 1897, where Aljaž held service occasionally. They also installed a meteorological outpost. The hut was expanded in years 1909/1910 and renamed into Triglav home on Kredarica (Svn. Triglavski dom na Kredarici). In addition to the "German" trail through Prag, a "Slovenian" Tominšek trail was established from the Vrata Valley in 1903. Photo archive: Slovenian Alpine Museum in Mojstrana.

tively opened on August 10 the following year and called it Triglav hut on Kredarica (Slavnostna …, 1896).

The Slovene mountaineering expanded significantly with the help of Jakob Aljaž and SPD, and the first decade saw 13 new SPD branches, 18 new Slovenian huts - 26 branches and 37 huts before WW1 (Figure 8).

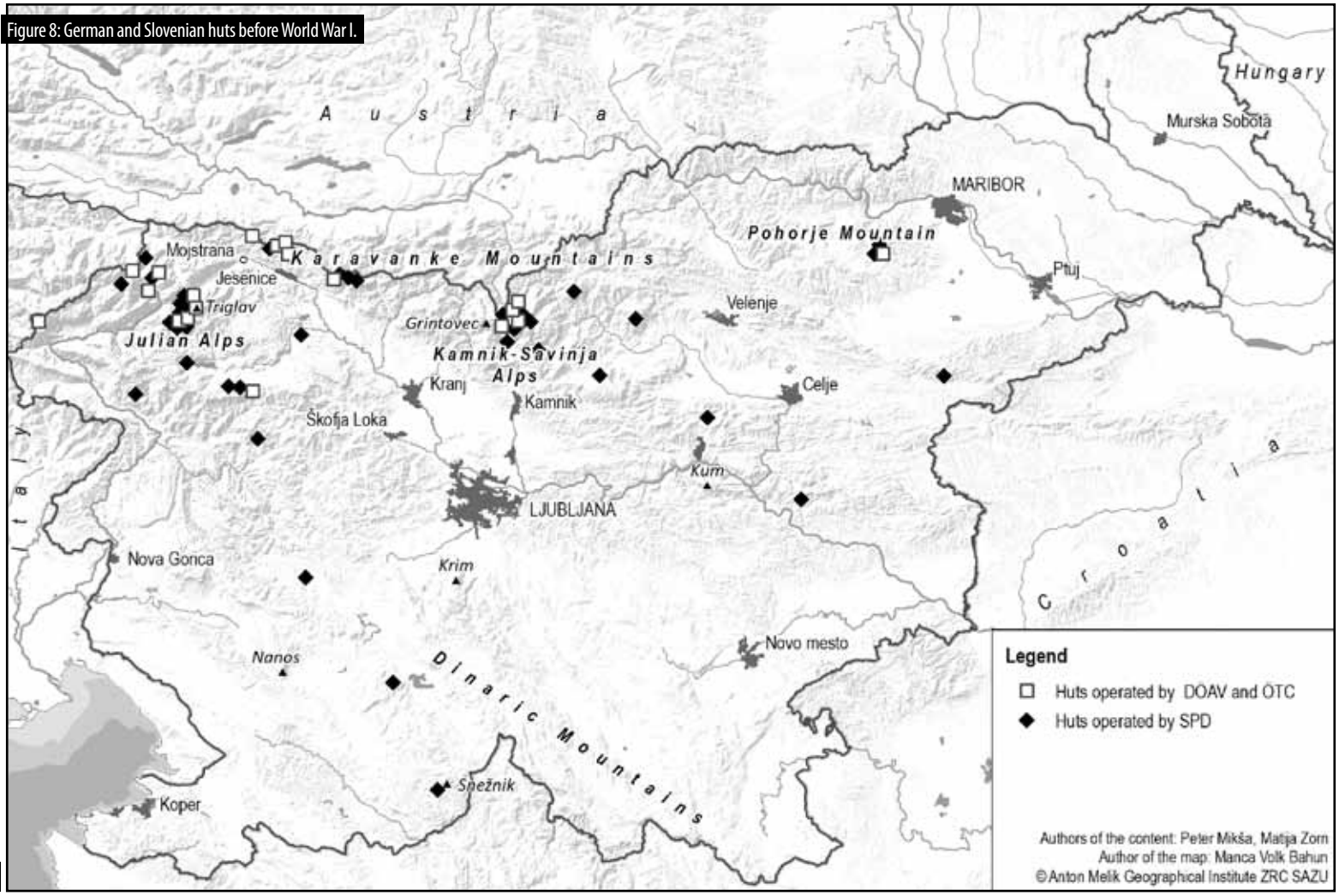
5. CONCLUSION

Slovenian mountains anchored in the Slovenian national identity through the national struggle and became a visible symbol, which is evident in innumerable postcards with the motif "Greetings from Triglav" and the image of Aljaž Tower. Such triumphs on national fronts boosted the self-confidence of the Slovenes.

There's another positive feature of this German-Slovene national battle for the mountains through the construction of mountain trails and huts – the latter would not be built in such numbers were it not for the national struggle (Mikša, Ogrin and Glojek, 2017). In point of fact: the German-Austrian Alpine Society had altogether 97,000 members and 331 mountain huts, which is around 300 members per hut, while SPD and its 37 huts had 116 members per hut (Mikša and Zorn, 2018).

The period of the national battle for the mountains as a sort of a blaze of individual nations was temporarily over when the mountains became part

Figure 8: German and Slovenian huts before World War I.



of the Kingdom of SHS after World War I. Temporarily, because the struggle between the Slovenes and the Germans was rekindled during World War II. The part of the Julian Alps that became Italian after World War I became a new front of the battle for the mountains between the Slovenes and the Italians. The Kingdom of SHS made foreign societies illegal and SPD took over the ownership of all property that had belonged to the German alpine societies on the Slovene territory. On the other hand, numerous structures, members and branches were lost in the national territory that remained outside the borders of the new state after World War I. The huts got new names, for instance Deschmannhaus, which became Stanič hut; Maria-Theresien Hütte became Aleksander hut; Vosshütte (Figure 4) became Erjavec hut. Valvasor, Zois and Piskernik huts kept their original names (Mikša and Ajlec, 2015).

REFERENCES

Aljaž, J. (1922). Planinski spomini. Planinski vestnik, Vol. 22, No. 6, p. 81–86.

Aljaž, J. (1923). Oris mojega življenja. Planinski vestnik, Vol. 23, No. 10, p. 145–148.

Debelak-Deržaj, , M. M. (1948). Kronika Triglava. Planinski vestnik, Vol. 48, No. 11-12, p. 336–345.

Debelak-Deržaj, M. M. (1949). Kronika Triglava. Planinski vestnik, Vol. 49, No. 2, p. 45–55.

Dobnik, J. (1992). Gradnja planinskih koč. In: Rapoša, K. (ed.): Stoletje v gorah (p. 145–170). Ljubljana: Cankarjeva založba.

Festschrift zur Feier des zwanzigjährigen Bestehens seit der Neugründung im Jahre 1881 (1901). Ljubljana: Section Krain des deutschen und österreichischen Alpenvereines.

Hoch hinaus! Wege und Hutten in den Alpen, Band 2 (2016). Köln: Böhlau.

Kristan, S. (1993). V gore . . .: izletništvo, pohodništvo, gorništvo. Radovljica: Didakta.

Letopis Planinske zveze Slovenije 2017 (2017). Ljubljana: Planinska zveza Slovenije.

Lovšin, E. (1944). V Triglavu in v njegovi soseščini. Ljubljana: Slovensko planinsko društvo.

Mazi, V. (1958). Koledarske beležke iz našega planinstva. Ljubljana: Planinska zveza Slovenije.

Mikša, P. (2011). Narodnostni boji v planinstvu na Slovenskem do 1. svetovne vojne. Zgodovina za vse, Vol. 18, No. 2, p. 59–69.

Mikša, P. (2014). Čigavi bodo Triglav in druge slovenske gore: spor med Slovenci in Nemci v planinstvu. Planinski vestnik, Vol. 114, No. 5, p. 8–10.

Mikša, P. (2015). »Da je Triglav ostal v slovenskih rokah, je največ moja zasluga«: Jakob Aljaž in njegovo planinsko delovanje v Triglavskem pogorju. Zgodovinski časopis, Vol. 69, No. 1-2, p. 112–123.

Mikša, P. (2017). Triglav in Jakob Aljaž. Ljubljana: Viharnik.

Mikša, P. (2018). Kako je Triglav pristal v grbu Republike Slovenije. In: Zorn, M., Mikša, P., Lačen-Benedičič, I. Ogrin, M., Kunstelj, A. M. (eds.): Triglav 240 (p. 15–28). Ljubljana: Založba ZRC.

Mikša, P., Ajlec, K. (2015). Slovensko planinstvo. Ljubljana: Planinska zveza Slovenije.

Mikša, P., Ogrin, M., Glojek, K. (2017). Od kod gorska identiteta Slovencev? Geografski obzornik, Vol. 64, No. 3-4, p. 10–28.

Mikša, P., Vehar, M. (2016). Kredar'ca: ob 120-letnici postavitve prve koče pod Triglavom. Ljubljana: Planinsko društvo Ljubljana-Matica.

Mikša, P., Zorn, M. (2016). The beginnings of the research of Slovenian Alps. Geografski vestnik, Vol. 88, No. 2, p. 103–131. https://doi.org/10.3986/GV88206

Mikša, P., Zorn, M. (2018). The »battle« for the mountains: Germans versus Slovenes in the South-Eastern Alps in the late 19th and early 20th century. Advances in Environmental Research, Vol. 65, p. 199–227.

Mlakar, J. (1953a). Jakob Aljaž, triglavski župnik. Ljubljana: Planinska zveza Slovenije.

Mlakar, J. (1953b). 60 let slovenskega planinstva. Planinski vestnik, Vol. 53, No. 5, p. 209–221.

Od Triglavskega podnožja (1887). Slovenec, Vol. 15, No. 175 (August 4, 1887), p. 3.

Pirjevec, A. (1925). Dežman, Karel (1821–1889). In: Slovenski bijografski leksikon, 1. zvezek (p. 131–135). Ljubljana, Zadružna gospodarska banka.

Ravnihar, M., Dolar, N., Dolar, M. (ur.) (2009). Pozdrav z vrhov: slovensko planinstvo na starih razglednicah. Žirovnica: Medium.

Slavnostna otvoritev Triglavske koče na Kredarici dne 10. avgusta 1896 (1896). Planinski vestnik, Vol. 2, No. 8, p. 122–127.

Strojin, T. (2009). Zgodovina slovenskega planinstva. Radovljica: Didakta.

Škantar-Šest, J. (1871). Iz Bohinja: Triglav vas gleda! Kmetijske in rokodelske novice, Vol. 29, No. 11 (March 15, 1871), p. 88.

Tuma, H. (1910). Po severni steni Triglava. Planinski vestnik, Vol. 16, No. 9, p. 191–197.

Janez Peter Grom, Petra Štukovnik: SEKTORSKA DELITEV OBRAMBNIH SISTEMOV RAPALSKE MEJE IN ODKRIVANJE OBSEGA SISTEMA UTRDB RUPNIKOVE LINIJE V PROSTORU

SECTORAL DIVISION OF RAPALLO BORDER DEFENCE SYSTEMS AND DISCOVERING THE EXTENT OF THE RUPNIK LINE FORTIFICATION SYSTEM

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IZVLEČEK

Raziskava je bila usmerjena v razumevanje realnega obsega in učinkov na prostor Rupnikove linije kot enega od dveh utrdbenih sistemov Rapalske meje. V ta namen so bili preverjeni dosegljivi viri in iz njih izpeljano razumevanje o sektorski delitvi elementov Rapalske meje. S terensko raziskavo na nivoju mikrolokacije je bil ocenjen realni obseg utrdbenih objektov Rupnikove linije. Na območju občine Žiri, lociranjem in evidentiranjem posameznih utrdbenih objektov Rupnikove linije in opravljenimi intervjuji je izdelana pregledna karta, ki prikazuje utrdbene objekte v prostoru. S to podlago, ki priča o dejanskem stanju in obsegu utrdbenega sistema Rupnikove linije na nivoju občine Žiri je mogoče razvijati poglobljena raziskovalna vprašanja glede vloge in vrednosti tega sistema v prostoru.

KLJUČNE BESEDE

sektorizacija Rupnikove linije, sektorizacija Vallo Alpino, sektorizacija Rapalske meje, obseg Rupnikove linije v prostoru, umeščanje utrdb Rupnikove linije v prostor

ABSTRACT

This study focused on improving the understanding of the actual extent and spatial impacts of the Rupnik Line as one of the two fortification systems of the Rapallo Border. To this end, the available sources were checked and the understanding about the sectoral division of the Rapallo Border's elements was derived therefrom. The field investigation done at a micro-location level revealed the real scope of the Rupnik Line fortification facilities. By identifying and recording the individual Rupnik fortification facilities in the Municipality of Žiri and by conducting interviews, we made an overview map showing the locations of these fortification structures. This basis, testifying to the actual condition and extent of the Rupnik Line fortification system at the level of the Municipality of Žiri, made it possible to develop further in-depth research questions regarding the spatial roles and values of this system.

KEY-WORDS

Rupnik Line sectorisation, Vallo Alpino sectorisation, Rapallo Border sectorisation, Rupnik Line extent, siting of Rupnik Line fortifications

1. INTRODUCTION

1.1 Historical background

In the aftermath of the fall of the Austro-Hungarian Monarchy a political vacuum was created in Europe. As a political entity, the Austro-Hungarian Monarchy dominated the entire Central Europe, connecting the East and the West with the gate to the Adriatic Sea through Trieste, Istria and Dalmatia to Montenegro, and with its control over the Balkans supervised the connection between the Ottoman Empire and the rest of Europe. At the end of World War I in 1918, the nations of the former Austro-Hungarian Monarchy were facing disputes over irredentist claims, as they were previously non-homogeneously included into the monarchy, and the territorial claims of large neighbouring nations. In relation to the study area – the initial western border between the Austro-Hungarian Monarchy and the then Kingdom of Serbs, Croats and Slovenes (hereinafter: Kingdom of SHS) –, the Kingdom of Italy, a member of the victorious Entente, which emerged from the conflict as a superpower, started to pursue its territorial pretensions by occupying the territory even during the truce. After several unsuccessful attempts at redrafting the border at the Paris peace conference of 1919, the final agreement on the Rapallo Border was reached on 12 November 1920 (Mikša et al., 2018, p. 606, 611).

Under the treaty the Slovene ethnic territory was taken over by the Kingdom of Italy, including the islands of Srakane, Unije, Cres, Lošinj, Lastovo, Palagruža, and Zadar, while Italy officially recognised the Kingdom of SHS. For Italians, this agreement was better than the assurances Italy received in the London Pact. Italians were aware of this fact, as confirmed by the Italian negotiator of the Treaty of Rapallo Count Carlo Sforza: "*It gave Italy an Alpine frontier as perfect as under the Roman Empire*" (Troha, 2001). To establish the border on the ground both sides agreed to form a commission, *Commisione Italo - S.H.S. per la delimitazine dei confini fra il Regno d'italia e il Regno S.H.S.,* which convened for the first time in Ljubljana. In fact, after their second meeting they started to demarcate the border on the ground, regardless of the disputes concerning the border in the mountains.

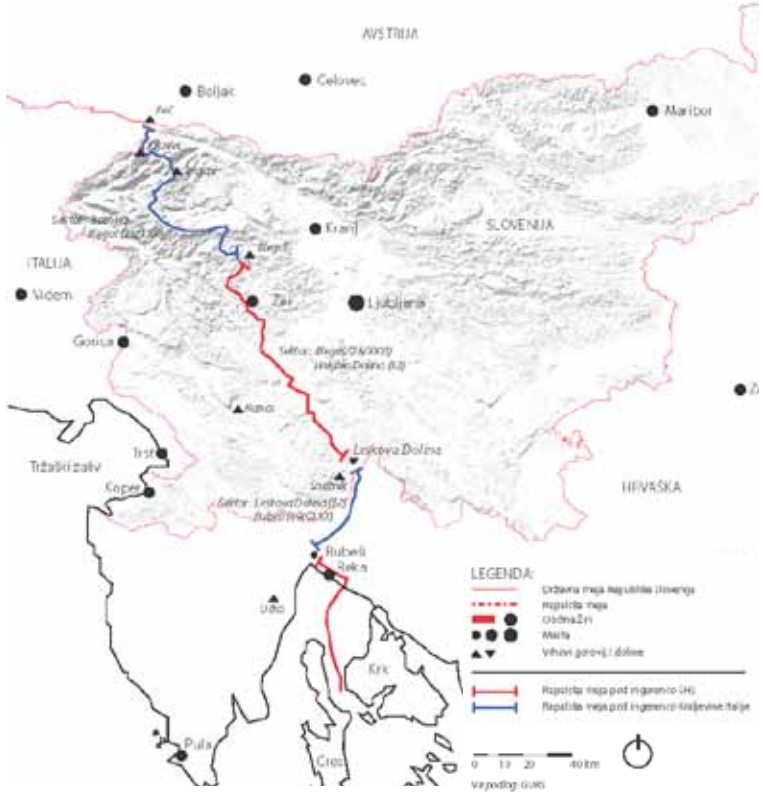
1.2 Definition and sectorisation of the Rapallo Border

The border ran, in general, as follows: Mangart – Triglav – Krnice pri Novakih – Špehovše – Hotedršica – Planina – Snežnik – Rijeka (Granda, Kordiš, 2004; Mikša et al., 2018, p. 612)

The Commission marked the border with four types of concrete boundary markers or *termini di confini*, also called *cippi.* In the south section towards Rijeka, there are carved stone boundary markers (Mikša et al., 2018, p. 615):

- Tripoint Boundary Marker – located at the top of the Peč mountain, signifying the tripoint between the Kingdom of Italy, the Kingdom of SHS, and Austria,
- The main boundary markers marked the beginning of each sector,
- *The second-order boundary markers – stood as intermediate boundary markers among the main ones,*
- *Special boundary markers – marked the crossing of communications with the border; on both sides of the road across the border crossing.*

Figure 1: Sectorisation of the Rapallo Border with illustration of changes.



In the first stage, the border was marked with one tripoint boundary marker; 69 main – sectoral boundary markers and 4508 second-order boundary markers were defined. The main boundary marker, No. 70, demarcated the meeting point of the Rapallo Border with the Free State of Fiume, and thus marked the tripoint. After the annexation of the City of Rijeka to Italy on 27 January 1924, the Rapallo Border was extended by 19,410.70 m; the number of main boundary markers increased by 9, and the number of the second-order boundary markers increased by 590 (Decisioni, 1929).

The border was divided according to land cover. The following categories were defined: uncovered or *tratti scoperti*, mixed or *copertura mista,* and forested or *copertura forestale* (Žorž, 2016). The two states also reached an agreement regarding the competences for constructing and maintaining the boundary markers. The Kingdom of Italy was in charge of the sectors from the tripoint at Peč to Blegoš and from the Leskova dolina (valley) to Rubeši. The Kingdom of SHS took care of the intermediate section from Blegoš to Leskova dolina (valley) and the final part from Rubeši to the Riječina River's outflow into the Bay of Rijeka (Decisioni, 1929) (Figure 1).

The Rapallo Border line coincided with the divide between the Black Sea and the Adriatic. In its role as a post-war superpower and in the light of *fait accompli* – by occupying the distinctly ethnic territory in November 1918 and thus violating the truce, Italy carried out an extensive occupation of the former Austro-Hungarian territory and thus followed the established military doctrine of allowing for defence readiness of the state. The western part of the diverse terrain morphology in the area presented better defensive positions to the Italian army than the lowland, flat part of the Apennine Peninsula, in the middle of which it found itself, albeit as a winner, at the end of the war after the successful final offensive of the Austro-Hungarian army.

Italian Army's logic was that the occupied mountainous area provided for better defensive and offensive positions (Bizjak, 2016).

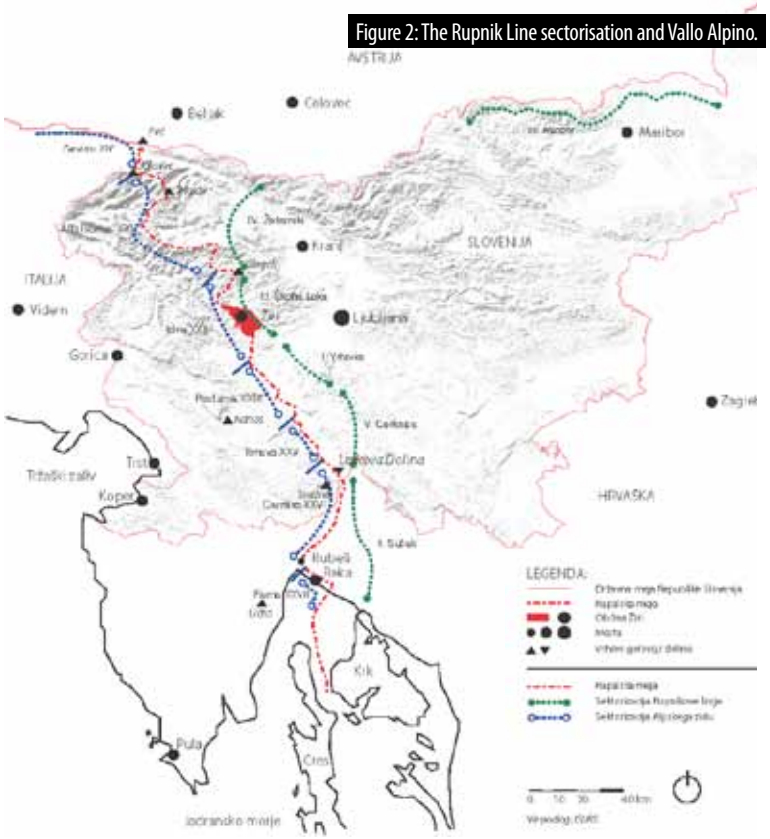
1.3 Fortification of the Rapallo Border and sectorisation of fortification systems

The Italian and the military doctrines of other European countries followed the French example of the Maginot Line. At the time, the Maginot Line (Ligne Maginot) in France, the Hindenburg Line (Siegfriedstellung) in Germany, the Beneš Line in Czechoslovakia, the Stalin Line in Russia, the Metaxas Line in Greece, the Fortified Position of Namur (Position Fortifiée de Namur – PFN), the Fortified Position of Liège (Position Fortifiée de Liège – PFL) in Belgium, the defence system Reduit in Switzerland, and the Mannerheim Line in Finland were being built (Kauffmann et al., 2014). With its system of fortified positions, Italy protected the entire northern border from the Gulf of Genoa to the Free State of Rijeka. Eventually, it dominated 1851 km of the border. Italy focused on the border with France and the Rapallo Border with Yugoslavia. This section of the Alpine Wall was set out in detail as the Eastern Alpine Wall – *Vallo Alpino Orientale*.

The Rapallo Border sectorisation is, in principle, interpretation of spatial characteristics done by the Kingdom of Italy and the Kingdom of Yugoslavia, respectively. The division of the entire area into sectors was the basis, on which each country laid down the principles of fortification by building fortified defence facilities.

In 1927 the Kingdom of Italy formed a special committee to fortify the borders. The Rapallo Border was soon exempted from the common design due to its specific terrain morphology and land cover. In 1929 the Committee was abolished, while the planning and implementation was handed over to the 11th Army Group. The Army Group divided the Rapallo Border into covering sectors called *settori di copertura*, where operations and surveillance in the designated sub-sectors was undertaken by frontier guards GaF – *Guardia alla Frontiera*. The surveillance over the Rapallo Border was divided into six sectors which partially corresponded to the division of the Italian Venezia-Giulia into provinces. These sectors ran from the tripoint in the north to the Bay of Rijeka as follows: XXI Alto Isonzo (with three sub-sectors), XXII Idria (with three sub-sectors), XXIII Postumia (with two sub-sectors) with the Command of the 11th Army Corps in Udine and XXXV Timavo, XXVI Carnaro (with two sub-sectors), XXVII Fiume, with the Command of the 5th Army Corps in Trieste (Ascoli, 2003) (Figure 2).

Figure 2: The Rupnik Line sectorisation and Vallo Alpino.



The defence of the western border with the Kingdom of Italy was the subject of discussions in the Kingdom of Yugoslavia's Army headquarters from 1926 onward. To this effect, a committee for assessing the operational and tactical significance of the Western Front and a committee for technical – fortification planning of the Western Front were established (Marković, 1995). In fact, the Yugoslav side started to fortify the border no sooner than in 1937, when the Fortification Headquarters was established (Terzić, 1984). First, the Headquarters specified four fortification sections, while later, following the Anschluss of Austria (Blackborn, 1997), the sixth section was determined along the northern border.

The Kingdom of Yugoslavia's fortification system, called the Rupnik Line, was composed of sections: from north to south – IV Železniki, III Škofja Loka, I Vrhnika, V Cerknica and II Sušak and the northern section VI Maribor. With the exception of section II, towards Rijeka, which had its headquarters at Kamenjak, other sections had their commands organised in the then province of Dravska banovina - *Drava Banate* (Figure 2).

1.4 Fortification of the Rupnik Line

The logics used by the Yugoslav side to introduce fortification facilities remains to be uncovered in historical or archive sources. Field work and the identification of the actual situation and extent of the fortification system of

the Rupnik Line can help us reconstruct these principles. Available archive sources reveal only that the Kingdom of Yugoslavia's army command was aware of the direction of any potential enemy invasions or fronts and that it secured their tactical lines accordingly (Marković, 1995). These directions were the following: 1 – Logatec direction, from Rovte to Planina Valley, 2 – Cerknica direction, from Planina to the entire Cerknica Lake, 3 – the Bloke direction, from the rim of Cerknica Lake to SE of Prezid, and 4 – Gerovo direction, from SE of Prezid to the border post of Brlog. The directions were fortified in-depth by exploiting natural elements and by interpreting space at the level of micro-locations. They protected them by exploiting the terrain morphology and land cover. Markovič mentions 8 types of work activities that were determined in the individual sections. The first group of activities assumed the camouflaging of positions. Using natural camouflage, forests were cut down or afforestation was used. Work activity No. 6 provided for organisation of quarries. Without taking into account construction interventions in the sense of building the various facilities, specified under work activity No. 2, today both aforementioned activities brought about major spatial developments and gross changes to the landscape image. This fact was proven by the field work carried out in the Municipality of Žiri. In constructing fortifications, the Yugoslav army followed the doctrine of the French Maginot Line and thus provided for two fortified lines. The first ran in proximity of the Rapallo Border; with its valley-defence or blockhouse fortifications (machine-gun nests or light-artillery bunkers) and obstacle systems (fortified positions, anti-tank ditches, and anti-tank fortified walls) in response to early enemy deployments. The second line involved major ridgetop fortifications as well as major lowland fortifications (Jankovič- Potočnik, 2009).

Fortifications at the level of the entire system were conceptually defined, while at the micro-location level in the case of the Rupnik Line this role was left to small army corps of engineers, who introduced these structures with more precision and more efficiently by interpreting the relevant spatial features.

1.5 Vallo Alpino fortification

The document that emerged during the meeting with the Hungarian delegation suggests that the Italian Army formed the starting points for introducing the fortifications by taking into account the natural features of the areas.

Given the then new military doctrine that replaced the concepts of national defence in a specific zone using a system of fortified positions of the permanent fortification type (Milan, 1937), the Italian side, which started to built fortifications prior to the Kingdom of Yugoslavia, initially chose between two fortification systems according to the depth of defence from the state border. The dilemma was whether to fortify just one position, i.e. the boundary point, or to fortify and defend several strategic positions reaching inside the state territory. The publication of the Circular 200 – *Circolare 200* of July 1931 marked the start of generation of systematic fortifications of Italian positions (Bizjak, 2016).

The circulars used by the Italian side to set out the method of fortifying the Rapallo Border were the following:

- Circular 200 – *Direttive per la organizzazione difensiva permanente in montagna, emanata il 6 gennaio 1931, contiene le direttive per la realizzazione della prima generazione di fortificazioni permanenti in ambiente montano, dette opere "Tipo 200"*
- Circular 450 – *Direttive per l'organizzazione della frontiera, emanata il 27 gennaio 1936, contiene le direttive per la copertura e la sistemazione difensiva della frontiera. Comprende un corposo allegato intitolato Direttive tecniche per lo studio degli elementi delle sistemazioni difensive*
- Circular 800 – *Direttive per la organizzazione difensiva nell'interno di zone boscose alla frontiera orientale*
- *Circular 7000 – Direttive per l'organizzazione difensiva*
- Circular 13500 – came into force on 14 August 1941, after the capitulation of the Kingdom of Yugoslavia in April. This directive provided the relevant information concerning the demolition by blasting to incapacitate certain fortified positions. These demolitions relate to the fortified positions which were until April of that year part of the fortification system of the Rupnik Line.
- Circular 15000 – *Fortificazione permanente alle frontiere alpine*

The circulars specified the in-depth defence of the border in three zones: *Zona di sicurezza* or Safety Zone, *Posizione di resistenza* or Resistance Position, and *Zona di schieramento* or Deployment Zone.

The circulars laid down the various principles of spatial interpretation and the measures adopted, and then applied, by the Italian side in building the fortification system. Circular 200 specifies the construction in mountain areas. Upon establishing that the principles laid down in Circular 200 were not applicable to construction south of the alp Soriška planina due to the changed terrain and land cover morphology, Circular 800 replaced or at least upgraded the principles of introducing fortification structures. At the same time, these circulars provide general instructions regarding the organisation of a defence system in depth, i.e. transversally to the Rapallo Border, by exploiting strategical natural positions and with effective interpretation of spatial attributes. In its largest scale, i.e. regional scale, these documents reveal the clear strategy of the army, specifying to which point eastwards it is reasonable to establish the occupation situation to make the defence more rational, while exploiting terrain characteristics. The line of defence specified in such a way provides information confirming political and strategic decisions used by the Kingdom of Italy to protect the start of the Padua Plain by positioning defence positions east of the diversified terrain morphology.

Both the Italian and Yugoslav sides decided to build defence-in-depth fortifications. Based on the field investigation and the analysed information, both sides carried out detailed terrain investigations and critically estimated the suitability of individual fortifications at the micro-location level.

3. CASE STUDY – THE STUDY OF FORTIFIED BUILT STRUCTURES OF THE RUPNIK LINE IN THE MUNICIPALITY OF ŽIRI.

3.1 About Žiri

The Municipality of Žiri offers unique study-relevant conditions both from the point of view of its spatial position, geomorphological characteristics, and its landscape image, as well due to its historical significance owing to its geographical position and spatial attributes. Žiri lies in the Žiri Basin, in the upper Poljanska Sora River valley. The village lies at 478 m at the confluence of the Sovra and Račeva streams, which used to flood regularly until flood control works were introduced. Here three historical regions meet: Gorenjska, Primorska, and Notranjska. The basin is an important crossroads between the valleys of Poljane, Logatec and Idrija, presenting a connection between the West and the North with the Ljubljana Basin. The rivers originating from the western slopes of the Western Žiri Hills flow into the Adriatic Sea; those originating from the eastern slopes flow into the Black Sea; Žiri presents an interesting divide geographically as well. From its definition in 1921 to the April War in 1941, the Rapallo Border ran partially along the border and partially in the area of the Municipality of Žiri of today. After Yugoslavia's capitulation in April in 1941, it was in the area of Žiri that the new German-Italian border turned from the Rapallo Border course eastward. These were the facts that led us to select the Municipality of Žiri to study the Rapallo Border and its fortification systems at the micro-location level.

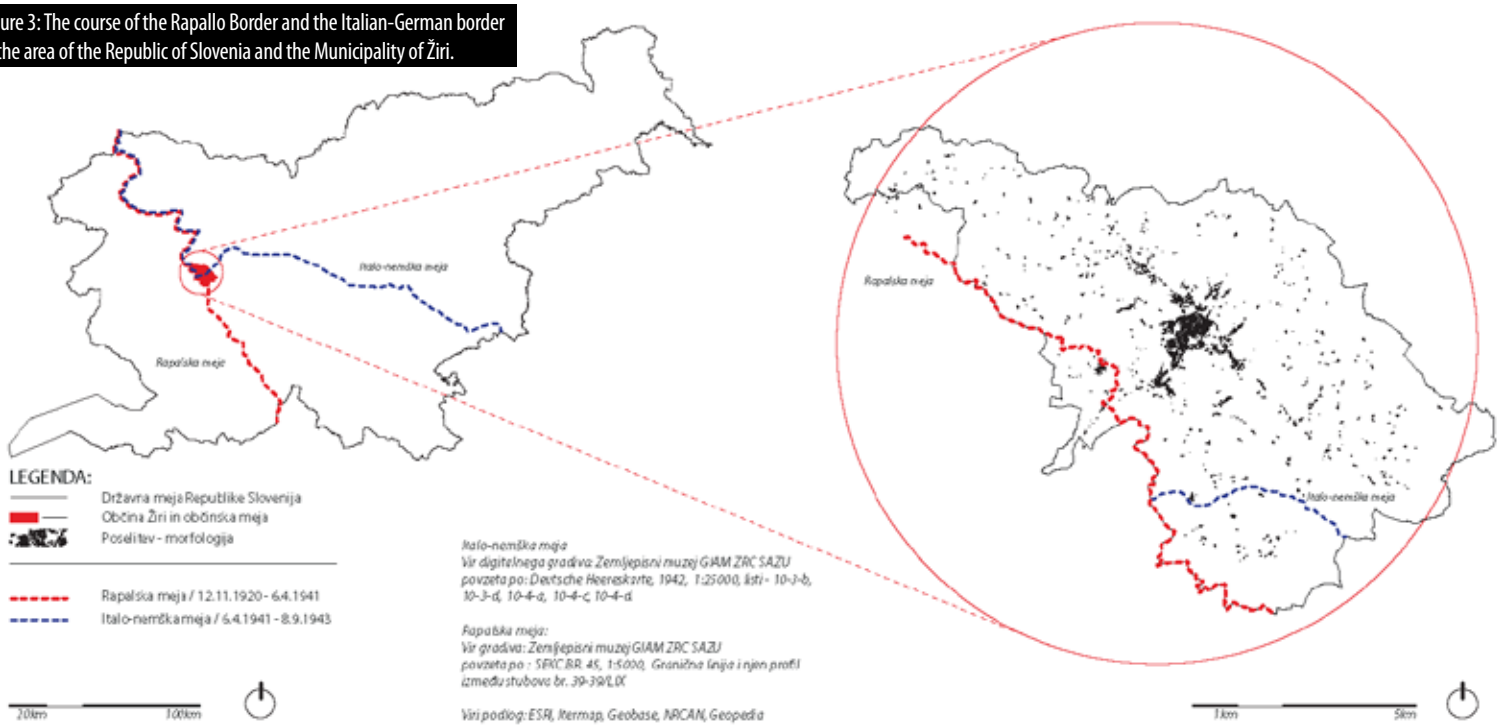
3.2 The Rapallo Border and the Rupnik Line in the Municipality of Žiri.

The Rupnik Line section running across the territory of what is nowadays the Municipality of Žiri was part of section III – Škofja Loka. In the Municipality of Žiri the Rapallo Border was divided into four main sections. It extended from the north to the south, running on hilltops along the today's western border of the municipality. The sections were demarcated with the main boundary marker No. 38 at Mrzli Vrh, while the border with the second-order boundary markers was demarcated from the main boundary marker No. 39 at Breznice to boundary marker No. 40 at Vrsnik. The last two sections run from boundary marker No. 41 above the village of Ravne and from there on to boundary marker No. 42 above Lom (below Zavratec). The border extended here from the signing of the Treaty of Rapallo in 1920 to the April war in 1941 (Figure 3).

The comparison between the Rapallo Border and the existing municipal division and land plot divisions is interesting. As evident from the Digital Cadastral Map and other surveying data, the existing administrative division – inter-municipal border and plot boundaries – land allotment in the Municipality of Žiri – follows the course of the Rapallo Border.

The Kingdom of Yugoslavia's capitulation brought about a new territorial division. The state was territorially divided between the Third Reich, the Kingdom of Italy, Hungary, and Pavelić's Croatia (NDH). Previously, the border ran in the North–South direction, while after the German-Italian occupation the new division was set in the East–West direction along Slovenian terri-

Figure 3: The course of the Rapallo Border and the Italian-German border in the area of the Republic of Slovenia and the Municipality of Žiri.



tory. The former state border remained valid at the Vršič–Žiri section. From Žiri onward it ran eastward along the Polhograjski Dolomiti, across Katarina down to Šentvid and Šiška, past Črnuče toward Laze to the Sava River.

From thereon it extended on the right bank of the Sava almost up to the confluence with the Kamniška Bistrica and the Ljubljanica rivers. After crossing the latter, it reached the mountains south of Besnica, Trebeljevo, Obolno, Osredek nad Stično, Debeč, Javor, Višnji Grm, Razbore, Ježni vrh, Nove Gore, through Vodice at Gabrovka, where it left the study area. It continued its way across Krmelj, east of Tržišče, West of Bučka, through Krakovski gozd, north of Kostanjevica na Krki and Sv. Križ (Podbočje) to the rim of Gorjanci at Gadova peč (Archives of the Republic of Slovenia, AS 1625, map Nazi/Fascist Division and Occupation of Slovenia – the Ljubljana Province 1943; Carta della Provincia di Lubiana 1:100,000, 1943; Deutsche Heereskarte Jugoslawien 1:25,000, 1942) (Rozman, 2006).

In terms of inter-state political divisions, the municipality of Žiri is unique, as here we find the place where the new German-Italian border intersected the former Rapallo Border. This new border ran in the NW part along the former Rapallo Border up to Žiri, and turned eastward in Brekovice toward Martinjaška grapa south of Goropek, and then transversally across the Račeva River valley toward Martinji vrh (Karawanken-Bote, 1941) (Figure 3).

3.3 Objective and purpose

The purpose of this study was to examine the resources and provide an overview of the existing literature and studies concerned with the Rapallo border and the fortified positions of the Alpine Wall and the Rupnik Line fortification system. In this sense we checked the literature on the Italian-Yugoslav inter-war division related to the political events, military doctrine, technological capacity and findings, economic situation, spatial conditions, and characteristics.

The spatial characteristics of both fortification systems were targeted, as well as their reciprocity by understanding the spatial conditions and siting. The available archival documents and the relevant literature were studied. By understanding the full breadth of information we can learn how and when, at a certain moment in time, these two fortification systems could be built, why they were built the way they were, and what conditioned the decisions about such siting. These findings are the basis for further studies on the impacts on the spatial appearance during and after the construction, when the Rapallo Border was active, after the April war at the time when this area was divided between Germany in the North and the Kingdom of Italy in the South-West, and after the end of World War II, when the border between Yugoslavia and Italy moved westwards; firstly, as an area divided into administration zones A and B and later in the form of the existing fixed state borders.

The aim of this study was to check the information obtained from archive sources and the literature in the field. After the initial findings, an extensive field inventory of the fortified structures of the Rupnik Line in the Municipality of Žiri was taken, where mostly Rupnik Line facilities and the Rapallo Border boundary markers are found.

Figure 4: Until 18 September 2007 the bunker stood at the end of the street Pot na Koče. It was removed by Anica Likovič when the the road to the "Grugatova" house was built. It is now buried in the construction pit underneath the previous dirt road (author of the photograph: Zvone Kopač, 2007; source: author's archives).

3.4 Methodology and tools

Data were collected at various levels. The sources were checked using the historical method. The information obtained from the various sources was checked with the analysis stemming from fieldwork. In the synthesis, the data acquired provide the basis for analysing the spatial condition. Semi-structured interviews were conducted. Most studies so far have relied on the historical research method as the basic method. This study focused on field-work with the purpose of testing the relevant facts underpinning our understanding of the relationship between the built structures of the fortification systems and the space at the levels of a location (area of a municipality with its impact areas) and a micro-location (level of a structure). The samples obtained in the field were analysed in the laboratory using microscopy.

Certain key texts were used in this study merely as a review of historical facts and of collected reference documents. These are accurate enough to understand the general interdependencies of the Rupnik Line and the Vallo Alpino and the demarcation lines of the Rupnik Border with space at the level of a system (regionally). It should be underlined that the studies so far provided a complex and in-depth approach to the historical aspects of one of the two fortification lines and the Rapallo Border, but never as a comprehensive system. The goals of previous studies were different, as they mostly dealt with social, political, military, and strategic aspects (Žorž, 2016, Marković, 1995, and Bizjak 2016), while professional works were mostly concerned with architectural, construction, military, and technological aspects of these structures (Jankovič Potočnik, 2009; Habrnal et al., 2005)

rather than with the systems as complex spatial entities. To date, there has not been, to our knowledge, a comprehensive work on the fortification systems of the Rapallo Border concerning space, i.e. one that would provide understanding of the correlation between the built elements of the fortification lines and the Rapallo border with space.

3.5 Fieldwork

The basic purpose of fieldwork has been to test the findings from the studied archival materials against field investigations. The goal was to record and photograph the directions of fortified built positions of the Rupnik Line in the Municipality of Žiri. Immediately upon starting fieldwork we found that the data available were incomplete. The fieldwork extended to seven days of intensive work, which would not have been possible without the help of the local residents.

A total of 75,93 km over steep and overgrown terrain were covered. 538 km were travelled. The field work took 86 hours. 52 new, previously unrecorded, fortification structures were uncovered. A total of 160 structures was identified; they were either preserved, preserved and overgrown, buried, or destroyed and, in many cases, found only based on witness accounts, under guidance of local inhabitants, or dug out to uncover the remains and indisputably confirm their former existence (Figure 5). Each location was assigned a position using GPS, while the points were inserted into DOF. The typology, number, and position of lines of fire were determined where possible. We identified the general directions that could be covered from these positions as well as the principle of siting the individual structures and the relationship between the nearest structures and the place of siting.

3.6 In situ findings

According to the course of the demarcation line, the built structures of both fortification systems were built following the defence-in-depth doctrine, as established from the sources studied. Field investigations revealed that the fortification structures of both lines were built on the Western slopes of the Eastern mountains for the Italian defence and in the Eastern slopes of the Eastern mountains for the Yugoslav defence. The defence systems were distributed in two relatively parallel lines. The Rupnik Line was investigated consistently. The Vallo Alpino was studied only from the resources available; we found that its construction faithfully followed the specifications set out in the reviewed literature and archival material.

The fortified positions of the Rupnik Line in a system of connected machine-gun nests were positioned along the eastern slope of the hills of the Sovra River valley along the entire valley course, from its widening at Žiri in the north to the narrowed down crossing at the border with the Municipality of Logatec lying to the south. In the system of the first-line of defence or the outpost position (Habernal et al. 2005) along the eastern slopes various fortified facilities, fortified machinegun positions, and strongly fortified artillery positions were strategically placed. This first-line of defence protected the expanded mouth of the SW Račeva valley, while the entire northern valley of the Sovra river downstream was defended, using the same logic as that in the valley south of the settlement. With the approaching armed conflict, the Kingdom of Yugoslavia accelerated the fortification of its defence positions. Fortification activities started to take shape at the Bulgarian border, at the border with Albania, and at the border with the Kingdom of Italy (Žorž, 2016). In the Račeva River valley we identified several poorly built fortification structures. Their construction was very sloppy, from concrete without reinforced steel. According to France Treven (Grom, 2018b), the Yugoslav Army started to fortify this valley in its entirety, in the same sense as in the Sovra Valley. Until the beginning of the April war, however, they managed to build only foundation slabs. Until now, the first line of defence was incorrectly evaluated and its extent incorrectly estimated. Habernal, too, defines this zone as if "*it started with a few groups of machine-gun and anti-tank nests, accompanied by a few typical structures that were erected at incoming communications and in the most probable attack directions in the proximity of the border with the purpose to stop enemy reconnaissance units or raise alarm during the attack of the main forces*" (Habernal et al. 2005). The extent of the uncovered system confirms the falseness of this finding and testifies how even the first-line of defence served as a serious resistance line, which spatially exploited the characteristics of the locations along the entire Rapallo Line.

The second-line of defence or the main zone (Habernal et al. 2005) was sited along the western slopes right below the Žirovski vrh ridgetop, from the northern border with Škofja Loka to the southern border with the Municipality of Logatec. This defence zone was segmented into three lines. The first line was composed of physical obstacles – concrete foundations with barbed wire coil. Such physical obstacles were established along the entire second-line of defence, in a width of 10 m, right below the machinegun defence positions. The fortification structures of machine-gun emplacements were typologically similar to the structures of the first-line of defence in the valley. The third-line of defence, established along the ridge, involved larger fortifications with greater fire power. Both the first- and second-line of defence continued in the same composition northward and southward beyond the municipal borders. The systems of the first-line of defence in the valley and the second-line of defence from Žirovski vrh onward were not completed. There are also large unfinished fortifications as well as concrete slabs and construction pits, where the whole defence system was supposed to be developed. The construction of the fortification structures and of the narrow gauge railway was personally followed by France Kavčič, born in 1932. In the interview he pointed the locations of these unfinished structures (Grom, 2018a).

The records are most incomplete concerning the extensive system of the first-line of defence running in the lower part of the hills immediately along the Rapallo Border.

This historical fact, in combination with fieldwork, revealed that immediately in the aftermath of the occupation of the territory in April 1941, the Italian Army, as a preventive measure and in line with Circular 13500, destroyed by blasting all the fortified facilities. Their locations were discovered, recorded, and geopositioned for the first time during our field investigation. The typology of the facilities and their role were assessed based on the remains, as many structures were completely destroyed or overgrown (Figure 5).

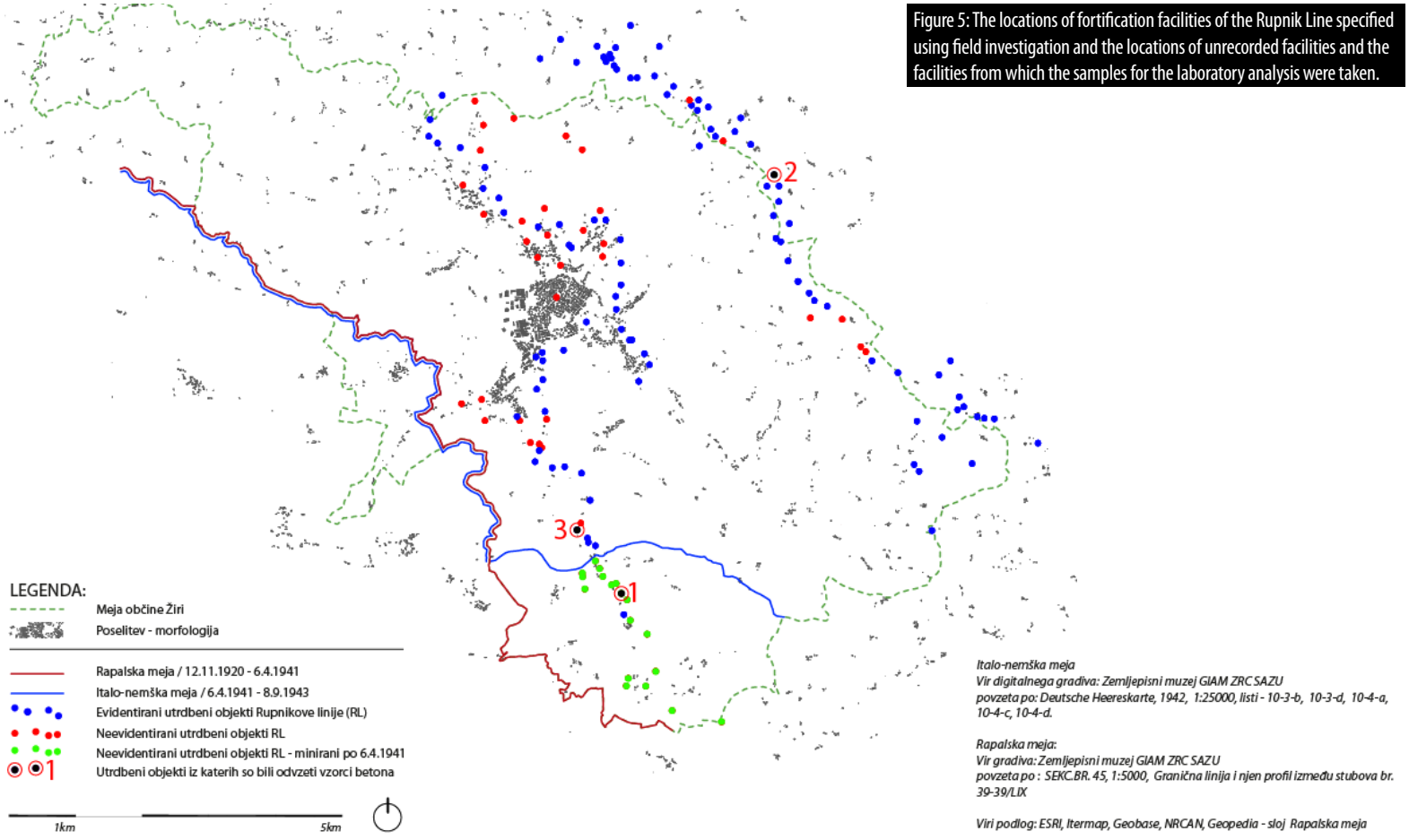


Figure 5: The locations of fortification facilities of the Rupnik Line specified using field investigation and the locations of unrecorded facilities and the facilities from which the samples for the laboratory analysis were taken.

Laboratory microscopic analysis of the concrete samples 1 and 3 confirmed that the discovered ruins belong, in fact, to the fortification structures of the Rupnik Line. These two samples were taken from one of the preserved fortified structures of the Rupnik Line and from one of the partially-blast structures, respectively. Sample 2 was taken from a fortification structure from the second-line of defence under the Žirovski vrh ridgetop. The samples, i.e. thin sections for microscopic examination, were appropriately prepared at the Faculty of Natural Sciences and Engineering of the University of Ljubljana, then they were stained using alizarin red to reveal mineral deposition (calcite, dolomite) (Figure 6).

The microscopic analysis of the samples was done using an optical microscope using transmitted light. Generally, it was found that samples 1 and 3 were homogeneous. The aggregate–binder–pore ratio was estimated according to Terry and Chilingar Ag:V:P= 40:57:3 (Chillingar, 1955). Large aggregate grains prevail in the sample. The grain size is between 0.5 mm to a few centimetres. All aggregate grains are angular. The mineralogical investigation of the aggregates showed that they are mostly composed of sparite

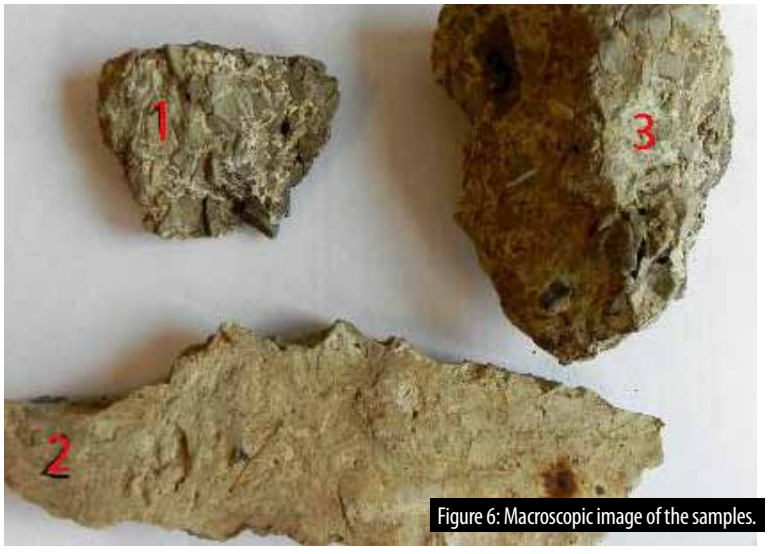


Figure 6: Macroscopic image of the samples.

Figure7: Sample 1 (left) and sample 3 (right). a 50× magnification, PPT.

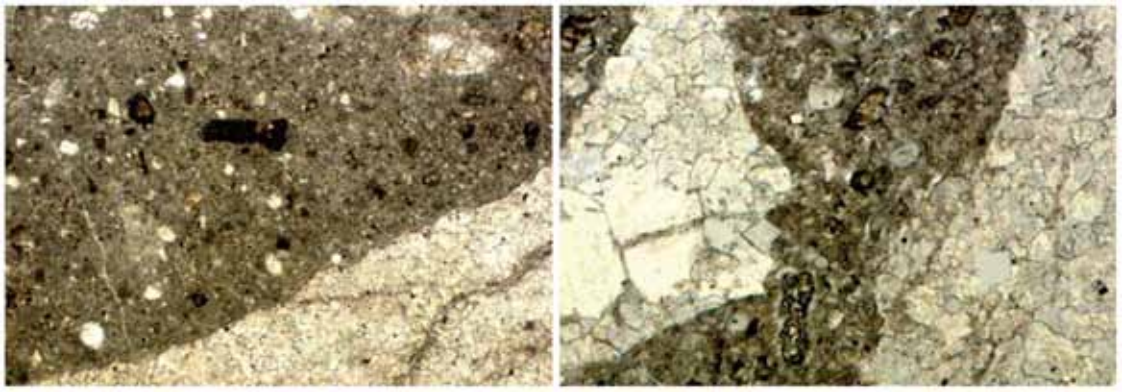


Figure 8: Sample 1 (left) and sample 3 (right). 50 x magnification, PPT, coloured part of the sample.

dolomite crystals. The binder revealed a larger proportion of unaggregated grains of cement clinker (Figures 7 and 8). In general, samples 1 and 3 seem similar. They have the same aggregate source, in both cases the proportion of unaggregated grains (Figures 7 and 8) is large, and there is a similar type of mineralogical changes in the aggregates. (Štukovnik, 2018)

Due to their inaccessibility some facilities were not identified during field work, but only after inserting all the information using ESRI ArcGIS, where by understanding the original logics of the builders gaps in the land surveillance coverage were identified. This information led to other structures, which were overlooked in the first field investigations. These fortification structures were preserved and used to a certain degree during the German occupation. Nevertheless, a certain number of structures on the ground under the then German control was recorded for the first time in this field investigation.

Field investigations revealed that the builders interpreted the spatial morphology, understood land cover, and were well familiar with site-specific natural features. The structures were sited so that by dual overlapping of the fields of vision they strategically covered the lines of access to Žiri and the "gate" to the Ljubljana Basin from the North to the South and from the Eastern directions, which connected the Italian positions through the Rapallo border crossings in several points. To understand land cover was of crucial significance for accurate adjustments of line-of-sights and for covering or camouflaging the positions to keep hidden from the enemy. Camouflaging was listed as the first among the 8 activities to be done by the working groups in the field (Markovič, 2016). For this purpose, forests were cut in some places, elsewhere the slopes were afforested.

Using witness accounts of older residents, this field investigation allowed us to identify and determine the positions of the dams that were generally believed to be exclusively flood control measures. It became evident that these structures were, in fact, designed and introduced as anti-tank reinforced concrete walls, which crossed all valleys with border crossings and the Sovra river valley leading to the Ljubljana Basin. This was found out in an interview with Pavla Treven (Grom, 2018c). All the crossings and valley mouths with obstacle systems for armoured vehicles and other machinery were protected with an increased number of fortified, strategically placed structures.

In 1927 (Slovenec, 1926) Žiri was affected by the worst flood in its history (Figure 9). It was found that all the fortification structures of the first-line of defence of the Rupnik Line were strategically positioned above the 100-year return period limit. According to the testimony of local inhabitants, the anti-tank walls identified in the field also served as flood-control works.

Due to the lack of protection, many fortification facilities of the Rapallo Border were destroyed over the last decades. In Žiri some fortified facilities were identified that were either moved, destroyed and even tipped or built

underneath (Figure 4). The reason for the destruction of these structures was the expansion of transport infrastructure. In some cases the inhabitants used the structures that were built on private land for other purposes, i.e. basements, storage of produce, or they partially destroyed them and built vineyard cottages or other facilities in their place. With the help of local residents, the locations where these structures once stood were identified, photographic materials were also obtained. These structures are of interest from the spatial aspect, as they mostly controlled the streets and the main road through Žiri and were spatially exposed. On the other hand, the fortification structures outside settlements were covered, masked, and positioned in dominating height points and covered other outdoor locations.

4. CONCLUSIONS

The study was done at the level of the Municipality of Žiri, the built elements of the Rupnik Line were recorded. We found that the sources available fail to provide comprehensive conclusions as they are incomplete, highly deficient, or even faulty. In the sources available, only the Rapallo Border is well sign-posted and recorded, while the border crossing points are consistently recorded and described. It was found that the fortification structures are often faultily described, the typologies are incorrect, and their spatial positions are only roughly determined. Many of the structures were officially not recorded. They are absent not only from the original cartography and documents, which can be ascribed to the way that these structures were built, but also from further investigations, which were without any exception based on incomplete archival documents.

Based on the findings of this study we conclude that, in a similar way, the Rupnik fortification system along the entire line of the Rapallo Border has been underestimated, as elsewhere the inventory of these facilities is even more incomplete. The accuracy of the information on fortified built positions of the Alpine Wall is put under question. The estimates concerning the Kingdom of Yugoslavia's readiness for war before the April war and its capitulation are put under question as well. The study recorded the situation and the location of each identified structure, thus providing the basis for comprehensive and relevant further investigations in various areas of interest.

The basis for analysing the strategic and tactical capacity of the fortification system of the Kingdom of Yugoslavia in the Western Front is provided. Further, the basis for a comprehensive treatment of the socio-economic conditions in the mid-war period in Žiri was also provided, as the study revealed that the town and the entire settlement of the area was under significantly stricter military control, and that people lived in much less uncertain conditions in terms of security, than previously estimated. A concrete basis for the economic justification of the Rapallo Border fortification systems is given. Its uniqueness is now unrecognised, while tourist services cover only a small, generally well-known part of this fortified system. Only by establishing a comprehensive picture of the system will it be possible to register these facilities into the heritage inventory and set up protection under the Institute for the Protection of Cultural Heritage, thus preventing (even recent systematic) destruction of these facilities.

Figure 9: The flood of 26 Sept. 1926 in Žiri (photo by: Štefan Mlakar, 1926, source: Slovenec, 1926).

A complete picture, which would allow for relevant treatment of spatial relationships, will be created only by investigating the positions of fortified built structures of the Alpine Wall, which stand, with their siting and purpose, in relation with the elements of the Rupnik Line in the Municipality of Žiri. To this purpose it will be necessary to make an inventory of all fortification structures of the Alpine Wall in the neighbouring municipalities of Idrija, Logatec, and Škofja Loka, for which it will be established that they have a spatial relationship with the fortification structures of the Rupnik defence system in the Municipality of Žiri. By determining the locations and understanding the typology of the structures and their characteristics, we will identify the relationships to the siting locations and the wider impact area. We will be able to establish real and relevant findings only after we acquire and interpret all this information.

The question of the extent and situation of the fortification systems in other sections of the Rapallo border remains open. The Rapallo Border in the Municipality of Žiri covers approx. 11.5 km out of 189 km of the total length of the demarcation line, without the Maribor sector VI to the north; thus, this investigation addresses 4% of the total border length. The work done in Žiri was consistent and a precedent was set, testifying to the general lack of clarity regarding the key historical facts significant for Slovenians and regarding this unique but, as it is, almost completely unexploited spatial content. The case study set a model based on which it is possible to build further studies focusing on the overall complex picture of the fortification systems of the Rapallo Line, mutual spatial impacts, and other related fields of research.

ACKNOWLEDGEMENTS

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I also thank my supervisor, Dr. Alenka Fikfak, for her encouragement and guidance and for allowing me so much research freedom.

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REFERENCES

Ascoli, G.I. (1878). Schizzi franco-provenzali, Archivio glottologico italiano 3

Ascoli, M. (2003). SME, la Guardia alla Frontiera, Roma.

Bernasconi, A., Muran, G. (1999). Capitolo primo »IL VALLO ALPINO DEL LITTORIO: LA SUA EPOCA«. Noi siamo all'epoca delle Nazioni murate, in Le fortificazioni del Vallo Alpino Littorio in Alto Adige, Trento, Temi, p. 15, ISBN 88-85114-18-0.

Bizjak, M. (2016). Italijanski obrambni načrti proti Kraljevini SHS/kraljevini Jugoslaviji in gradnja utrjenega obrambnega pasu na italijanski vzhodni meji (Rateče-Reka), 1927-1941, Doktorska disertacija, Univerza na Primorskem, Fakulteta za humanistične vede, Koper

Blackbourn, D. (1997). The Long Nineteenth Century: A History of Germany, 1780-1918 New York: HarperCollins.

Burgwyn, H. J. (1993). The Legend of the Mutilated Victory: Italy, the Great War, and the Paris Peace Conference, 1915-1919 (Contributions to the Study of World History), Westport, CT [etc.] : Greenwood Press.

Decisioni della commissione mista stabilita dalle convenzioni Nettuno e di Belgrado, (1929). str. 46, Rim, Ministrstvo za zunanje zadeve

Granda, S., Kordiš, I. (2004). Od držav na Slovenskem do slovenske države, Pokrajinski muzej Kočevje. Kočevje.

Grom, J.P. (2018a); Interviewee France Kavčič. Sound recording, Žirovski Vrh 53, 4226 Žiri, 16 August 2018

Grom, J.P. (2018b); Interviewee France Treven. Manual record, Lavrovec 16a, 1373 Rovte, 11 August 2018

Grom, J.P. (2018c); Interviewee Pavla Treven. Sound recording, Brekovice 15, 4226 Žiri, 5 August 2018

Habernal, M., Čermak, L., Gregar, O., Markovič, Z. (2005). Rupnikova črta in druge jugoslovanske utrdbe iz obdobja 1926-1941. Dvůr Králové nad Labem, Češka Republika, J. Škoda--FORTprint.

Ingham, J. (2011). Geomaterials Under the Microscope. (ISBN-13: 978-0124072305). Academic Press; 1st edition (February 15, 2013)

Jankovič Potočnik, A., Tonič, V. (2012). Fortifying Europe's Soft Underbelly: The Rupnik Line, the Vallo Alpino and Other Fortifications of the Ljubljana, 3rd edition, Merriam Press Military Monograph Series.

James Burgwyn. H. (1993). Legend of the Mutilated Victory: Italy, the Great War and the Paris Peace Conference, 1915–1919.

Kacin-Wohinz, M. (1972). Primorski Slovenci pod italijansko zasedbo 1918 do 1921. Maribor.

Karawanken-Bote, letnik 1, št.2,12.7.1941, str.3, Kärntner Volksbund. URN:NBN:SI:DOC-9C7YTDCP

Kauffmann, J. E., Jurga, R.M. (2014). The Forts and Fortifications of Europe 1815-1945: The Central

Marinelli, O. (1923). Il Friuli e la Venezia Giulia. Problemi di geografia amministrativa e di toponomastica. Udine.

Marković, Z. (1995). Vojska kraljevine Jugoslavije in utrjevanje zahodne meje na Slovenskem 1937-1941. Diplomsko delo, Univerza v Mariboru, Filozofska Fakulteta, Maribor

Mikša, P., Zorn, M. (2018). Rapalska meja : četrt stoletja obstoja in stoletje dediščine. V: AJLEC, Kornelija (ur.), BALKOVEC, Bojan (ur.), REPE, Božo (ur.). Nečakov zbornik : procesi, teme in dogodki iz 19. in 20. stoletja, (Historia, ISSN 1408-3957, 25). 1. izd. Ljubljana: Znanstvena založba Filozofske fakultete.

Milan, R. (1937) Sistem savremene stalne fortifikacije. Ratnik, sv.4, Beograd.

Terry, R.D., Chilingar, G.V. (1955) Summary of »Concerning some additional aids in studying sedimentary formations,« by M. S. Shvetsov. Journal of Sedimentary Research 25 (3):229-234

Terzić, V. (1984) Slom Kraljevine Jugoslavije. Partizanska knjiga. Ljubljana. narodna knjiga. Beograd. Pobjeda. Titograd.

Troha, N. (2001). Slovensko/jugoslovansko-italijanska meja v: Zgodovina v šoli, letnik X, št. 3. Ljubljana. str: 29.

Rozman, J. (2006). Geografska analiza prehodov čez Savo med II. Svetovno Vojno (na odseku Dol-Renke), UI, fakulteta za družbene vede, Ljubljana.

Slovenec (1926). Slovenec: političen list za slovenski narod (03.10.1926). Leto: 03.10.1926, letnik 54, številka 226.

St John Donalt A., Poole A., W., Sims, I. (1998). Concrete Petrography. First edn. Aronold and meber of the Hodder Headline Group, New York

Štukovnik, P. (2018). Poročilo št.: FA-18/01, UI, Fakulteta za gradbeništvo in geodezijo, Ljubjana

Žorž, G. (2016). Varovanje rapalske meje in vojaška navzočnost na območju XI. Armadnega zbora, magistrsko delo. Univerza v Ljubljani, Filozofska fakulteta, Oddelek za geografijo, Ljubljana

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RESOCIALIZACIJA ODVISNIKOV – SOCIALNI IN PROSTORSKO-ARHITEKTURNI VIDIKI ZDRAVLJENJA ODVISNIKOV

RESOCIALISATION OF RECOVERING DRUG ADDICTS – SOCIAL, SPATIAL, AND ARCHITECTURAL ASPECTS OF TREATING DRUG ADDICTS

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IZVLEČEK

Odvisnik v času zdravljenja zamenja svoje okolje. Novo okolje ter prostor morata ustrezno simulirati in vzpodbujati dejavnike, ki pozitivno vplivajo na ozdravitev, življenje (socialno in duhovno), učenje in delo. Članek obravnava vpliv prostora in okolja na uspešnost zdravljenja ter (re)socializacijo odvisnika. Vstopiti v tovrstno ustanovo v današnjem času pomeni 'takojšnji' izbris iz ustaljenega vsakdanjega socialnega okolja in tudi virtualnega sveta. Vendar je za odvisnika omogočanje ustreznih spontanih in načrtovanih stikov z znanci nujno. Kljub odvzeti socialni kompetenci je pomembno, da pri odvisniku ustalimo in utrdimo občutek pripadnosti družbenemu okolju. Srečanja in navezovanje stikov z ljudmi bližnjega ali daljnega okolja so potrebni za družabnost v času 'izolacije', saj ta pripomorejo k lažji resocializaciji v okolju po zaključku zdravljenja. Članek temelji na izsledkih polstrukturiranih intervjujev in kvalitativni analizi pridobljenih odgovorov, na študiji primerov posegov v prostor, ki slonijo na kakovostnem oblikovanju družbenega prostora, ter primerjavi domačih in tujih praks glede ocenjevanja prostorskih vrednot. V rezultatih je predstavljen aplikativni primer arhitekturne kompozicije ekovasi za zdravljenje odvisnikov, ki sloni na socialni kompetenci: razvoju sposobnosti posameznika za samostojno delovanje v družbenem okolju.

KLJUČNE BESEDE

odvisnik, resocializacija, intervju, Zavod Pelikan Višnja Gora, umestitev objekta v prostor, arhitekturna kompozicija ekovas.

ABSTRACT

During treatment, drug addicts change their environment. The new environment and surroundings must adequately simulate and encourage the factors that positively affect their treatment, living (social, spiritual), learning, and work. The focus of this paper is the impact of the environment on the success of rehabilitation and (re)socialisation of drug addicts. Nowadays, setting foot in such an institution means an "immediate" removal from the established, everyday social environment as well as the virtual world. However, the provision of appropriate spontaneous and planned contacts with family and friends is necessary for an addict. Despite the removed social competence, it is important for an addict to settle down and strengthen the sense of belonging to a social environment. Meeting people and developing contacts with people from near and far is necessary to maintain social relationships during "isolation", as this eases their resocialisation in their environment after the completion of treatment. This paper is based on the findings of semi-structured interviews and qualitative analysis of the answers received, case studies of spatial developments based on a qualitative design of social space, and various comparisons between domestic and foreign practices in view of the evaluation of spatial values. In the Results section, we present an applicative case of architectural composition of an ecovillage for rehabilitation of drug addicts based on social competence: development of an individual's abilities for an independent functioning in a social environment.

KEY-WORDS

addict, resocialisation, interview, institute Zavod Pelikan Višnja Gora, site selection and placement of a structure, architectural composition of an ecovillage

1. INTRODUCTION – SOCIO-SPATIAL EXCLUSION OF DRUG USERS

Socio-spatial stigmatisation is a process, whereby places inherit the stigmatisation of persons (Takahashi, 1997). The problem of accepting the socio-spatial stigmatisation, i.e. the Not In My Back Yard (NIMBY) phenomenon, has been addressed by many authors. There is an extensive literature on the topic of socio-spatial stigmatisation, which is mostly in relation to the homeless, people living in slums, and, lately, refugees and migrants. The subject matter of drug addicts[1] has been addressed fewer times, but in detail (Fiorentine, Hillhouse, 2000, Taylor, Covay, 2008, Radcliffe, Stevens, 2008, Gowan *et al.,* 2012). In Slovenia, the problem of the "attitude of the society toward marginal social groups, which can be established from the attitude of the society to the problems of the weak," was determined by Žgavc (2011, pp. 82–83), who finds that intolerance to marginal groups, such as illegal migrants or the Roma, and intolerance regarding the building of a mosque and inflow of other cultures, etc., has turned into a serious threat to local communities, also in light of ongoing debates in mass media and privately. "When reporting on marginalized groups, the media employ a "stigmatisation and discrimination discourse that primarily adopts the principle of separating between "them" and "us"[2] (Pajnik, 2003. p. 92). According to Žgavc (2011), the latter includes the problem of societal acceptance of drug users[3], where "various attempts at establishing communities for treating drug users, residential communities for persons with problems, etc., meet a similar response of local communities" (Žgavc, 2011, p. 82).

In Slovenia, there are many prevention programmes and non-governmental organisations dedicated to addressing all kinds of addictions. Bačar (2014, p. II) states that "around 40 programmes address users of illicit drugs", while Kastelic (2015, p. 12) reports that "[since 1995] in Slovenia, 18 centres for prevention and treatment of addiction to illicit drugs have been established". In 2003, the Centre for Treating Drug Addictions at the Psychiatric Clinic Ljubljana (PKL) was established, while a detoxification department dates back to 1995. Services operating in the field of drugs are, according to users' opinion, relatively accessible, but unfortunately some programmes mentioned in the Resolution on the National Programme in the Field of Illicit Drugs 2014–2020 [ReNPPD], e.g. safe injection rooms and syringe vending machines, did not fully come to life; moreover, there is a lack of such programmes in smaller towns (ReNPPD14–20, 2014).

The most widely used drugs are cannabis, cocaine (crack), ecstasy, LSD, phencyclidine, among opiates: heroin, morphine, codeine, and synthetic drugs, e.g. methadone; the availability and use of synthetic drugs are on the rise. "The overarching goal of Slovenia's National Programme on Illicit Drugs (2014–2020) is to reduce and contain the harm caused to individuals, families, and society from illicit drug use" (~~ReNPPD14–20, 2014~~). To fulfil this goal, the Resolution provides for 14 goals, which include the goal of "promoting psychosocial treatment programmes for drug users, therapeutic groups and communities, reintegration programmes, and employment programmes for former drug addicts to contribute to reducing the social exclusion of drug users". (ReNPPD14–20, 2014)

1.1 Therapeutic community and the place for resocializing drug addicts

A therapeutic community has been conventionally defined as a drug-free environment in which people with addictive (and other) problems live together in an organised and structured way to promote social and psychological change (European Monitoring Centre on Drugs and Drug Addiction, 2012, p. 33). Isolation and planned prevention of contact with the external social environment leave a mark on individuals, affecting them during living/treatment in an institution and later, during reintegration into the environment, characterised by random interactions and external impacts. For an individual it is important that "his or her reintegration into social and relational life realistically allows them to choose how to live their lives" (Stefanovski, 1998, p. 249). On the other hand, psychotherapeutic communities deal with individuals and address the reasons leading to addiction (Auer, 2001, p. 133; in: Podpečan, 2006, p. 40). This concerns the relations within the community, among addicts, with staff, the surroundings, and their social life. The spatial aspect here is very important, whereby the visual composition of the facility as well as good functional, programmatic, and content organisation help to influence the evolution of awareness and dealing with problems of drug users in their everyday environment, or in areas encouraging social interaction and offering the feeling of social integration.The possibility of developing the various resocialisation aspects is, along with therapeutic programmes, influenced by the built environment or elements defining it, such as location, proximity to, or distance from, the built environment, size and, above all, the organization of additional programmes, i.e. internal (communal areas, workshops, work, education, socialising – interaction) as well as external (additional activities, sports, working outdoors) which allow for resocialization and humanity of living. This is a form of living which provides seclusion when necessary, living in groups/communities, as well as contact with the wider social environment as soon as the psychological state of the addict allows for it. Here we take into consideration the following aspects that should be addressed in spaces intended for therapeutic communities for drug addicts when organising a better living environment, which becomes the place of learning, living, and socialisation – in the short- or long-term:

- How should the built environment and its surroundings – and their imageability – affect the desire for personal change?
- Does the built environment give the impression that its priorities are education and rehabilitation?
- In the opinion of staff and recovering drug addicts, what should such a therapeutic centre look like?

1 A human being can be psychologically addicted to just about anything (Flaker, 1999, p. 214).

2 "The discourse of the duality of "us" versus "them" reflects a practice of separation, exclusion, which leads to thinking in terms of duality, e.g., good–bad, developed–undeveloped, and normal–not normal. This discourse ascribes positive characteristics to the "normal" majority and negative ones to the marginalised minority" (Pajnik, 2003, p. 87).

3 Different terms are employed to refer to someone who is a drug user; their meaning carries the connotation of drugs: "unemployed druggies", "old acquaintances with the police", "junkies", "stoners", "ex-users", etc., or other connotations: "old dudes", "washed-out rockers", "first-generation dinosaurs" (Pajnik, 2003, p. 90; original in: Pajnik 2001, pp. 144–45).

These questions were the starting point of designing an evaluation system of the built environment, i.e. the criteria and indicators of the spatial response to the question of resocialisation of addicts. The key question addressed in this study was the following: How to evaluate a location so that it encourages the implementation of therapeutic programmes whose content is well thought out, but which, in the end, typically involve facilities and locations that other actors pass on? On this basis we determined the spatial elements of observation and evaluated their significance in terms of the following: built form design; accommodation units; programme; location; integration into the cultural landscape; access and mobility; public space, green areas and the physical environment; interior space and communal interior areas; cells; security and surveillance; economics and economy; inclusion of the public. Below we provide the working methods that helped us to develop the recognition process concerning location and structure evaluation, i.e. findings of semi-structured interviews with addicts, a qualitative analysis of the answers obtained, and a study of spatial developments whose main parameter is a well-designed social space.

2. WORK METHODOLOGY

By way of introduction, let us quote from Maver's (1984, p. 150) paper: *Uživanje drog in narkomanija v Sloveniji: dosedanji razvoj in pogled v prihodnost (Drug Use and Addiction in Slovenia: The Evolution and a Look to the Future)*, which concerns the relationship between urban developments, environment, and impacts thereof on drugs as a spatial phenomenon:

> *"If urban planning will shift its focus to building smaller atrium houses or similar, with well-maintained surroundings and more warmth, we can expect better family living conditions and better relationships among family members. Smaller houses increase the feeling of privacy and thus the responsibility and concern of its residents for tending to the house and its surroundings. This takes away most of the problems concerning leisure time, as landscaping, gardening, and doing minor house work provide plenty of opportunities to residents to occupy their time even after their obligatory workload. Such urban design prevents the emergence of substantial youth subcultures and makes them easier to control. We can predict that, on the other hand, the high-rises and faceless settlements of blocks of flats could become attractive for the poorer sections of the population, which could lead to the formation of ghettos where drug addiction and abuse could easily spread."*

Below we show that "making good use of leisure time" is key for all phases of rehabilitation of addicts as well as their resocialisation, i.e. the transition from a "controlled" treatment to everyday life. Moreover, according to Flaker (1999, p. 238) "the effort put into prevention of harmful social effects of drug abuse should be comparable to the one put into health aspects of tertiary prevention".

This study about the impacts of spatial and environmental factors on the treatment success, focusing mainly on rehabilitation and resocialisation phases, is composed of semi-structured interviews and a qualitative analysis of the answers obtained, case studies of spatial developments, the needs of drug addicts in forming spaces using special criteria, which are based on a qualitative design of the social space, and comparison of domestic and foreign practices concerning spatial value assessment (these findings are included in the explanation of spatial indicators in Chapter 3). To some extent, the study on the needs of drug addicts in terms of designing spaces to support successful treatment was based on previous findings, studies, and experience concerning spaces, environments, and the built environment design for marginal groups, which was supported by semi-structured interviews with drug addicts from Zavod Pelikan at Višnja Gora. The interviews took place in three stages: as an introductory interview to get to know the way of life of drug users (oral interview), a second interview on the way of living of drug users (written interview), and, after the study and application were completed, a follow-up interview to verify the study findings (the latter was also conducted among the staff working with drug addicts and is presented in the Results section).

2.1. Interviews with drug users from Zavod Pelikan at Višnja Gora

The study on spatial and environmental impacts on treating addicts was carried out between 2015 and 2016 by the first author of this study, who continues to volunteer at Zavod Pelikan at Višnja Gora. This institution functions as a therapeutic centre preparing addicts to enter the community. Genuine contacts and meetings, interaction, and living with drug users and therapists gave her insight into the life and thinking of former addicts. Four individuals, who agreed to take part in the survey, were selected for the interviews; the respondents varied in terms of gender, age, and type of addiction. The respondents[4] (in the first and second interviews) tackled various addictions: sedatives, cannabis, alcohol, heroin.

The first part of interviews (oral) took place on 11 July 2015 as a conversation, but with pre-prepared questions on the reasons for initial and continued substance abuse, on the period of substance addiction that followed, and the struggles with it. The second round of interviews, which took place on 1 August 2015, was in written format; the questions mostly related to space and the environment that are, in the respondents' opinion, appropriate or necessary for the drug user. After the first survey, the preparation of the site evaluation system, and the applied architectural model of an ecovillage, the interview was repeated on 8 September 2016, involving drug users, staff, as well as volunteers. The respondents were given a few pointers that served as questions, structuring the order of their writing. Their writing was not limited by quantity, way of writing, length, or style. The aim of the written interview was to obtain from the user/drug user and the responsible persons "an impression" about what could contribute to successful treatment, not from the aspect of "cleansing" the body, but to encourage active resocialisation, i.e. reintegration into everyday life in the environment that had been part of their lives before or during their addiction, or as help to deal with an unfamiliar environment.

4 In this paper, each respondent is assigned a roman numeral I (the first, oral interview) and a number from 1 to 4; or II (the second, written interview) and a number from 1 to 4; or III (the third, written interview) and a number from 1 to 4 (drug addicts) and or a number from 5 to 8 (staff working with drug addicts).

2.2. Qualitative analysis of the responses in oral interviews – life stories

In this part we summarise the interviews focusing on the lives of individuals during treatment and their way of living:

- Users need a change, the opportunity to create; education/schooling during treatment (this should take 3 years).

I1: "I don't regret trying drugs, but I do regret not finishing school."

- Drug addicts feel that for them the life outside the centre has stopped, that they cannot improve, and many drop out of treatment because of this.
- They need a sense of achievement, of small personal victories.
- Their success and acknowledged achievements are a motivation to go on.
- They need routine, order, and discipline.
- They need the right kind of people to keep them company, a way of life teaching them the right interactions (compared to online social networks), interaction with people, self-insight, and the help of professionals.

I2: »I smoke weed regularly, every evening, out of a bong; I also do speed and ecstasy. Mostly in the evenings, during events, sometimes at home. The main reasons for going back to drugs are loneliness, asocial behaviour, the desire to spend time in solitude, online search for information, Facebook. And the power of will that increases when using, and the illusions that I'm able to have when I'm under influence."

- Spaces should not be confining.
- They need opportunities (regarding anything), both imaginary and actual.
- The most important thing is to feel "accepted"; that this is "the place and time for them", that it is alright to be successful and to be proud of themselves for it.

2.3. Qualitative analysis of the responses in written interviews – a place to stay during treatment

After additional encouragement to think (i.e. after the first, oral interview) about the changes that they would propose, the respondents described their desires and opinions (the second round of interviews – spatial and environmental issues). Below, we summarise some of the writings; the questions focused on the "ideal environment helping the addict to "heal"".

- Users want locations in a natural setting, in the countryside, in an area away from large cities and main roads. They place emphasis on a green environment for living, and agricultural land for self-supply (garden, fields, orchards, trees). They would like their food to come from nature, they do not want pre-processed food. In their opinion, nature is the environment that allows progress during treatment.

II1: "The right community is located in the right place; somewhere outside large cities, in a natural environment, with appropriate working and living areas; with enough land (garden, fields) for cultivation; for cultivation of one's own vegetables, fruit; with appropriate areas (larger houses) for its users; not located in the city or too close to a city, preferably in the countryside. In my opinion, nature is the supportive environment that allows progress."

II3: "There is no recipe for the right community. When talking about a community I think of nature, away from the everyday hustle and bustle."

- Users miss the appropriate places for workshops (carpentry, machinery, sewing, creative). They want these workshops to have access to outdoor areas – to spend as much time as possible working and creating outdoors, whenever weather conditions permit. They want larger living areas, preferably double rooms.
- They want a large communal area inside as well as the possibility of using outdoor areas for various purposes (meditation, therapy with sounds from nature). They mentioned an area that allows for isolation in emergencies, an area to retreat into for a short while, under professional guidance. They want as many natural, local materials as possible. They want light spaces. They crave a space that could accommodate a nuclear family. In this way, the community simulates the feeling of living in a family and offers at least a glimpse of a primary social environment.

II3: "Spaces should be made to accommodate a family (father, mother, sons, daughters), also acquaintances (foreigners), and I don't mean foreign citizens. "Normal" family atmosphere. Rooms with several beds, "maybe only one reserved for emergency", I'd omit single rooms altogether. I feel that a four-member community is enough, because in the group that I'm currently in I see the right (maybe even ideal) group: two adults, and two young adults (father, mother, son, daughter) – this seems to be the right, most familiar hierarchy from when we were born."

Despite their wishes and their views, they are aware that there is no ideal place that would be appropriate for everyone. During treatment, which is completely voluntary (the treatment can stop any time), they are aware of the necessity to be isolated up to a certain degree and the real situation regarding the choice of the living environment and the eventual secondary social environment. They say that much depends on personal efforts and general perception of life. Respondent II3 wrote: "the conditions should not be ideal".

2.4. Case study of spatial developments and design, based on a high-quality design of social spaces

Living includes the existence of humans as biological beings and, at the same time, all of their activities necessary for their existence, as well as pleasant activities that they pursue in their leisure time (Fikfak, 2007, p. 343). Humans are social beings and need "socialising" and communication for their existence, instead of being limited merely to modern communication systems. The studying of spatial developments for the purposes of

living (of drug addicts during treatment) focused on the following levels:

- way of life or way of living depending on the content and operation of the facility,
- function of the living unit concerning the way of connecting with the surroundings, inclusion of the public, and connection with other institutions,
- applicability of the living unit depending on the way of life (urban versus rural[5]), according to the time that the addict spends therein,
- relationships between the individuals, the community, and the wider community, the significance of individuality,
- impact of the way of life on the combining functions between the individual units and within a settlement structure,
- basic and permanent values of humanity in the construction of housing and accompanying programmes.

2.4.1. Design for the Natural Life Center Therapy Institute, Cankiri, Turkey6

The project is envisaged to be built in a plain area, surrounded by fish ponds and natural vegetation, thus creating the space for a healthy lifestyle. The centre allows for a sustainable lifestyle focused on the cycles of nature, organic agriculture, permaculture, appropriate waste management, and energy production from renewable resources. Programmatically, the centre includes various facilities: lodgings, open-air event spaces, workshops, greenhouses, an organic farm, permaculture facilities, barns, waste disposal facilities and compost management. The conceptual design of this compound emphasises the interplay of various activities and a healthy lifestyle in a natural environment in connection with agricultural activities.

2.4.2. Occupational therapy in the Spring Lake Ranch Therapeutic Community [7]

The Spring Lake Ranch Therapeutic Community was described in detail by Kladnik (2012) in the journal *Socialno delo*. Here we summarise only those parts of the paper that touch upon the spatial aspect of the presented compound, i.e. those relevant for this study.

> *"The community created conditions that resembled everyday life of its residents and staff. This did not resemble treatment. Their stay included activities throughout the week (with an emphasis on working days). During their time in the community, the residents came into contact with other residents, staff, and some volunteers. In non-formal communication the residents became aware of everyday practices and world views of others, and learned some of the practices important for independent life and thus changed their actions. They gradually became introduced to greater independence outside the community, in the first phases through their transitional living program in a nearby town, and in the end to complete independence."*
>
> *"In the ranch there were two larger and several smaller wooden, single-storey buildings, scattered around the ranch, typical for this part of US where forests cover around 90% of the area. One of the larger buildings in the central part of the ranch housed a kitchen, a dining room, a laundry, and other communal areas. The second largest building housed lodgings for residents – each resident had his or her own room, two or three residents shared a toilet and a bathroom, the building also had a spacious and open communal area. Some of the smaller, mostly three-room houses housed one staff member and two residents each. The ranch also had another building for various repair shops and activities (a small library, pottery studio, etc.) and several outhouses: barns, an ice house, a sugar house for making maple syrup, a food storage, and a sport equipment storage."*

3. RESEARCH RESULTS

Communities are temporary homes for addicts, who are therein provided with new opportunities, knowledge, therapy, and spiritual growth. In Slovenia, these programmes are usually sited in existing buildings, which are often abandoned and in need of renovation. In the process of establishing a therapeutic centre for drug addicts, the location and building design are often not addressed appropriately, i.e. with the user in mind. A drug addict's necessity for social interaction during their stay in the community and the resocialization necessary after treatment are also not addressed (Štibernik, 2016). Such topical and programmatic areas provide the basic starting point for evaluating the individual imaginary locations. Below we provide the evaluation results of such spatial developments and the guidelines for organisation of modern therapeutic centres, based on the elements of the working method used in this study.

3.1 Evaluation of sites of modern therapeutic centres: urban and rural

Table 1 provides an overall synthesis of evaluating the spatial criteria that contribute to decision-making regarding the value of a location for siting facilities with special content, for the purposes of strengthening the individual's resocialisation. From the spatial aspect we determined and delineated the , according to the level of urbanity:

- Urban surroundings:
  1. Urban space (e.g. old town)
  2. Suburbs (periphery)
- Rural surroundings:
  3. Village, rural settlement (village environment)
  4. Agricultural, vacant landscape (undeveloped land)

The spatial criteria with subcategories and indicators were organised into three groups that were further broken down in detail, as follows.

5 "Modern rurality is reflected in the formation of a new relationship between the natural environment and spatial activities: new qualities of agricultural production are found in connection with other activities (tourism, craft, commerce, etc.). The intertwining of the rural and urban culture in agricultural space has enabled a larger economic stability of the countryside but also a new, richer cultural environment. Thus in the modern society, the idea on the rural–urban continuum proceeds in the other direction, i.e. with the transfer of the features and qualities of the countryside into the urban environment (Fikfak et al., 2012).

6 **MuuM**, LOSEV Natural Life Center Therapy (Santos, 2015).

7 After Kladnik, 2012.

Table 1: Synthesis of evaluating the spatial criteria - facilities with special content, for the purposes of strengthening the individual's resocialisation (according to level of urbanity).

		URBAN SURROUNDINGS		RURAL SURROUNDINGS	
		CITY	PERIPHERY	VILLAGE, RURAL SETTLEMENT	VACANT LANDSCAPE
LOCATION	L1	Integration/direct connection	Isolation/indirect connection	Integration/direct connection	Isolation/indirect connection
	L2	Built-up area	Built, green environment, traffic	Rural area, green area	Rural area, green area
	L3	Confinement, noise	Noise	Peace, occasional noise	Peace
	L4	Small	Moderate	Large	Small
	L5	Small	Moderate	Large	Large
	L6	Detected	Large	Large	Small
SPATIAL CONCEPT AND DESIGN	P1	Depending on site restrictions/ restricted	Unrestricted/restricted	Unrestricted/restricted	Unrestricted/unrestricted*
	P2	Depending on the location and siting	Possibility of expansion	Possibility of expansion	Possibility of expansion
	P3	Views, opening, light	Views, opening, light, external areas	Views, opening, light, external areas	Views, opening, light, external areas
	P4	Opening, connection of spaces, separation of spaces, creation of routes, creation of privacy; Vertical construction	Opening of spaces, separation of spaces, connection of ambiences, creation of routes, diversification of architecture; Vertical construction/single-storey construction	Opening, connection of spaces, separation of spaces, connection of ambiences, creation of routes, connection of the programme to the village, direction connection between outdoors and indoors; Single-storey construction	Opening of spaces, separation of spaces, connection of ambiences, creation of routes, direct connection of outdoors and indoors; Single-storey construction
	P5	Dependent on neighbouring structures	Dependent on neighbouring structures	Good	Good
	P6	Local, natural	Local, natural	Local, natural	Local, natural
	P7	Colours: introduction of colourfulness/nature indoors; Artwork: formation of interesting ambiences allowing for various interpretations	Colours: connection to nature; Artwork: formation of interesting ambiences allowing for various interpretations	Colours: connection to nature; Artwork: formation of interesting ambiences allowing for various interpretations	Colours: connection to nature; Artwork: formation of interesting ambiences allowing for various interpretations
	P8	Difficult to control, can be obtrusive	Controlled, unobtrusive, desirable	Controlled, unobtrusive, desirable	Controlled, unobtrusive, desirable
	P9	Indirect, connection to trees, park	Direct, access to nature	Direct, access to nature	Direct, access to nature
	P10	Restricted	Large	Unrestricted	Unrestricted
	P11	Concrete, asphalt, metal, wood	Wood, stone, bricks	Wood, stone, bricks	Wood, stone
	P12	Coherent with the surroundings, customised to needs	Coherent with the surroundings, customised to needs	Rural, customised to needs	Rural, customised to needs
CONTENT AND OPERATION	V1	Difficult to separate (depending on the size of the community)	Easy to separate (more room)	Creation of separate ambiences if appropriate, flexibility	Creation of separate ambiences if appropriate, flexibility
	V2	Difficult to control, desirable up to a certain degree	Easy to control, desirable up to a certain degree	Easy to control, but not much need for control, Desirable	Easy to control, but not much need for control, Desirable
	V3	Restricted size	Connection to the surroundings	Unlimited size, direct connection to the exterior	Unlimited size, direct connection to the exterior
	V4	Proximity of other institutions	Direct proximity of other institutions	Distance from institutions	Distance from institutions
	V5	Immediate, controlled	Gradual, controlled	Direct, controlled	Direct, controlled
	V6	Enabled	Enabled	Necessary to establish	Necessary to establish

LOCATION – understanding the siting of an element, structure, group of structures. The (6 identified) detailed criteria specifying this are the following: L1 – "Communal" isolation/integration with the existing (built) environment; L2 – Characteristics of the immediate surroundings of the spatial design; L3 – Impact of the surroundings (as space) on the programme; L4 – Impact of the surroundings (as people) on the programme; L5 – Impact of the programme (as space) on the surroundings; L6 – Impact of the programme (as users) on the surroundings.

SPATIAL CONCEPT AND DESIGN – organisation of space and design of a facility/group of facilities. The (11 identified) detailed criteria specifying this are the following: P1 – Size/capacity (depending on the type of project – new/existing facility); P2 – Dimensioning of the community (specification of size, relation between the number of users and areas); P3 – Characteristics of spatial setting; P3 – Design features; P4 – Quality of day light; P5 – Properties of building materials; P6 – Use of colours and artworks; P7 – Relationship between the community facilities and its surroundings; P8 – Relationship between outdoor vegetation and the indoors of the community; P9 – Size of outdoor areas intended for the community; P10 – Materials used for outdoor areas/exteriors; P11 – Street (urban) furniture (or rural, depending on the location).

CONTENT AND OPERATION – of spaces, facilities, groups of facilities, and communities. The (6 identified) detailed criteria specifying this are the following: V1 – Adaptation in terms of age, gender, and the security level necessary; P2 – Information transfer from the external world to the community; P3 – Characteristics of spaces for group activities; P4 – Establishment of connections with external institutions; P5 – Public participation; P6 – Development of spatial communications and mobility.

3.2. Application – a preliminary design concept for an ecovillage8

The subject of this detailed study is located between the towns of Grosuplje and Ivančna Gorica (Figure 1). The programme is delivered at Zavod Pelikan institute in Višnja Gora, which operates as a therapeutic centre preparing addicts to enter one of Don Pierino's communities (Encounter Communities) while geographically it is at the centre of this type of programmes in Slovenia. The landscape diversity of the place allows the programme to be delivered outside urban areas, while connecting to the organic farm in one of the surrounding villages (Figure 2) and thus encouraging social interaction and meetings with various people. The design addresses the necessary agricultural land (Figure 3) and outdoor areas for recreation and farming. The buildings consist of a self-sustaining organic farm with all the associated areas for living, therapy, and work, and a wide, outdoor sports field combined with a multi-purpose sports hall and a climbing wall intended for wider use (Figure 4, 5 and 6). The project (Figure 7, 8, 9, 10, 11) allows for a stepwise construction, where the user is actively involved. Opening up of views to distant scenes and blending the interior with the outdoors "make" the users to learn about themselves, their self-awareness (Figure 12). Siting, which follows the existing natural environment and complements it, and the composition that dictate the climb, routes, and the change of ambiences, allow the user a living, programmatic, and spiritual completion of the space needed during recovery. Connection to the nearby village, surrounding farmsteads, and a sports centre allow for necessary social interaction and spontaneous and planned meetings reminiscent of everyday lives. (Štibernik, 2016)

8 The project was conceptualised in detail as part of the Long-cycle Master's Study Programme in Architecture, as a graduation work entitled Preliminary Concept Design of a Self-sustaining Organic Village for Recovering Addicts in Polževo at Višnja Gora (Štibernik, 2016).

3.3. Presentation of findings from interviews

The third round of interviews (in written format) took place on 8 September 2016. The basis for the interviews was the presentation of the preliminary design concept for an organic village for recovering addicts (presented under 3.2.). The presentation was followed by interviews among drug addicts and staff. 4 interviews with drug addicts were carried out (the treatment typically takes between 3 weeks and 4 months; below, the respondents are marked as III, 1–4, as specified under 2.2.) as well as 4 interviews with staff (with 4 to 13 years of experience in treating addiction; marked as III, 5–8, as specified under 2.2.). The written interviews consisted of two parts. The first part listed the criteria as presented in Table 1, while the second part took the form of opinion questions.

During the interviews in the presentation phase, user III2 suggested that the project was too extensive. The following discussion suggested that this was the opinion of the majority; however, written answers revealed a different picture, i.e. that drug addicts find it more important to: "retreat into isolation" and "have one's own space", and "be accepted", "spend several days with their friends and families", and "select various spaces". The users fear to take on any additional responsibility, duty, or coordination. The arrival of a new person is an obstacle that evokes the largest adjustments to everyday life of recovering drug addicts, as this brings new responsibilities, new need for interaction. Their need for stability, without any changes in their surroundings, has been identified as a major obstacle – social exclusion gives a sense of safety from external world, but also the inability to handle everyday life. Unchangeability of persons, places, relationships, environments; a necessity for something permanent in life that offers a form of security. In this sense, it does not matter whether there are 5 of 50 residents in a community, as long as these are same people with the same emotions and responses.

Under the first category (Location), the opinion prevailed that a village or a vacant landscape are the most optimal places of living. They felt that the village environment had a positive impact of the surroundings (as space) on the programme, while a village and the suburbs were considered to have a positive impact of the surroundings (as people). On the contrary, when evaluating the impact of a programme (as space) on the surroundings, that of a village was considered as positive, while in terms of the impact of a programme (as users) on the surroundings the impact of a village or suburbs was considered as positive.

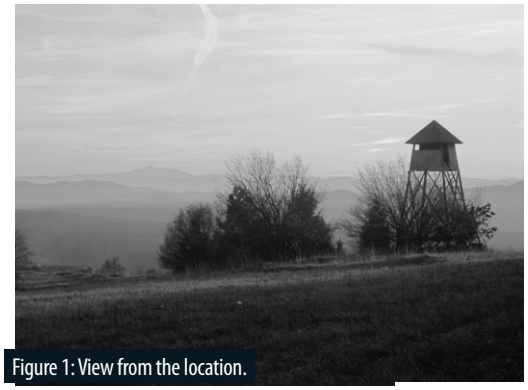

Figure 1: View from the location.

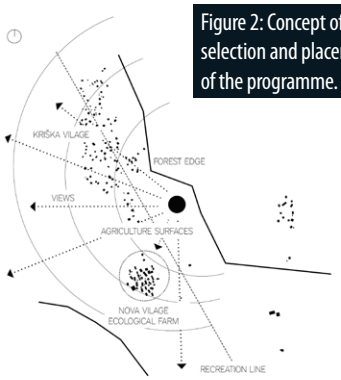

Figure 2: Concept of site selection and placement of the programme.

Figure 3: Programme concept: The natural landscape, proximity of rural surroundings, free spiritedness, an imaginary wall.

Figure 4: Rural architecture and a proposal of settlement patterns as a design guidance

Figure 5: View of the treatment facility, accommodation facility in the background, food and work facility to the right.

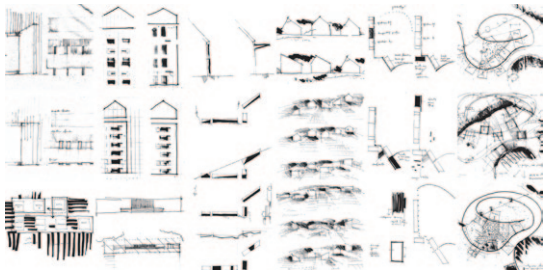

Figure 6: Design thinking – location, architecture, complex composition, connection with rurality of surrounding, materiality, relation with programme.

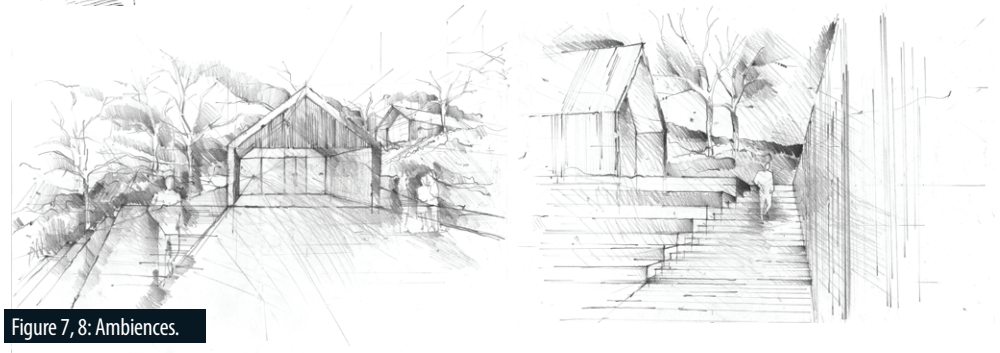

Figure 7, 8: Ambiences.

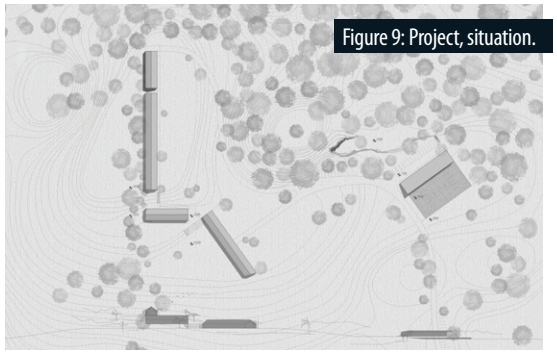

Figure 9: Project, situation.

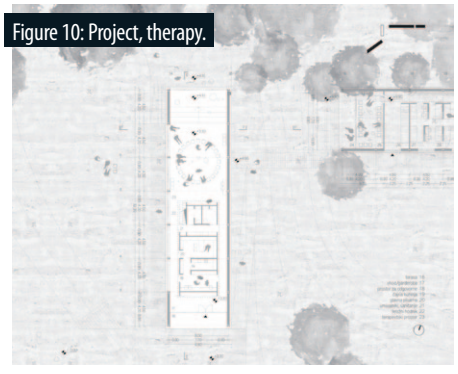

Figure 10: Project, therapy.

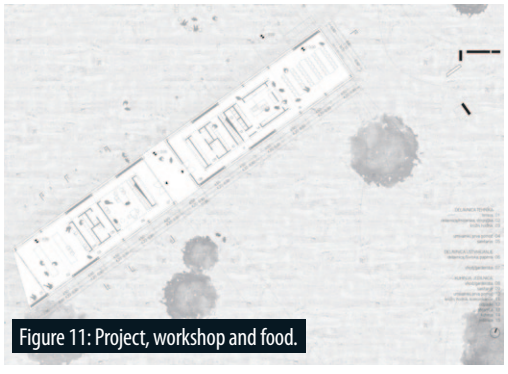

Figure 11: Project, workshop and food.

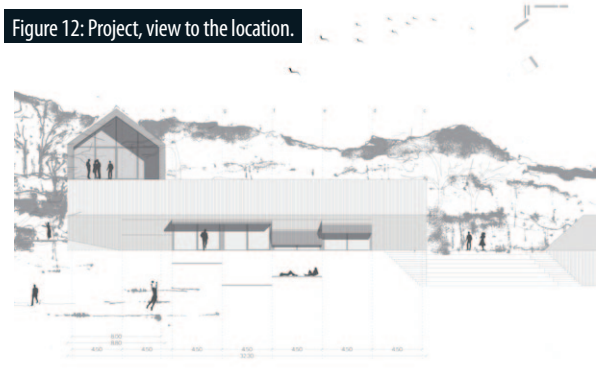

Figure 12: Project, view to the location.

Under the Spatial Concept and Design category we find the prevalence of the following responses: in the first question on the number of users, the responses varied between 6 and 12. In general, an optimum concept design would entail a village or the suburbs, and, to a smaller degree, vacant landscape; no one selected a city as the optimum environment according to the programme. Building materials, colours, and artwork were regarded as important, with one exception ("colours and artwork are irrelevant" – III3). The connections between the surroundings and community areas were considered optimal and most desired in a village or the suburbs, with one exception ("vacant landscape" – III8). The optimal correlation between outdoor vegetation and the interior of a community and the size of the exteriors was considered to be found in "the suburbs", "village", and "vacant landscape", with a prevalence of "village".

Concerning the relevance of street (urban) furniture, the answers stressed the following: "local, natural materials" (III1), "benches" (III3), "a fireplace" (III5), and "access to the main road" (winter, snow) (III8).

In the category Content and Operation we find that the opinions on the individual indicators vary greatly. In most cases, both drug addicts and staff agree that the information transfer from the outside world to the community was the best in a village and suburbs, while the connections with external institutions were the best in the suburbs.

In the category evaluating the optimal opportunities for "adjustments given the age, gender, level of safety needed", the prevailing answer is "a village".

Below we provide some excerpts from the opinion survey.

Question: In your opinion, what kind of a place does a recovering drug addict need to stick to treatment? At what stage of treatment are places used or lived in important? Does it matter, at any stage, where and how a recovering drug addicts lives?

III1: "They need a place where they feel well – relaxed. Never – it is our mind that is important. I don't think it matters."

III7: "I think it is important that the user feels at home, safe, and accepted in the house or place he lives in. This allows them to play a part in shaping spaces. Spacious, light, colourful (not dark) places are important. Space is important in all phases."

Question: In your opinion, what is the impact of space and the environment where the drug addict is treated on resocialisation?

III8: »I think that they play an important role. Our experience with the house in the city, in Ljubljana, was that we all felt extremely bad there – it was very confining; here, in the village, it is quite the opposite. The users and staff on Litijska took every opportunity to leave the house. This is what the red fence, by the side of the road, literally signified. While the village (here in Višnja Gora) means a slow departure or resocialisation from the community back to real life. There were stairs everywhere, houses close to one another, concrete, noise from the road, view of a gas station and a bar, walks through Fužine (with dealers), a dark, foggy Ljubljana. An extremely depressing environment to make any headway. Small spaces, riddled with darkness, negativity. In our minds the house was full of negative emotions, which even the chapel inside the house could not improve. Everyone who came into the house wanted to leave as soon as possible, while here, in Višnja Gora, indeed the opposite is the case."

Question: What part of living in the community do you find the most important?

III2: "(1) good relationships, (2) television, (3) peace, (4) food".

Question: How would you comment the collaboration with the nearby village and the sports facilities, connecting, in both organised way and randomly, the community users and the secondary environment – people?

III6: "It is well thought out, in this way recovering drug users make contact with the outer world, and when they feel helpless, they can temporarily go back to the safety of the community. In short, it allows for gradual relationship building."

III2: "Depending on how the local inhabitants would accept it."

Question: In your opinion, does socialisation in the community affect the resocialisation later on?

III5: "Definitely, the user, after a certain period of isolation (depending on the case), should be gradually reintegrated, as this is the only way for a person to learn about social values and those unwritten rules. For example, good manners and how to behave (e.g. at a post office, in a store) should be ensured."

III4: "Of course, this prepares us how to live in the outside world."

Question: Could you list any other measures that could later affect a user's resocialisation? Or, how should a community operate to make the resocialisation after the treatment completion as fast and easy as possible?

III1: "There must be connections with relatives, partners, true friends. It is more difficult for those who have no one (in this case social services, psychologists, can help)."

Question: What are your comments regarding the design concept that provides for necessary, everyday routes to users (sleep – hygiene – work – food – therapy – sports – animals, etc.)?

III1: "It is necessary."

Question: What are your comments regarding the selected location?

III8: "The location is great. It is not easily accessed by staff. Contact with the outdoors allows for returning back to one's roots, contact with oneself. Meditative, without external, disturbing factors. What is important is the human being."

5. CONCLUSIONS

During treatment, a drug addict needs an appropriate place that keeps him in contact with nature, oneself, with people of various interests, appropriate therapeutic, working and living areas, and the possibility of intellectual growth (schooling, education). After the completion of rehabilitation, the users mostly return to their milieus; this is when the resocialisation starts, i.e. reintegration into everyday life. When in a community, the maintenance of known (family and other positive) relationships in a combination with permanent integration into the social environment and work increases their self-confidence and the feeling of being "beneficial to oneself and the community". When studying how drug addicts cope with their treatment we asked about the significance of space, location, structure, and relationships with friends and family and the wider environment. The evaluation system that we developed in the study can be used to define the needs for finding locations that include the search for a perfect balance in humans in terms of the relationship to the modern society as well as education on modern approaches to implementing sustainable ways of living and work.

REFERENCES

Auer, V. (2001). *Droge in odvisnost.* Ormož: samozaložba.

Bačar, U. (2014). Pregled programov za pomoč odvisnikov od prepovedanih drog. Koper: Univerza na Primorskem, Fakulteta za matematiko, naravoslovje in informacijske tehnologije (zaključna naloga). Accessed on 10 February 2016: *http://www.famnit.upr.si/files/zakljucna_dela_repo/232*

European Monitoring Centre on Drugs and Drug Addiction (2012). The state of the drugs problem in Evrope, Annual report 2012. Luxembourg: Publications Office of the European Union. Accessed on 13 January 2016: *http://www.emcdda.europa.eu/publications/annual-report/2012*

Fikfak, A. (2007). Reurbanizacija večstanovanjskih objektov v okviru spreminjanja bivalne kulture. *Geodetski vestnik*, 51, 2, 341–352. Accessed on 20 August 2015: *http://www.geodetski-vestnik.com/51/2/gv51-2_341-352.pdf*

Fikfak, A., Mrak, G., Zavodnik Lamovšek, A. (2012). The Challenges of modern concepts of sustainable "rurbanity" in the 21st century, in Z. Karač (Ed.). Rethinking urbanism: International scientific conference (pp. 115–118), Faculty of Architecture, University of Zagreb, 19th May 2012.

Fiorentine, R., Hillhouse, M. P. (2000). Drug treatment and 12-step program participation. The additive effects of integrated recovery activities. *Journal of Substance Abuse Treatment,* 18, 65–74.

Flaker, V. (1999). Družbena konstrukcija kariere uživalca drog. *Socialno delo*, 38, 4/6, 211–240. Accessed on 18 March 2016: *http://www.dlib.si/?URN=URN:NBN:SI:DOC-9GUL7HV9*

Gowan, T., Whetstone, S., Andic, T. (2012). Addiction, agency, and the politics of self-control: Doing harm reduction in a heroin users' group. *Social Science & Medicine,* 74, 1251–1260. doi:10.1016/j.socscimed.2011.11.045

Kastelic, A. (2015). Programi zdravljenja odvisnosti od drog v Republiki Sloveniji, in J. Čuk Rupnik (Ed.), Ob dvajsetletnici ustanovitve mreže centrov za preprečevanje in zdravljenje odvisnosti od prepovedanih drog, (pp. 11–16), Ljubljana: Ministrstvo za zdravje RS. Accessed on 18 March 2016: *http://www.mz.gov.si/fileadmin/mz.gov.si/pageuploads/javno_zdravje_2015/droge/20_cpzopd_publikacija_vsebina_2015.pdf*

Kladnik, T. (2012). Delovna terapija v terapevtski skupnosti Spring Lake Ranch. *Socialno delo,* 51, 6, 419–423. Accessed on 13 January 2016: *http://www.dlib.si/?URN=URN:NBN:SI:DOC-VPQ05CBJ*

Maver, D. (1984). Uživanje drog in narkomanija v Sloveniji: dosedanji razvoj in pogled v prihodnost. *Socialno delo*, 23, 3/4, 136–161. Accessed on 10 February 2016: *http://www.dlib.si/?URN=URN:NBN:SI:DOC-88RF34TA*

Pajnik, M. (2001). »Mamilaši« ali »zapozneli rockerji prve generacije.«, in Mirovni inštitut (Ljubljana): Poročilo skupine za spremljanje nestrpnosti. 1, 1, 136–153.

Pajnik, M. (2003). Poročanje medijev o marginaliziranih skupinah. ***Socialno delo***, 42, 2, 87–94. Accessed on 20 September 2016: *http://www.dlib.si/?URN=URN:NBN:SI:DOC-Q5EB32XJ*

Podpečan, T. (2006). Družbena reintegracija odvisnikov in odvisnic od nedovoljenih drog v Sloveniji. Ljubljana: Univerza v Ljubljani, Fakulteta za družbene vede (diplomska naloga). Accessed on 14 February 2016: *http://dk.fdv.uni-lj.si/dela/Podpecan-Tjasa.PDF*

Radcliffe, P., Stevens, A. (2008). Are drug treatment services only for 'thieving junkie scumbags'? Drug users and the management of stigmatised identities. *Social Science & Medicine*, 67, 1065–1073. doi:10.1016/j.socscimed.2008.06.004

Resolucija o nacionalnem programu na področju drog (2014). *Ur. l. RS, št. 25/2014* (ReNPPD14–20). Accessed on 18 March 2016: *https://www.uradni-list.si/1/content?id=116966*

Santos, S. (2015). MuuM Designs Natural Life Center Oasis in Arid Anatolian Plains. Accessed on 14 March 2016: *http://www.archdaily.com/770044/muum-designs-natural-life-center-oasis-in-arid-anatolian-plains*

Stefanoski, P. (1998). Družina, droge in socialno delo. *Socialno delo,* 37, 3/5, 249–252. Accessed on 10 February 2016: *http://www.dlib.si/?URN=URN:NBN:SI:DOC-1X7YO1MQ*

Štibernik, J. (2016). Idejna zasnova samooskrbne eko vasi za odvisnike na Polževem pri Višnji Gori. Magistrsko delo. Ljubljana: Univerza v Ljubljani, Fakulteta za arhitekturo.

Takahashi, L. M. (1997). The socio-spatial stigmatization of homelessness and HIV/AIDS: towards an explanation of the NIMBY syndrome. *Social Science & Medicine*, 45(6), 903–914.

Taylor, N. T., Covay, H. C. (2008). *Helping People Addicted to Methamphetamine, A Creative New Approach for Families and Communities*. Westport: Prager.

Žgavc, D. (2011). *Marginalne družbene skupine.* Ljubljana: Zavod IRC. Accessed on 10 February 2016: *http://www.mizs.gov.si/fileadmin/mizs.gov.si/pageuploads/podrocje/vs/Gradiva_ESS/Impletum/IMPLETUM_275ORGANIZATOR_Marginalne_Zgavc.pdf*

Sebastiano Marconcini: URBANO MERILO VKLJUČEVANJA: RAZMIŠLJANJA IN PREDLOGI ZA DOSTOPNE JAVNE PROSTORE

THE URBAN SCALE OF INCLUSION: REFLECTIONS AND PROPOSALS FOR ACCESSIBLE PUBLIC SPACES

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IZVLEČEK

Grajeno okolje ima ključno vlogo pri spodbujanju človekovega dobrega počutja in družbenega sodelovanja, v zadnjih letih pa sta dostopnost in vključevanje postala osrednji vprašanji evropskih politik za trajnostni razvoj. Vendar pa današnje načrtovalske prakse izkazujejo več kritičnih točk glede navezovanja na kompleksnost človekovih potreb, ki jih morajo vključujoči kraji izpolnjevati, predvsem v urbanem merilu. Zato je potreben nov premislek o procesih urbanističnega načrtovanja in oblikovanja, in sicer z analizo omejitev, ki jih grajeno okolje predstavlja, in možnih rešitev, s katerimi bi te omejitve presegli. Pri tem bi morali načrtovalci prevzeti novo vlogo pri upravljanju materialnih in nematerialnih sestavin, ki morajo označevati vključujoči pristop k načrtovanju.

KLJUČNE BESEDE

javni prostor, vključitev, dostopnost, človekove potrebe, družbeno sodelovanje, urbano merilo

ABSTRACT

The built environment plays a key role in fostrering human well-being and social participation and, in recent years, accessibility and inclusion have become central issues in the European policies for sustainable development. However, today's design practice has revealed multiple criticalities in answering to the complexity of human needs that inclusive places should meet, especially at the urban scale. For this reason, it is necessary to rethink the processes of urban planning and design through the analysis of the limitations, and the possible solutions to overcome them, that the built environment presents. In particular, planners should play a new role in managing the tangible and intangible components that must characterize an inclusive design approach.

KEY-WORDS

Public space, inclusion, accessibility, human needs, social participation, urban scale

1. INTRODUCTION

Several phenomena that the contemporary society is facing, such as the aging society and the risen multiculturalism, have made accessibility and inclusion two key points in European policies and strategies for sustainable development.

Provide proper solutions to everyone's needs, regardless of a person's level of abilities, has become an unavoidable design requirement, to which new methodologies such as *Universal Design*, *Design for All* and *Inclusive Design* have tried to answer since the end of the eighties. Although they have been developed in different places and at different times[1], assuming these various denominations, these design approaches have a common purpose: to guarantee social participation, through spaces, products and services that respond to the needs of the greatest possible number of people.

Since its early stages of development, the main implementation of Universal Design has been in the field of products design and communication. However, it later has evolved on larger-scale projects, as well as the other approaches. This transition towards a new understanding of the influence that the built environment has on everyone's life has been possible through the redefinition of the concept of disability. The United Nations Convention on the Rights of Persons with Disabilities (2006) defines it as the result "from the interaction between persons with impairments and attitudinal and environmental barriers that hinder their full and effective participation in society on an equal basis with others". Prior to that, a fundamental document was the International Classification of Functioning, Disability and Health [ICF] (2001) by the World Health Organization (WHO), a tool introduced to assess a person's health and well-being. In addition to physical conditions, this classification system acknowledges that people's functioning and their ability to do personal activities and participate in life situations are influenced by contextual factors. The latter are divided into environmental factors, the physical and social features of the surroundings in which communities live their lives, and personal factors, which involve the particular background of an individual, e.g. the cultural one.

Nevertheless, the current design practice still has numerous difficulties in embracing this vision of the built environment, and subsequently of accessibility, as a set of several factors to deal with simultaneously.

2. TOWARDS INCLUSIVE ENVIRONMENTS: THE CHALLENGES OF PUBLIC SPACE

Stemming from these premises, this paper aims to re-open the debate on the role public space plays in people's daily lives, particularly by focusing the discussion on the components of the public realm on which urban planning and design can intervene to provide a better level of accessibility within cities.

2.1 Well-being and human development: the relationship between people and public space

In order to understand why a city and its places can have a great effect on human beings' everyday experience, it is fundamental to introduce two concepts: well-being and human development.

When they first introduced the theories of the Capability approach, A. Sen and M. Nussbaum (1993) define well-being as what people can be or do in relation to the available resources and their potential capabilities to promote or achieve functionings they value. According to this perspective, A. Sen (1999) highlight how "development can be seen, […], as a process of expanding the real freedoms that people enjoy". In particular, in the first report of the United Nations Development Programme (1990), human development has been defined as "a process of enlarging people's choices" and "the most critical of these wide-ranging choices are to live a long and healthy life, to acquire knowledge and to have access to the resources needed for a decent standard of living". The same document set the main objective of "at least create a conducive environment for people, individually and collectively, to develop their full potential and to have a reasonable chance of leading productive and creative lives in accord with their needs and interest".

Everyone's goal is to achieve a life to which give value and that is worth living, through the development of work, recreational and cultural activities within the community a person belongs. The same concept was expressed by the American psychologist A. Maslow (1943) and his "Theory of Human Motivations", which pointed out among the basic human needs those of belonging, self-esteem and self-realization[2]. The latter are closely related to the fulfillment of the previously mentioned activities and the subsequently feeling of accomplishment as expression of someone's full potential.

What has just been said is particularly important for public spaces, since they are the place of social participation and where (or at least the connection between the locations where) the main activities take place. For this reason, their physical configuration and transformation processes in which they are involved have the ability to limit or enhance people's freedom in achieving their functionings.

2.2 Places "for all": the objectives of urban planning and design

Although its scope of intervention can be broad and without clear boundaries, the final aim of urban planning and design is clearly to build spaces for people.

1 The first definition of *Universal Design* was given by American architect Ronald Mace in 1985 and then, in 1997, the Center for Universal Design, an initiative of the College of Design of the North Carolina State University, defined its 7 Principles. In 1993, the European Institute for Design and Disability (EIDD - *Design for All* Europe) was established and through the Declaration of Stockholm, in 2004, was set the purpose of the Design for all methodology. The *Inclusive Design* approach is principally linked to the British area, since its definition and principles where defined in 2005 by the British Standard Institute and the Commission for Architecture and Built Environment (CABE).

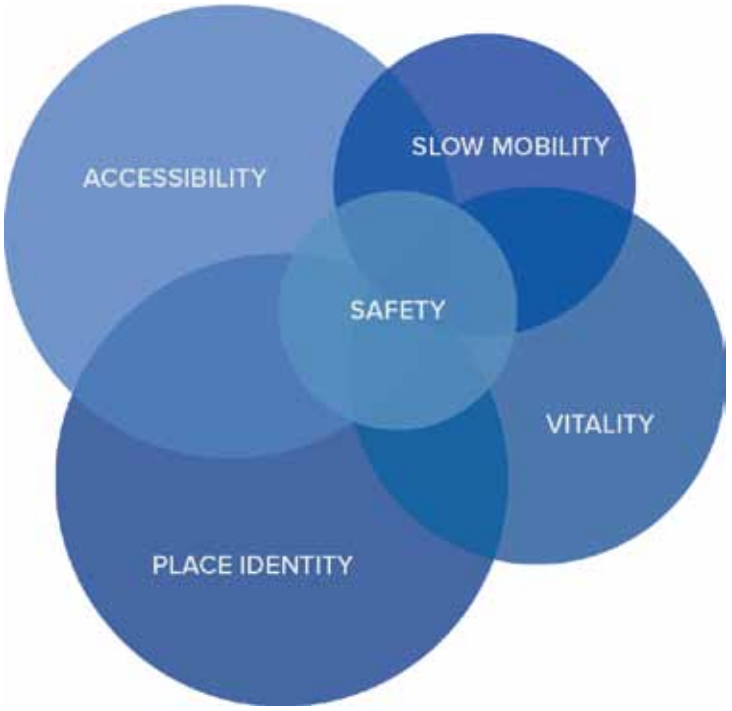
2 In particular, Maslow's hierarchy of human needs was based on a five-stages pyramidal model (from bottom to top): physiological needs, safety needs, belongingness and love needs, esteem needs and, finally, self-actualization needs.

The complexity of public space design is well expressed by the division in six fundamental dimensions that according to M. Carmona et al. (2010) allow to depict the overall pictures of the issues related to the urban environment: the morphological dimension, the perceptual dimension, the social dimension, the visual dimension, the functional dimension and the temporal dimension.

From their analysis, it is possible to identify some cross components that characterize the different dimensions and therefore contribute to the definition of macro objectives to be pursued for the enhancement of public space in contemporary cities. Here, it is proposed the development of five main goals (as shown in Figure 1):

- *Accessibility*, which allows all the potential users of urban environment to access public spaces and buildings, thus favoring the processes of social integration;
- *Place Identity*, which helps to answer the human need to feel part of a community and to express an own personal identity, thus favoring the processes of cultural integration;
- *Vitality*, which favors different aspects of the public realm, contributing to the development of social relations and the activation of local economies, which can only develop in the presence of a constant demand in public space;
- *Slow Mobility*, which, by limiting vehicular traffic, fosters the presence and permanence of people within public space and, consequently, the development of all social activities;
- *Safety*, which is an element that greatly influences the use of public space and in turn improves the vitality of the public real, avoiding the development of situations of social decline.

Figure 1: Urban design objectives for the development of inclusive public spaces.



Given the purpose of this paper, what has been stated until now enables to highlight two key topics[3]. Firstly, urban planning deals with both tangible and intangible components of the built environment, a fundamental issue also in the design strategies to foster accessibility. This implies not only the need of urban re-shaping actions, but also a series of urban managing actions, handling the immaterial effects of city transformations, which could be experience both a top-down or a bottom-up approach. Furthermore, physical accessibility is only one of the parameters through which guarantee places meant "for all". For this reason, the focus of the cultural debate has been shifted from accessibility to inclusion, as the only condition capable of taking into account all the different social, cultural, economic and environmental factors affecting people's ability to participate in the life of a community.

3. TOWARDS AN INCLUSIVE PLANNING: THE CHALLENGES OF URBAN DESIGN

The following section focuses on the analysis of the different parts of the urban environment and their features that must be assessed in order to foster people's public participation. Although previously it has been recognized the complexity of the issues the topic of inclusion deals with, the attention of this paper will be primarily set on the physical accessibility, considered a feasible target. However, it will be described how the physical supports intended for people with particular impairments, like the sensorial ones, could be useful to overcome cognitive barriers, furthering e.g. intercultural dialogue.

3.1 Methodological approach

The reflections presented in this article belong to a broader research aimed at the definition of inclusive design practices and policies, especially regarding historical context´s. From the methodological point of view, the outcomes about the current limitations of public space in fostering inclusion are the results of a literature review and an empirical investigation applied to Mantua[4]. In particular, the latter has been development through on-site surveys and the distribution of a questionnaire, concerning the perception of the accessibility level in Mantua, distributed to a sample of city users. In addition, a further fundamental step has been the identification and the study of numerous case studies of cities that have started to develop inclusive practices, not that can be found within the cities but also

3 For a further detailed study concerning the topic emerged within the paper, it's possible to refer to the wide literature on urban design developed by great authors such as J. Jacobs, K. Lynch, W. H. Whyte, J. Gehl and S. Porta.

4 Mantua (Mantova) is an Italian city located in Lombardy region, entered in the UNESCO World Heritage List in 2008, along with the site of Sabbioneta, as extraordinary examples of Italian Renaissance urban centers.

to observe how they can be overcome. A primary reference of this process has been the *Access City Award*, a recognition that celebrates, since 2011, the cities of the European Union committed to the construction of inclusive environments.

3.2 Real users and real needs: the subjects of urban planning and design

Before proceeding on the investigation of the features of the built environment affecting people's lives, it was essential to develop the necessary knowledge around real human needs, above all for those with special ones. The focus on the necessities rather than people's characteristics allows the transition from dedicated design solutions, aimed to solve requirements for specific disabilities, to a fully inclusive view of the project.

For design purposes, it is possible to identify two main categories, able to contain within them the complexity and diversity of human needs (as shown in Figure 2):

- *Physical needs framework*, the necessities that a person presents in moving and using the objects or other elements located in the built environment, regardless of his physical characteristics;
- *Sensorial and cognitive needs framework*, the necessities that a person presents in relation to the activities of orientation and localization, in addition to the ability to communicate and relate to persons and objects in the space, regardless of his sensorial and cognitive abilities.

3.3 City components and design opportunities in the development of inclusion

The brief theoretical framework here introduced sets the basis for the discussion around the components that urban planning and design must consider in the process for the development of inclusion (as shown in Figure 3).

The first aim is to ensure that all public spaces and facilities are physically accessible to all. The principles of the different approaches of Universal Design, Design for All and Inclusive Design represent the main reference in providing full inclusive solutions. However, even if a building, a square or a pedestrian path are designed according to these recommendations, this doesn't imply that they are completely accessible. All this point of interest and the surrounding spaces of the city must be reconnected within an urban system, to let everyone move independently and safely between them.

In connection with this, another fundamental aspect is that urban planning must deal with urban mobility and public transport. Through the questionnaires distributed in Mantua, it was possible to highlight how city users consider inappropriate public transport services one of the main reason why they cannot access the urban environment. The importance of this component is also represented in the Access City award, which always provides a special mention for inclusive transport and related infrastructure, including e.g. the cities of Ljubljana, Malaga and Budapest.

Figure 2: The two main frameworks describing the complexity of human needs.

A further essential factor that can foster inclusion is information, as acknowledged by literature review, people's opinions from the questionnaire and some specific design solution highlighted by the Access City Award. Information is indispensable to ensure the ability to access and move in the built environment and the current success of digital maps has widely recognized it. In particular, people with disability need to receive as much data as possible, in order to know the level of accessibility of a place and be able to organize their movements, according to their personal needs and the possibilities offered to them through specific proposed services. For this reason, it is necessary to intervene on two elements: on the one hand, to provide the physical supports to use in the process of way-finding, regardless of the physical, sensorial and cognitive abilities of a person, within the urban environment; on the other hand, to implement information technologies (ICT) as a tool that sometimes represent the only possibility to guarantee everyone access or experience a particular context, e.g. cultural heritage sites.

The issue of information has introduced the intangible dimensions that urban planning and inclusion have to address. From this point of view, another necessary action is to foster social and economic participation. Work and recreational activities have been already mentioned as fundamental needs of a person and, for this reason, it is important to establish programs to assure everyone this opportunity. In this regard, *InovAccess* is an interesting project developed by the city of Grenoble (France), though which the municipality and the local business companies have been collaborating to favor the employment of people with disabilities, parallel to the elimination of architectural barriers within the city. In addition, the direct involvement of stakeholders in administrative decision-making processes makes it possible, as well as encouraging active participation, to guarantee the effectiveness of the identified solution, proposed on the basis of their real needs.

Figure 3: City components that have to be taken into account for developing inclusive urban environments.

A final consideration is related to education, since inclusion is (also) a matter of culture. From a professional point of view, accessibility has been slowly introduced in the programs of universities only in recent years. The current professionals didn't receive this training, so it is necessary to promote educational activities among them. In addition, raising citizens' awareness on inclusion is another key issue. From the questionnaire, it has emerged how in the urban environment certain people's "bad behaviors", like parking cars and bicycles on the sidewalk, can become great criticalities. Not only because they can become actual "architectural barriers", but also because, as unexpected obstacles, they are a source of danger (e.g. a visually impaired person could fall on it) or force people in unsafe conditions to avoid them (e.g. walk on the roadway to turn around them). For this reason, raising awareness on these themes is an essential action and everyone could help improve inclusion in public space.

4. CONCLUSIONS

The paper has briefly introduced the topic of inclusion, in all its complexity, and the importance for which it must be considered as one of the interpretative keys and no longer an option of urban design.

However, the principal aspect that the discussion has tried to highlight is that a fully inclusive design approach requires to work at the urban scale, as the only one able to embrace all the different components that must be taken into account to guarantee everyone the right to social participation. To strengthen what has just been said, the description of the approaches to overcome the limitations of current public spaces, especially their tangible and intangible outcomes, has emphasized the necessity to look at inclusion as a system of interrelated solutions that can only be controlled at a large scale.

If this series of suggestions provides some basic recommendation useful to approach inclusion, the latter requires additional efforts to guarantee the effectiveness of the proposed actions. The complexity of the inclusive project is linked to the complexity of its management, which requires the involvement of numerous stakeholders. Therefore, the definition of new governance models and tools that could help in managing and monitoring inclusion in the urban environment are the expected further developments of this discussion, in order to guarantee everyone the possibility of accessing public space resources.

REFERENCES

Carmona M., Tiesdell S., Heath T., Oc T. (2010), *Public places - Urban spaces. The dimensions of urban design*, 2 ed., Oxford: Routledge.

European Commission (2012). Access City Award 2012: Rewarding and inspiring accessible cities across the EU, Luxembourg: Publications Office of the European Union.

European Commission (2013). Access City Award 2013: Inspiring EU cities to become more accessible, Luxembourg: Publications Office of the European Union.

European Commission (2014). Access City Award 2014: European cities responding to the accessibility needs of ALL citizen, Luxembourg: Publications Office of the European Union.

European Commission (2015). Access City Award 2015: Examples of best practice for making EU cities more accessible, Luxembourg: Publications Office of the European Union.

European Commission (2016). Access City Award 2016: Examples of best practice for making EU cities more accessible, Luxembourg: Publications Office of the European Union.

European Commission (2017). Access City Award 2017: Examples of best practice for making EU cities more accessible, Luxembourg: Publications Office of the European Union.

European Commission (2018). Access City Award 2018: Examples of best practice for making EU cities more accessible, Luxembourg: Publications Office of the European Union.

Maslow, A. H. (1943). *A theory of human motivation,* in «Psychological review», *50,* 370-396.

Sen, A. (1993). Capability and Well-being. In Sen, A. & Nussbaum, M. (ed.), *The Quality of Life*, Oxford: Claredon Press.

Sen, A. (1999). *Development as freedom*, New Delhi: Oxford University Press.

United Nations (2006). *UN Convention on the Rights of Persons with Disabilities*, United nations.

United Nations Development Programme (1990). *Human Development Report 1990*, New York: Oxford University Press.

World Health Organization (2001). *International Classification of Functioning, Disability and Health: ICF*, World Health Organization.

Marija Miloshevska Janakieska, Martina Zbašnik-Senegačnik, Kiril Gramatikov, Manja Kitek Kuzman:

ARHITEKTOVO DOJEMANJE STEKLENE FASADE IN BIVALNEGA UGODJA V POSLOVNIH STAVBAH V MAKEDONIJI

ARCHITECT'S PERCEPTION OF GLASS FACADE AND LIVING COMFORT IN OFFICE BUILDINGS IN MACEDONIA

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IZVLEČEK

Bivalno ugodje je v arhitekturi opisano kot stanje fizičnega udobja, svobode, prijetnega načina življenja, odsotnost stresa in dobrega počutja uporabnikov stavbe. Steklo pozitivno vpliva na bivalno ugodje, saj zagotavlja naravno dnevno svetlobo in povezavo z zunanjim prostorom ter tako ustvarja zdravo okolje v stavbah. Po drugi strani pa imajo zastekljene površine negativen učinek, kot so občutek mraza pozimi, pregrevanje poleti, učinek bleščanja in še več.

Da bi bolje razumeli uporabo stekla in dobili vpogled v težave in ovire pri stavbah s steklenimi fasadami, je bil analiziran vzorec poslovnih stavb v Makedoniji. V raziskavi so bile na podlagi anketnega vprašalnika narejene primerjave stališč arhitektov, njihova ozaveščenost in preference o steklenih fasadah v Makedoniji. Študija temelji na anketnem vzorcu 67 arhitektov, ki so uporabili spletno aplikacijo anketnega vprašalnika, s stopnjo odziva 24%. Rezultati kažejo, da obstaja pozitiven odnos do uporabe steklenih fasad v Makedoniji. Hkrati se kažejo težave pri ozaveščanju in pripravljenosti za vključevanje novih tehnologij zasteklitev fasad. Te ugotovitve so lahko uporabne za tržne priložnosti, prepoznavanje ovir pri vključevanju steklenih fasad ter kot predlogi vsebin za delavnice, seminarje in druge informacijske mehanizme za izobraževanje arhitektov v Makedoniji.

KLJUČNE BESEDE

steklena fasada, poslovna stavba, bivalno ugodje, Makedonija

ABSTRACT

Living comfort in the architecture is described as a state of physical easiness, freedom, pleasant lifestyle, a relief from the stress and the well-being of the building`s users. Glass positively affects the living comfort, because it provides natural day-lightning and connection with outer space, thus enables creating a healthy environment in buildings. On the other hand, glazed surfaces also have a negative effect, such as cold feeling in winter, overheating in summer, glare effect and more.

A sample of office buildings in Macedonia has been analysed, in order to understand the interest in using glazing technologies and to get a good overview of the problems and obstacles regarding glass facades. In this study, using a survey questionnaire, architect attitudes, awareness and preferences regarding the use of glass facade in Macedonia, are compared. The study is based on a sample of 67 architects using on-line survey, with a response rate of 24%. Results suggest that there is a positive perception in regards to the usage of glass facades in Macedonia, while at the same time, indicates problems in the awareness and willingness in incorporating glazing technologies. These findings can have implications for market opportunities, identifying barriers to glass facade adoption, and content for workshops, seminars, and other outreach mechanisms for architects in Macedonia.

KEY-WORDS

glass facade, office building, living comfort, Macedonia

1. INTRODUCTION

Human health and comfort have been perceived as the most important parameters during evaluations of indoor environments. Developing countries are limited by extreme environmental conditions, outdated construction techniques and scarce financial resources, which is why they struggle to adopt costly technologies aimed at achieving improved interior environments (Manzano – Agugliari, et al. 2015, p. 737). Therefore, one of the most important things for architects and engineers when designing a building is providing living comfort and well-being for the users. New sustainable designs incorporate the living comfort as crucial part together with the economic and environmental aspects (Akadiri, 2011, p. 127). Measuring progress towards sustainability therefore requires accounting tools that measure progress in terms of the socio-economic and ecological imperatives (Gibberd, 2018).

An essential role of architecture is to provide occupants' safety, health, physiological comfort, physiological satisfaction and productivity. Many building designers have been preoccupied with style and form-making, disregarding environmental quality and human satisfaction in and around the built environment.

Living comfort consists of several aspects (Akadiri, 2011; Manzano – Agugliari, et al. 2015; Andrade, Viera and Braganca, 2012; Markelj, 2016 and Browing, Ryan and Clancy, 2014): thermal comfort, daylighting, natural ventilation, acoustic comfort, safety and risk prevention, functionality and aesthetics (Praznik, Butala and Zbašnik-Senegačnik, 2014, p. 425).

The design of modern houses is orientated towards low energy consumption and users' comfort. Thus, investors and architects aim at maximizing the use of natural solar radiation gains, taking into account the orientation of a building and its transparent areas. With suitable technological development and appropriate use, glass is nowadays becoming crucial construction material that can improve the living comfort in the interior of the building. Incorporation of large and properly oriented glazed facade areas represents a great potential for achieving environment-friendly and energy-efficient buildings. The appropriate positioning of glass areas enables better energy performance of a building, where the solar gains obtained through the glazing can be evidently higher than the transmission losses through the same glazing areas. A comparison of transmission losses through the building envelope and possible solar gains through the glazing is of great importance in defining the optimal size of the glazing areas and performing a suitable selection of the glazing type. Further attention to the solar protection devices must be ensured (Ber, et al. 2014 and Leskovar and Premrov, 2012).

A number of studies treat the influence of the glazing on the internal conditions in and the energy performance of the buildings. A parametric study of heating and cooling demand was performed in order to determine optimal design for office windows for Swedish climates (Bülow-Hübe H, 2001), where the shape and size of the glazing have major influence on thermal comfort. Moreover, office module with two types of switchable glazing and one solar control glazing unit was used in three different climates; Stockholm, Brussels and Rome. The study shows that larger window areas increase the cooling demand but if glazing types with lower solar transmittance are used, the difference in cooling demand between different window areas decreases (Persson, 2006).

The influence of windows on the energy balance of apartment buildings in Amman is investigated by using self-developed simulation software (SDS) based on the ASHRAE tables for solar heat gain calculation and coaling load factor for latitude 32°, where Amman city is located (Hassouneh, Alshboul, and Al-Salaymeh, 2010). The purpose of the analysis of (Marino, Nucara, and Pietrafesa, 2017) was to verify the existence of an optimal size of the window surface, allowing for minimum overall energy consumption and improving the comfort for the users. The study was performed on an office building whose structure and configuration represent a typical reference case of the Italian building stock. Nevertheless, the authors suggested further investigation within future research, such as the influence exerted by the type, position and shape of the window.

Results of an analytical study of the functioning of glazing at two different yet interacting levels: at the level of the building as a whole, and at that of glazing as a building element was research in a study in Slovenia (Jordan and Zbašnik-Senegačnik, 2011). A research for the optimal proportion and appropriate orientation of glazing surfaces for locations in Athens and Sevilla suggests that the optimal solutions in such cases should avoid overheating (Premrov, Zigat and Leskovar, 2018). An experimental study of indoor thermal environment near a full-scale glass facade with different types of shading devices under varying climatic conditions in winter was presented by (Bessoudo et al. 2010).

In spite of a number of different studies presented, there is still a lack in studies that specifically examine a comprehensive understanding of architect perceptions related to glass facade influence on the living comfort, especially in Macedonia. As such, we selected architects as the key target group in this research effort as they are key decision makers in the selection of materials in the construction sector. Furthermore, architects communicate with all other participants in the project in every phase. In addition, some studies found architects to be environmentally conscious specifiers of construction materials, and, as such, are an important target group for research particularly as environmental and sustainability issues are becoming more salient issues generally (Singhaputtangkul, et al. 2014).

Similar study was performed by (Kuzman et al. 2018) using questionnaire for determining architect perceptions of different construction materials: engineered wood products of selected countries in Central and Southeast Europe.

This study aims to improve understanding of both disadvantages and advantages of applying glass facade to office buildings in Macedonia. At the beginning, analysis on a sample of office buildings in Macedonia were made in order to understand the situation and the interest in using modern glass facade technologies. Furthermore, in the main part of the study, using a survey questionnaire, the architects' perception of glass facade influence on the living comfort and indicators of problems in glass facade application in office buildings in Macedonia were perceived.

2. ANALYSIS OF OFFICE BUILDINGS IN MACEDONIA

In previous study (Analysis of office buildings with glass facade in Macedonia, 2018[1]), a research of the application of glass facade in office buildings in Macedonia has been done. The interest in glass facades is increasing lately, especially in the last few decades, according to information from system for issuing building permits where all data for the buildings are updated. The greatest interest is predominantly among office and administrative buildings, national institutions, commercial buildings and sports facilities.

In order to understand the situation in Macedonia and the interest in using modern glass facade technologies, about 30 office buildings were analyzed. The reason why office buildings were selected is mainly because they usually have a larger glazed facade area compared to other types of buildings. Furthermore, investors are motivated to use high technology materials and systems in office buildings with purpose to achieve attractive exterior. Buildings with bigger volume and larger facade surfaces, which most often do not have adequate protection against solar radiation, were selected. The analyzed buildings have different volumes and different dimensions, as well as different number of floors, from 4 to 10. The size of the glazed surface and the type of glass used for the glass facade also varies for different buildings. Double-glazed glass or single-laminated glass is most commonly used, while triple insulating glass is very rare. The construction of the glass facade is usually made of aluminum profiles.

The total analyzed area of the facades was 132 112m^2, from which 58 729m^2 was a glazed surface, or 44% of the facade was glazed, while 56% was a non-transparent part of the building envelope, expressed in percentage. Glazing size ranged from 44% for the eastern and western facades, 49% for the southern facade and 43% for the northern facade.

The protection against solar radiation is crucial for buildings with a large glass surface, because it reduces the need for mechanical cooling. Despite this fact, very little attention is paid to the process of designing devices for solar control when using glass facades in office buildings in Macedonia. Only 29% of the analyzed buildings had full protection from the sun, which was provided through external elements such as large eaves that are thrown over the facade or appropriate lines of brilliance laid linearly along the glazing. 15% had partial protection from the sun, such as minimal breezes placed on only one part of the facade. Even 56% of the facilities had no external devices for protection against solar radiation at all. However, it could be seen that the application of shading devices, which is extremly important for achieving living comfort and healthy environment in office buildings, increased especially in the last 3 years, compared to the period from 2000 to 2004, where the percentage of buildings with no shading devices is highest.

1 The study was developed at the Department on Concrete and Timber Structures, Faculty of Civil Engineering, University "Sts. Cyril & Methodius", Skopje, Macedonia

3. ARCHITECTS` PERCEPTION OF LIVING COMFORT IN OFFICE BUILDINGS WITH GLASS FACADE IN MACEDONIA

3.1 Objectives

The overarching goal of this study was to identify architects' perceptions regarding potential advantages/benefits and disadvantages/ challenges in using glass facades in Macedonia and their influence on the living comfort in the buildings, especially office buildings. Based on these perceptions, we hope that communication mechanisms and messaging to increase architect understanding of glass facades in Macedonia will be identified.

3.2 Methods

A survey questionnaire was constructed and developed by an international group of architects from Macedonia and Slovenia. The study methods included a two stage survey; in the first stage, personal interviews were conducted, and then, based on input from these in-person interviews, the second stage an exploratory web-based survey was designed. The survey questionnaire was in English (Table 1).

The target population of the survey included practicing architects, with lists complied from members of professional architect societies and associations in Macedonia, the Chamber of Certified Architects and Certified Engineers of the Republic of Macedonia. Respondent data were collected through the on-line survey (the instrument was programmed in Free Online Surveys, a free web survey software); random sampling of these association populations was used. The main advantage of the Internet Surveys is the speed and low financial consumption. Pictures could be included among the questions, and people respond more honestly. The risk of not answering the entire survey exists, but less than on paper surveys, as well as it is only possible to contact people with e-mail and internet access. Therefore, an e-mail / website method is one of the most recommended. The only drawback is not being able to generalize the results to the entire population, but nowadays the problem of not having access to the Internet is declining. (Ibáñez, 2015, p. 23). Based upon similar studies (Damery and Fisette, 2001; Hwang and Shu, 2011 and Hincapié, et al. 2011) a response rate of 15–35% is considered adequate for analytical purposes for business/corporate surveys. Taking into account an expected response rate within this range and a sampling error of 10% (Dillman, 2011) we sent out 280 questionnaires. The survey process took place from mid-July to late August 2018. We received 67 valid responses. Taking into account non-deliverables (e.g., invalid emails addresses or out-of-business firms); the response rates were 24%. Although the reasons for low response rates are unknown for this study, often, the main reasons for nonparticipation in surveys are non-appealing survey topic, or the length of the questionnaire (Fan and Yan, 2010).

The questionnaire was divided into four parts. The first part included demographic questions about respondent gender, profession and experience. The second part was composed of questions about living comfort, followed by the third part with questions about the influence of the glass façade on

Table 1: Online survey - The influence of the glass façade on the living comfort in office buildings.

1	Indicate how different aspects influence living comfort.
2	How important is natural daylight for achieving living comfort and healthy environment in the buildings?
3	Which aspect influences the most on the living comfort in summer?
4	Which aspect influences the most on the living comfort in winter?
5	Which types of buildings are most suitable for using glass facade?
6	Do you think that glass facades have a positive impact on the living comfort of the buildings?
7	Indicate which parameter can contribute the most in achieving living comfort in office building when using glass facade?
8	Mark aspects in which the glass facade can have positive impact on the living comfort in the office building?
9	Mark aspects in which the glass facade can have negative impact on the living comfort in the office building?
10	What is the main problem for failing to achieve living comfort in the buildings?
11	Do you think that living comfort could be achieved in office buildings with glass façade without using devices for solar control?
12	Which devices for solar control can achieve best protection from sun radiation in summer?
13	There are several ways of getting information about glass facades. Which is the most important?
14	What kind of information would you like to have?
15	In your opinion, is there increased use of glass facades in your country in the last 5 years?
16	What influence the most in the decision of the architects to use glass façade in designing buildings?
17	What is the major problem in the functioning of a glass façade building?

the living comfort. The last part had questions about the problems when using glass facade and information sources and information needs of architects.

3.2 Results

Majority of all respondents work in the field of architecture, but few of them are working in the field of building construction, or project management, interior design and structural engineering. Respondents had an average of 5–15 years of experience (63%), followed by 15 to 25 years of experience (18%). Only few of them had experience less than 5 years and more than 25 years. 40% of respondents were men and 60% women.

3.3.1 Living comfort

In the first part of the survey, the respondents were asked to rate different living comfort aspects on the scale from 1 to 5 (1 being the least and 5 being the most influential) about their influence on the living comfort. The responses are given in Table 3. The most important aspect which influences the most on the living comfort is daylight, followed by natural ventilation and indoor air quality, while the least important aspect which influences the least is the acoustic comfort according to the respondents` opinion (Table 2). The cells reflecting highest percentage are bold.

Table 2: Respondents ranking different aspects according to their influence on the living comfort

Aspects of living comfort	1	2	3	4	5	Average
Thermal comfort	2%	2%	14%	28%	**54%**	**4.30**
Daylight	0%	2%	8%	22%	**68%**	**4.56**
Humidity	2%	2%	32%	**35%**	29%	**3.87**
Natural ventilation and indoor air quality	2%	0%	8%	22%	**68%**	**4.54**
Acoustic comfort	0%	8%	**39%**	31%	22%	**3.67**
Safety and risk prevention	3%	6%	19%	16%	**56%**	**4.16**
Functionality	2%	0%	9%	31%	**58%**	**4.43**
Aesthetics	3%	3%	25%	**41%**	28%	**3.88**
Visual comfort	0%	5%	19%	**44%**	32%	**4.03**
Health and well-being	2%	3%	9%	22%	**64%**	**4.43**

Respondents were also asked for their opinion about the importance of natural daylight. Results show that natural daylight is considered extremely important for achieving living comfort and healthy environment in the buildings (58%). Only 1% of respondents think that natural daylight is not so important.

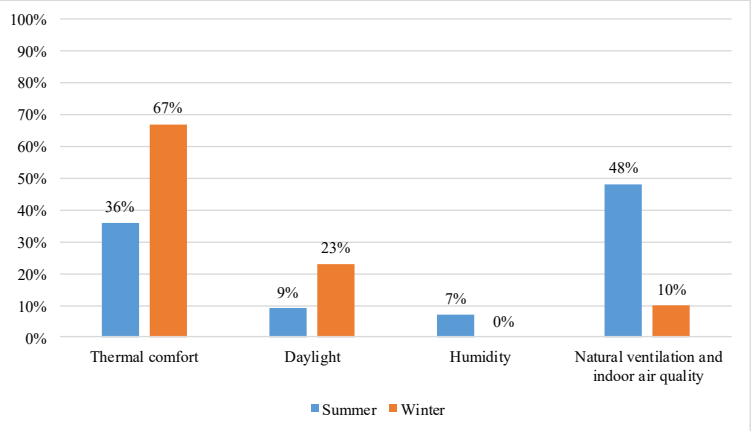
In addition to the rating of the living comfort aspects, respondents were also asked to select aspects that have major influence on the living comfort in summer and in winter. For the summer, natural ventilation and indoor air quality was chosen as the most influential. On the other hand, thermal comfort was chosen as most influential for the winter. Humidity is chosen as the least influential aspect for both summer and winter (Graph 1).

3.3.2 The influence of the glass facade on the living comfort

Respondents were selecting the type of building which are most suitable for using glass facade: office, industrial and residential buildings. On the first place were office buildings. Additionally, on the question whether the usage of glass facade has a positive impact on the living comfort, 79% of the respondents answered positive.

Moreover, for achieving living comfort in office buildings when using glass facade, the respondents indicated in the first place the characteristics of the glass as most important parameter (41%), followed by the orientation of the glass (24%). The size of the glazing is chosen as the least important parameter (Graph 2).

Graph 1: Aspects that influence the most on the living comfort in summer and in winter according to respondents.



Furthermore, we asked the respondents to rate the aspects in which the glass facade can have positive impact on the living comfort in the office buildings. They answered that the most positive impact is obtaining natural daylight and reducing the costs for electricity, followed by gaining heat from sun radiation in winter and reducing the costs for heating (Table 3)

Table 3: Respondents ranking different aspects in which glass facade can have positive impact on the living comfort.

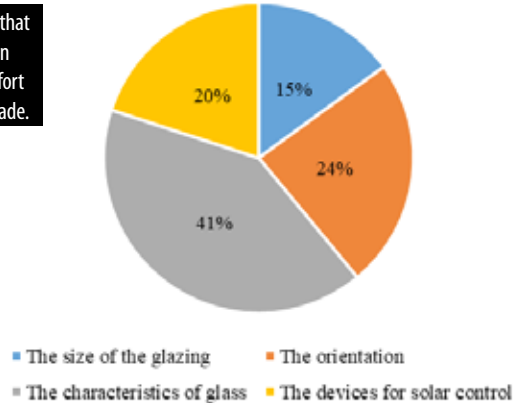
Positive impact of the glass façade on the living comfort	1	2	3	4	5	Aver-age
Gaining heat from sun radiation in winter and reducing the costs for heating	2%	0%	24%	36%	**38%**	**4.08**
Natural daylight and reducing the costs for electricity	2%	2%	17%	28%	**51%**	**4.24**
Connection with outer space	3%	8%	23%	27%	**39%**	**3.91**
Health and well-being of the users	3%	3%	18%	37%	**39%**	**4.06**
Natural ventilation (if some of the parts of the façade are not fixed)	6%	8%	27%	**31%**	28%	**3.67**

On the other hand, respondents reported that overheating in summer and need for mechanical cooling is the most negative impact that the glass facade has on the living comfort, while losing heat in winter is on the second place. Bad sight view is not a significantly important factor that influence negative on the living comfort (Graph 3).

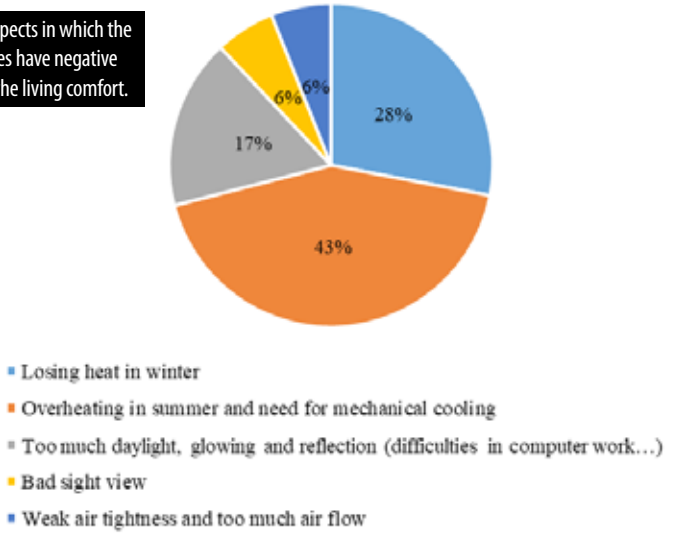
3.3.3 Problems when using glass facade, information sources and needs of architects/promotional methods

Despite the string of positive features that the glass facades can provide for a building, there are certain obstacles and problems that prevent its usage, especially in Macedonia.

Graph 2: Parameters that contribute the most in achieving living comfort when using glass facade.



Graph 3: Aspects in which the glass facades have negative impact on the living comfort.

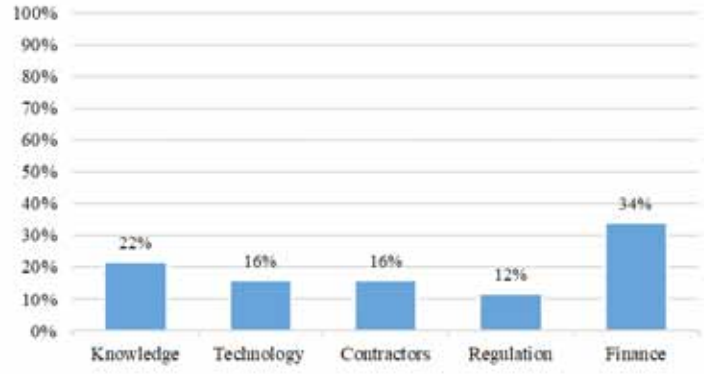


Finance was given as a main problem for failing to achieve living comfort in the buildings in Macedonia according to respondents' opinion (Graph 4).

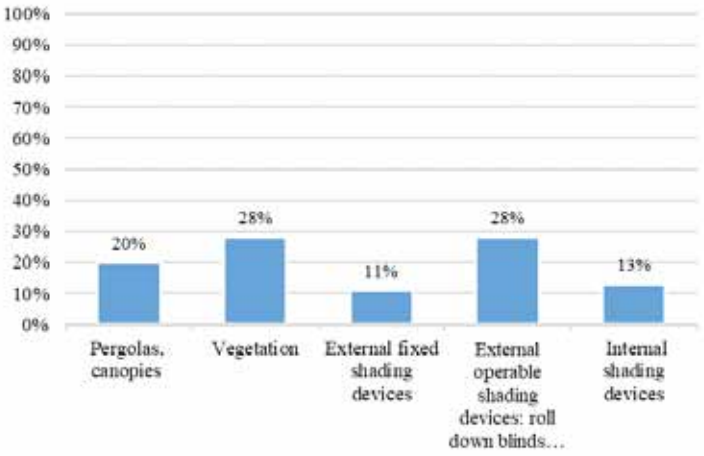
51% of the respondents think that living comfort could not be achieved in office buildings with glass facade without using devices for solar control. In addition, the best protection from sun radiation in summer can be achieved using vegetation and external operable shading devices (Graph 5).

Given the importance of learning about products on the job, respondents were queried about various methods of obtaining information to support their firms and profession. Selections were made based on the following list of informational sources: Internet, from building companies, through manufacturers, through architect associations, and from homeowners. The respondents were asked to rate the ways of getting the information from 1 to 5 (1 being the least and 5 being the most). Building companies were chosen as the most important way of getting information about glass facade (Table 4).

Graph 4: Problems for failing to achieve living comfort .



Graph 5: Devices for solar control which can achieve best protection from sun radiation in summer according to the respondents.



Graph 6: Information needs for glass facades.

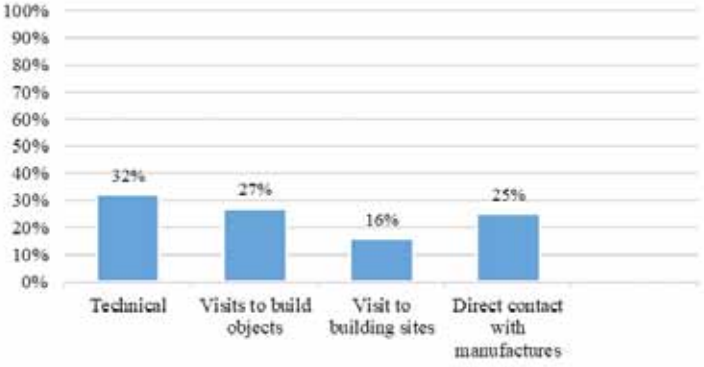


Table 4: Respondents ranking different ways of getting information about glass facade.

Information	1	2	3	4	5	Average
Internet	0%	2%	36%	20%	**42%**	**4.02**
Building companies	2%	3%	16%	**44%**	35%	**4.07**
Manufactures	3%	6%	21%	27%	**42%**	**3.96**
Architect's associations	11%	11%	22%	22%	**33%**	**3.52**
Users	5%	8%	17%	22%	**48%**	**4.00**

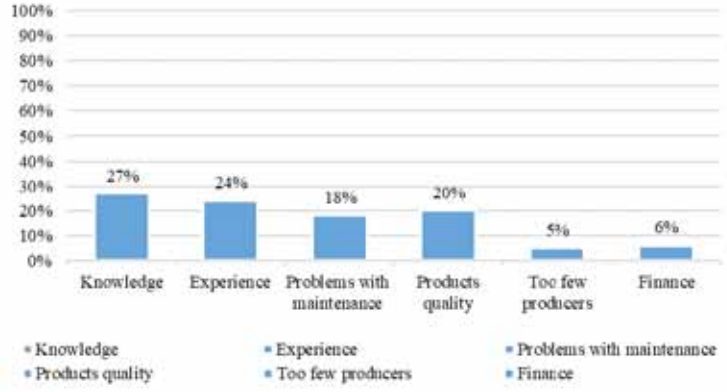
Respondents were also asked about the effectiveness of various information sources in terms of learning about glass and glass facade relative to architectural applications. Specifically, they were asked to identify ways that they would like to get information about glass facade, through 1) technical specifications; 2) visits to completed structures; 3) visits to building sites under construction; and 4) direct contact with glass façade manufacturers.

Respondents noted that obtaining information through technical specifications was the top rated preference, followed by visits to completed structures (Graph 6). In last place was through visits to building sites under construction.

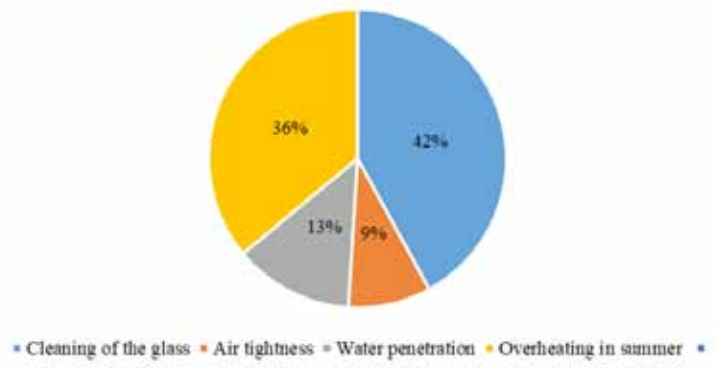
On the question about their perception regarding application of glass facades in the last 5 years in Macedonia, 67% of the respondents think that the usage is increased. Moreover, respondents were asked to identify the main aspects that influence the most in the decision to use glass facade when designing buildings. The lack of knowledge is pointed as a main aspect for not using glass facade, followed by the lack of experience, low products quality and problems with maintenance (Graph 7).

Finally, respondents were asked about the problems in functioning and maintenance of a glass facade building. Cleaning of the glass (42%) is a major problem, followed by overheating in summer (36%) (Graph 8).

Graph 7: Factors that influence on the decision of the architects to use glass facade in designing buildings.



Graph 8: Problems in functioning and maintenance of a glass facade building.



4. DISCUSSION AND CONCLUSIONS

Glazing affects the energy balance of the building or part of the building (offices), as dynamic processes take place through glazing facade surfaces: transmission heat losses and solar irradiation (Jordan and Zbašnik-Senegačnik, 2011, p. 53). However, appropriate size and positioning of glazed areas can enable better energy performance of a building, where the energy from the sun obtained through the transparent part of the envelope can be clearly higher than the transmission losses through the same part (Leskovar and Premrov, 2012, p. 94).

When analyzing the buildings in Macedonia, one tendency of glazing can be concluded which is not related to the orientation towards the east, west, north or south, but to the orientation of the building towards the main street. Thus, the largest glazed surface of the building is most often placed on the facade that is oriented towards the main street, where the access to the building is most commonly located. The reason for this is that this facade is being considered as the most attractive facade and it is in the focus of the passers-by. Architects and investors usually do not pay so much attention on the facades on the back side of the building, so there are usually no large glass facade surfaces, but only windows for functionality of the premises.

Regardless of the fact that protection against solar radiation is crucial for buildings with a large glass surface, it can be concluded that in this segment very little attention is paid to the process of glass facade design in the administrative buildings in Macedonia. Only 29% of the buildings have full protection from the sun, which is provided through external elements such as large eaves that are thrown over the facade or appropriate lines of brilliance laid linearly along the glazing. 15% have partial protection from the sun, such as minimal breezes placed on only one part of the facade. Even 56% of the facilities have no external devices for protection against solar radiation at all. This is a big problem because Macedonia is a country where high temperatures above 40 °C are reached in the summer, and very often there is overheating of the inner space which demands additional energy for mechanical cooling. Almost everywhere where there are no external sun protection devices, interior elements such as curtains, venetians and others are installed, but these devices have a much weaker effect. However, application of shading devices increased especially in the last 3 years, compared to the period from 2000 to 2004, where the percentage of buildings with no shading devices is highest.

In addition, an online survey was conducted to collect data from over 60 respondents. The results show that there is a positive perception in terms of using glass façade in buildings in Macedonia.

The most important aspect which influences the most on the living comfort according to respondents' opinion is daylight, which can be provided using glass as a transparent material in buildings. On the other hand, the least important aspect which influences the least is the acoustic comfort which also goes in favor of glass facade usage, because the glass facade has a lower sound insulation compared to walls. Also, natural daylight is considered extremely important for achieving living comfort and healthy environment in the buildings.

According to this survey, office buildings are most suitable for using glass facade which can even improve the living comfort inside the buildings. The most important factor for achieving living comfort is considered to be the characteristics of the glass, from which the glass facade is made.

The most positive impact from the glass facade can be seen in obtaining natural daylight and reducing the costs for electricity, followed by gaining heat from sun radiation in winter and reducing the costs for heating. On the other hand, the most negative impact from the glass facade on the living comfort inside the office buildings is the overheating in summer and the need for mechanical cooling. Therefore, it is extremely important, architects and engineers to design devices for solar control in the early stage of the design.

Finance was given as a main problem for failing to achieve living comfort in the buildings in Macedonia according to respondents' opinion.

In terms of architects' opinion on whether there has been increased use of glass facades in the last 5 years, in Macedonia, the majority agree. There is in general a lack of knowledge of the principles of design options in using glass facades, especially in the office buildings in Macedonia. Results show that building companies are leading source of information for architects. Architects also need more technical information to better understand the glass facades application.

Architects could be good advocators for an increased use of glass facade but increased efforts must be placed to increase their knowledge. Demonstration projects are vital to show the various actors teamwork with glass facade in practice; e.g. collaboration among representatives of the production, architects, builders and housing associations, to better understand the technical and the business potential of glass as a building material. To gain more knowledge of glass as a material, more diverse group should be targeted in this region, e.g. including contractors and civil engineers. Moreover, knowledge about protection of solar radiation through devices for solar control is needed, when using different glass facade systems.

Using the information obtained in this study will contribute to an understanding of the application of glass facade in Macedonia. It is important to integrate technical specifications and also experience to ensure understanding of the functional and aesthetic performance of glass facade from design to construction to use. As the authors believe that the increased and appropriate use of glass facade may be an important element of a more sustainable future built environment, more information about use and perceptions is needed.

With a review of enhancing the knowledge about glass facades` influence, we aim to focus our further studies onto the perception of the users of office buildings with glass facades, because they are directly influenced by the living comfort.

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REFERENCES

Akadiri, O. P. (2011). Development of a multi-criteria approach for the selection of sustainable materials for building projects. PhD Thesis. Wolverhampton: School of Engineering and the Built Environment, University of Wolverhampton. https://wlv.openrepository.com/bitstream/handle/2436/129918/Akadiri_PhD%20thesis.pdf;jsessionid=43AA703AD81753D3D87CA41039BBBAE1?sequence=1

Andrade, J. B., Vieira, S. M., Braganca L. (2012). Selection of key Sustainable Indicators to Steel Buildings in Early Design Phases. Concepts and Methods for Steel Intensive Building Projects, 2012, IV, pp. 167-178. http://repositorium.sdum.uminho.pt/handle/1822/22421

Ber, B., Premrov, M., Strukelj, A., Kuhta, M. (2014). Experimental investigations of timber–glass composite wall panels. Construction and Building Materials, 2014, 66, pp. 235–246. https://doi.org/10.1016/j.conbuildmat.2014.05.044

Bessoudo, M., Tzempelikos, A., Athienitis, A.K., Zmeureanu, R. (2010). Indoor thermal environmental conditions near glazed facades with shading devices – Part I: Experiments and building thermal model. Building and Environment, 2010, 45, pp. 2506-2516. https://doi.org/10.1016/j.buildenv.2010.05.013

Browing, W.D., Ryan, C.O., Clancy, J.O. (2014). 14 Patterns of Biophilic Design. New York: Terrain Bright Green LLC. https://www.terrapinbrightgreen.com/wp-content/uploads/2014/09/14-Patterns-of-Biophilic-Design-Terrapin-2014p.pdf

Bülow-Hübe, H. (2001). The effect of glazing type and size on annual heating and cooling demand for Swedish offices. Lund: Department of construction and architecture, Lund University, division of energy and building design. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.580.7866&rep=rep1&type=pdf

Damery, D.T., Fisette, P. (2001). Decision making in the purchase of siding: a survey of architects, contractors, and homeowners in the US northeast. For. Prod. J, 2001, 51, 7/8, pp. 29–36. https://www.researchgate.net/profile/David_Damery/publication/242217480_Decision_making_in_the_purchase_of_siding_A_survey_of_architects_contractors_and_homeowners_in_the_US_Northeast/links/0f31752dfdb720e9d6000000.pdf

Dillman, D.A. (2011). Mail and Internet Surveys: The Tailored Design Method–2007 Update with new Internet, Visual, and Mixed-Mode Guide. John Wiley & Sons. https://books.google.si/books/about/Mail_and_Internet_Surveys.html?id=d_VpiiWp51gC&redir_esc=y

Fan, W., Yan, Z. (2010). Factors affecting response rates of the web survey: A systematic review. Computers in Human Behavior, 2010, 26, 2, pp. 132-139. https://doi.org/10.1016/j.chb.2009.10.015

Gibberd, Jt. (2018). Sustainable building assessment tool: integrating sustainability into current design and building processes. https://www.researchgate.net/publication/30511175_Sustainable_building_assessment_tool_integrating_sustainability_into_current_design_and_building_processes

Hassouneh, K., Alshboul, A., Al-Salaymeh, A. (2010). Influence of windows on the energy balance of apartment buildings in Amman. Energy Conversion and Management, 2010, 51, pp. 1583-1591. https://doi.org/10.1016/j.enconman.2009.08.037

Hincapié, I., et al. (2015). Nanoparticles in facade coatings: a survey of industrial experts on functional and environmental benefits and challenges. Journal of Nanoparticle research, 2015, 17, pp. 287. https://doi.org/10.1007/s11051-015-3085-3

Hwang, R-L., Shu, S-Y. (2011). Building envelope regulations on thermal comfort in glass facade buildings and energy-saving potential for PMV-based comfort control. Building and Environment, 2011, 46, 4, pp. 824-834. https://doi.org/10.1016/j.buildenv.2010.10.009

Ibáñez, A. T. (2015). Metro user evaluation of crowding during rush hours. Stockholm, Sweden: Degree Project in traffic and transport planning. http://kth.diva-portal.org/smash/get/diva2:839246/FULLTEXT01.pdf

Jordan, S., Zbašnik-Senegačnik, M. (2011). Analyses and influences of glazed building envelopes. AR, 2011, 2011/2, pp. 47-54. http://www.fa.uni-lj.si/filelib/9_ar/2011/2011-2/ar2011_2_06_jordan.pdf

Kuzman, M. K., Klarić, S., Barčić, A. P., Vlosky, R. P., Janakieska, M.M., Grošelj, P. (2018). Architect perceptions of engineered wood products: An exploratory study of selected countries in Central and Southeast Europe. Construction and Building Materials, 2018, 179, pp. 360-370. https://doi.org/10.1016/j.conbuildmat.2018.05.164

Leskovar, Ž.V., Premrov M. (2012). Influence of glazing size on energy efficiency of timber-frame buildings. Construction and Building Materials, 2012, 30, pp. 92–99. https://doi.org/10.1016/j.conbuildmat.2011.11.020

Manazno-Agugliaro, F., Montoya, F. G., Sabio-Ortega A., Garcia-Cruz A. (2015). Review of bioclimatic architecture strategies for achieving thermal comfort. Renewable and Sustainable Energy Reviews, 2015, 49, pp. 736-755. https://doi.org/10.1016/j.rser.2015.04.095

Marino, C., Nucara, A., Pietrafesa, M. (2017). Does window-to-wall ratio have a significant effect on the energy consumption of buildings? A parametric analysis in Italian climate conditions. Journal of Building Engineering, 2017, 13, pp. 169-183. https://doi.org/10.1016/j.jobe.2017.08.001

Markelj, J. (2016). Model za arhitekturno-tehnološko vrednotenje trajnostnih stavb. Doktorska disertacija. Ljubljana: Univerza v Ljubljani, Fakulteta za arhitekturo.

Persson, ML. (2006). Windows of opportunities, the glazed area and its impact on the energy balance of buildings. PhD Thesis. Uppsala: Uppsala Universitet. http://www.diva-portal.org/smash/get/diva2:168352/FULLTEXT01.pdf

Praznik, M., Butala, V., Zbašnik-Senegačnik, M. (2014). A Simple Method for Evaluating the Sustainable Design of Energy Efficient Family Houses. Journal of Mechanical Engineering, 2014, 60, pp. 425-436. https://doi.org/10.5545/sv-jme.2013.1561

Premrov, M., Zigat, M., Leskovar, Ž.V. (2018). Influence of the building shape on the energy performance of timber-glass buildings located in warm climatic regions. Energy, 2018, 149, pp. 496-504. https://doi.org/10.1016/j.energy.2018.02.074

Singhaputtangkul, N., Low, S. P., Teo, A. L., Hwang, B. G. (2014). Criteria for Architects and Engineers to Achieve Sustainability and Buildability in Building Envelope Designs. Journal of Management in Engineering, 2014, 30, 2, pp. 263-245. https://doi.org/10.1061/(asce)me.1943-5479.0000198

Carolin Stapenhorst, Magdalena Zabek, Linda Hildebrand: KOMUNIKACIJA IN PRETOK INFORMACIJ V KONTEKSTU ARHITEKURNEGA NAČRTOVANJA

COMMUNICATION PROCESS AND INFORMATION FLOW IN THE ARCHITECTURAL PLANNING CONTEXT

DOI: http://dx.doi.org/10.15292/IU-CG.2018.06.066-073 ▮ UDK: 728.1:658.5 ▮ 1.01 Izvirni znanstveni članek / Scientific Article ▮ SUBMITTED: August 2018 / REVISED: September 2018 / PUBLISHED: November 2018

IZVLEČEK

V pogojih vse večjega kopičenja podatkov v vsakdanjem življenju postajajo orodja za obdelavo podatkov vedno bolj zmogljiva, da omogočajo podporo kompleksnemu načrtovanju stavb. Proces arhitekturnega načrtovanja ponuja vrsto novih instrumentov za oblikovanje, načrtovanje in načrtovalsko odločanje. V idealnih pogojih dostop do informacij služi zagotavljanju in dokumentiranju kakovosti stavbe, v najslabšem primeru pa povečano število podatkov zahteva predvsem čas pri zbiranju in procesiranju, brez koristi za stavbo in njene uporabnike. Procesni modeli lahko ponazorijo vpliv informacij na oblikovanje in načrtovanje in tako podpirajo arhitekta in načrtovalca pri vodenju procesa. Članek predstavlja pregled zgodovinskih in sodobnih modelov za vizualizacijo procesa arhitekturnega načrtovanja in vpeljuje načine, kako opisati današnjo situacijo, z vključevanjem različnih deležnikov, dogodkov in instrumentov. Renesančne modele primerjamo z modeli, ki so se uporabljali v drugi polovici 20. stoletja. Predstavimo tudi sodobne modele, predvsem v smislu njihove vrednosti v luči vse bolj računalniško podprte gradnje.

KLJUČNE BESEDE

proces načrtovanja, struktura in faze, akterji, pogoji, orodja, udejanjanje, postopek načrtovanja

ABSTRACT

Against the background of growing data in everyday life, data processing tools become more powerful to deal with the increasing complexity in building design. The architectural planning process is offered a variety of new instruments to design, plan and communicate planning decisions. Ideally the access to information serves to secure and document the quality of the building and in the worst case, the increased data absorbs time by collection and processing without any benefit for the building and its user. Process models can illustrate the impact of information on the design- and planning process so that architect and planner can steer the process. This paper provides historic and contemporary models to visualize the architectural planning process and introduces means to describe today's situation consisting of stakeholders, events and instruments. It explains conceptions during Renaissance in contrast to models used in the second half of the 20th century. Contemporary models are discussed regarding their value against the background of increasing computation in the building process.

KEY-WORDS

Design process, Structure and Stages, Actors, Conditions, Tools, Manifestations, Planning proces

1. INTRODUCTION

1.1 Complexity in the architectural planning process and communication models

The architectural planning processes deal with an increasing amount of information or its digital form data (Windsperger et al., 2010). One reason is the rising complexity of projects and extended functionality of software programs which are used to develop, steer and communicate the planning decision. Against the background of growing data quantity in everyday life, information augments continuously. As the variety of knowledge sources and tools generating very specific categories of information is increasingly available, planners are capable of making their decisions based on information which was not accessible before the frequent use of the internet in the 90ies and the introduction of Web 2.0 in the beginning of this century. The architectural planning process experienced a growing impact of computation which offered great potential. The introduction of computer aided design contributed essentially to reduce the time to draw and encouraged more complex design approaches. The communication among the planners and clients became easier. Plans as mean for communication could be produced with less effort. In the beginning the technical connection between semantic and geometric information was introduced by the concept of building information models. This supports the implementation of quantifiable aspects in different stages of the planning process. In the design and planning phase aspects like costs can be a basis for optimization and be later on updated and monitored. The production of a building, including the activities of the stakeholders becomes more transparent in all stages, the design and planning, the construction and the building use. Furthermore, it shows potential to also include the time after the use phase as a source for secondary resources.

The new level of transparency especially in the planning process stimulated the demand for meta methods which range from organisational structure for the process documentation to specific definition of terms and regulations in order to come to an agreement for specific milestones. From disciplines outside architecture methods and software solutions have been introduced to visualize and monitor the planning process.

The increased computation is also accommodated by changes which constitute potential risks. One challenge is the recognizing relevant data; while it is currently possible to judge whether compliance with mandatory regulation is achieved, it becomes considerably more difficult to distinguish relevant from irrelevant information. A planner could easily get lost in the data-scapes and loose working time by processing information that is not (at that time or not at all) useful for his work. Additionally, quantifiable information are significantly better represented compared to qualitative capabilities. The translation of building qualities into a numeric and therefor tangible capabilities exposes the risk of reducing a variety of values in architecture.

Models to visualize and reflect the architectural planning process have been introduced already in the times of Renaissance. Later on, the dynamic and elements of the planning process have been investigated by design theorists. Especially in the last six decades, architect and planners increasingly discussed models of communication in architectural design. In the context of this research information flow models are looked at in regard to their suitability to show successful and failing process while *successful* in this context can have different designations.

1.2 Aim and method

The aim of this paper is to provide an overview of information flow models which include historic conceptions of the building process, as well as contemporary approaches from other disciplines. This review paper provides an understanding of different model characters and explains their potential to different applications.

The paper is based on literature review, including books on architecture theory, scientific journals ranging from 1970 until 2018. Furthermore, the results of three student courses on information in the architectural design context are included. The assignment included the development of a model to visualize an architectural planning process. The *grammar* the students created is introduced here as well as the findings based on the students application.

The paper is structured in four parts (chapters), of which the first part (2nd Ch.) introduces different communication models. It starts with an historic communication model of in the context architectural planning process and proceeds with Mid-century approaches not strictly limited to the planning process of buildings. The second part (3rd Ch.) reflects on the model's potential for different application in the architectural planning process. Based on this, students developed models in three subsequent courses models to show the information flow. The models are introduced in the third part (4th Ch.). The paper closes with a discussion on the different approaches against the background of today's complexity in the building process (5th Ch.).

The aim of this paper is to identify models that are suitable to show successful and failing processes and indicate whether more information lead to an increased quality for the building or the building process. Models to visualize and discuss the architectural planning process have been mainly produced and applied by architecture theorist and IT specialist. The paper explores the application of communication and information flow models for architect designing and planning a building and for consultants hired to optimize the architectural planning process.

2. DEVELOPMENT OF COMMUNICATION MODELS

In Renaissance, design solutions were thought to be the results of exclusively intuitive, sudden inspirations, originating from the creative genius of one person, the architect. Leon Battista Alberti describes this position as the one who holds the complete intellectual control of the design, develops and defins it within a multitude of drawings (Alberti, 1485/1988). The architect expresses the so-called lineaments (*lineamenta*) which incorporates both, the virtual idea in a designer's mind and its representation on paper.

Thus, the lineaments are the designer's intellectual products preceding and directing the physical execution of a design. From the present point of view, Alberti's description of designing may be described with a model of communication that shows a linear flow of information conditioned by a clear hierarchy (Carpo, 2011). In this model, one actor takes all decisions and defines the solutions that are communicated by means of the drawings to the building site where they have to be executed as faithfully as possible.

Manifestations of a changing conception were produced in the 1960ies, for example in Europe by the Team Ten group which formed within the context of the CIAM (Congrès Internationaux d'Architecture Moderne, Engl: International Congress on Modern Architecture) Congresses and started a critical revision of the modernist era. They underlined the need and the potential of collaboration of different disciplines for the adequate solution of urban and architectural problems and lived that conviction through the intense theoretical discussions within their international group of architects (Smithson, 1974).

The drawing of an "ideogram of a net of human relations" (Fig. 01) shows the conceptual communication model of the Team Ten. Information is exchanged in a net character. Another visualization of communication involving different parties is Charles Eames' "Design Diagram" (Fig. 02) elaborated for an exhibition in 1969. The diagrams show the multiplicity of concerns and interests involved in the design process, it underlines the importance of different actors like the client and external specialists, and shows an overlapping field in the centre as the place where the design decisions should take place (Demetrios, 2001).

The role of the architect in the planning process was recognized as a centralized information manager depicted in the Design Diagram in Figure 2, who communicates various information to different stakeholders. Most information (in the past and present) is exchanged between the architect and the client or other engineers and the architect aiming in meeting the client's expectations and ensure a high quality of the building. The planning process follows a certain structure (starting with a design idea, to construction planning, realisation and use phase) but the communication among the stakeholder is project-specific.

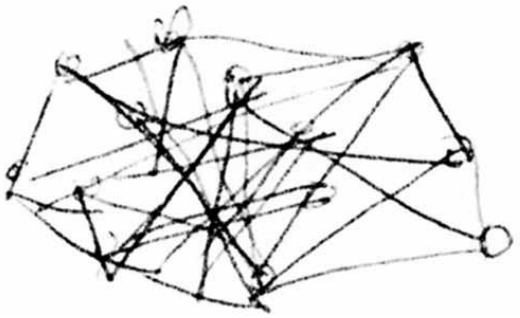
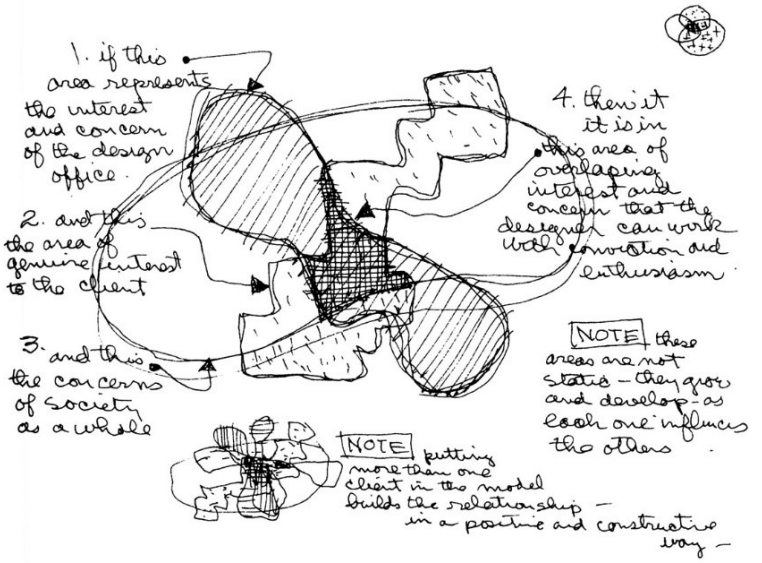


Figure 1: Sketch by Alison and Peter Smithson: Ideogram of a net of human relations.

Figure 2: Charles Eames' "Design Diagram", 1969.



3. APPROACHES FOR CONTEMPORARY COMMUNICATION MODELS

3.1 Data Flow Diagram

In the second half of the 20th century poor information transportation was identified as one origin for design failures and motivated the development for process models to find and tackle them. Improving the management of a project by modelling its framework became a new method to provide an overview of the whole process. This generic approach is based on a comprehensive understanding of the information flow within a process (Browning, 2001). In 1970 the *Data Flow Diagrams* (DFD) was designed by Constantine, a US software engineer, to visualize information flow in data systems with the focus on processes and information flow (Stevens, Myers, & Constantine, 1974). Baldwin and Austin (A. Baldwin, Austin, Hassan, & Thorpe, 1999) used this approach to transfer it to the building sector. With this method the transformation and coordination of information flow in a system could be displayed and information exchange between activities can be mapped. According to Baldwin, data flow diagrams are organized in a hierarchical manner with the main task or process at the top level, called *context diagram*. This diagram is divided into further subtasks or processes until the identification of tasks which generate specific information conditions at the bottom of a diagram. These tasks known as *functional tasks* represent the design outputs or deliverables like drawings, calculations or sketches. Figure 3 shows a structure of a generic data flow model for conceptual and schematic design with 6 stages. This schematic diagram provides a comprehensive graphic of the overall process and provides a model which monitors information requirements for each design task.

UVODNIK
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COMPETITION
PREDSTAVITEV
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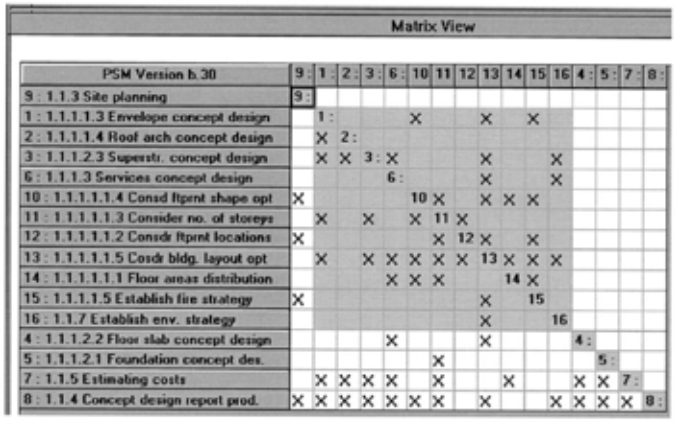
Figure 3: Structure of a generic data flow model for conceptual and schematic design (Baldwin, 2010).

Figure 4: Baldwin, 1998: An example of an DSM with an identified iterative loop.



3.2 Design Structure Matrix

Don Steward introduced the *Design Structure Matrix* (DSM) in 1981, a model that analyses dependencies between tasks and information (Steward, 1981). Research on information flow was and still is conducted by several international institutes like the MIT, Loughborough University, University of California at Berkley and (Hardin & McCool, 2015). Against the background of the digitalisation in the building sector and especially with the introduction of information linked geometries, building information model, the use of models based on DSM can be increasingly observed. Several information modelling techniques have been developed by the software industry since the need of a comprehensive understanding of information flow between stakeholders' relays to the production of computer-based information systems.

During the design phase changes in the design occur as loops in the information flow which are known as iterative design tasks. The DFDs does not identify these iterations. Applying the DSM can be a useful for that. This model is used to determine communication failures and information flow gaps in a design process by displaying the relationships between components of a system. Due to the iterative nature of a design process information are being moved back-and-forth between stakeholders or disciplines. Especially in a multi-disciplinary process like building projects information like calculations, structural loadings, facility specifications are being exchanged between architects, civil and structural engineers or building services engineers (Liau & Wang, 2000). By identifying dependencies between design tasks and reordered them a planning process can be improved. Therefore, the DSM identifies loops by portioning sequences of design tasks caused by changes in the planning process. These changes can relate to the clients change of requirement or desire, a delivery of false information, unavailable resources, weather conditions or others. As shown in Figure 4 the DSM organizes tasks in rows and columns. Dependencies that exist between two design tasks are marked in the matrix. If a task provides input to another task, than a mark exists under the diagonal line. If a mark exists above the diagonal line, than a tasks provides information to a previous tasks which indicates that the information is not existing at that design stage and an assumption has to be made. After completing the task its information needs to be checked which causes a loop in the design process as shown as a grey shaded area in the diagram (Fig. 4).

Using the DSM to analyse the planning process can identify misleading or missing information, which relay to changes in the planning process and raise the potential for design failures or delays in the schedule. It provides a simple and compact visualisation of the planning tasks and their relationships to each other based on their dependencies. This model is used in disciplines like the automobile industry to manage the product development. Today DSM is often applied in combination with other visualization models like flow charts. (For example in (A. N. Baldwin, Austin, Poon, Shen, & Wong, 2007) a process flow chart, an information dependency table, a horizontally organized project program chart and a DSM are combined to what the authors call *Analytical Design Planning Technique*).

3.3 Visualisation of process models

Process models are used in different disciplines like business management, psychology, ergonomics and computer science among others. They represent different perspectives of processes; while business management models seek for optimization of company organisations or production flows, psychology and ergonomics focus on displaying interdependencies aiming in a better understanding. In the building sector both approaches can be recognized. The following distinction can be helpful to specify the context of the process looked at. Ergonomics differentiates types of process in *Business processes* (which aims in the production of goods and services for a certain market), *Work process* (describing the process within one company with regard to a person) and *Workflow process* (a formalized process which is structured by time and procedural aspects). Looking at the building process could be considered as Workflow process with different stakeholders (Mütze-Niewöhner, 2017).

Over time, different visualisation languages developed. In the 1960ies Petri nets were developed in the computer science context to show different parallel processes (Petri, 1962). It showed to suitable to discuss theoretical analyses and simulation but lacked clarity to be included in practical application. In 1977 and in 1983 as revised form, the standard DIN 66001 *Information processing; symbols and their application* was published which was originally developed to illustrate computer science program sequences (Deutsches Institut für & Normenausschuss, 1983). (Scheer, 2001) describes the *Event-driven process chain*, which was introduced in the 1990ies as one model to be used for the analysis of processes at departmental level and for computer-aided optimization processes. It includes a graphical language which provides forms for certain parts of the process description.

4. INFORMED BUILDING DESIGN MODELS

In the building sector, established models to visualize the planning process can be found only in very simple form. (This is especially true for small and medium size projects. Nevertheless, it is expected to change with the increased application of BIM). One example is the construction schedules which describe the time of completion of a task in written form and includes a horizontal bar chart. These diagrams grew with the complexity of the building and the planning process. The information which can be derived from this type of visualisation is very limited. It names tasks, the responsible stakeholder and the defines when the task is due. The information which can be derived is limited to whether an assignment is fulfilled according to a certain time frame. The quality of the produced subsection or the reasons for delayed /early completion are not documented.

The technical means in regard to software products for visualization offer a great potential for the design and the management process but is also brings along new types of challenges or even risks. With ongoing bigger amounts of information the issues of organizing, evaluating and communicating them becomes increasingly important. While it is still possible to differentiate between information that is mandatory or not, it becomes considerably more difficult to distinguish relevant from irrelevant information. A planner could possibly get lost in the data-scapes surrounding the working process. The method how to handle the complexity of data and how they build criteria for their selection is closely connected to the models of communication used in planning processes. Within these models it can be observed how the flow of information is developing. This was the starting point for the student courses *Informed Building Design* which was conducted in the format of a research module. In three subsequent courses (in the summer semesters 2016, 2017 and 2018) the topic of information in the architectural planning phase was investigated. Each course assignment included the development of a process model and its visualisation with three different foci; The first dealt with the establishment of a visual expression, called *grammar*, the second focused on expressing the process and the third dealt with mistakes in the planning process.

4.1 The grammar

In order to visualize an exemplary flow of information during a planning process the components of the grammar are combined with a graphical code. The components *actors*, *conditions*, *tools, products* and *coordination* have each a symbol (circle, square, rhomb, rectangle) and a colour. Further, the thickness of the symbols' boundary line indicates the decisional hierarchy among them. Thus, it is possible recognize which actor produces which quantity of information but also whose information is on a higher position within the hierarchy. The diagrammatic visualization of the communication model and the flow of information is therefore capable of a distinction between the quantity and the decisional weight of information (Fig. 5).

Stakeholders can be a physical persons, an office or an institutions. The architect and the client are included in every model. Architects collaborate with specialized planners from different areas of expertise and, especially in larger projects, with different professional figures linked to project management. The client can be private or public, represented by single individuals or groups and be interested directly (a private person commissioning the own house) or indirectly (an investment group) interested in the results of the planning process. Furthermore, if not the same person, the users of a building can become actors, too. Public institutions, like building authorities and the land-registry office, account as actor. In greater projects, especially in public buildings or when participation of the population is included, citizens may be part the planning process. In later design stages, the executing building firms become active participants of the planning process.

A planning process is exposed to a series of conditions which are contained in formulation of the design task—the brief. The brief contains various binding specifications, like the functionality, the indications on quantities, and the specific requests of a client. Normative standards and contractual specifications build another group of design conditions. Finally, the factors time and costs are fundamental conditions of planning.

The different actors of a planning process use a multitude of tools which can be highly specific and can become very influential in generating and processing information. A first subdivision of tools differentiates into analogue and digital drawing tools, analogue and digital modelling tools, text and calculation software, photographic cameras, and the tools of Building Information Modelling.

As a product of working with different tools, manifestations are produced. These represent the processing of information and become then units of information on their part. Typical products created during planning processes are sketches, drawings, models/mockups, photos, tender documents, plans, textual documents, cost calculations, schedules, and Industry Foundation Classes.

Figure 5 shows different components of the model: on the left the different stakeholders, in the middle the topic, on the right the tools, on the far right the output format an on the bottom the point of coordination where decisions (yes or no) are taken.

Figure 5: Different components of the model.

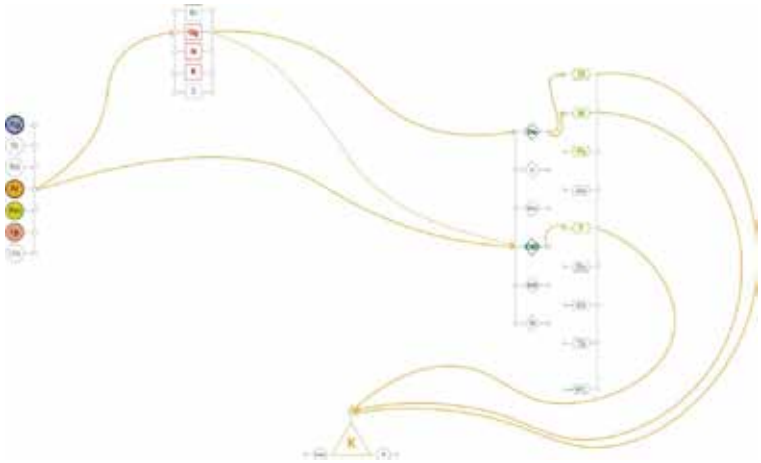
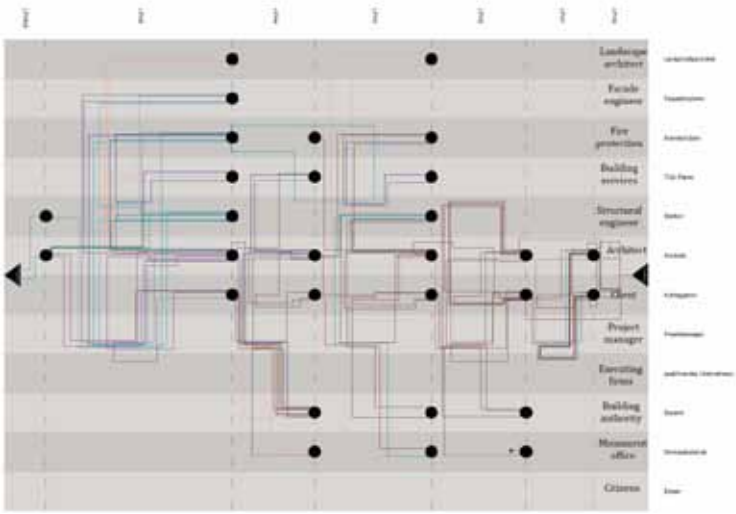


Figure 6: The process model of the second course.



4.2 The process model

Based on the grammar presented, the subsequent model focused on visualising the planning process while the grammar was adapted. It included the group of *actors, framework conditions*, *topics*, the *information flow*, the *type of information* and the *media* that carries the information (Fig. 6).

The actors follows the logic introduced in the previous chapter. The framework conditions include the qualities of the building project defined by the client (German: Bauvorhaben, Bv), the properties of the site (G.: Ortsgegebenheiten, O), standards for building construction (G: Normen, N), costs (G.: Kosten K) and time (G: Zeit Z).

The topics describe the information the media refers to. It is subdivided in I) design, II) building services, III) finance, IV) building construction, V) interior construction and VI) environmental aspects.

The information flow shows three icons. One for incoming information, one for outgoing information and information that is not passed on. The triangle represents a stakeholder.

The type of information is differentiated in qualitative and quantitative.

The media four categories are given: 2D drawings (CAD), digital 3D Modell (IFC), visualisation (V) and text (T).

In Figure 6 the actors are represented on the y-axis in the form of swim lanes, thus it is recognizable which actors are involved to which extend according to work phases. Furthermore, the information flow can be tracked. The process is structured by the nine phases defined by the professional associations of architects and engineers, the German Fee Structure for Architects and Engineers, HOAI. It specifies legal responsibilities as well as fees and is used as a common underlying structure for the protocol. The different topics are represented by the different colours. The topic that dominates a phase is best visible.

Figure 6 shows the process model of the second course. On the x-axis the phases according to the German Fee Structure for Architects and Engineers are shown, the y-axis reflects the actors. The differently coloured lines show different topics.

4.3 Planning mistakes

In third course a specific planning task was provided which should be visualized in the model. Based on the experiences before the model presented here included the following categories: *actors*, *topics*, *media*, *type of information*, *milestone*, *weighting* and *information transfer*. While the first four are adopted from the previous models, three new categories are introduced.

The milestone contains a variety of assignments at the end of planning stage. It is displayed with an octagon shape.

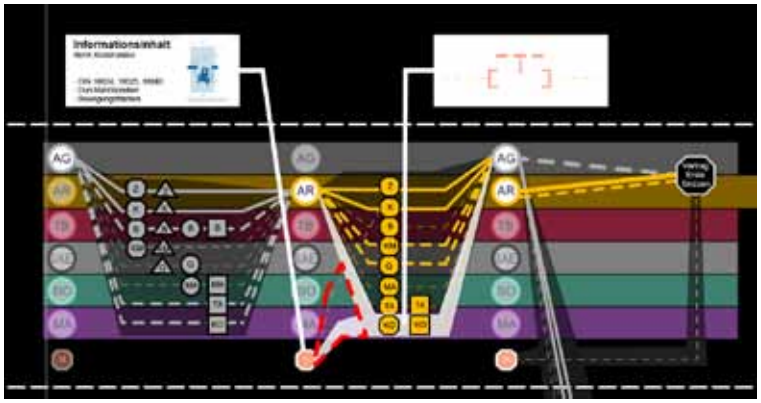
The weighting is differentiated in soft and hard. It is indicated by a thin (soft) and thick (hard) line.

The icon for information transfer refers to the translation of information into built subjects. It is shaped like a arrow.

The diagram shows the time in months on the x-axis and the different planning phases according to HOAI on the y-axis. The ideal sequence presents itself as an diagonal line meeting all milestones to complete the construction in the planned time. Deviations from this diagonal can function as recognition for problems or flaws in the process flow.

In the hypothetical problem case, the client discovers a planning error after completion and reports it to the architect. Here, the door to the bathroom

Figure 7: The problem of lost information.



is not barrier-free and the wheelchair user cannot use the bathroom as it is too narrow. The source of the error in the process documentation can quickly be traced back to performance phase 1, in which the necessary standards and guidelines were not called up by the architect with regard to the construction. This error is characterised in the further process by a rebound in performance phase 1 and thus deviates clearly from the diagonal of the ideal case. The integration of the standards would have constituted a *hard* factor and, in an interactive system, would lead to the process stopping at this point until the target had been met. In the further processing of the correction of defects, the process then goes through LPH 3 and 5 as before and ends with delayed completion after 20 weeks instead of the projected 14th weeks.

Figure 7 shows the problem of lost information which resulted in missing one milestone.

4.4 Reflection on the proposed models

The three approaches used different categories to define the grammar. Actors and media are included in all of them. The framework conditions occur also in all three; while in the first two, the category is named as such, in the third the subjects of the framework is not differentiated by divided in soft and hard. Tools is only used in the first one, topics are part of the second and third as well as the information transfer.

The variety of categories were discussed among the participants of the courses with the conclusion that ideally different foci should be supported by customized visualisation. A model which reflects the planning process should ideally include a broad variety of information but select the parts that are necessary for a certain time span, for a specific actor or to fulfil a milestone. Different visualisation levels and box-in-box scheme were part of the discussion.

Process visualisation models in architecture are impacted from other disciplines with is also reflected in the motivation to apply the models. While quantifiable data can be used to optimize a process or a product, qualitative data needs a representation as well in order to be integrated as relevant criteria.

The models do not only serve to evaluate and optimize, furthermore they can be used to reflect on the process or to function as a type of process-supporting instrument which helps to organize the growing amount of information in the form of data.

5. DISCUSSION

In recent years, architect and planners discussed models of communication in architectural design not only as mean to reflect and visualize processes but also as idea of communication as an integral part of designing. This is connected to a substantial shift in both, the intellectual conception and the practical organization of architectural design. Considering the discussed models, implies the definition that designing as a process that features decisional sequences, involves different actors and is characterized by ongoing interactions.

Before electronical data was introduced to architecture, models for communication processes were used to visualize the relation of different stakeholders to one another and the information flow within a process. The modelling of processes and schematic visualisation helped to understand and clarify how the use of new tools and the varying influential field around the process are changing the decisional sequences of planning and thus, the profession of the planner. Later matrixes were introduced to reflect the interdependencies between different actors. Based on this method, software products were developed which lead to increased capabilities in processing data.

Nowadays, two principal factors are influencing the possible models of communication active within these decisional processes: the increasing complexity of design tasks and the rising influence of economic and ecologic forces. In order to cope with the changing situation, an ongoing development of collaborative and communicative tools is taking place and in this moment. The most relevant and influential one of them is Building Information Modelling that translates the Charles Eames' idea of a field of maximum overlapping of concerns into a digital model.

One target of the new digital tools is to minimize errors in the sense of "wrong decisions". For this scope, they collect and compare as much information about the planned object as possible in order to detect contradictions and incongruences. This function is particularly important from the stage of execution planning on but in order to control costs and time efficiently it is supposed to be integrated in possibly early design stages. Another target of digital tools and their capacity of collecting and processing information goes beyond the avoidance of "wrong decisions": it is to take "intelligent decisions" helping to optimize the design from early decisional stages on. This optimization is made in correspondence to parameters or criteria whose definition can be once again already the result of some kind of data elaboration and evaluation.

Therefore, an ongoing trend of information-based decision-making can be observed. The sharing, communication and negotiation of information, or data, thus become key-factors in design processes. Along this development, a series of relevant questions are arising: how is the complexity of available information handled, how can contradictory information be negotiated and how are suitable criteria to differentiate between relevant and irrelevant information developed? Which influence do the different tools have in this context? Moreover, how will the models of communication within these data-scapes look like?

Against the background of new conditions, architects and planners need an basic understanding of the complex parameters and conscious perspective on them to steer and guide the architectural planning process. The deeper understanding permits to propose new models of communication and to develop adequate criteria for the structuring of design processes that augment the quality of their results.

Acknowledgements:

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REFERENCES

Alberti, L. B. (1485/1988). *De re aedificatoria. On the art of building in ten books.* Translation by Rykwert, J.,Tavernor, R., and Leach, N. Cambridge, Mass: MIT.

Baldwin, A., Austin, S., Hassan, T., & Thorpe, A. (1999). Modelling information flow during the conceptual and schematic stages of building design. *Construction Management & Economics, 17*(2), 155-167.

Baldwin, A. N., Austin, S., Hassan, T., & Thorpe, A. (1998). Planning building design by simulating information flow. *Automation in Construction 8,* 149-163.

Browning, T. R. (2001). Applying the design structure matrix to system decomposition and integration problems: a review and new directions. *IEEE Transactions on Engineering management, 48*(3), 292-306.

Carpo, M. (2011). *The alphabet and the algorithm.* Cambridge, Mass.; London: MIT Press.

Demetrios, E. (2001). *An Eames primer.* New York: Universe Publishing.

Deutsches Institut für, N., & Normenausschuss, I. (1983). *Informationsverarbeitung : Sinnbilder und ihre Anwendung = Information processing: graphical symbols and their application. Beiblatt Beiblatt.* Berlin: Beuth.

Hardin, B., & McCool, D. (2015). *BIM and construction management: proven tools, methods, and workflows:* John Wiley & Sons.

Liau, T., & Wang, W. (2000). *Representations of building design process with iterations.* Paper presented at the Proceedings of the 17th International Symposium on Automation and Robotics in Construction (ISARC), Taiwan.

Mütze-Niewöhner, S. (2017). [Kurzvortrag Modellierung von Arbeitsprozessen].

Petri, C. A. (1962). *Kommunikation mit Automaten.* Bonn.

Scheer, A.-W. (2001). *ARIS - Modellierungsmethoden, Metamodelle, Anwendungen.* Berlin: Springer.

Smithson, A. (1974). *Team 10 Primer.* Cambridge, Mass: MIT.

Stevens, W. P., Myers, G. J., & Constantine, L. L. (1974). Structured design. *IBM Systems Journal, 13*(2), 115-139.

Steward, D. V. (1981). The design structure system: A method for managing the design of complex systems. *IEEE Transactions on Engineering management*(3), 71-74.

Windsperger, A., Windsperger, B., Hummel, M., Ott, C., Teischinger, A., Zukal, M. L., . . . Hirn, U. (2010). *Optimierung der Ressourceneffizienz der Holznutzung - Modellierung der Holzverarbeitungsprozesse zur Darstellung der Auswirkungen von Entwicklungen auf die Leistungscharakteristik.* Retrieved from St. Pölten: https://nachhaltigwirtschaften.at/resources/fdz_pdf/endbericht_1062_holznutzung.pdf

Saja Kosanović, Branislav Folić, Olivera Lekić, Alenka Fikfak: OBLIKOVANJE LABORATORIJEV ZNANJA ZA TRAJNOSTNO GRAJENO OKOLJE NA ZAHODNEM BALKANU

DESIGNING THE KNOWLEDGE LABS FOR SUSTAINABLE BUILT ENVIRONMENT IN THE WESTERN BALKANS

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IZVLEČEK

Članek na podlagi standardnega pristopa k raziskavam in metodologije opisuje več ključnih izobraževalnih in raziskovalnih dejavnosti, ki so potekale v okviru projekta EU Erasmus+ »Creating the Network of Knowledge Labs for Sustainable and Resilient Environments – KLABS« (Mreža laboratorijev znanja za trajnostna in odporna okolja). KLABS je pionirska skupna pobuda 11 visokošolskih ustanov Zahodnega Balkana in Evropske unije, katere cilj je zagotoviti sistemski odziv na strokovne in družbene potrebe, z uvajanjem programov, ki se ukvarjajo s trajnostjo grajenega okolja v kontekstu Zahodnega Balkana. Metodološko smo se pri razvoju trajnostno usmerjenih učnih načrtov osredotočili ne le na vsebine, temveč tudi na izobraževalne in raziskovalne metode, interpretacije holistične trajnosti, povezave med trajnostjo in odpornostjo na podnebne spremembe, vplive kulturno-regionalnih posebnosti in nenazadnje na raven ponujenega znanja, veščin in kompetenc. Članek podaja pregled nekaterih splošnih izzivov v povezavi z vključevanjem trajnosti v izobraževanje v grajenem okolju in pojasni, kako smo se z njimi spopadli v primeru Zahodnega Balkana.

KLJUČNE BESEDE

učni načrt, pedagoške metode in oblike, raziskave, specializacija, trajnost, odpornost .

ABSTRACT

By applying standard research approach and methodology, this paper describes several key educational and research actions undertaken through the Erasmus+ EU project "Creating the Network of Knowledge Labs for Sustainable and Resilient Environments – KLABS". KLABS is a pioneering joint initiative of eleven Western Balkans and European Union higher education institutions, aimed to provide a systemic response to professional and societal needs by introducing programmes dealing with sustainability of the built environment in the Western Balkan context. Methodologically, attention in sustainability-related curricula development was given not only to contents, but as well to educational and research methods, holistic sustainability interpretations, interconnections between sustainability and resilience to climate change, impacts of cultural-regional specificities, finally the level of offered knowledge, skills and competencies. The paper reviews some universal challenges referring to the integration of sustainability into education in the built environment and explains how these were overcome in specific Western Balkans case.

KEY-WORDS

curriculum, pedagogical methods and formats, research, specialisation, sustainability and resilience

1. INTRODUCTION

Sustainability became an important issue in several branches of higher education sector: teaching, research, operations, and community outreach (UNESCO, 2012). Higher education institutions are gradually reorienting their profile towards openness, participation, transparency and justice (Hill et al., 2004), thus paving the way to the dialogue with outside society. Academic programs in sustainability are growing and the pedagogies are renewed with sustainability-related forms of interactive, integrative, systemic and critical learning that can help students to understand and engage in sustainable development (UNESCO, 2012). New generations of university students believe that sustainability skills are going to be important for their future employment and accordingly expect their acquirement during the studies (Bone et al., 2011; Sterling, 2012).

The traces of what today is known as sustainability-related education can be found in architectural curricula from the 1900s. During the first half of the 20th century, the main educational themes were nature, climate control, thermal efficiency, materials, technologies, land use, and vernacular studies. In the 1950s, the common term 'ecology' was introduced (Khan et al., 2013a). By the end of the 1960s, the social component became dominant but its application, according to Omann et al. (2002), was unsuccessful. Already in seventies, there was a return to 'basic needs', so that the environmental and economic issues took over the supremacy in debates until social issues were again taken into account in the late 1990s, this time within the sustainability agenda (Colantonio, 2007). Nowadays, the development of architectural education in Europe is governed by the directives 2005/36/EC and 2013/55/EC. Here, sustainability principles are embedded into several knowledge and skills areas (The European Parliament and the Council of the European Union 2005, 2013).

With the harmonisation of national legislation with European framework, sustainable development became a significant subject in the Western Balkans. At the end of the UN Decade of Education for Sustainable Development (2014), however, university programmes related to sustainability were rare and focused on energy issues; specialized programmes offering comprehensive education on sustainability of the built environment were not registered at this time. In existing university programmes, topics on sustainability were most often delivered to students in the form of isolated classes. Separation from curriculum backbone makes negative impact on knowledge integration and its practical application in professional work and real-life situations. Additionally, many past generations of students didn't get any education in the field of sustainability. The lack of knowledge, manifested as 'malpractice', leaves significant and permanent damage in the built environment and contributes to the increment of environmental, social and economic risks.

Aforementioned facts have shaped the initiative for the development of study programs in the Western Balkans region that are accessible both to graduate students and already employed professionals dealing with the built environment. It is believed that by determining the optimal duration of these programs, by developing and using a comprehensive system of support for their implementation and by looking at a set of priorities and the realistic but also dynamic conditions in the surrounding space as an input in curricula design, it is possible to efficiently compensate the accumulated lack of knowledge from the previous period, and to synchronize further development of the built environment in the Western Balkans with the principles of sustainable development. Such an approach to the problem made the foundation for the European Union project "Creating the Network of Knowledge Labs for Sustainable and Resilient Environments – KLABS" that was implemented in the period between 2015-2018. By applying standard research approach and methodology, this paper describes some of the key aspects of development of higher education in the Western Balkans through the mentioned project.

2. DEVELOPMENT OF KNOWLEDGE LABS

Erasmus+ Capacity Building in Higher Education project "Creating the Network of Knowledge Labs for Sustainable and Resilient Environments – KLABS" is a joint initiative of six Western Balkans and five European higher education institutions (https://klabs.pr.ac.rs/consortium.php), aimed at modernising the higher education in Western Balkan region through the development of innovative knowledge labs for sustainable and resilient environments. Project methodology relied on the definition of realistic problem in considered Western Balkans urban and rural areas that today are faced with significant challenges in terms of sustainable development and adaptation to climate change. During the three-year work, project produced diverse results among which the most important are: study programmes, literature supporting programmes' implementation, institutional centres and labs, and the network that higher education institutions from the Western Balkans have formed to provide long-term cooperation and to foster multiplication of positive effects within the education sector and the society at large.

Different methods and approaches to integration of sustainability principles into higher education have been developed internationally during the last decade, but there is a general concord that, due to the extensiveness, sustainability cannot be thought as a discreet subject. Instead, it should be treated with holistic approach and spread over the whole curriculum (UNESCO, 2005). Rusinko (2010) suggested that integration of discipline-specific sustainability into higher education may refer to existing or to creation of new structures - courses, modules or programmes. On the other hand, Khan et al. (2013b) introduced the three layer model for integrating sustainability issues in designers' curriculum: deepening component, consisted of specialists vertical knowledge courses about certain sustainability aspects (such as environmental, technical, socioeconomic, cultural and political); connecting component, made of one or more horizontally integrated (synthesizing) courses dedicated to theorizing sustainability (i.e. to the integration of the aspects of specialist courses in a meaningful way); and design studios (whole systems thinking platforms) which bring together all components and enable students to reach sustainability in architectural design. By joining these proposals with existing contextual challenges and having regarded that sustainability in higher education in Western Balkans represents a new but relevant field, the decision was made to establish programmes that will be opened both to graduate students and already employed professionals dealing with the built environment.

Developed programmes belong to the second cycle of higher education and offer contemporary, specialised educational themes, introduce IT educational tools and methods (such as virtual mobility, or utilisation of software, and virtual platforms and libraries), connect knowledge gaining with the real-life problems, support interdisciplinary, multidisciplinary and transdisciplinary approaches to education, and promote learner-centred and lifelong education.

Specialised topics encompassed by programmes were systematised in "Reviews of Sustainability and Resilience of the Built Environment for Education, Research and Design" – state-of-the-art thematic collection that contributes to the comprehensive understanding of the two approaches and their interrelations in the built environment by retrospectively investigating their development, addressing current issues, and speculating on possible futures. The main narrow objective of the book series was to inform the development of specialised knowledge, build critical awareness of interdisciplinary and transdisciplinary knowledge issues, and connects university education with the domain of scientific research. The broad aim was to develop the collection of reviews of sustainability and resilience of the built environment that are useful for students, educators, professionals, and researchers, all of whom are dealing with these two important subjects.

Implementation of developed programmes and courses is further supported with the foundation of six institutional units – centres and labs for sustainable and resilient environments. Their main purpose is to enable practical part of teaching and learning, but these units also represent a link between academia and external non-academic sector and as such play role in established Network of Knowledge Labs for Sustainable and Resilient Built Environment in the Balkans – the pioneering regional academic network dealing with sustainability and resilience to climate change in educational, research and professional terms. Every Western Balkans network member has the primary operational area that corresponds to the scope of developed programmes. These are: resource efficiency, and sustainability and resilience assessments; energy efficient and green architecture; fire protection of buildings; energy efficiency of settlements; integrated architectural and urban design; and environmental infrastructure management.

3. SPATIAL-CULTURAL RELEVANCE AND THE RESEARCH COMPONENT

Universally applicable formula that would ensure success in sustainability-related pedagogical practice doesn't exist. The competencies are most successfully acquired when students' work is related to a specific context (de Haan, 2010), and knowledge application most effective when students respond to peculiarities of a given task (Kosanović at al., 2014). Differences among the countries in terms of environmental systems, ecosystems, climatic and geographical conditions, ratio between predominant rural or urban spatial contexts, political, economic, social, cultural, institutional, technological, environmental, legal/ regulatory and educational situations and demands, etc. clearly indicate that the knowledge needs to be used for solving local/regional problems. Same as there is no single sustainable urban development strategy to suit all societies (Zavadskas et al., 2004), there neither exists such an education. As diversity represents the best instrument for addressing the sustainability (Borden, 2009), the institutions must develop (and revise) their own way of dealing.

The goal to address local/regional needs and sustainability challenges and to preserve cultural identity of Western Balkans was reached following the proposal to keep theoretical courses at general level and to tackle specific situations, problems and fields of actions through practical problem solving (Khan et al., 2013). In that function, established Western Balkans knowledge labs feature pedagogical formats such as design studio, workshops or professional practice.

Multiple methods responding to general and sustainability-specific teaching and learning are integrated in design studio. These include project-based learning, designing exercises, seminars and theoretical lectures, case study analyses, identification of best practices, field trips, team work, debates, presentations, etc. Interdisciplinary, value-driven, learner-centred, praxis-oriented and problem-solving approach in design studio allows for the development of holistic, critical thinking and professional skills applicable in encompassed context of the Western Balkans. Besides being responsive to the specificities of a socio-spatial frame, pedagogical studio is seen as a suitable ground for connecting research with design, and further, for addressing different sustainability pillars.

Practical work in the form of design (or design-build) workshop is another suitable method of teaching and learning about sustainability. Characterized by limited duration and intensive work on specific problem, the workshop seems to be the ideal for concentrating on a narrow scope of sustainability interventions (Fikfak, 2012). During the first school year of programmes' implementation – 2017/2018 – Western Balkans universities have organised several workshops dealing with narrow spatial frames and precisely defined sustainability-related problems.

The syllabi of professional practice in Western Balkans programmes were designed according to the general constraint that is the lack of systemic approach to sustainability. The course professional practice, therefore, rather follows a bottom-up approach: students who are referred to an external organization, and a specific position within it, apply previously acquired knowledge in real-life circumstances, conduct analyses and submit their own proposal for improving the scope/methods of organisation's work or functioning in the domain of undertaken sustainability-related specialisation.

Besides being context-specific, the terms 'sustainability' and 'sustainable development' are also evolving and transformative (UNESCO, 2005). The complexity of multi-layered notion is growing together with new scientific findings, technological innovation and societal changes, and sustainability education needs to be enough flexible to accommodate emerged shifts. A rapidly changing world raises the risk of educating students for a future that no longer exists (Sterling, 2013). To prevent the risk from obsolete knowledge, Western Balkans knowledge labs feature deep integration of education with research and up-to-date circumstances.

In "conditions characterised by change, uncertainty, risk and complexity"

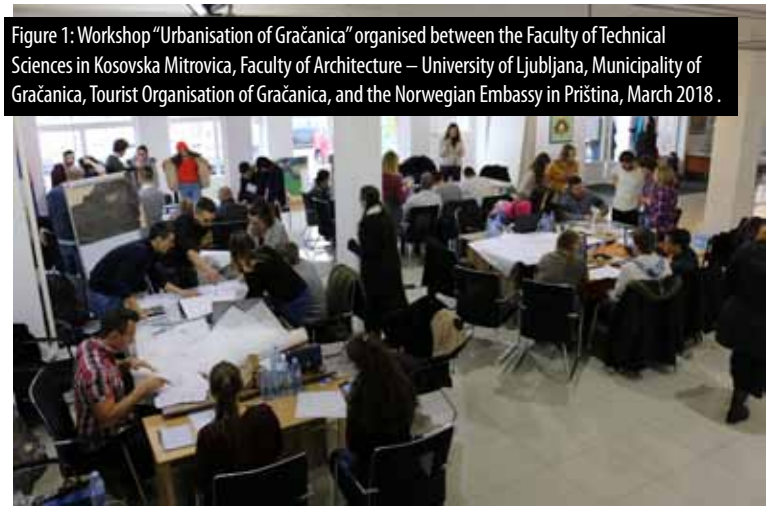


Figure 1: Workshop "Urbanisation of Gračanica" organised between the Faculty of Technical Sciences in Kosovska Mitrovica, Faculty of Architecture – University of Ljubljana, Municipality of Gračanica, Tourist Organisation of Gračanica, and the Norwegian Embassy in Priština, March 2018 .

Figure 2: Presentation of results from the workshop "Bebića Luka – Eco--village for a self-sufficient community" organised between the University of Belgrade – Faculty of Architecture and the IUAV Venice, July 2018 .

(Sterling, 2012) the design of the built environment must be accompanied by research that adequately addresses socio-spatial dimension and encompassed issues of importance and urgency. The main function of research in education related to the built environment is to allow generation of design responses to determined sustainability demands (Folić et al., 2014). To bring closer research to the design in any of the three forms: design of research, research as design, or research for design, means to make transition from the architecture of problem solving to the architecture of intelligent discussion (Salomon, 2011). Research prevents from negative oversimplification of the term 'sustainability' resulting with "a set of aesthetic and cultural clichés based around green roofs, wind turbines and open-toed sandal--wearing vegetarians" (Borden, 2009, 34). In Western Balkans knowledge labs, research represents one of the main features of innovative character of curricula and a precondition for effective work of professionals specialised in sustainable and resilient environment. Programmes introduce separate courses dealing with the research methodology, support the execution of individual research work and application of complete scientific apparatus, and promote the application of research results in design.

4. SUSTAINABILITY PILLARS

Imperative for a balance between economic growth, environmental quality, and social well-being (Khan et al., 2013b), additionally compounded by dynamism and permanent transformation, represents the challenge in education. Complex demand requiring organised and all-inclusive thinking is difficult for many and, due to deficiency in interdisciplinary knowledge and experience, a potential source of frustration and the lack of motivation (Merck et al., 2015). Any simplified and fragmented response, on the other hand, potentially leads to the dissolution of the concept, so that the sustainability becomes "what you make of it" (Khan et al., 2013b, 175), which in relation to the built environment most often implies the environmental (technical) sustainability.

4.1 Environmental Sustainability

Supported by determined physical referents, environmental sustainability appears as the least abstract (Kosanović et al., 2014), and the most often applied concept in European educational space (Kosanović et al., 2013). To many, 'sustainable' persists as a synonym to the attributes like 'environmentally-friendly', 'eco-friendly' or 'green', as seen by reviewing published literature or by comparing syllabi with titles of the courses, i.e. the programmes with their titles. Even though the narrowed approach offers limiting results, which may put its justification into question, there still exist challenging issues concerning environmental sustainability itself.

Two major challenges set in front of students with regard of environmental sustainability of the built environment are measure and balance. The failure to suitably respond to these challenges is reflected through the application of as many green interventions as possible, by simple thinking that 'more is greener' (which consequently leads to the loss in overall quality), or through overemphasising just one technical segment on account of the others. To determine 'how green is green enough', KLABS programmes introduced a variety of methods for the assessment of environmental performance, based on quantification and life cycle considerations, and available in the form of assessment tools or computer modelling and simulation software. The application of either tools or software offers the possibility to compare different design options and assists in making the right choice. The assessment allows for observation, reflection on the consequences of design decisions, and making the informed judgments about the work; in this way, students can learn much more about environmental impact of the built environment than by simply discussing the issues (Erdel-Jan et al., 2001). By introducing quantification-based methods for sustainability assessment into the education formula, future professionals learn how to conduct an experiment, which in turn unites research and design. Finally, the incorporation of software skills with sustainability education is of paramount importance to graduates (Bone et al., 2011) in terms of their future employment facilitation.

Figure 3: Teachers' training workshop at the Laboratory for Sustainability and Resilience of the Built Environment, Faculty of Technical Sciences, Kosovska Mitrovica, April 2018.

To overcome constraint regarding the educators' skills in the field of environmental assessments, KLABS organised multiple teachers' training sessions. Furthermore, all Western Balkans universities included in KLABS project have strengthened their capacities by establishing new institutional units – centres and labs – for experimental part of teaching and learning.

4.2 Social Sustainability

In the process of developing the curricula for sustainable built environment in the Western Balkans, the need to clarify notion of social sustainability was raised as a prerequisite for its incorporation into educational programs. Answering this question, due to multiple interpretations and the lack of consensus, opened a new research topic that ultimately resulted in the state-of-the-art research publication *Sustainability and resilience: Socio-spatial perspective* (Fikfak et al., 2018) representing the introductory part of thematic KLABS book series.

Designers produce materialised space intended for people who then transmute it into a social environment. Populated built entities are at the same time social communities. The education on social sustainability, as understood by KLABS, should relate to acquisition of knowledge, skills, and competencies necessary to carry out those spatial interventions which contribute to social identity, responsibility, justice, inclusion, health, well-being and happiness, diversity, evolution and growth, security, stability, activity, networking, etc., i.e. to the quality of a community, finally, the quality of life. In engineering branches, the scope of interventions on social sustainability may be understood as a spatial response to demand for the development and growth of sustainable communities - places where people want to live and work, now and in the future, because they meet the diverse needs, are sensitive to environment, safe, inclusive, well planned, built and run, contribute to a high quality of life, and offer equality of opportunity and good services for all (ODPM, 2006). To successfully integrate social sustainability concepts (Edvardsson Björnberg et al., 2015) into design and design-related research, there is a need to enrich the studio social milieu with external groups. For students, this means that the education on social sustainability implies the acquisition of both profession-specific and general competencies, and, for educators, that an optimal methodology of fostering the skills that are tacit rather than formal (Johnston, 2015) needs to be shaped. According to Gould at al. (2006), social sustainability will be best tackled upon the creation of socially sustainable learning environment where personal will transform to communal, and individual to collaborative.

There is a variety of interpretations of general sustainability competencies in the literature. In fact, universal attitude about what general competencies in sustainability should precisely be doesn't seem to be adopted yet (Murga-Menoyo, 2014). De Haan (2010) proposed *Gestaltungskompetenz* – universally applicable model of competencies for education for sustainable development in formal sector, describing them as a specific capacity to act and solve problems. Wiek et al. (2011) and, later, UNESCO (2012) suggested somewhat different lists of key (generic) sustainability competences. In all mentioned proposals, there exist multiple common issues, and one of these, considered as especially significant, is the empathy. Adomßent et al. (2013) emphasised the 'We' term and noted that the development of empathy and its relative values as well as a widened perception of time and space in the consciousness are central within the concept of education for sustainable development. In de Haan's model, the empathy is put into relation with disadvantaged; for Wiek et al., the limits of cooperation and the empathy represent a part of interpersonal sustainability competence; in UNESCO list of generic sustainability competencies, the importance is given to the ability to feel empathy, sympathy and solidarity.

Indeed, the task of higher education schools is not just to produce sustainability-conscious designers, but also the citizens. In this respect, Johnston (2015) argues that by empathy students engage as citizens actively pursuing positive social visions through design, and that the empathy is essential attribute which allows the designers to place themselves in the role of others and to understand the world as if they are that person. By involving community, practitioners, decision-makers, enterprise sector,

Figure 4: KLABS word cloud designed for Venice Biennale, July 2016.

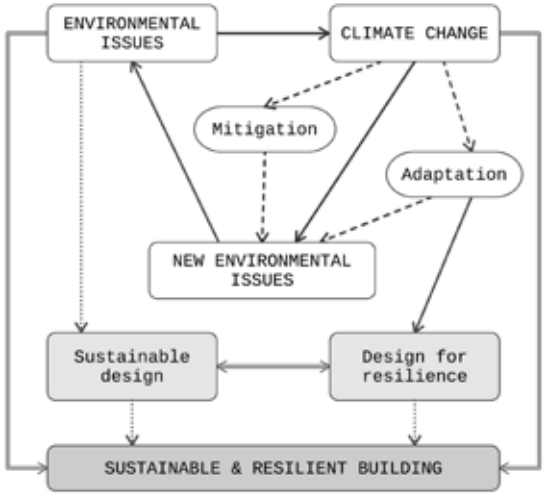
teachers specialized in other disciplines, etc. into the studio scene, students will develop general sustainability competencies and learn how to tackle social and economic sustainability challenges, while at the same time sustainable design's emphasis on logical principles and communal values will be embraced (Gould et al., 2006). In difficult and conflictual periods of this dynamic participative process, the empathy as perspective of the other can both be understood and clarified, which in turn promotes recognition and understanding (Johnston, 2015).

Guergachi et al. (2010) believe that the empathy may also assist in the dilemma of 'economy versus environment' and that the environmental and economic sustainability of community as a whole depends on the interrelations among its individual members; the more empathy in these micro-relations, the more sustainable the community will be.

4.3 Economic Sustainability

The integration of economic sustainability into curricula of Western Balkans knowledge labs was proved as the most challenging, due to overall economic constraints. Nevertheless, it was recognised that students need to understand that a successful project, besides being environmentally and socially sustainable, should also be competitive in the marketplace, and learn how both direct (such as lower costs) and indirect economic benefits (such as promotion of better health, comfort, well-being and productivity) (EERE) can be achieved through design. To reach economic sustainability also means to make the shift from cost strategy to value strategy which has more potential to last over time (Williams, 2007). Architectural-urban renewal, economic performance of buildings through life cycle, studies of potential consumers of sustainable architectural products and of production-consumption patterns, decrement of pollution and waste, utilization of renewable resources, calculation of the pay-off period, etc., are all important economic issues tackled by developed curricula.

Figure 5: Causal relations between environmental issues, climate change, and design responses (Kosanović, Fikfak and Folić, 2018a).



In developed economies, professionals equipped with sustainability-related knowledge, skills and competencies may pursue the employment within the 'green jobs' sector (Murga-Menoyo, 2014), where the final goal would be the whole profession becoming 'green'. In Western Balkans context, the role of professionals specialised in sustainability of the built environment is pioneering. While trained professionals are in position to act directly, the educators who teach sustainability perform the 'green job' in a more indirect way, but nonetheless make significant contribution to sustainable development. This role must be well understood and accepted.

5. CONNECTING SUSTAINABILITY AND RESILIENCE

Sustainability achievement is recognized as fundamental condition for progress of society at all levels. However, the development process and its main credo by which the needs of present generation must be met in a way that will not compromise the ability of future generations to meet their own needs, today is compounded by manifestation of consequences of past unsustainable actions of society - the climate change. The increased pressure on environment thus doesn't origin just from population, their activities or technology, but as well from the nature. New facts on climate change and its past occurred and future possible catastrophic negative implications in social environments call upon the need to develop adaptive capacity. Therefore, interrelated concepts of sustainability and adaptation to climate change, i.e. the resilience, need to be studied concurrently.

In Western Balkans knowledge labs, the interrelations between sustainability and resilience to climate change were first researched and presented in the book series *Reviews of Sustainability and Resilience of the Built Environment for Education, Research and Design* (Kosanović et. al., 2018b). The elaborated topics were subsequently embodied into Western Balkans study programmes. Innovative knowledge brought by KLABS was made availa-

ble to world-wide educational, research and professional communities by using open access format of published books.

6. DISCUSSION AND CONCLUSIONS

The main subject of study in conventional architectural education is built environment. The main subject of study in future-responsive architectural education should be environmentally, socially and economically sustainable and healthy built environment. The education on these attributes must become the essential part of training, woven into theory, history, technology, design, building and research. Sustainability, because the future depends on its achieving, cannot be treated anymore as an individual expression of the personal understanding (Johnston, 2015), or a subjective taste (Gould et al., 2006), but a fundamental quality (Kosanović et al., 2014).

Erasmus+ project "Creating the Network of Knowledge Labs for Sustainable and Resilient Environments – KLABS" took a brave step to modernise higher education in Western Balkans by developing a pioneering educational platform that applies holistic approach to sustainability and integrates it with the resilience. Nevertheless, every Western Balkans knowledge lab has its defined operational field, while they together form the network offering a possibility for knowledge exchange. KLABS promotes the diversity; similarly, sustainability looks for a variety of right solutions. The search for establishing the interrelationships between local and global scale, present and future (Sterling, 2012), can only simulate creative development.

Sustainability-oriented curriculum is a result of organised, systemic approach and whole-institution engagement, and a vast responsibility is placed in front of educators. Teachers play a key role in the development of learning environment which is, according to de Haan (2010), a decisive factor for the construction of knowledge. Success is conditioned with the appeal to educators to "come out of their disciplinary silos", as Khan et al. (2013b) named required reorientation towards interdisciplinary, multidisciplinary or system thinking. Educator is the first and the main responsible to communicate sustainability in a way that will raise students' interest and gain their seriousness, build commitment and enlarge motivation. By enhancing motivation instead of needs, the possibilities for changes towards sustainability will be better shown (Merck et al., 2015). To that end, the use of formalistic pedagogical expressions should be decreased, and new accent placed on informal debates, discussions, reasoned dialogue, interactive conversations, open communication, role-play and other forms and methods allowing for creation of a learning environment that secures better understanding of sustainability and the obtainment of general sustainability competencies. Tutor's 'whole person' approach should ideally lead to *gestalt* experience (Trowler, 2001).

REFERENCES

Adomßent, M., Hoffmann, T. (2013). *The Concept of Competencies in the Context of Education for Sustainable Development (ESD).* Concept Paper. ESD Expert Network.-Accessed on 9 December 2018: https://pdfs.semanticscholar.org/9ec3/118c915b2b11fd1017a1691398346f46af45.pdf

Bone, E., Agombar, J. (2011). *First-Year Attitudes Towards, And Skills In, Sustainable Development*. Heslington, York: The Higher Education Academy. Accessed on 12 May 2016: http://efsandquality.glos.ac.uk/toolkit/NUS_HEA_2011.pdf

Borden, I. (2009). Sustainability and Architectural Design, *Palette 2009 - the Grand Challenge of Sustainable Cities*, Summer 2009, pp. 32-34. Accessed on 18 April 2018: https://studylib.net/doc/12611043/sustainability-and-architectural-design-perspective-iain-...

Colantonio, A. (2007). Social Sustainability: An Exploratory Analysis of its Definition, Assessment Methods, Metrics and Tools. In: *Measuring Social Sustainability: Best Practice from Urban Renewal in the EU.* 2007/01: EIBURS Working Paper Series. Oxford: Oxford Brookes University. Accessed on 15 October 2015: http://oisd.brookes.ac.uk/sustainable_communities/resources/SocialSustainability_Metrics_and_Tools.pdf

De Haan, G. (2010). The Development of ESD-related Competencies in Supportive Institutional Frameworks, *International Review of Educ*ation, 56(2), 315–328. Accessed on 15 October 2015: https://doi.org/10.1007/s11159-010-9157-9

Edvardsson Björnberg, K., Skogh, I-B., Strömberg, E. (2015). Integrating Social Sustainability in Engineering Education at the KTH Royal Institute of Technology. *International Journal of Sustainability in Higher Education*, 16(5), 639–649. Accessed on 10 October 2017: http://kth.diva-portal.org/smash/record.jsf?pid=diva2%3A858007&dswid=-9328

Erdel-Jan, L., Frame, I. (2001). Theory and Practice of Learning and Teaching: Environmental Issues. In: *Proceeding of the Architectural Exchange 2001 Conference*, 11-12 September, CEBE, Welsh School of Architecture, Cardiff University, pp. 1-10. Accessed on 25 April 2018: https://www.worldcat.org/title/aee2001-architectural-education-exchange/oclc/53457461&referer=brief_results

Fikfak, A. (2012). Workshops as a Form of Empirical Learning: Researching the Term "Sustainable Development". In: Gabrijelčič, P., Fikfak, A. (Eds.). *The Creativity Game: Urban Design Workshops, Urban Architectural Workshops and Spatial Planning Workshops,* pp. 41-47. Ljubljana: Faculty of Architecture.

Fikfak, A., Kosanović, S., Konjar, M., Anguillari, E. (eds.) (2018). *Sustainability and resilience: socio-spatial perspective*, (Reviews of sustainability and resilience of the built environment for education, research and design). Delft: TU Delft Open. Accessed on 10 November 2018: https://books.bk.tudelft.nl/index.php/press/catalog/view/isbn.9789463660303/726/608-1.

Folić, B., Kosanović, S., Glažar, T. (2014). Contemporary Debates on the Education of Architects - Selected Examples, *Architecture Research* 2014/1. pp. 5-14. Accessed on 25 April 2017: http://www.fa.uni-lj.si/filelib/9_ar/2014-1/ar2014-1-email.pdf

Gould, K., Hosey, L. (2006). *Ecology and Design: Ecological Literacy in Architecture Education*. Report and Proposal. The AIA Committee on the Environment. Accessed on 10 September 2018: https://network.aia.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=09eb4e0a-51a1-41dc-96ac-afa57907a4ae&forceDialog=0

Guergachi, A., Ngenyama, O., Magness, V., Hakim, J. (2010). Empathy: A Unifying Approach to Address the Dilemma of 'Environment versus Economy'. In: Swayne, D.A., Yang, W., Voinov, A. A., Rizzoli, A., Filatova, T. (Eds.). *2010 International Congress on Environmental Modelling and Software Modelling for Environment's Sake, Fifth Biennial Meeting, Ottawa, Canada.* International Environmental Modelling and Software Society (iEMSs). International Congress on Environmental Modelling and Software July 5-8 2010, Ottawa, Ontario, Canada. Accessed on 1 October 2015: http://former.iemss.org/sites/iemss2010//proceedings.html

Hill, S.B., Wilson, S., Watson, K. (2004). Learning Ecology – A New Approach to Learning and Transforming Ecological Consciousness. In: O'Sullivan, E., Taylor, M. (Eds.) *Learning Towards Ecological Consciousness:*

Selected Transformative Practices, pp. 47-64. New York: Palgrave Macmillan. https://doi.org/10.1007/978-1-349-73178-7_4

Johnston, A. (2015). From Consumer to Citizen: Engaging Students with Participative Methods in Design. In: Leal Filho, W., Brandli, L., Kuznetsova, O., Finisterra do Paço, A.M. (Eds.). *Integrative Approaches to Sustainable Development at University Level - Making the Links,* pp.245-258. Springer. https://doi.org/10.1007/978-3-319-10690-8_17

Khan, A., Hornbaek, K. (2013a). Sustainability through Computation. In: Zander, J., Mosterman, J.P. (Eds.). *Computation for Humanity: Information Technology to Advance Society,* pp. 35-68. Boca Raton: CRC Press. https://www.taylorfrancis.com/books/9781439883297/chapters/10.1201/9781315216751-9

Khan, Z.A., Vandevyvere, H., Allacher, K. (2013b). Design for the Ecological Age: Rethinking the Role of Sustainability in Architectural Education, *Journal of Architectural Education,* 67(2), 175-185. https://doi.org/10.1080/10464883.2013.817155

Kosanović, S., Fikfak, A., Folić, B. (2018a). Sustainability and resilience: (In)consistencies in two design realms. In Kosanović, S., Tillmann, K., Konstantinou, T., Radivojević, A., Hildebrand, L. (Eds.). *Sustainable and resilient building design: Approaches, methods and tools*, pp. 67-81. Accessed on 10 November 2018: https://books.bk.tudelft.nl/index.php/press/catalog/view/isbn.9789463660327/730/612-2

Kosanović, S., Fikfak, A., Novaković, N., Klein, T. (eds.) (2018b). Reviews of Sustainability and Resilience of the Built Environment for Education, Research and Design. Book series (1-6). Delft: TU Delft Open. Accessed on 10 November 2018: https://books.bk.tudelft.nl/index.php/press/catalog/results

Kosanović, S., Folić, B. (2013). Green Themes in Architectural Curriculum: Scope and Content, *The Creativity Game: Theory and Practice of Spatial Planning*, 1/2013, pp. 60-67. Accessed on 20 October 2015: https://www.iu-cg.org/stevilka.php?vol=1&lang=si

Kosanović, S., Folić, B. (2014). Reviewing the Sustainability in Students' Design Work. In: Fikfak, A. (Ed.). *Book of proceedings of the scientific meeting on the topic of urbanism "Smart Urbanism - Teaching Sustainability",* Ljubljana, Slovenia, 19-21 June 2014, pp. 117-124. Ljubljana: Faculty of Architecture.

Merck, J., Beermann, M. (2015). The Relevance of Transdisciplinary Teaching and Learning for the Successful Integration of Sustainability Issues into Higher Education. In: Leal Filho, W., Brandli, L., Kuznetsova, O., Finisterra do Paco, A.M. (Eds.). *Integrative approaches to Sustainable Development at University Level - Making the Links*. Springer. pp. 19-26. https://doi.org/10.1007/978-3-319-10690-8_2

Murga-Menoyo, M.A. (2014). Learning for a Sustainable Economy: Teaching of Green Competencies in the University. *Sustainability,* 6, 2974-2992. doi:10.3390/su6052974

Office of the Deputy Prime Minister (ODPM) (2006) *UK Presidency: EU Ministerial Informal on Sustainable Communities*. European Evidence Review papers. London: Office of the Deputy Prime Minister.

Omann I., Spangenberg J.H. (2002). Assessing Social Sustainability. The Social Dimension of Sustainability in a Socio-Economic Scenario [Online]. Paper presented at the 7th Biennial Conference of the International Society for Ecological Economics, 6-9 March 2002, Sousse, Tunisia, pp. 1-20. Accessed on 14 October 2017: https://pdfs.semanticscholar.org/01bb/c45e359f0be5503c864b73bbd0cc374eac23.pdf

Rusinko, C. J. (2010). Integrating Sustainability in Higher Education: A Generic Matrix. *International Journal of Sustainability in Higher Education,* 11(3), 250-259. https://doi.org/10.1108/14676371011058541

Salomon, D. (2011). Experimental Cultures: On the End of Design Thesis and the Rise of the Research Studio. *Journal of Architectural Education*, 65(1), 33-44. https://doi.org/10.1111/j.1531-314X.2011.01172.x

Sterling, S. (2012). *The Future Fit Framework – An Introductory Guide to Teaching and Learning for Sustainability in HE*. York: The Higher Education Academy. Accessed on 14 November 2017: https://www.heacademy.ac.uk/system/files/future_fit_270412_1435.pdf

Sterling, S. (2013). The Sustainable University - Challenge and Response. In: Sterling, S., Maxey, L., Luna, H. (Eds.) *The Sustainable University - Progress and Prospectus,* pp. 17-50. Abingdon: Routledge.

The European Parliament and the Council of the European Union (2005) *Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications* [Online] EUR-Lex: Access to European Union Law. Accessed on 11 October 2015: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02005L0036-20140117

The European Parliament and the Council of the European Union (2013) *Directive 2013/55/EC amending Directive 2005/36/EC on the recognition of professional qualifications and Regulation (EU) No 1024/2012 on administrative cooperation through the Internal Market Information System ('the IMI Regulation')* [Online] EUR-Lex: Access to European Union Law. Accessed on October 2015: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013L0055

Trowler, P. (2001). Captured by the Discourse? The Socially Constitutive Power of New Higher Education Discourse in the UK. *Organization*, 8(2), 183-201. https://doi.org/10.1177/1350508401082005

United Nations Educational, Scientific and Cultural Organization (UNESCO) (2005) *United Nations Decade of Education for Sustainable Development 2005-2014: Draft International Implementation Scheme*. Accessed on 20 October 2017: http://unesdoc.unesco.org/images/0013/001399/139937e.pdf

United Nations Educational, Scientific and Cultural Organization (UNESCO) (2012) *Shaping the Education of Tomorrow: 2012 Report on the UN Decade of Education for Sustainable Development, Abridged.* Accessed on 12 October 2017: http://unesdoc.unesco.org/images/0021/002166/216606e.pdf

US Department of Energy, Energy Efficiency and Renewable Energy (EERE) *The Economic Benefits of Sustainable Design* [Online]. Accessed on 11 November 2015: https://www1.eere.energy.gov/femp/pdfs/buscase_section2.pdf

Wiek, A., Withycombe, L., Redman, L.C. (2011). Key Competences in Sustainability: A Reference Framework for Academic Program Development. *Sustain Sci,* 6, 203-218. https://doi.org/10.1007/s11625-011-0132-6

Williams, D.E. (2007). *Sustainable Design: Ecology, Architecture and Planning*. Hoboken: John Wiley & Sons, Inc.

Zavadskas, E.K., Kaklauskas, A., Vainiunas, P., Šaparauskas, J. (2004). A Model of Sustainable Urban Development Formation, *International Journal of Strategic Property Management*, 8(4), 219-229. https://www.tandfonline.com/doi/abs/10.1080/1648715X.2004.9637519

Martina Zbašnik-Senegačnik: VPLIVI NOTRANJEGA PROSTORA NA OTROKE V ŠOLAH IN VRTCIH

THE IMPACTS OF INTERIOR SPACE ON CHILDREN IN SCHOOLS AND KINDERGARTENS

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IZVLEČEK

Študije in izkušnje kažejo, da je prostor pomemben dejavnik pri vzgoji in izobraževanju otrok. Stroka mu pripisuje vlogo tretjega učitelja, kar je pomembna in odgovorna funkcija. Prispevek izpostavlja pomen grajenega izobraževalnega prostora in se osredotoča na fizikalne parametre, ki zagotavljajo bivalno ugodje – toplotno ugodje, svetlobno okolje, akustično ugodje in kakovost zraka v notranjih prostorih. Obravnavani parametri ugodja v zadnjih desetletjih pridobivajo na pomenu na podlagi številnih študij, ki dokazujejo njihovo pomembnost in predvsem izpostavljajo negativne vplive na zdravje in počutje otrok ter njihovo učno uspešnost in napredovanje. Na dolgi izobraževalni poti od vrtca do fakultete preživi otrok v izobraževalnih ustanovah veliko časa, zato negativni potencial grajenega okolja ne sme biti zanemarjen.

Arhitekt kot oblikovalec prostora vpliva na kakovost grajenega okolja že v najzgodnejši fazi načrtovanja – funkcionalna zasnova oblike stavbe mora omogočati osvetlitev z dnevno svetlobo in hkrati preprečevati možnost pregrevanja, nuditi akustično ugodje, izbrana gradiva ovoja stavbe in opreme ne smejo sproščati škodljivih substanc, vgrajeni tehnološki sistemi pa morajo zagotavljati ustrezno uravnavanje temperature in stalne izmenjave zraka.

KLJUČNE BESEDE

šole, negativni vplivi okolja na zdravje otrok, toplotno ugodje, svetlobno ugodje, akustično ugodje, kakovost notranjega zraka

ABSTRACT

Studies, as well as experience, show that learning space plays an important part in children's education. The experts believe it has the role of the third teacher, which is an important and responsible role. This article stresses the importance of constructed learning space and focuses on physical parameters providing residential comfort – heat comfort, light comfort, acoustic comfort and the air quality of internal spaces. The assessed parameters of comfort have been gaining importance in the last ten years based on numerous studies proving their significance and particularly revealing the negative impact on children's health and wellbeing, but also their school success and progress. On the long path of education from kindergarten to university, a child spends a significant amount of time in school, therefore the negative potential of constructed environment should not be overlooked.

The architect is the designer of the space and therefore has an influence on the quality of the constructed environment in the early stages of planning – the functional design of the building structure has to provide daylight and at the same time prevent the space from overheating, it has to provide acoustic comfort, the selected materials of the building's envelope and furniture must not emit harmful substances, and the inbuilt technological systems have to provide an adequate temperature regulating and continuous air exchange.

KEY-WORDS

schools, negative environmental impacts on children's health, thermal comfort, light comfort, acoustic comfort, interior air quality

1. UVOD

Kakovostna je tista šola, v katero otroci radi zahajajo, se v njej veliko naučijo in nanjo ohranijo lepe spomine. Tega ne omogočajo zgolj dobri učitelji z veliko znanja, s pravim odnosom do otrok in vključevanjem ustreznih pedagoških pristopov. Velik pomen ima tudi grajeno okolje, saj učni prostor lahko spodbuja ali pa ovira poučevanje in učenje spretnosti. Stavba šole mora nuditi zdravo in prijetno okolje za vsestransko psihično in fizično rast otroka, tudi kot individuuma s svojskimi potrebami. Pomembno je, da omogoča poučevanje v skladu s pedagoškimi doktrinami, izpolnjuje psihološke potrebe, ob tem pa upošteva fiziološke procese, ki se dogajajo v organizmu in so pogojevani z grajenim okoljem. Menezes *et al* ugotavljajo (2012), da je v Evropi v vrtcih, osnovnih in srednjih šolah 64 milijonov otrok in mladine ter 4,5 milijona učiteljev. Na poti do akademskih ciljev bo otrok kar 30 % svojega časa preživel v razredu, zato mora biti učno okolje udobno, živahno in zdravo (Golshan, 2018).

Arhitekti in oblikovalci nosijo pri zasnovi šol veliko odgovornost, saj daje kakovostno učno okolje priložnost za izboljšanje izobraževalnih rezultatov otrok (Yang *et al.* 2018). Dobro oblikovano in vzdrževano izobraževalno okolje podpira otrokove aktivnosti, prav tako pa mora spodbujati tudi kvalitetno učenje (Mohidin *et al.* 2015). Arhitekturno dobro oblikovana šola doprinese tudi k višjemu nivoju sodelovanja med otroki in učitelji ter omogoča večjo uspešnost v učnih dejavnostih.

Izsledki novih raziskav o izobraževalnem okolju, vključevanje novih tehnologij in upoštevanje otrokovih potreb so oblikovalcem v pomoč pri kreiranju inovativnega, uporabnega in učinkovitega izobraževalnega okolja, ki bo otroku pomagal pri razvoju, prilagajanju in učenju. Leinonen in Venninen (2012) trdita, da je grajeno okolje pomembno že v najzgodnejših obdobjih, zato poudarjata, da mora biti prostor oblikovan tako, da stimulira:

- **Gibanje**: gibanje je temelj za otrokov intelektualni razvoj – otrok mora imeti čim več možnosti mišičnega gibanja v notranjem prostoru in zunaj stavbe
- **Udobje**: ko se otrok počuti dobro v fizičnem okolju, začne raziskovati materiale in dogodke okrog sebe. Elemente udobja se lahko občuti v variacijah arhitekturnih elementov, kot so obseg, višina etaže, teža stropa, osvetljenost, različnost tekstur površin in prisotnost mehkih predmetov, kot so preproge, zofe in blazine.
- **Kompetentost**: podporno okolje pomaga otrokom izpolniti njihove lastne potrebe; spodbuja enostavno opravljanje nalog, upravljanje z lastnimi igračami in nadzor nad lastnim gibanjem od prostora do prostora. Prostor mora biti oblikovan tako, da zadovolji potrebe različnih skupin otrok – miren prostor z zatemnjenimi lučmi za spanje in počitek, svetel in vesel prostor za spodbujanje branja ali drugih aktivnosti.
- **Nadzor**: otrok mora imeti možnost izvajanja nadzora nad trenutnim osebnim okoljem na ta način, da ima lahko nekaj zasebnosti, da predvideva in da pravilno orientira svoje telo v prostoru. Nekatere oblikovalske rešitve pomagajo vzdrževati ravnotežje med nadzorom otroka v prostoru in njegovo potrebo po zasebnosti. Prostor mora biti oblikovan tako, da podpira predvidljivost prihodnjih dogodkov, kar vključuje možnost razgleda in nadzora nad celotnim prostorom (npr. povišano mesto).

Po kognitivni teoriji, ki jo je razvil Jean Piaget (Piaget, Inhelder, 2013), otrok gradi svoje znanje na praktičnih izkušnjah, ki jih pridobiva v določeni starosti, zato mora učno okolje spodbujati raziskovanje. Piagetova teorija vključuje v arhitekturno oblikovanje arhitekturne elemente, ki so sredstvo za spodbujanje razvoja znanja s pomočjo praktičnih izkušenj. Okolje, ki izpolnjuje otrokove potrebe v zgodnji dobi, mora vsebovati (Mohidin *et al.* 2015):

- senzitivne in senzualne teksture, zvok, svetlobo in barve – vse, kar izziva in navdihuje otroka v taki meri, da zagotovi miren in prijeten prostor za umik in varnost, pa tudi več odprtih socialnih prostorov za skupinske aktivnosti, in
- vznemirljiv zunanji prostor za svobodno gibanje in fizične drznosti.

2. BIVALNO UGODJE V PROSTORU

Grajeno okolje mora poleg varnosti najprej zagotavljati bivalno ugodje uporabnikom. Bivalno ugodje opredelimo kot prijetno počutje človeka v prostoru. Odvisno je od fizikalnih pogojev – toplote, svetlobe, relativne vlažnosti zraka ter kvalitete zraka. Na bivalno ugodje dodatno vplivajo tudi akustični pogoji. Načeloma človek ugodnih razmer posebej ne občuti, zato pa je precej bolj občutljiv na neugodne. V prostorih šol in vrtcev morajo biti ustvarjene razmere, ki nudijo optimalne pogoje za delo, učenje in igro.

Parametri, ki sestavljajo bivalno ugodje – toplotno ugodje, svetlobno ugodje, akustično ugodje in kakovost zraka, imajo zelo velik vpliv na počutje, uspešnost in tudi zdravje otrok, česar se večinoma še vedno premalo zavedamo.

3. TOPLOTNO UGODJE

Pojem toplotno ugodje se nanaša na temperaturo, ki jo občutijo uporabniki prostora. Občutena temperatura je rezultat ravnovesja toplotnih tokov (konvekcija in sevanje) med tremi termodinamičnimi sistemi – to so notranji zrak, površine obodnih konstrukcij prostora in notranjih elementov ter uporabnik prostora. Na toplotno ugodje vplivajo štiri fizikalne veličine – temperatura zraka, hitrost zraka, srednja sevalna temperatura in vlažnost zraka – ter dve subjektivni spremenljivki – izolativnost oblačil in nivo fizične aktivnosti (Golshan, 2018). Toplotno ugodje zagotavlja v prvi vrsti ustrezen ogrevalni sistem, v toplotno bilanco pa so vključeni tudi dobitki sončnega obsevanja. Z naravno vidno svetlobo, ki vstopa preko velikih, južno orientiranih zasteklitev, prihaja v prostor tudi toplota. Ob sončnih dnevih v prostorih pogosto prihaja do pregrevanja, kar poslabša toplotno ugodje.

»Nevtralno« toplotno ugodje se do neke mere lahko uravnava in vzdržuje z izbiro obleke – kombinacija tanka obleka in topel zrak je ekvivalent topli obleki in hladnemu zraku. Ko toplotne razmere presežejo mejo nevtralnosti, pride v telesu do znižanja vzburjenja, ko se človek sprosti in se na splošno manj trudi delati. To je pogosto nezaveden odgovor na toploto. Raziskave (Wargocki in Wyon, 2017) na skupinah otrok, ki so bile po dve uri izposta-

vljeni temperaturam 20, 27 in 30 °C, kažejo, da se je z višanjem temperature zmanjševala hitrost branja in računanja. Avtorja ugotavljata, da se učinki na otrokovo delo v hlajenih učilnicah odražajo na hitrosti opravljanja nalog in pri zelo majhnem obsegu napak.

V razredih so temperature pogosto previsoke zaradi nizke stopnje prezračevanja. Učinkovit prezračevalni sistem bi odstranil tudi odvečno toploto.

4. SVETLOBNO UGODJE

Svetlobno ugodje je pomemben parameter kakovostnega okolja v razredu (Al-Khatatbeh, Ma'bdeh, 2017). Doseže se ga lahko z naravno in umetno osvetlitvijo. Glede na to, da se pri nas dejavnost v šolah večinoma izvaja v svetlem delu dneva, mora biti prostor oblikovan tako, da omogoča zadostno in kakovostno osvetlitev z naravno svetlobo, ki pa mora biti podprta tudi s kakovostno umetno osvetlitvijo (Woolner *et al.* 2007). Človek namreč v zaprtih prostorih preživi 87 % svojega življenja (Konis, 2017) in je izpostavljen predvsem pomanjkanju naravne svetlobe, ki je za organizem zelo pomembna, saj uravnava cirkadiani ritem. Ta biološka ura, sinhronizirana na naravni dnevno-nočni cikel, vpliva na številne fiziološke procese v človekovem organizmu (na primer uravnavanje telesne temperature, prebava, izločanje hormonov). Neupoštevanje cirkadianega ritma lahko pripelje do motenj spanja, debelosti, nekaterih oblik raka itd. (Španinger *et al.* 2009). Nezadostna, pa tudi neustrezna osvetlitev povzroča nelagodje, pogosto lahko tudi glavobol. Študije dokazujejo povezavo med osvetljenostjo in obnašanjem otrok ter njihovimi učnimi dosežki (Winterbottom in Wilkins, 2009).

Podpora nezadostni osvetlitvi z naravno svetlobo je električna razsvetljava, ki je primerna za izvajanje vizualnih nalog (stimulacija vizualnega sistema), vendar pa večinoma nima ustrezne spektralne sestave in intenzivnosti, ki sta potrebni za spodbujanje cirkadianega sistema, razen če ta vsebuje dodatni učinkoviti dražljaj cirkadianega stimulusa. Vse cone znotraj stavbe, ki regularno ne dosežejo svetlobnih pogojev, potrebnih za učinkovit cirkadiani stimulus, so označene kot »biološka temà« in veljajo za območja, kjer lahko stalna zasedenost oz. uporaba skozi daljše časovno obdobje predstavlja nevarnost za motnje cirkadianega sistema uporabnikov.

Osvetljenost v razredih mora biti primerna za različne aktivnosti, kot sta pisanje in branje na šolskih mizah (Yener, 2011). CIBSE (2004) izpostavlja priporočeno osvetljenost miz za različne oblike razredov med 300 in 500 lux. Sprejetje teh vrednosti pomaga omejiti bleščanje na sprejemljiv nivo. Moteči so tudi preveliki kontrasti v osvetlitvi. Svetlobno ugodje se zmanjša, če razmerje med najmanjšo in največjo osvetlitvijo v prostoru presega 0,6 (Slater, 1993). Rešitev predstavlja umetna osvetlitev, vendar izključna odvisnost od nje ni priporočljiva (ne samo zaradi migotanja, ampak ker lahko moti delovanje hormonov in cirkadiani ritem (Küller, Laike, 1998)). Za zmanjševanje razmerja med najmanjšo in največjo osvetlitvijo v prostoru so uporabne žaluzije in drugi sistemi za uravnavanje dnevne osvetlitve.

Velikokrat motnjo osvetlitve lahko predstavlja tudi nepravilno vgrajena oprema. Projektor, ki je obešen na strop in usmerjen na vertikalno steno, lahko povzroči odboj svetlobe na tabli, kar se odraža kot bleščanje, to pa povzroči nelagodje. Moteč vir svetlobe, ki povzroči bleščanje, je lahko interaktivna tabla, pa tudi bela tabla s sijano površino. Moteče je tudi 100 Hz migotanje fluorescentne svetlobe (ki je sicer neopazno, pa kljub vsemu moti) (Winterbottom in Wilkins, 2009). Moteči vzorci žaluzij na oknih lahko povzročijo vizualni stres, izzovejo glavobol ali migrene in celo epileptične napade (Harle *et al.* 2006; Fisher *et al.* 2005).

Nelagodje povzroča tudi prevelika osvetljenost, še posebej, če ni enakomerna, kar se pogosto lahko zgodi poleti (Winterbottom in Wilkins, 2009). Stopnja osvetljenosti mora biti prilagojena na trenutne dejavnosti oz. fizične aktivnosti otrok. Schreiber (1996) trdi, da postanejo otroci bolj umirjeni in zainteresirani za aktivnosti v razredu, če se osvetljenost zmanjša. Treichel-Arehart (1974) ugotavlja, da lahko fluorescentna svetloba zmanjša hiperaktivnost otrok v šoli.

5. AKUSTIČNO UGODJE

V učilnicah je večinoma zbrana večja množica otrok in učitelj. Posledica njihove aktivnosti je govorjenje – to je zvok, ki se v zaprtih prostorih večkrat odbije od odbojnih površin, kot so stene, tla in okna. Zvočni signal, ki doseže ušesa, tako ni več originalni signal tistega, ki je govoril, ampak je kontaminiran s šumom iz ozadja in z odmevi. Odmev se nanaša na zvoke, ki se odbijejo od površin in (glede na volumen in obliko razreda) celotnega absorpcijskega območja ter absorpcijskih materialov na konstrukciji. Dobro je znano, da je odmev v otrokovi verbalni komunikaciji in učenju zelo moteč (Neuman *et al.* 2010; Klatte *et al.* 2010). Dva pomembna faktorja, ki vplivata na verbalno komunikacijo med učiteljem in učencem v razredu, sta razmerje med signalom in šumom (angl. signal-to-noise-ratio (SNR)) ter odmevni čas. Še posebej je to pomembno pri otrocih (Bradley in Sato, 2008), saj njihov slušni sistem in zaznavanje do starosti 13 ali 14 let še nista popolnoma razvita. Sprejemljivo akustično okolje za odrasle torej ne pomeni nujno tudi ustreznega okolja za zadovoljevanje potreb otrok. Da se doseže enako razumljivost govora, kot velja za odrasle, mora biti v razredu višje razmerje med signalom in šumom (SNR) in manj odmevnega časa (Peng *et al.* 2015).

Prostor mora omogočati enostavno razlikovanje besed, razumevanje govorjenja in tudi omogočati, da si sporočilo zapomnimo. Slaba akustika poviša hrup zaradi aktivnosti, zmanjša zaznavanje govora in poslabšuje koncentracijo (Sala in Rantala, 2016). Tudi dolg odmevni čas povečuje nivo hrupa. Z akustičnim stropom se akustično okolje v razredu bistveno izboljša (Peng *et al.* 2015).

5.1 Hrup

Hrup je neinformacijski zvok, ki ima določene škodljive učinke na človeške funkcije. V prvi vrsti hrup nervira. Poleg tega zmanjša zaznavanje zvoka pri otrocih in odraslih, pri otrocih celo bolj resno (Dockrell, Shield, 2004). Zaznavanje govora med hrupom je posebej težko za posameznike z nizko kapaciteto spomina. Saala in Rantala (2016) ter Åhlander *et al.* (2011) ugotavljajo, da kar 92 % učiteljev zmoti hrup, ki ga povzročajo otroci, ventilacija in druge naprave v stavbi. Kognitivne funkcije, za katere je znano, da so dovzetne za učinke hrupa, so pozornost, učenje jezikov, uspešnost v matematiki

in spomin (Astolfi, Pellerey, 2008). V raziskavi o vplivu hrupa cestnega in letalskega prometa (Stansfeld *et al.* 2005) je bilo ugotovljeno, da ima hrup pomembno in odgovorno funkcijo v kognitivnem delovanju otrok: čim višji je nivo hrupa, tem večji je njegov moteč vpliv.

V zadnjih 20 letih so se metode poučevanja spremenile in vplivale na nivo hrupa med poučevanjem. Nedavne študije (Saala in Rantala, 2016) so ugotovile, da v razredu ena oseba govori 46 % vsega časa, kljub temu, da učenci niso več pasivni opazovalci, ampak aktivni iskalci znanja. Dinamične metode poučevanja so orientirane k otroku, vključujejo skupinske diskusije, learning-by-doing vaje in timsko delo. Vse te aktivnosti pa povečujejo hrup. Tudi fizične aktivnosti same – rokovanje z različnimi predmeti, premikanje stolov in miz, gibanje po prostoru – zvišujejo raven hrupa. Nivo hrupa variira glede na predmet, ki se poučuje, število in starost učencev ter pedagoške doktrine. Dodatni hrup v ozadju povzročajo tudi promet ter oprema in naprave, vgrajene v stavbo (ogrevalne in prezračevalne naprave, klimatske naprave, vodovod, električne naprave).

Namen komuniciranja je biti slišan in razumljen, zato govornik reagira na hrup v okolici. Da preseže moteč hrup, mora govorec uporabiti povišan, glasen, zelo glasen ali kričeč glas (Saala in Rantala, 2016). Povišanje jakosti glasu je večinoma nezavedno. Čeprav spremembe v jakosti glasu pomenijo izboljšanje verbalnega sporočila, imajo hkrati škodljiv vpliv na govorni organ. Povečana je nevarnost govorne motnje, ki je med učitelji zelo pogosta.

6. KAKOVOST NOTRANJEGA ZRAKA

Kakovost notranjega zraka je pomembna za zdravje in dobro počutje, pomembnejša kot drugi okoljski vplivi. Kakovost zraka je ustrezna, če je v prostorih zagotovljen stalen dotok svežega zraka brez znanih ali pričakovanih onesnaževalcev v koncentracijah, ki bi lahko bile škodljive. V prostorih se ne sme ustvarjati pogojev, ki bi lahko bili povezani z zdravjem uporabnikov. Nad kakovostjo zraka nihče ne bi smel izražati nezadovoljstva (ASHRAE).

6.1 Škodljive substance

Študije kažejo, da največji onesnaževalec notranjega zraka niso substance iz zunanjega zraka (razen če objekt stoji v močno onesnaženem okolju), temveč nastajajo v notranjosti. Izhajajo iz gradiv ali opreme v stavbah. Izpostaviti velja predvsem tiste škodljive snovi, ki so splošno razpoznavne, ali pa zelo nevarne pri višji koncentraciji (Zbašnik-Senegačnik, 1996):

- hlapi – gradiva takoj po vgradnji ali pa še nekaj časa po tem izhlapevajo agresivne hlape, ki dražijo sluznice;
- prah – v določenih fazah življenjskega ciklusa gradiv nastaja prah, ki z vdihavanjem pride v pljuča;
- vlakna – vlaknasta gradiva (npr. azbestna vlakna) obremenjujejo bližnjo in daljno okolico, posebej nevarna so, če pridejo v pljuča;
- strupi – iz nekaterih gradiv izhajajo določeni strupi (formaldehid, stiren, PCP, PCB, toluen, ksilen...), ki so (še posebej v večjih koncentracijah) lahko zelo nevarni;
- radioaktivne snovi – iz nekaterih zemeljskih gradiv izhaja radon, ki se nabira predvsem v zaprtih in neprezračenih prostorih.

V notranjem zraku se pojavljajo npr. hlapne organske spojine (VOCs), mehčalci, vlaga in plesen – sproščajo jih ljudje s svojimi aktivnostmi, gradiva in oprema, ki sestavljajo notranji prostor, nepopolno zgorevanje kuriv in drugi procesi. Emisije so odvisne od vrste onesnaževalca, vrste stavbe in tudi glede na čas in prostor v stavbi (Sundell *et al.* 2011). Verriele *et al.* (2016) so v raziskavi analizirali sestavo notranjega zraka v desetih francoskih šolah in v nekem razredu identificirali preko 150 VOCs delcev s koncentracijo 1 $\mu g/m^3$ (najvišje koncentracije so bile dosežene za acetone, 2-butanone, formaldehid, acetaldehid, heksanal, toluen, heptane in pentanal). Razen benzena, ozona in NO_2, ki so bili tudi prisotni, so vse substance izhajale iz notranjosti. Tudi Simoni *et al.*. (2010) so ugotovili, da v notranjem zraku v šolah prihaja do povišanih vrednosti trdih delcev PM_{10}. Merili so sestavo zraka v šolah na Norveškem, Švedskem, Danskem, v Franciji in Italiji (21 šol, 46 razredov). V času pouka so merili stopnjo prezračevanja, temperaturo, relativno vlago, osvetlitev, trde delce, dušikov dioksid, ogljikov dioksid, ozon, formaldehid, prah in zračne alergene, plesen ter bakterije, in sicer znotraj in zunaj stavb. V večini šol je koncentracija PM_{10} presegla mejno vrednost 50 $\mu g/m^{-3}$, ki jo priporoča EPA (Environmental Protection Agency) za dolgotrajno izpostavljenost. Notranje vrednosti PM_{10} so bile vedno višje znotraj kot zunaj.

Posledice delovanja škodljivih substanc se kažejo v obliki različnih težav in bolezni, nekatere med njimi so tudi smrtonosne. Škodljive snovi, ki izhajajo iz gradiv, organizem sprejema preko kože, dihalnih poti in prebavnega trakta. Med substancami, ki so v notranjem zraku, prihaja do fizikalnih in kemijskih reakcij. Nastajajo nove spojine, ki spremenijo sestavo notranjega zraka in, domnevno, njihove učinke tako na zaznano kvaliteto zraka kot tudi na zdravstvena tveganja na izpostavljene uporabnike prostorov (Sundell *et al.* 2011). Teh procesov ni mogoče nadzorovati.

6.2 Ogljikov dioksid

Največji delež onesnaževalcev v notranjem zraku predstavlja CO_2, zato ima velik vpliv na njegovo kakovost. Delež CO_2 je odvisen od števila prisotnih v razredu, njihove aktivnosti in predvsem od stopnje prezračevanja. Ovoj stavbe je zrakotesen do te mere, da ne zagotavlja zadostnih količin svežega zraka. Prezračevanje poteka ročno, z občasnim odpiranjem oken, ali pa konstantno s prezračevalno napravo. Učinkovitost prezračevanja prostorov z odpiranjem oken je odvisna od pogostosti odpiranja oken, torej od subjektivne ocene uporabnika, ki pa večinoma ne zagotavlja kakovostnega zraka. Rijal *et al.* (2007) so na podlagi več kot enoletnega opazovanja navad po hlajenju prostorov z odpiranjem oken v 15 poslovnih stavbah v Angliji ugotovili, da je delež odprtih oken nižji pozimi, srednji spomladi in jeseni in najvišji poleti. Ker se z odpiranjem oken hkrati uravnava tudi nivo prezračevanja, je zlasti pozimi, ko se manj odpira okna, zrak v notranjih prostorih slabe kvalitete, čeprav ima mogoče ustrezno temperaturo in zagotavlja toplotno ugodje.

T. i. naravno prezračevanje z odpiranjem oken v zadnjem obdobju nadomešča mehansko prezračevanje, s katerim se prostor prezračuje kontinu-

irano in nezaznavno oz. nemoteče. Številne študije dokazujejo, da samo uravnoteženo mehansko prezračevanje zagotavlja konstantno kakovost zraka. Sistem konstantnega mehanskega prezračevanja je pomemben zato, ker CO_2 ljudje ne zaznavamo, šele pri koncentraciji nad 1500 ppm se začuti neprijeten vonj ob vstopu v prostor. Količina CO_2 v zraku se lahko relativno hitro izmeri. Rezultati kažejo, da je zrak v razredih relativno slab. Meritve v danskih razredih (Toftum *et al.* 2015) so pokazale, da je koncentracija CO_2 na splošno visoka in pogosto nad 1000 ppm, kar je trenutno priporočena meja. Prezračevanje preko oken običajno ne zadošča zaradi različnih navad pri odpiranju, koncentracije CO_2 pogosto močno variirajo, in to veliko bolj kot v šolah z uravnoteženim mehanskim prezračevalnim sistemom. V razredih, kjer prezračujejo z naravnim prezračevanjem z odpiranjem oken, so pozimi koncentracije CO_2 veliko višje kot poleti, odvisne pa so od navad učencev in učiteljev (Gao *et al.* 2014). Haverinen-Shaughnessy *et al.* (2011) so merili srednje koncentracije CO_2 v razredih v različnih šolah na Danskem in ugotovili, da je stopnja prezračevanja v razredih z uravnoteženim prezračevalnim sistemom približno dvakrat višja kot v razredih z naravnim prezračevanjem. Bakó-Biró *et al.* (2012) trdijo, da je v šolah, kjer prezračujejo samo z odpiranjem oken, razpon maksimalne koncentracije CO_2 celo trikrat večji kot pri šolah z mehanskim prezračevanjem (2600 ppm proti 750 ppm). Prav tako je bila tudi povprečna koncentracija CO_2 v šolah z naravnim prezračevanjem dvakrat višja kot v šolah z mehanskim prezračevanjem (700 ppm proti 300 ppm).

6.3 Vpliv slabe kvalitete zraka na zdravje otrok

Trenutno so standardi prezračevanja osnovani bolj na uporabnikovi percepciji kvalitete notranjega zraka kot na riziku izpostavljenosti otroka notranjim onesnaževalcem , ki lahko povzročajo kratkotrajne in dolgotrajne posledice (Sundell et al. 2011). Prav kakovosti zraka v prostorih, kjer se otroci zadržujejo velik del dneva, pa bi bilo potrebno nameniti več pozornosti. Otroci so bolj občutljivi na okoljske onesnaževalce kot odrasli, ker dihajo večje količine zraka glede na telesno težo, njihovo tkivo in organi pa so v aktivni rasti. Otroci tudi preživijo več časa v šolah kot v drugih okoljih, razen doma. Neugodni okoljski vplivi na učenje in uspešnost imajo lahko kratkotrajne in dolgotrajne posledice, tako na otroka kot na družbo (Mendell in Heath, 2005).

Več znanstvenih člankov obravnava vplive prezračevanja prostorov na zdravje in počutje otrok ter njihovo storilnost. Njihov skupni sklep je, da slabše prezračevanje vpliva na pojav bolezni (Sundell et al. 2011; Toftum *et al.* 2015). Študije sugerirajo povezavo med tremi alergičnimi stanji (astma, rinitis in ekcemi) in bivanjem v prostorih s slabšim prezračevanjem (Sundell et al. 2011). Simoni et al. (2010) ugotavljajo, da imajo otroci, ki so v šoli izpostavljeni nivoju CO_2 pod 1000 ppm, znatno manjše tveganje za suh kašelj in rinitis. Nizka stopnja prezračevanja prostorov je s povečano odsotnostjo otrok v šolah zaradi respiratornih simptomov (Sundell et al. 2011).

Čedalje več je tudi dokazov, da ima nezadostno prezračevanje razredov negativne vplive na učni uspeh (Daisey et al. 2003; Mendell in Heath, 2005, Toftum et al. 2015). V številnih študijah so s psihološkimi in vedenjskimi testi testirali vplive nezadostnega prezračevanja prostorov na učenje in preučevali različne spretnosti, ki so potrebne za učenje – npr. sposobnost koncentracije in pomnjenja (Bakó-Biró *et al.* 2012). S krajšimi testi, s katerimi so preučevali sposobnost branja, razumevanja in računanja (Wargocki inWyon, 2007a; Wargocki in Wyon, 2007b), so dokazali, da slabo prezračevanje znatno zniža sposobnost opravljanja takih testov. Haverinen-Shaughnessy *et al.* (2011) ugotavljajo, da slabo prezračevanje zmanjša število učencev, ki so opravili test iz jezika in matematike. Rezultati danske raziskave (Toftum *et al.* 2015,) izpostavljajo, da so učenci v šolah z uravnoteženim mehanskim prezračevanjem dosegli boljše rezultate pri nacionalnem preverjanju znanja v primerjavi z učenci iz razredov z naravnim prezračevanjem z odpiranjem oken. Wargocki in Wyon (2017) sta s poskusi ugotovila, da se je pri povečanju nivoja oskrbe z zunanjim zrakom opazno povišala hitrost, s katero so otroci opravljali numerične in jezikovne naloge. Ugotovila sta linearno razmerje – za vsak liter pretoka zraka na sekundo (L/s) je opravilo test 3 % več učencev, in sicer do povečanja prezračevanja na 7 L/s na osebo. Matematične ocene so se izboljšale za cca 0,5 % za vsak L/s na osebo, če se je povečal nivo prezračevanja od 0,9 na 7 L/s na osebo.

Posledice slabe kakovosti zraka v razredih se kažejo tudi posredno – učna uspešnost se zmanjša tudi zaradi odsotnosti. Krajša prisotnost v šoli poslabša učenje zaradi krajšega časa verbalnega in vizualnega prenosa učiteljevih informacij ali s tem, da učenci zaostajajo z delom (Mendell in Heath, 2005). Slabša kakovost notranjega okolja lahko poslabša koncentracijo ali spomin, vpliva pa tudi na razvoj bolezni, kot so astma ali alergije, zaradi katerih morajo otroci uživati zdravila, ta pa lahko zmanjšajo uspešnost učenja. Mendell in Heath (2005) ugotavljata, da je v osnovnih in srednjih šolah na Danskem astma med kroničnimi boleznimi razlog za cca 20 % odsotnosti. V obširnem preglednem članku dokazujeta povezavo med vplivi faktorjev notranjega okolja in uspešnostjo uporabnikov ter njihovo odsotnostjo. Ugotavljata, da je seneni nahod direktno povezan z manjšo uspešnostjo in prisotnostjo. Učinki slabega zraka se ne kažejo samo pri otrocih. Ervasti *et al.* (2012) poročajo o povečani kratkotrajnih odsotnosti učiteljev (od 1 do 3 dni) v šolah s slabo kakovostjo zraka v zaprtih prostorih.

7. ZAKLJUČEK

Grajeno okolje ima pomembno vlogo pri izobraževanju otrok. Po eni strani nudi primeren prostor za varstvo, igro in učenje ter zbiranje s sovrstniki in učitelji, po drugi pa s svojo sporočilno vrednostjo neposredno vpliva na otrokovo dojemanje prostora in ga s tem vzgaja in oblikuje. Fizično okolje ustvarja tudi fizikalne pogoje za bivanje in zagotavlja toplotno, svetlobno in akustično ugodje ter ustrezno kakovost zraka, vse to pa vpliva na zdravje, počutje in učno uspešnost uporabnikov prostora. Grajeno okolje ima torej veliko odgovornih funkcij.

Odločitve arhitektov in projektantov o obliki stavbe, izbiri gradiv, sestavi opreme in komponent imajo lahko daljnosežne posledice na otroke (in učitelje!), kar je predstavljeno v prispevku – podatki so povzeti iz obširne znanstvene literature, objavljene v zadnjih letih. Dejstvo je, da je arhitektovo poznavanje obravnavanega področja podhranjeno, velikokrat vsebine segajo tudi na druga strokovna področja, ki v projektantski ekipi niso zastopana. Zakonodaja prepočasi sledi novim dognanjem, tudi vključevanje

novih smernic v priporočila in navodila za gradnjo izobraževalnih objektov je prepočasno. Nadaljnja težava so pomanjkljivo označene deklaracije na gradivih, opremi in komponentah, ki pogosto niti ne omenjajo najbolj kritičnih substanc. Dodaten problem predstavljata nepravilna ali nestrokovna uporaba in vzdrževanje stavb ...

Odgovornosti za slabo kakovost prostorov vrtcev in šol ne morejo nositi samo arhitekti in projektanti. V veliko pomoč bi bil interdisciplinarni načrtovalski tim, kar je najbrž ta trenutek precej utopično. Delno rešitev bi predstavljale smernice z evidentiranimi negativnimi vplivi grajenega okolja na otrokovo zdravje, počutje in učno uspešnost, ki bi sledile zadnjim dognanjem strokovnjakov s posameznih področij in bi načrtovalce vodile pri iskanju optimalnih rešitev.

VIRI IN LITERATURA

Åhlander, L. V., Rydell, R., Löfqvist, A. (2011). Speaker's comfort in teaching environments. Voice problems in Swedish teaching staff. Journal of Voice, 25 (4), 430–440. https://doi.org/10.1016/j.jvoice.2009.12.006

Al-Khatatbeh, B.J., Ma'bdeh, S.N. (2017). Improving visual comfort and energy efficiency in existing classrooms using passive daylighting techniques. Energy Procedia 136, 102-108. https://doi.org/10.1016/j.egypro.2017.10.294

ASHRAE, Indoor Air Quality Guide. Pridobljeno september 2018 s spletne strani: https://www.ashrae.org/technical-resources/bookstore/indoor-air-quality-guide

Astolfi, A., Pellerey, F. (2008). Subjective and objective assessment of acoustical and overall environmental quality in secondary school classrooms. The Journal of the Acoustical Society of America, 123, 163–173. https://doi.org/10.1121/1.2816563

Bakó-Biró, Z., Clements-Croome, D.J., Kochhar, N., Awbi, H.B., Williams, M.J. (2012). Ventilation rates in schools and pupils' performance, Building and Environment, 48, 215-223. https://doi.org/10.1016/j.buildenv.2011.08.018

Bradley, J.S., Sato, H. (2008). The intelligibility of speech in elementary school classrooms. The Journal of the Acoustical Society of America 123, 2078-2086. https://doi.org/10.1121/1.2839285

CIBSE. (2004). Code for lighting. London: CIBSE.

Daisey, J., Angell, W., Apte, M., (2003). Indoor air quality, ventilation and health symptoms in schools: an analysis of existing information, Indoor Air 13 (1), 53-64. https://doi.org/10.1034/j.1600-0668.2003.00153.x

Dockrell, J.E., Shield, B. (2004). Children's perceptions of their acoustic environment at school and at home. The Journal of the Acoustical Society of America 115:2964–2973. https://doi.org/10.1121/1.1652610

EPA (Environmental Protection Agency). Pridobljeno september 2018 s spletne strani: https://www.dccae.gov.ie/en-ie/environment/topics/environmental-protection-and-awareness/environmental-protection-agency/Pages/default.aspx

Ervasti, J., Kivimäki, M., Kawachi, I., Subramanian, S., Pentti, J., Oksanen, T., Puusniekka, R., Pohjonen, T., Vahtera, J., Virtanen, M. (2012). School Environment as Predictor of Teacher Sick Leave: Data-linked Prospective Cohort Study. BMC Public Health 12, 770. https://doi.org/10.1186/1471-2458-12-770

Fisher, R. S., Harding, G., Erba, G., Barkley, G. L., & Wilkins, A. (2005). Photic- and pattern-induced seizures: a review for the epilepsy foundation of America working group. Epilepsia, 46(9), 1426–1441. https://doi.org/10.1111/j.1528-1167.2005.31405.x

Gao, J., Wargocki, P., Wang, Y. (2014). Ventilation system type, classroom environmental quality and pupils' perceptions and symptoms, Building and Environment, 75, 46-57. https://doi.org/10.1016/j.buildenv.2014.01.015

Golshan, M., Thoen, H., Zeiler, W. (2018). Dutch sustainable schools towards energy positive. Journal of Building Engineering, 19, 161-171. https://doi.org/10.1016/j.jobe.2018.05.002

Harle, D. E., Shepherd, A. J., & Evans, B. J. W. (2006). Visual stimuli are common triggers of migraine and are associated with pattern glare. Headache, 46, 1431–1440. https://doi.org/10.1111/j.1526-4610.2006.00585.x

Haverinen-Shaughnessy, U., Moschandreas, D.J., Shaughnessy, R.J. (2011). Association between substandard classroom ventilation rates and students' academic achievement, Indoor Air 21 (2), 121-131. https://doi.org/10.1111/j.1600-0668.2010.00686.x

Klatte, M., Lachmann, T., Meis, M. (2010). Effects of noise and reverberation on speech perception and listening comprehension of children and adults in a classroomlike setting. Noise & Health 12, 270–82. https://doi.org/10.4103/1463-1741.70506

Konis, K., (2017). A novel circadian daylight metric for building design and evaluation. Building and Environment 113, 22-38. https://doi.org/10.1016/j.buildenv.2016.11.025

Küller, R., & Laike, T. (1998). The impact of flicker from fluorescent lighting on wellbeing, performance and physiological arousal. Ergonomics, 41(4), 433–447. https://doi.org/10.1080/001401398186928

Leinonen, J., & Venninen, T. (2012). Designing learning experiences together with children. Procedia-Social and Behavioral Sciences, (ajE-Bs) 45, 466-474. https://doi.org/10.1016/j.sbspro.2012.06.583

Mendell , M. J., Heath, G.A. (2005). Do indoor pollutants and thermal conditions in schools influence student performance? A critical review of the literature. Indoor Air, 15, 27-52. https://doi.org/10.1111/j.1600-0668.2004.00320.x

Menezes, A. C., Cripps, A., Bouchlaghem, D., Buswell, R. (2012). Predicted vs. actual energy performance of non-domestic buildings: Using post-occupancy evaluation data to reduce the performance gap. Applied Energy, 97, 355-364. https://doi.org/10.1016/j.apenergy.2011.11.075

Neuman, A.C., Wroblewski, M., Hajicek, J., Rubinstein, A. (2010). Combined effects of noise and reverberation on speech recognition performance of normal-hearing children and adults. Ear and Hearing, 31 (3), 336–44. https://doi.org/10.1097/AUD.0b013e3181d3d514

Mohidin, H. H. B., Ismail, A. S., Ramli, H. B. (2015). Effectiveness of Kindergarten Design in Malaysia. Procedia - Social and Behavioral Sciences 202, 47 – 57. https://doi.org/10.1016/j.sbspro.2015.08.207

Peng, J., Wang., D., Lau, S.-K., Yan, N., Jiang, P., Wu, S. (2015). An investigation of acoustic treatment for children in a classroom of an elementary school. Applied Acoustics 89, 42–45. https://doi.org/10.1016/j.apacoust.2014.09.005

Piaget, J., & Inhelder, B. (2013). Child's Conception of Space: Selected Works. (Vol 4). New York: Routledge.

Rijal, H.B, Tuohy, P., Humphreys, M.A., Nicol. J.F., Samuel, A., Clarke, J. (2007). Using results from field surveys to predict the effect of open windows on thermal comfort and energy use in buildings. Energy and Buildings 39, 823–836. https://doi.org/10.1016/j.enbuild.2007.02.003

Sala, E., Rantala, L. (2016). Acoustics and activity noise in school classrooms in Finland. Applied Acoustics 114, 252–259. https://doi.org/10.1016/j.apacoust.2016.08.009

Schreiber, M. E. (1996). Lighting alternatives: considerations for child care centres. Young Children, 51 (4), 11–13.

Simoni, M., Annesi-Maesano, I., Sigsgaard, T., Norbäck, D., Wieslander, G., Nystad, W., Canciani, M., Sestini, P., Viegi G. (2010). School air quality related to dry cough, rhinitis and nasal patency in children, European Respiratory Journal, 35 (4), 742-749. https://doi.org/10.1183/09031936.00016309

Slater, A. I., Perry, M. J., & Carter, D. J. (1993). Illuminance differences between desks:limits of acceptability. Lighting Research and Technology, 25, 91–103. https://doi.org/10.1177/096032719302500208

Stansfeld, S.A., Berglund, B., Clark, C., Fischer, IL.-B., Öhrström, E., Haines, M.M., et al. (2005). Aircraft and road traffic noise and children's cognition and health: a cross–national study. The Lancet, 365 (9474), 1942–1949. https://doi.org/10.1016/S0140-6736(05)66660-3

Sundell, J., Levin, H., Nazaroff, W. W., Cain, W. S., Fisk, W. J., Grimsrud, D. T., Gyntelberg, F., Li, Y., Persily, A. K., Pickering, A. C., Samet, J. M., Spengler, J. D., Taylor, S. T., Weschler, C. J. (2011). Ventilation rates and health: multidisciplinary review of the scientific literature. Indoor Air, 21 (3), 191 -204. https://doi.org/10.1111/j.1600-0668.2010.00703.x

Španinger, K., Košir, R., Fink, M., Debeljak, N., Rozman, D. (2009). Cirkadiani ritem pri ljudeh. Zdravniški vestnik, 78, 651-657.

Toftum, J., Kjeldsen, B.U, Wargocki, P., Menå, H.R., Hansen, E.M.N., Clausen, G. (2015). Association between classroom ventilation mode and learning outcome in Danish schools, Building and Environment, 92, 494-503. https://doi.org/10.1016/j.buildenv.2015.05.017

Treichel-Arehart, J. (1974). School lights and problem pupils. Science News, 105(16), 258–259.

Verriele, M., Schoemaecker, C., Hanoune, B., Leclerc, N., Germain, S., Gaudion, V, Locoge, N. (2016). The MERMAID study : indoor and outdoor average pollutant concentration in 10 low-energy school buildings in France. Indoor Air 26 (5), 702-713. https://doi.org/10.1111/ina.12258

Wargocki, P., Wyon, D. P. (2017). Ten questions concerning thermal and indoor air quality effects on the performance of office work and schoolwork. Building and Environment 112, 359-366. https://doi.org/10.1016/j.buildenv.2016.11.020

Wargocki, P., Wyon, D.P. (2007a) The effects of outdoor air supply rate and supply air filter condition in classrooms on the performance of schoolwork by children (1257-RP), HVAC&R Research, 13 (2) 165-191. https://doi.org/10.1080/10789669.2007.10390950

Wargocki, P., Wyon, D.P. (2007b) The effects of outdoor air supply rate and supply air filter condition in classrooms on the performance of schoolwork by children (1257-RP), HVAC&R Research, 13 (2) 193-220. https://doi.org/10.1080/10789669.2007.10390951

Winterbottom, M., Wilkins, A. (2009). Lighting and discomfort in the classroom. Journal of Environmental Psychology 29, 63–75. https://doi.org/10.1016/j.jenvp.2008.11.007

Woolner, P., Hall, E., Higgins, S., McCaughey, C., & Wall, K. (2007). A sound foundation? What we know about the impact of environments on learning and the implications for Building Schools for the Future. Oxford Review of Education, 33(1), 47–70. https://doi.org/10.1080/03054980601094693

Yang, B., Olofsson, T., Wang, F., Lu W. (2018). Thermal comfort in primary school classrooms: A case study under subarctic climate area of Sweden. Building and Environment 135, 237–245. https://doi.org/10.1016/j.buildenv.2016.11.020

Yener, A.K. (2011). Daylight analysis in classrooms with solar control. Architectural Science Review 45 (4), 311-316. https://doi.org/10.1080/00038628.2002.9696946

Zbašnik-Senegačnik, M. (1996). *Negativni vplivi gradiv na človeka in okolje : doktorska disertacija.* Ljubljana: Univerza v Ljubljani, Fakulteta za arhitekturo.

Marija Maruna, Jelena Radosavljević:

TRANZICIJA KOT SPODBUDA ZA RAZVOJ INOVATIVNE METODOLOGIJE POUČEVANJA TEORIJE NAČRTOVANJA

TRANSITION AS A STIMULUS FOR INNOVATIVE TEACHING METHODOLOGY IN PLANNING THEORY

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IZVLEČEK

Teorija načrtovanja predstavlja velik izziv za poučevanje na magistrski študijski ravni. Planerske šole in avtorji po svetu se tega lotevajo različno, pri tem pa imajo težave glede izbire znanj, ki naj bi jih ponujali – praktičnih znanj in znanj, povezanih s kompleksnostjo družbenopolitičnega konteksta urbanističnega načrtovanja. Dodatno vprašanje, ki se poraja v državah v tranziciji, je, kako poučevati urbanistično načrtovanje v pogojih privatizacije zemljišč in nenehnih sprememb v zakonodaji, predpisih, postopkih in procesu vzpostavitve nove paradigme načrtovanja. V luči teh izzivov predmet Teorija planiranja na Fakulteti za arhitekturo Univerze v Beogradu predstavlja pedagoški model, ki temelji na analizi spornih primerov v sodobni urbanistični praksi v Beogradu. Inovativno metodologijo smo zasnovali prek več raziskovalnih korakov, ki vključujejo zbiranje in analizo javno dostopnih podatkov, vključno z mnenji deležnikov, vključenih v proces urbanističnega razvoja. Članek se osredotoča na opazovanje odnosov med informacijami, vrednostmi in razporeditvijo moči, kot ključnimi izzivi pri razumevanju procesa prostorskega razvoja. Raziskava predstavlja rezultate uporabe te metodologije v šolskem letu 2015/2016 na primeru »Beograda na vodi«, največjega, a tudi najspornejšega razvojnega projekta Beograda v zadnjih 25 letih. Glavni cilj raziskave je predstaviti, kako lahko inovativna metodologija prispeva k izboljšanju določenih načrtovalskih znanj: komunikacije, pogajanj, odločanja in kritičnega razmišljanja o sodobnem urbanističnem razvoju.

KLJUČNE BESEDE

tranzicija, metodologija poučevanja, kritično mišljenje, načrtovalska znanja, Srbija

ABSTRACT

Planning theory can be perceived as a great challenge in teaching master's-level studies. Planning schools and authors throughout the world have developed diverse approaches to address this problem, drawing attention to the issues of what skills to offer – practical ones or skills related to the complexity of the socio-political context of urban planning. An additional question that arises in countries in transition is how to teach planning theory under their specific conditions of land privatisation and constant changes to legislation, regulation, procedures, and the process of establishment of a new planning paradigm. Following these challenges, the Planning Theory course at the Faculty of Architecture, University of Belgrade, presents a pedagogical model based on analysis of controversial cases in contemporary urban planning practice in Belgrade. An innovative methodology is conceptualised through multiple research steps that entail collection and analysis of publicly available information, including all statements of the stakeholders involved in the process of urban development. The paper focuses on the observation of relationships between information, values, and power imposed as key challenges in understanding the process of space production. The research presents the results of applying this methodology during the 2015/16 academic year on the case study of Belgrade Waterfront, the city's largest and most controversial development project in the last 25 years. The main goal of the research is to present how an innovative methodology can contribute to the improvement of specific reflective planning skills: communication, negotiation, decision-making, and critical thinking about contemporary urban development.

KEY-WORDS

transition, teaching methodology, critical thinking, planning skills, Serbia

UVODNIK
EDITORIAL
ČLANEK
ARTICLE
RAZPRAVA
DISCUSSION
RECENZIJA
REVIEW
PROJEKT
PROJECT
DELAVNICA
WORKSHOP
NATEČAJ
COMPETITION
PREDSTAVITEV
PRESENTATION
DIPLOMA
MASTER THESIS

1. INTRODUCTION

In the early 1990s, as Serbia abandoned the socialist governance model and re-oriented itself toward a neo-liberal one, changes occurred in the country's institutional, legal and planning framework. Neo-liberalisation of the market limited the economic power of the state that had already been politically and financially vulnerable, whereby significant emphasis was placed on the private sector, not only for (physical) action in the urban space, but also in terms of decision-making affecting it. The privatisation of the complete socially-owned housing stock, as well as of erstwhile socially-owned corporations and their real property, highlighted the problems inherent in the attempts to achieve complete privatisation, which also entailed privatising development land, public enterprises, and public services (Petovar, 2010). In the time of new socio-economic conditions, clear differences can be observed between the power of the state, the private sector, and the community, but these have not been reflected in planning documents (Lazarevic Bajec, 2009). In that regard, Serbia's comprehensive planning system, inherited from socialist times, leaves out the tenets of a neo-liberal governance and planning system, which include the plurality of interests and the open market. Transition has led to confusion in spatial development, accompanied by the lack of communication between planners and decision-makers. Although a new communicative-collaborative planning paradigm has been mooted, according to Petovar, a traditional planning system has remained operational in practice but, unlike under socialism, when professional planners played a leading role, it now favours the interests of politicians and the private sector (Petrović, 2009).

These changes, brought about by transition, have created a multitude of challenges and given rise to complex questions and problems that demand new research in all fields, and in particular in education. What is the role of the university in studying and reacting to the changes? How will the practice of education alter under these new conditions? Planner education poses a particular challenge, since changes to the socio-political system affect the value framework and the development of pedagogical models that must be considered a part of the developmental context that alters old patterns of planning work and the role of planners in community development (Milovanović, 2015).

In this context, specific importance ought to be accorded to the position and structure of curricula for subjects dealing with the theory of planning, a key segment of planner education in a variety of schools (ECTP-CEU, 2016). As this subject-matter is based on values, the question arises, on the one hand, of the knowledge and skills that students should acquire, and, on the other, of how that knowledge and those skills are shared (Frank, 2002). The prevailing view is that 'practitioners have little use for planning theory, students find it a diversion from learning how to do planning and a requirement to be endured, and planning academics, on average, tolerate it' (Beauregard, 1995, p.163). Friedman and Klosterman feel that planning theory should be a theory of good practice, not only a critique of existing practice, whose primary objective is to improve and support the practice of planning (Friedman 1995; Klosterman, 2011). On the other hand, Olesen (2018, p.25) believes that planning theory should be 'more concerned with how to understand the nature of planning and the role of the planner, than prescribing guidelines for how to do planning ... which seek to raise students' awareness of their own theory of planning and help them reflect on their own values'.

The course in Planning Theory[1] at the Faculty of Architecture, University of Belgrade was first introduced in 1990 and has been offered ever since. In view of the complex interplay between the planning system and the socio-political context in Serbia, accompanied by the relinquishment of a comprehensive planning system and the preference for introducing a communicative-collaborative planning paradigm, the principal research question is: how should planning theory curricula be re-designed to accommodate a better understanding of complexity of the post-socialist context? Drawing on Nancy Frank's argument that 'planning theory is about process, not substance' (Frank, 2002, p. 322) allows us to identify the key problem in studying planning theory: students expect to acquire practical skills, whereas teachers aim at developing critical thinking and encouraging future planners to adopt a reflective approach (Olesen, 2018) and understand the relationships between information, values, and power.

This paper does not aspire to answer these questions: rather, its goal is to stimulate discussion about challenges to the study of planning theory in master's-level courses in an environment of post-socialist transition by presenting an innovative pedagogical model tested on the case study of the Belgrade Waterfront development. This demonstration aims at illustrating the opportunities for and means of enhancing specific planning skills that, according to Milovanović, include 'creativity, dialogue, inclusivity and critical thinking, but also a willingness and determination toward effective communication and collaboration' (Milovanović, 2013, p. 75). An examination of the actual steps taken to apply this methodology to the analysis of Belgrade Waterfront, the largest development project launched in the past 25 years, allows a clear understanding of the characteristics of the Serbian planning system and its hallmarks of opaque decision-making, precedence accorded to particular interests, and changes to procedures and regulations.

2. METHODOLOGY

Given the characteristics of the Serbian planning system and the new challenges in the process of space production in a time of transition, the Planning Theory course, part of the master's programme at the Faculty of Architecture, University of Belgrade, was prompted to develop an innovative methodology based on a study of controversial cases of construction in Belgrade. Controversial cases were chosen for research as they offered a wealth of information to assess local developmental processes in which issues and problems of contemporary planning practice intersect. Media reporting served as the key source of information: news constituted the largest publicly accessible database of material about the cases analysed.

The media also provided a direct illustration of the state of spatial development in transition, characterised by unregulated urban development that planning is merely one component of. Although media outlets do offer

1 The Planning Theory course was created as a stand-alone course by Professor Dr Nada Lazarević Bajec in 1990 as an elective specialisation that formed part of the Faculty of Architecture curriculum before the adoption of the Bologna Process.

information about construction activities for a variety of purposes – information, education, popular entertainment – their reporting is shaped by editorial policy, which permits the quality of the source and content of the information to be evaluated.

Media coverage of projects was used as the primary research material for the case study. The methodological approach entailed monitoring day-to-day media reporting to understand the socio-economic logic of the development of the city and the structure of spatial governance stakeholders, recognise key urban policies and their purposes, identify primary stakeholders, and acknowledge interests and power dynamics, with particular reference to how the planning profession responded to evolving changes affecting the planning system.

The selected case study, Belgrade Waterfront, is the largest and most controversial urban development project in the last 25 years. This is evidenced by the high visibility of the scheme in the media over the six years since the current governing party first took power. It is situated in a riverside location in the historic urban core of Belgrade and so holds major potential for the future development of the city as a whole (Perić & Maruna, 2012). Nevertheless, the case of Belgrade Waterfront illustrates how formal planning procedures were usurped and experts ignored in the development of plans (Maruna, 2015). This project is the outcome of significant changes made to Serbia's planning system to allow it to be constructed. The changes were made opaquely and without the involvement of planning professionals, and included both amendments to legislation and alterations to the hierarchy of the planning system and decision-making powers.

2.1 An innovative pedagogical model for analysis of controversial cases in urban development

An innovative pedagogical model was designed with reference to the general learning model, which entails working in small and large groups and acquiring particular skills and knowledge through both individual and group work. The general learning model comprises two stages: 1) working in small groups (teams of between 4 and 6 students) to produce summarised reports of conclusions; 2) in-class workshops in large groups (involving the entire annual intake of some 40 students) to allow shared reasoning and learning. The course is focused on analysing a single case, with the key objective being to facilitate communication within both small and large groups; collect and exchange publicly-available information; and draw conclusions at a number of junctures. This learning process promotes skills required for assigning responsibilities in large and small groups; intra-group organisation; and presentation of individual and shared conclusions. Key knowledge obtained through the general learning model includes understanding the task; understanding responsibility; and recognising different approaches to research, as well as to the adoption of individual and shared conclusions.

The course comprises four steps, and each represents a different stage of research with clearly defined results and knowledge and skills that students should acquire: 1) Becoming acquainted with the case; 2) Understanding the socio-political context; 3) Identifying urban development stakeholders; and 4) Reviewing development policies.

Diagram 1 provides a detailed step-by-step structure of the pedagogical model. The four columns show research steps, tasks, knowledge, and skills. Each step assumes clearly defined assignments and activities that should be undertaken to appropriately present conclusions made by the small and large groups. The tasks are sequenced so as to allow the complex matter of urban space production to be mastered gradually. Understanding of a set of aspects gained in one research step provided the basis for research in the next one. The same principle was applied to the acquisition of knowledge and skills, which followed the steps of research and drawing conclusions.

The case was studied primarily by looking at the presence of the project in the media, more specifically newspaper articles, blogs, and other sources of news, with the aim of acquiring skills needed to select information, arrange it chronologically, and fact-check it. The case was then analysed as a sequence of events relevant for the resulting change in physical structure, and their key actors and actions were scrutinised. The third research step focused on analysing statements made by stakeholders with a view to understanding the complex structure of participants in the process of space production and the logic of their activities that affected the transformation of the city (Maruna, 2013). The policy collection and review segment centred on an analysis of the Serbian planning system, identification of formal and informal policies adopted by the various levels of governance, and recognition of the developmental objectives that underlie them. All of these steps together led to an understanding of the complex structure of space production and the role of professionals in it.

3. RESULTS: Process of space production in transition – Belgrade Waterfront case study

The pedagogical model was tested on the intake of students for the 2015/16 academic year. There were 37 students in total, divided into nine smaller groups. Teaching was organised into four blocks that followed the research steps envisaged by the assignment. Activities in these blocks took the form of workshops, with materials prepared in advance and clearly defined agendas and expected results. The teacher moderated these workshops.

Below are the results of the pedagogical model as applied to the case of Belgrade Waterfront through the four steps that permit students' activities and assignments to be followed and reveal the results of the research.[2]

2 The findings presented below are the result of research done by students Mina Vučković, Božena Stojić, Nataša Petrović, Nataša Radić, and Marina Pešić.

Diagram 1: Innovative pedagogical model (Source: Authors)

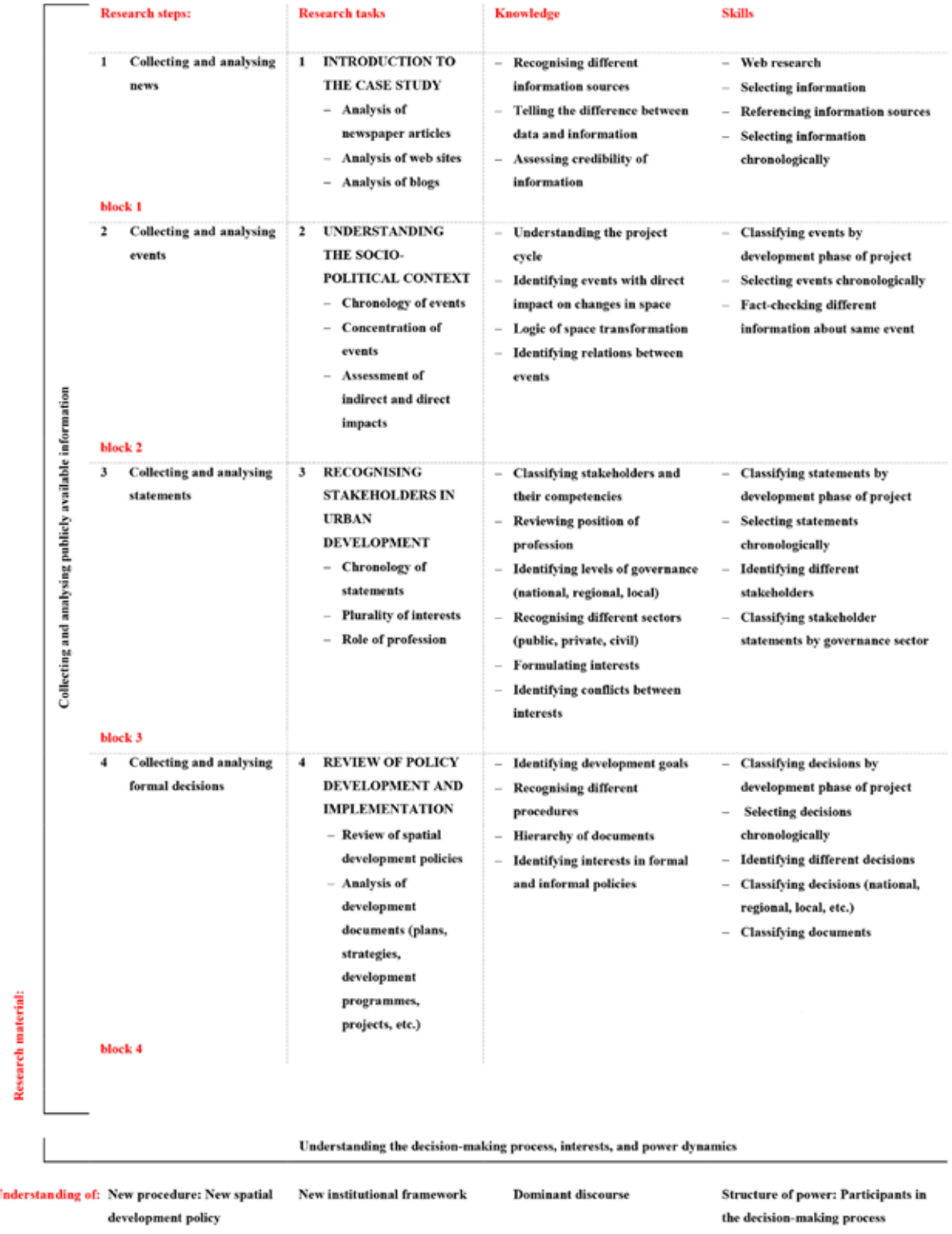

Table 1: Event collection and analysis (Source: Authors)

Year	Date	Event
2012	13. 03. 2012	General election called
	06. 05. 2012	Presidential and general election held: New political party takes power
2013	28. 03. 2013	Joint venture agreement signed in Abu Dhabi with Al Dahra, a corporation based in the United Arab Emirates
	18. 04. 2013	Memorandums of Understanding signed with the management of Al Dahra
	18. 04. 2013	Belgrade City Legislature dissolved; Caretaker Body created
	12. 12. 2013	Potential investor arrives in Belgrade
	25. 12. 2013	Investor's proposals adopted
2014	18. 01. 2014	Potential investor presents Belgrade Waterfront Project; presentation attended by future Prime Minister
	29. 01. 2014	Snap general election called
	02. 03. 2014	Future PM and potential investor present Master Plan for Belgrade Waterfront
	12. 03. 2014	Head of Caretaker Body presents Belgrade Waterfront Master Plan at MIPIM real estate exhibition in Cannes, France
	16. 03. 2014	Snap general election held: New PM and Belgrade Mayor elected
	01. 05. 2014	Serbian Government designates Belgrade Waterfront a project of national significance
	03. 06. 2014	Serbian Government resolves to develop Spatial Plan to Regulate a Section of the Sava Riverfront in Belgrade for the Belgrade Waterfront Project ('Belgrade Waterfront Spatial Plan')
	26. 06. 2014	Belgrade Waterfront LLC, a privately-held firm, established to serve as a lead stakeholder for the Government's activities under the Belgrade Waterfront project
	09. 07. 2014	Changes to the Belgrade General Urban Plan to 2021 put up for public inspection
	07. 2014	Local authority responsible for site issues temporary planning permission (limited to one year) to Belgrade Waterfront LLC for building a promotional kiosk on public land
	03. 09. 2014	Contract to develop Belgrade Waterfront Spatial Plan entered into with Belgrade Urban Planning Institute
	18. 09. 2014	Serbian Parliament enacts Amendments to Belgrade General Urban Plan to 2021
	29. 09. – 28. 10. 2014	Restrictions from Tall Buildings Study for Belgrade removed
	23. 10. 2014	Belgrade Waterfront Spatial Plan put up for public inspection
	25 .10. 2014	Don't Let Belgrade D(r)own holds panel discussion entitled 'Below the surface of Belgrade Waterfront: Plans and consequences'
	28. 11. 2014	Serbian Academy of Arts and Sciences submits set of comments and suggestions to National Spatial Planning Agency following public inspection of Belgrade Waterfront Spatial Plan
	08. 12. 2014	Management of Urbanists Association of Belgrade resigns
		Amendments to Planning and Construction Law enacted
	31. 12. 2014	Belgrade Waterfront Spatial Plan enacted by Serbian Parliament
2015	10. 01. 2015	Construction ends on Belgrade Waterfront promotional kiosk
	31. 01. 2015	Belgrade Waterfront Spatial Plan takes effect
	18. 02. 2015	Don't Let Belgrade D(r)own holds rally protesting against opening of Belgrade Waterfront promotional kiosk and restaurant
	05. 03. 2015	Academy of Architecture of Serbia releases Declaration on Belgrade Waterfront
	09. 03. 2015	Government of Serbia proposes special legislation declaring Belgrade Waterfront a project of national significance
	12. 03. 2015	Parliamentary Committee endorses special legislation
	16. 03. 2015	Don't Let Belgrade D(r)own holds rally outside Parliament
	30. 03. 2015	Group of Belgrade lawyers submits motion seeking withdrawal of special legislation declaring Belgrade Waterfront a project of national significance
	08. 04. 2015	Law Declaring Belgrade Waterfront a Project of National Significance and Regulating Specific Expropriation and Permitting Requirements enacted
	10. 04. 2015	Serbian Parliament enacts special legislation
	26. 04. 2015	Joint venture agreement signed for Belgrade Waterfront_
	26. 04. 2015	Civic rally in protest against joint venture agreement
	14. 06. 2015	Bicycle path closed
	26. 06. 2015	Protest rally by Streets for Cyclists, a cyclists' association
	30. 07. 2015	Expiry of limited planning permission for promotional kiosk
	15. 08. 2015	Eagle Hills Serbia incorporated
	20. 09. 2015	Joint venture agreement for Belgrade Waterfront published on Serbian Government web site
	24. 09. 2015	Building permission issued for first two mixed-use residential and commercial towers
	27. 09. 2015	Construction starts of first two mixed-use residential and commercial towers at Belgrade Waterfront
	27. 09. 2015	Protest rally spearheaded by Don't Let Belgrade D(r)own
	06. 10. 2015	Academy of Architecture of Serbia releases second Declaration on Belgrade Waterfront

3.1 Becoming acquainted with the case

The first step of the assignment entailed a review of online newspapers, blogs, and other online resources referencing the selected case. All information publicly available online was researched, and each news feature was treated as a separate piece of information. The evolution of the case was simulated in class through a reconstruction of the sequence in which news were published. The objective here was for the group to come to a shared understanding of the history of the case. Sources were fact-checked in parallel with a comparative review of the collected material. After the first block of teaching was completed, students worked at home to fact-check information, arrange sources in chronological order, and practise the selected citation style. This effort involved a total of ten online newspapers, two blogs, and seven development documents, including Government documents, Spatial Plan, Urban Plan, investment agreement, and urban planning study. Also reviewed was a summary of claims advanced by Don't Let Belgrade D(r) own, the key civic group that emerged in opposition to Belgrade Waterfront.

3.2 Understanding the socio-political context

The second step entailed collecting and analysing events that affected the development and execution of the project. Selected information was chosen from the wealth of news available, and the sequence of events was reconstructed. The focus here was on recognising events that had a direct impact on changes in space and that essentially reflected the socio-economic and political context (Maruna, 2013). The resulting chronological summary of events, displayed in a format that included the date and description of each event, allowed a review of the entire process whereby space was transformed for Belgrade Waterfront. Events were further subdivided by calendar year (see Table 1).

3.3 Identifying urban development stakeholders

The third step in investigating the case study entailed collecting and analysing statements made by all stakeholders. For the purpose of this research,

Table 2: Identification of stakeholders and recognition of their interests (Source: Authors).

Sector	Stakeholder	Interest
Public sector (national and local level)	Ministry of Finance	Ensuring optimal allocation of financial resources and prevention of inappropriate and illicit use of budget funds
	Ministry of Economy	
	Ministry of Construction, Transportation and Infrastructure	Attracting international investment and donations to execute infrastructure projects of importance for the development and economy of Serbia that constitute public interest
	National Spatial Planning Agency	Advocating the public interest of all members of the public and ensuring greater quality of life in the city
	Belgrade City Legislature	
	Mayor	Protection of shared and common interest of the local population; preservation of urban settings and tradition of the city
	Belgrade Urban Planning Institute	
Professionals	Institute for Architecture and Urban Planning	
	City Architect	Safeguarding the shared and common interest of the local population
	Sociologist, professor (retired)	Safeguarding the common good and public interest of all citizens of Serbia; advancing public welfare
		Contributing to balanced development throughout Serbia by preparing spatial plans
	Head of team tasked with developing the Republic of Serbia Spatial Plan	
	Professors at University of Belgrade Faculties of Law and Economics	Passing knowledge on to coming generations and contributing effort and knowledge to the Serbian economy
		Safeguarding civil, commercial, and property rights
Private sector	Belgrade Waterfront LLC and Eagle Hills LLC Investor	Profit
	Serbian construction firms	Achieving a leading position in the Serbian construction industry and accessing the global market
	Architects, lawyers, managers of Serbian construction firms	Personal and company profit; advancement through professional engagement; acquisition of knowledge and skills needed for continuing development
Professionals		
Civil sector (professionals)	President of the Union of Architects of Serbia	Progress in architecture and urban planning
	President of Academy of Architecture of Serbia	Advocating and promoting interests of their respective organisations
	Head of Executive Board of Serbian Academy of Arts and Sciences (Architect)	Advancement through professional engagement; acquisition of knowledge and skills needed for continuing development
	Editor of Serbian construction-themed trade journal	
	President of Society of Architects of Belgrade	
	Architect (Activist of Don't Let Belgrade D(r)own)	Active involvement of public in development of their environment to avoid the common good and public resources becoming collateral damage

all individuals, groups, or organisations interested in changes to space or able to influence the outcomes of processes were treated as stakeholders. As the initial collection and chronological arrangement of events had allowed the researchers to observe the set of concrete actions, stakeholders, and outcomes of Belgrade Waterfront, this step required understanding the roles played by individuals and institutions in the events and activities. This allowed the study to directly link stakeholders with their respective mechanisms of action and clarify the scope of their influence on the final outcome (Maruna, 2013). Sources assessed as reliable through fact-checking in the first step were examined to identify direct statements made by various stakeholders relating to the Belgrade Waterfront case: Mayor of Belgrade, Prime Minister, City Government, National Government, cabinet ministers, political party officers, civil society representatives, business managers, investors, activists, professionals, and the like.

This task entailed arranging statements in chronological order, where each statement had to be accompanied by its date, source, title of news feature, name and office of person making the statement, and the actual quotation. The assignment also required stakeholders in the production of space to be categorised by sectoral affiliation, i.e. whether they came from the public, private, or civil sectors. This step centred on an analysis of statements about Belgrade Waterfront made by experts and the recognition of their roles, or interests, which revealed the actual space available for professional action. A total of seven statements were made in 2012, exclusively by public officials; this number rose to 74 in 2015, with stakeholders from the public, private, and civil sector all represented. Professionals made 49 statements between 2012 and 2015. Stakeholder analysis also included the recognition of their formal roles and the formal interests they represented (see Table 2).

3.4 Reviewing development policies

The final step in researching Belgrade Waterfront entailed collecting and reviewing formal decisions relevant to the case study. The decisions were arranged in chronological order by their date of enactment. The review comprised development documents such as strategies, plans, development programmes, projects, studies, real property purchase agreements, amendments to legislation, and the like. It was also necessary to select documents pertaining to national, regional, and local policies, as well as other sectoral policies (social, environmental, cultural, spatial planning, etc.). Although the project primarily affects the area of Belgrade, its elevation to a matter of national significance, as borne out by events highlighted above, required analysis of both national and local-level decisions (see Table 3).

4. DISCUSSION: Understanding the decision-making process, spheres of interest, and power dynamics

The study of the controversial Belgrade Waterfront case, performed through the pedagogical model described above, allowed students to master key issues examined by planning theory (Lazarević Bajec, 1992): what planning is, how plans are made, and how planning is positioned in the contemporary context of space production in Serbia's post-socialist transition. In parallel with introducing new knowledge, the pedagogical model promoted the development of critical thinking and permitted understanding of the complexities of professional practice and the role of individuals in it.

Urban development is, on the whole, a reflection of socio-economic and political circumstances, or, more precisely, the result of myriad interests. Stakeholders' interests stem from the respective value frameworks in which they move and which they accept, and may be grouped by sectoral affiliation or type of power – political, economic, or social – that these actors represent (Maruna, 2013). The variety of interests in play often leads to conflict, which is the consequence of differences in the value frameworks of stakeholders in the process of space production. As such, physical structure, the tangible output of space production, represents the victorious set of values and depends on the power of the dominant stakeholder. As the issue is one of urban development, architects and planners play essential roles in all stages of governing the process of space production. Their roles are twofold: more broadly, they safeguard the public interest in different sectors, whilst a narrower interpretation of these roles reduces them to mere developers of plans. The positioning of the importance of plans is of the utmost importance for spatial governance: here it must be made clear whether plans are seen only as an instrument to exercise a group of dominant interests, or as a means for attaining the public interest, with clearly defined mechanisms for implementation.

The socio-political context of Serbia's transition has produced a set of circumstances wherein stakeholders in the process of space production act without sufficiently clear rules and depend on means at their disposal at any given moment to pursue their interests. This permits various types of formal and informal action within an institutional framework characterised by unclear procedures and powers, as well as an opaque decision-making process that favours particular interests.

The preponderance of public-sector interests and political power in the Belgrade Waterfront project primarily reflects the interests of the governing political party. The events and decisions reviewed reveal the positions and intentions of the ruling party, resulting in decision-making about the project being reduced to only the Government and one investor, as well as in the project being assigned national importance although it is restricted to the City of Belgrade. They also illustrate the existence of formal avenues for public involvement that, however, do not facilitate the acknowledgment of comments or suggestions voiced by the civil sector, meaning that social power remains unexercised. The statutory planning process is in this case viewed as only a set of obsolete procedures, with planning transformed into an instrument to be wielded by the governing party. The role of planning institutions was only to carry out the decision to execute – legalise – the nationally-significant Belgrade Waterfront project by developing the required plan. When a group of experts, members of scientific bodies and professional organisations, and the country's highest scientific institutions, attempted to voice their opposition to amendments to plans and legislation and the enactment of the planning document for the project and make suggestions for improvement, they were met with casual dismissal.

Table 3: Collection and review of decisions (Source: Authors).

Year	Date of enactment	Decision
2012	13. 03. 2012	Decision to call general election
2013	28. 03. 2013	Decision to enter into joint venture agreement with Al Dahra
	24. 09. 2013	Decision to dismiss Mayor
2014	29. 01. 2014	President of Serbia dissolves Serbian Parliament and calls snap general election
	01. 05. 2014	Serbian Government designates Belgrade Waterfront a project of national significance
	26. 05. 2014	Government decision to incorporate Belgrade Waterfront LLC
	03. 06. 2014	Government decision to develop Belgrade Waterfront Spatial Plan
	22. 07. 2014	Decision to amend General Urban Plan pursuant to Law on Planning and Construction
	03. 09. 2014	Contract to develop Belgrade Waterfront Spatial Plan entered into with Belgrade Urban Planning Institute
	18. 09. 2014	Serbian Parliament enacts Amendments to Belgrade General Urban Plan to 2021
	18. 09. 2014	Restrictions from Tall Buildings Study for Belgrade removed
	08. 12. 2014	Serbian Parliament enacts amendments to Planning and Construction Law enacted
	31. 12. 2014	Serbian Parliament enacts Belgrade Waterfront Spatial Plan
2015	31. 01. 2015	Belgrade Waterfront Spatial Plan takes effect
	08. 04. 2015	Law Declaring Belgrade Waterfront a Project of National Significance and Regulating Specific Expropriation and Permitting Requirements enacted
	08. 04. 2015	Serbian Parliament enacts special legislation
	26. 04. 2015	Joint venture agreement signed for Belgrade Waterfront_
	25. 09. 2015	Planning permission issued for first two mixed-use residential and commercial towers

Review of publicly available information through clearly defined research steps and tasks resulted in a methodical and gradual construction of understanding of the complexity of spheres of interest and power dynamics, as well as of the position of architects and urban planners in the process of space production. This methodological approach revealed the potential and means for developing research skills in future planners, understanding political processes within spatial development, and understanding dominant interests and their interrelationships. Professionals' views of and reactions to processes employed to implement Belgrade Waterfront constituted an attempt to influence the project, but, in a situation where political power dominates, their role as advocates of public interest was completely side-lined. Analysis of the news, events, statements, and decisions presented above gradually facilitated the development of critical thinking with respect to information published in the media. Reading interests, formulating them, and re-examining the difference between formal interests within each sector and information available through the media constitutes the foundation on which to build the reflexive role of future planners.

5. CONCLUSION

This innovative methodology in researching controversial case studies in urban development entails clearly defined steps and tasks designed to aid in understanding circumstances that are an integral part of the process of space production. Challenges to studying the theory of planning identified on the example of Belgrade Waterfront reveal the potential and means for developing critical thinking about the urban development of Belgrade and planning practices that form one of its components. The collection and analysis of information published in the media through the four steps of becoming acquainted with the case, understanding the socio-economic context, identifying stakeholders in the process of space production, and reviewing development policies led to the gradual construction of reflexion on the circumstances in which Belgrade Waterfront is being implemented and the environment created by the media. Understanding the positions of professionals and their interests, as well as identifying the types of powers possessed by the various stakeholders in the process of space production, is of particular significance for constructing reflexion on the current state of spatial development in transition. In this regard, acknowledging political circumstances, formulating interests, and recognising relationships between interest groups and their powers within their respective sectors is seen as a contribution to creating the role of the planner in urban development. Constructing the reflexive role of the planner in processes that take place in spatial development presents an opportunity to enhance planning practice in Serbia and incorporate the views of the profession into urban development in a broader sense.

REFERENCES

Beauregard, R. (1995). Edge cities. *Journal of Planning Education and Research 14*, 163-166.

ECTP-CEU. (2016). *Stage 2 Study on the Recognition of Planning Qualifications in Europe.* ECTP-CEU. Retrieved from ECTP-CEU.

Frank, N. (2002). Rethinking Planning Theory for a Master's-Level Curriculum. *Journal of Planning Education and Research 21*, 320-330.

Friedmann, J. (1995). Teaching planning theory. *Journal of Planning Education and Research 14*, 156-162.

Klosterman, R. E. (2011). Planning Theory Education: A Thirty - Year Review. *Journal of Planning Education and Research, 31 (3)*, 319-331.

Lazarević, B. N. (1992). Uvod u teoriju planiranja. In B. N. Lazarević, *Istraživanje prostora* (pp. 11-34). Beograd: Arhitektonski fakultet.

Lazarević, B. N. (2009). Rational or collaborative model of urban planning in Serbia: institutional limitation . *Serbian architectual journal, Vol.1, Issue 2, Belgrade*, 81-106.

Maruna, M. (2013). *Urbanizam Beograda - priručnik za istraživanje procesa proizvodnje prostora.* Beograd: Univerzitet u Beogradu, Arhitektonski fakultet.

Maruna, M. (2015). Can planning solutions be evaluated without insight into the process of their creation. *REAL CORP.* Ghent, Belgium.

Milovanović, R. D. (2015). Edukacija za rehabilitaciju pozicije i uloge urbanista u procesima upravljanja razvojem. In *Inovativni metodološki pristup izradi master rada: doprinos edukaciji profila urbaniste.* Belgrade: Univerzitet u Beogradu - Arhitektonski fakultet.

Milovanović, R. D., Živković, J., & Lalović, K. (2013). Changing architectural education for reaching sustainable future: a contribution to the discussion. *Spatium*, 75-80.

Olesen, K. (2018). Teaching planning theory as planner roles in urban planning education. *Higher Education Pedagofies, 3 (1)*, 23-29.

Perić, A., & Maruna, M. (2012). Predstavnici društvene akcije u procesu regeneracije priobalja - slučaj braunfild lokacije „Luka Beograd". *Sociologija i prostor*, 61-88.

Petovar, K. (2010). Grad bez građana – tako se gradi(lo) u Beogradu i Srbiji. *Republika*, 484-485.

Petrović, M. (2009). Transformacija gradova ka depolitizaciji urbanog pitanja.

III.

PROJEKTI

PROJECTS

MEMUD – Skupni srednjeevropski magistrski študij urbanističnega oblikovanja

MEMUD – Middle European Joint Master for Urban Design

UDK: UDK: 71:378(061.1 EU) 1.03 Kratki znanstveni prispevek / Short Scientific Article SUBMITTED: August 2018 / REVISED: September 2018 / PUBLISHED: November 2018

Avstrija – Hrvaška - Slovenija

2016-2019

TIP PROJEKTA *TYPE OF PROJECT*
mednarodni raziskovalni projekt*/ international research project*
Erasmus+, Strategic Partnerships in the field of Higher Education

DELOVNA SKUPINA *WORKING GROUP*
Hrvoje Bartulović (UNIST), Ilka Čerpes (UL FA), Vid Degleria (UL FA), Bernhard Eder (TUW), Alenka Fikfak (UL-FA), Dario Gabrić (UNIST), Tadej Glažar (UL-FA), Ana Grgić (UNIST), Michael Klein (TUW), Cristoph Luchsinger (TUW), Sanja Matijević Barčot (UNIST), Markus Tomaselli (TUW)

VODILNI PARTNER *PROJECT LEADER*
Tehniška univerza na Dunaju, Inštitut za urbanistično oblikovanje in krajinsko arhitekturo (TUW) / Vienna University of Technology, Institut of Urban Design and Landscape Architecture (TUW); Prof. Christoph Luchsinger

PROJEKTNI PARTNERJI *PROJECT PARTNERS*
Univerza v Ljubljani, Fakulteta za arhitekturo (UL FA) / University of Ljubljana, Faculty of Architecture (UL FA) in Sveučilišče v Splitu, Fakulteta za gradbeništvo, arhitekturo in geodezijo (UNIST) / University of Split, Faculty of Civil Engineering, Architecture and Geodes*y* (UNIST)

PROJEKT FINANCIRAN S STRANI *PROJECT CO-FUNDED BY*
Evropska komisija, Erasmus+ / European Commission, Erasmus+
Avstrijska agencija za mednarodno mobilnost in sodelovanje na področju izobraževanja, znanosti in raziskovanja (OeAD) / Austrian agency for international mobility and cooperation in education, science and research (OeAD)

INTERNET STRAN *WEB PAGE*
http://memud.eu/about/

GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*
doc. dr. Ilka Čerpes

VSEBINA

Namen projekta Skupni srednjeevropski magistrski študijski program urbanističnega oblikovanja / Middle European Joint Master for Urban Design (MEMUD) je projekt mednarodnega sodelovanje pri razvoju izobraževanja in raziskovanja na področju urbanističnega oblikovanja s težiščem v prostoru Srednje Evrope. Osrednja tema projekta je integracija in izmenjava znanj povezanih z visokošolskim izobraževanjem urbanističnih oblikovalcev in oblikovalk. Rezultat projekta je struktura skupnega magistrskega študijskega programa urbanističnega oblikovanja, ki podpira dolgoročno izmenjavo znanj med različnimi univerzami in s tem trajno spreminjanje urbanega okolja v katerem delujejo. Ne nazadnje je mednarodni študijski program tudi priložnost za ustvarjanje novih delovnih mest s področja urbanizma v širši regiji.

Ključni cilji projekta so izmenjava, internacionalizacija in nadgradnja znanj s področja urbanističnega oblikovanja v srednje evropskem prostoru preko:

- Specifikacije in diverzifikacije študijskih programov s področja arhitekture in urbanizma, predvsem specializacija obstoječih študijskih programov v Srednji in Jugo-vzhodni Evropi. Ti so vsebinsko podobni in nimajo vgrajenih posebnosti sicer skupnih kulturno-zgodovinskih temeljev razvoja urbanih struktur in izobraževalnih sistemov, ki so priložnost za ustvarjanje posebnih znaj in s tem novih zaposlitvenih možnosti.
- Razvoja inovativnih metod poučevanja s središčem na projektnem delu: predvsem neposredna komunikacija s študirajočimi, individualni pristop, integracija prakse (raziskovanja) in poučevanja, mednarodna izmenjava študentov / študentk in učiteljev / učiteljic.
- Ozaveščanja o družbeni vlogi in odgovornosti urbanističnega oblikovalca / ke, predvsem vzgoja za javno odgovorno etično delovanje in prevzemanje vloge mediatorja med različnimi družbenimi skupinami, ki sooblikujejo razvojne procese v fizičnem in družbenem prostoru.

Rezultati projekta so vsebina in struktura študijskega programa, strategije za študentske in učiteljske mobilnosti, informativni priročnik za študirajoče ter gradiva in orodja za promocijo študijskega programa.

METODA IN PROGRAM DELA NA RAZISKAVI

Projekt MEMUD je nadaljevanje dolgoletnega sodelovanja vpletenih partnerskih univerz, projektnih skupin in študirajočih na različnih raziskovalnih projektih. Rezultati in izkušnje predhodnega sodelovanja so povzeti in sistematično vgrajeni v končne rezultate. Pri oblikovanju vsebin študijskega programa sodelujejo pristojne profesionalne in akademske ustanove ter uveljavljeni strokovnjaki iz regije. Proces priprave gradiva in sestavljanje vsebine študijskega programa je razvit v več korakih:

1. Analiza prostorskega, kulturnega, zgodovinskega in profesionalnega okolja v regiji, kartiranje podobnosti in razlik v znanju, izkušnjah, tradiciji na področju urbanističnega oblikovanja, analiza zaposlitvenih možnosti, analiza pomanjkljivosti v kulturi urbanističnega načrtovanja, izdelava preglednice skupnih temeljev v kulturi urbanističnega načrtovanja, vrednotenje rezultatov preko intervjujev z uveljavljenimi strokovnjaki.

Slika 1: Prikaz internetne strani MEMUD (vir: https://memud.eu/category/work/).

2. Razvoj vsebin študijskega programa MEMUD, analiza človeških virov, analiza obstoječih študijskih programov, analiza podatkovnih baz. Sledi izdelava strukture študijskega programa in zasnova strategij poučevanja, opis orodij za poučevanje, opredelitev vsebinskih modulov in izdelava načrta za izvajanje študijskih aktivnosti. Sledi diseminacija vmesnih rezultatov, analiza odzivov in možnosti za implementacijo študijskega programa.
3. Testiranje študijskega programa v okviru obstoječih študijskih programov na partnerskih univerzah na podlagi obstoječih programov mednarodnih izmenjav študentov / študentk in visokošolskih učiteljev / učiteljic.
4. Izdelava modela za izmenjavo znanj med partnerskimi univerzami (projektno delo s študenti in študentkami v seminarju, študije primerov, delo na terenu) in priprava podatkovnih baz za internetno stran.
5. Priprava priročnika z informativnim gradivom za študente in študentke, ki podrobneje predstavi profil, vsebino in način izvajanja študijskega programa MEMUD, pogoje za vpis, ter druge potrebne informacije o možnosti nastanitve, štipendiranju ipd.

6. Promocija študijskega programa MEMUD preko oblikovanja celostne podobe, preko organizacije okroglih miz, z aktiviranjem internetne strani, z izgradnjo baze kontaktov zainteresiranih ustanov, podjetij, neformalnih družbenih skupin, civilne družbe in posameznikov, s posredovanjem informacij preko medijev in osebnega naslavljanja splošne, akademske in strokovne javnosti.

Delo na projektu poteka organizirano v obliki projektnih sestankov, z izmenjavo informacij preko elektronskih medijev in platform, v okviru razprav na okroglih mizah z zunanjimi udeleženci in v pilotni fazi projekta v okviru skupnih študijskih projektov sodelujočih partnerskih univerz.

ZAKLJUČEK

Projekt MEMUD (Middle European Joint Master for Urban Design) združuje tri partnerske univerze iz Dunaja, Ljubljane in Splita v skupnem prizadevanju razviti vsebine za skupni srednjeevropski magistrski študijski program urbanističnega oblikovanja. Cilj projekta je dolgoročna izmenjava znanja med univerzami v Srednje evropskem prostoru in s tem trajno spreminjanje urbanega okolja, v katerem delujejo. Rezultat projekta je skupni študijski program, ki sloni na specifikaciji in diverzifikaciji študijskih programov s področja arhitekture in urbanizma, na razvoju inovativnih metod poučevanja s središčem na projektnem delu in na ozaveščanja o družbeni vlogi in odgovornosti urbanističnega oblikovalca / ke. Ne nazadnje je mednarodni študijski program tudi priložnost za ustvarjanje novih delovnih mest s področja urbanizma v širši regiji.

ABSTRACT

MEMUD (Middle European Joint Master for Urban Design) is a project of transnational cooperation in the field of higher education and research with a focus on the central European region. Its main focus lies on the exchange, integration and mediation of knowledge, so as on forming highly skilled urban designer who are able to propose new solutions to the challenges of tomorrow´s cities. It tackles the following issues: the exchange and internationalization of knowledge, the specification and diversification of education in the field, innovation in teaching and social dimension of higher education. The programme seeks to establish a structure that allows the long-term exchange of knowledge, not to be limited to universities, but to be open to entire urban sphere. Transnational program and its training methods create preconditions for new job opportunities within European field of urban design and urbanism. Program structure and content is developed in following steps: surveying respective national and local environment of planning and design including atlas of common cultural and historical ground, developing curriculum, strategies, tools, course modules, training packages and database, testing and evaluating curriculum and its operationalization, developing mobility exchange strategy including students´ handbook, disseminating and promoting the programme. Within activities of the project three partner universities establish firm and long-term collaboration which could add benefits to European education and research in the field of urban design as well as to the European urban environment in general.

Načrtovanje obrečnega prostora v mestih kot del trajnostnega urbanega razvoja

Development of urban riverfronts as a part of a sustainable development

Slovenija, Rusija *Slovenia, Russia*

2016-2018

1.03 Kratki znanstveni prispevek / Short Scientific Article ▮ SUBMITTED: September 2018 / PUBLISHED: November 2018

ŠT. PROJEKTA *PROJECT NO.*
BI-RU/16-18-046

TIP PROJEKTA *TYPE OF PROJECT*
Bilateralni projekt (ARRS) / *Bilateral project (SRA)*

DELOVNA SKUPINA *WORKING GROUP*
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SLOVENSKI PARTNER (VODILNI) / SLOVENE PARTNER (*LEADER)*
Univerza v Ljubljani, Fakulteta za arhitekturo *University of Ljubljana, Faculty of Architecture* (UL FA): asist. dr. Špela Verovšek

RUSKI PARTNER *RUSSIAN PARTNERS*
Irkutsk National Research Technical University, Institute of Architecture and Construction, prof. dr. Meerovich Mark Grigoryevich

PROJEKT FINANCIRAN S STRANI *PROJECT CO-FUNDED BY*
Javna agencija za raziskovalno dejavnost Republike Slovenije (ARRS)
Slovenian Research Agency and

GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*
asist. dr. Špela Verovšek

VSEBINA

1 Uvod

Projekt bilateralnega sodelovanja v danem obdobju se ukvarja z aktualno tematiko obrečnih mest, to je *Načrtovanje obrečnega prostora v mestih kot del trajnostnega urbanega razvoja*. Sodelovanje ruskih in slovenskih raziskovalcev in strokovnjakov gradi na različnih izkušnjah in prenosu znanja o urbanem načrtovanju in oblikovanju prostora mestnih rek in njihovega zaledja. Ljubljana beleži v zadnjem desetletju intenziven razvoj in spremembe pri razvoju nabrežij Ljubljanice, ki dajejo mestu poseben pečat. Podobno je tudi Irkutsk močno urbanistično zaznamovan z rečno mrežo, ki mestu daje specifično identiteto, raznolikost podobe in potencial za razvoj kvalitete prostora in bivanja (Nuyanzina & Kosolapova, 2017).

Obe mesti se soočata tudi s problematiko pritiskov na razvoj in oblikovanje obrečnega mestnega prostora. Mestni obrežni prostori so z vidika ekonomskega potenciala namreč vselej zelo zanimivi za najrazličnejše interesne skupine in podvrženi moči kapitala. To se v obeh mestih deloma kaže tudi v vprašljivih praksah urejanja ter nezadostno urejeni rabi prostora (npr. stara industrija in degradirana območja vzdolž rek, neurejene zelene površine in nabrežja, nesanirana odlagališča odpadnih materialov, slabo vzdrževane poti in urbana oprema, slaba povezljivost obrežja z ostalimi prostori…). Pri tem ravno reke in rečna nabrežja, kot ena najbolj ranljivih ekosistemov, zahtevajo posebno pozornost načrtovalcev in oblikovalcev ter celostno premišljeno urejanje, prenovo ali revitalizacijo.

Tako Ljubljana kot Irkutsk nosita velik potencial razvoja mestnega prostora prav na temelju rečne mreže, strateški dokumenti urejanja prostora to potrjujejo in spodbujajo. Celostno povezovanje rečnih in drugih mestnih prostorov ter aktivnosti je ena od prioritet razvoja v obeh mestih. Tudi druga »rečna mesta« širom Evrope si prizadevajo k trajnostni in celostni ureditvi območja rek, kar se nenazadnje kaže v številu akcij in projektov, ter končnih ureditev (implementacij), ki smo jim lahko priča v zadnjih dveh desetletjih. Prizadevanja v tej smeri vključujejo velik nabor ukrepov, od kombiniranja različnih družbenih aktivnosti in rabe, družbenih dogodkov, urejanja pasivnih rekreacijskih površin, intenzivnih točk rabe, do urejanja protipoplavnosti, melioracij in sanacij, zagotavljanja okoljskega ravnovesja ter urejanja povezav do ostalih mestnih površin (prometno, vizualno, funkcijsko itd.).

2 Izzivi in metode dela

Kljub obsežni zalogi znanja na področju razvoja mestnih obrečnih prostorov , tako v strateškem kot izvedbenem smislu, pa revitalizacija in urejanje v posameznem, lokalno ali regionalno specifičnem primeru, zahteva prilagojen in vedno znova premišljen pristop k procesu urejanja. Razlog za to je, da vsak rečni prostor kaže edinstven odnos med reko in mestom, določajo pa ga različni zgodovinski, kulturni, socialni, infrastrukturni in okoljski pogoji (Verovšek & Čavić, 2017).

Pričujoči projekt in njegova struktura ter izvedba omogočajo ne le izmenjavo izkušenj med slovensko in rusko strokovno in raziskovalno srenjo, pač pa tudi povezovanje s strokovnjaki in raziskovalci drugih držav in mest, ki so vključeni v projekt zaradi svojih znanj in izkušenj na področju uspešnega urejanja rečnih prostorov, pametnih, tehnološko podprtih in lokalno-specifičnih rešitev. Sodelovanje tako prinaša izziv tako v smislu raziskovalno/strokovne izmenjave znanj in iskanja rešitev (metodološko in aplikativno), krepitve akademskega povezovanja, kot tudi dejanski prispevek k dvigu trajnosti pri načrtovanju rečnega prostora mesta in kakovosti bivanja v mestih. Vsebina in rezultati projekta prispevajo k dvema od ciljev tekočega raziskovalnega programa na Fakulteti za arhitekturo (Trajnostno oblikovanje kvalitetnega bivalnega okolja - P5-0068), in sicer: (a) razvoju sodobnih konceptov arhitekture in urbanizma vezanih na specifiko arhitekturnega prostora in kulturno dediščino v Sloveniji, in (b) raziskavam metod dialoga in izobraževanja o trajnostnem prostorskem razvoju v arhitekturi in urbanizmu. Slednji je posvečen arhitekturnemu in urbanističnemu izobraževanju, razvoju metod za pogajalski urbanizem ter med-disciplinarnemu in medkulturnemu sodelovanju.

Projekt v metodološkem smislu sledi primerjalni analizi serije prostorskih problemov ali intervencij (implementacij) na primeru obrečnega prostora Ljubljanice in Angare ter njenih pritokov. V raziskovalno shemo projekta se umeščata tudi doprinos letnega simpozija na temo razvoja obrečnih prostorov na *Irkutsk National Research Technical University* ter doprinos v okviru mednarodne šole »International Baikal Winter University of Urban Planning and Design«, kjer strokovnjaki in raziskovalci sodelujejo na izbrani geo-prostorski problematiki.

3 Zaključek

Ljubljana in Irkutsk sta v svojih naravno-geografskih in družbeno-kontekstualnih značilnostih daleč vsaksebi, pa vendarle v razvoju obrečnega prostora iščeta povsem podobne prostorske kvalitete (zelena rekreacijska os, povezanost prostorov, 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 ruskih kot slovenskih strokovnjakov in raziskovalcev ter posredno udeleženih strokovnjakov.

Dosedanji rezultati doprinašajo k analitični zalogi znanja na obravnavanih prostorih (v ekološko-okoljskem smislu, ekonomskih kapacitete območij in njihove demografsko in družbeno kulturne strukture itd). Prostor obravnave je bil naknadno kategoriziran v pet razredov trajnostne učinkovitosti. Kategorizacija je temeljila na različnih kriterijih in kazalcih - od naravno-geografskih, družbenih, kazalcih ekonomske vitalnosti, do okolijskih in nenazadnje arhitekturno-urbanističnih. Z vidika identitete teh prostorov rezultati krepijo njihovo povezavo s preteklim razvojem, kar je pomembno za izhodišča njihovega nadaljnjega razvoja, ki spoštuje kulturno dediščino ter omogoča boljše razmere v smislu razvoja skupnosti in odnosa posameznikov do danega okolja.

Poleg rezultatov v prostorsko-analitičnem okviru urbanističnega načrtovanja, pa projekt uvaja dobro delujoč model sodelovanja in usposabljanja

strokovnjakov in raziskovalcev različnih strok, povezanih z urbanističnim načrtovanjem, in jim omogoči, da razvijejo višjo raven konceptnega mišljenja, medsebojne komunikacije, obvladovanja analitičnih in oblikovalskih pristopov pri razvoju dinamičnega načrtovanja mesta, pri čemer spodbuja sodelovanje mladih strokovnjakov in raziskovalcev.

LITERATURA IN VIRI

Nuyanzina, V., Kosolapova, A. 2017. Urban rivers as a part of sustainable development. Project Baikal, Russian Federation, n. 51, p. 16-27.

Verovšek, Š., Čavić, L. 2017. Expressions of spatial quality and local identity in urban riverfronts. Annales, anali za istrske in mediteranske študije, Series historia et sociologia, 27 (2), p. 349-362.

ABSTRACT

The research bilateral project proposes cooperation of the Slovene and Russian professionals and researchers on the theme: Urban rivers as a part of sustainable development. The collaboration builds upon the different experiences and knowledge transfer concerning the city rivers and riverfronts development. Ljubljana records strong an evident development of the river Ljubljanica banks and nearby areas in last decade. Similarly Irkutsk is denoted by the uniqueness of the Irkutsk river net forming the distinctive landscape diversity of the city territory. Both cities face pressures of different groups of interest and capital to capture the river bank as one of the most potential areas in the city. The proposed cooperation in these terms brings the benefits for both – the research/professional domain within the two cities (Ljubljana and Irkutsk), strengthened academic networking as well to the actual quality of living in Ljubljana and Irkutsk.

Analiza stanja na področju arhitekture javnih vrtcev in šol v Sloveniji – evidentiranje, vrednotenje in varovanje primerov kakovostne (trajnostne) arhitekturne prakse

Analysis of the situation in the field of architecture of public kindergartens and schools in Slovenia – recording, evaluating and protecting examples of quality (sustainable) architectural practice

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BLENKUŠ, Matej, ZORC, Mitja. Izsledki kvantitativne analize stavbnega fonda osnovnih šol v Sloveniji = The results of a quantitative analysis of the building fund for elementary schools in Slovenia. AR : arhitektura, raziskave, ISSN 1581-6974. [Spletna izd.], 2017, [Št.] 2, str. 48-59. http://www.fa.uni-lj.si/filelib/9_ar/2017-2/ar2017-2-separat5-b-2.pdf. [COBISS.SI-ID 3551108]

ZBAŠNIK-SENEGAČNIK, Martina, LUNDER VERLIČ, Stanka, BLENKUŠ, Matej, GREGORSKI, Mojca, ZORC, Mitja, ŠTEMBERGER, Tina, CENCIČ, Majda. Interdisciplinarni posvet o kakovosti arhitekture javnih vrtcev in osnovnih šol : uvodno predavanje in predstavitev projekta in raziskovalcev, MIZŠ, Ljubljana, 23. 1. 2018. [COBISS.SI-ID 3554948]

VSEBINA

Aktualne razmere na družbenem, tehnološkem, okoljskem, pedagoškem in drugih področjih na začetku 21. stoletja postavljajo obstoječe stavbe za vzgojo in izobraževanje pred velike izzive. Tradicionalni prostor varovanja otrok, skupinskega učenja ter splošnih pravil so nadomestili novi inovativni pedagoški pristopi, ki temeljijo na obravnavanju otrok kot individualnih osebnosti z lastnim ustvarjalnim potencialom. Ob tem se spreminjajo tudi prostorski normativi, ki terjajo večje površine, hkrati pa se pojavljajo potrebe po fleksibilnih in raznovrstno zasnovanih prostorih.

Preko osnovnega raziskovalnega vprašanja, kakšne so značilnosti kakovostnega fizičnega prostora za vzgojo in izobraževanje javnih vrtcev in osnovnih šol, prepoznavamo in opredeljujemo značilnosti kakovostnega prostora z vidika arhitekturne in pedagoške stroke v povezavi z medicinsko stroko, psihologijo, krajinsko arhitekturo, ekonomiko z vidika uporabnika, z vidika trajnosti ...

METODE DELA

Stavbe vrtcev in šol so bile obravnavane ločeno, kot dve vzporedni raziskavi po enaki metodi. Projekt je bil razdeljen v več vsebinskih faz, pri katerih so bile uporabljene naslednje metode dela:

- pregled relevantne literature in virov ter primerov dobrih praks
- zbiranje osnovnih podatkov o stavbah javnih šol in vrtcev
- evidentiranje osnovnih matičnih in podružničnih šol ter vrtcev (776 šol in 617 vrtcev)
- izoblikovanje kriterijev za evidentiranje reprezentativnega vzorca šol in vrtcev
- oblikovanje reprezentativnih vzorcev javnih šol in vrtcev
- anketiranje uporabnikov (ravnateljev, učencev)
- analiza in vrednotenje izbranih primerov šol in vrtcev

REZULTATI

- Oblikovanje kriterijev za kategorizacijo stavb javnih šol in vrtcev v Sloveniji – kriteriji so bili opredeljeni glede na velikost, lokacijo v urbanem prostoru, čas izgradnje, arhitekturni pomen. Ob tem je bila upoštevana tudi regionalna zastopanost.
- Oblikovanje reprezentativnega vzorca vzgojno izobraževalnih stavb – s pomočjo štirih glavnih kriterijev za kategorizacijo stavb je bil izoblikovan reprezentativni raziskovalni vzorec 25 stavb vrtcev in 25 stavb šol, s katerim so raznoliki primeri šol in vrtcev primerni za nadaljnjo analizo.
- Izdelava evidenčnih listov za izbrane šole in vrtce – posamezne stavbe so bile analizirane z različnih vidikov arhitekturne stroke: urbanistični vidik, funkcionalni vidik, konceptualno-prostorski vidik, vidik uporabe tehnologije in materialov, arhitekturno-energijski vidik (bivalno ugodje – osvetlitev igralnic), vidik varovanja kulturne dediščine/kulturne identitete/elementov varovanja.
- Interdisciplinarni posvet – v okviru projekta sta bila organizirana

Slika 1: Grafični prikaz rezultatov anketnega dela analize obstoječih objektov vrtcev.

okrogla miza in posvet, na katerih so bila izpostavljena raziskovalna vprašanja strokovnjakom s področja pedagogike, psihologije, medicine, arhitekturne tehnologije, krajinske arhitekture, kulturne dediščine ter ekonomike in ekonomije. Strokovnjaki so opredelili vidike kakovosti prostorov šol in vrtcev s posameznih področij.

- Oblikovanje interdisciplinarnih dejavnikov za vrednotenje kakovosti arhitekture stavb – na osnovi analiz izbranih vrtcev in šol ter strokovnih prispevkov sodelujočih strokovnjakov z različnih področij so bili izpostavljeni ključni dejavniki za vrednotenje, ki vključujejo faze procesiranja (načrtovanje investicij, načrtovanje stavb in ureditev, vzdrževanje stavb in ureditev) ter arhitekturne elemente zasnove (umeščanje stavb in vrtcev v prostor, konstrukcijska in tehnična zasnova stavb, oblikovanje splošnih učilnic in igralnic; fleksibilna raba, prilagodljivost, združevanje in povezovanje prostorov, oblikovanje večnamenskih prostorov in komunikacij, oblikovanje drugih prostorov, zasnova in oblikovanje zunanjega prostora).

Cilji projekta

- Oblikovanje strokovnih podlag za izdelavo smernic za varovanje primerov kakovostne arhitekturne prakse in celovite politike na področju načrtovanja vzgojno-izobraževalnih ustanov.
- Priprava priročnika s strokovnimi podlagami za načrtovalce, investitorje, odločevalce ...
- Potujoča razstava s prikazom evidentiranih objektov kakovostne arhitekture šol in vrtcev.

ABSTRACT

The traditional childcare space and collective learning have been replaced by new innovative pedagogical approaches based on recognising a child as an individual with their own creative potential. This generates changes in facility-design standards, which require bigger surfaces. Facilities need to be flexible and diverse. Apart from architecture and pedagogy, the design of educational facilities also includes experts in the fields of medicine, psychology, landscape architecture, economics, architectural technology.

Pregled in analiza razvojnih vizij in potencialov slovenskih mest za opredelitev ključnih ukrepov urbanega razvoja.

Review and analysis of development visions and potentials of Slovenian cities for defining key urban development measures.

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VSEBINA

Urejanje in načrtovanje prostora je odraz civiliziranosti, socialne ozaveščenosti, skrbi za urejeno, zdravo in trajnostno okolje ter kulturni odraz vsakega naroda. Pri tem so ključni generatorji razvoja mest, ki se po vstopu v novo tisočletje soočajo z različnimi izzivi, naslednji: vlaganje v konkurenčnost s spodbujanjem obstoječih gospodarskih dejavnosti, inovativnosti in ustvarjalnosti ter privabljanje novih naložb in hkrati doseganje vizije modela visoke kakovosti življenja. Kot posledico različnih strategij, vizij in razvojnih odločitev prepoznamo v prostoru razlike v stopnji razvitosti lokalnih skupnosti oziroma mest. S ciljem postopnega zmanjševanja razlik v razvitosti, z istočasnim zagotavljanjem vzdržnega in trajnostnega razvoja celotnega prostora Slovenije, je pri pripravi razvojnih politik mest potrebno poznati dejavnike, ki te razlike povzročajo in hkrati omogočajo razvoj strateških potencialov, ki bodo postali osnovno gonilo razvoja mest. S ciljem zagotoviti, da slovenska mesta tudi v širšem evropskem prostoru ostanejo konkurenčna, privlačna za bivanje in ekonomski razvoj, je potrebno okrepiti vsebinsko celovitost načrtovanja, pri čemer morajo biti obravnavane in vnaprej usklajevane različne komponente in vidiki mestnega razvoja, ki ga opredeljujejo (in omejujejo) mehanizmi tržnega gospodarstva.

Glavni namen raziskovalnega projekta je prepoznati glavne razvojne potenciale slovenskih mest. V kontekstu tržno naravnanega družbeno-ekonomskega sistema je urejanje prostora v splošnem in razvojno specifičnem smislu močno pogojeno z ekonomskimi gibanji in trendi. Potenciale je moč določiti skladno z razvojnimi vizijami in vizijami delovanja različnih deležnikov v mestu, ki generirajo ekonomsko aktivnost in moč mesta. Hkrati so pomembni socialni in okoljski parametri, ki vplivajo na zviševanja bivalne kvalitete v mestih. Predlagani ukrepi, ki so trdno vpeti v ekonomsko in administrativno-upravno realnost slovenskega prostora, naj bi pripomogli k izboljšanju in večji izkoriščenosti socialnih, prostorskih in okoljskih kakovosti slovenskih mest. V raziskavo so vključeni trije temeljni vidiki razvoja: ekonomski vidik, socialni vidik in okoljski vidik; na podlagi teh je cilj raziskave ugotoviti možnosti uvajanja ukrepov, ki bodo omogočali dvig kakovosti bivanja in konkurenčnosti slovenskega urbanega prostora.

Metoda dela v 1. fazi raziskave (2018)

Raziskovalni projekt je zastavljen interdisciplinarno. Vključeni so strokovnjaki s področja urbanizma, arhitekture, prostorskega načrtovanja, upravljanja in ekonomije. Raziskovalno ogrodje projekta v temelju sledi paradigmi trajnostne zasnove in upravljanja urbanih okolij, ki ima za cilj preseči današnje mehanicistične in statične oblike določanja rabe prostora in njegovega upravljanja. Predlagani pristop vključuje delovanje, ki zagotavlja prisotnost javnega interesa tudi v zasebnih in parcialnih posegih v urbani prostor. Projekt je razdeljen v dve fazi oz. štiri glavne delovne sklope:

R_1: pregled in analiza

Sklop obsega pregled relevantne literature s področja urbane ekonomije in gospodarstva, kakovosti celovitega bivanjskega okolja, urbana regija, trajnostni prostorski razvoj in trajnostna mesta, urbano zdravje, degradirana urbana območja, revitalizacija prostora, prostorske vizije in strategije. Sledi podrobna proučitev tujih primerov, predvsem aplikativnih, z vidika naprednega urbanega razvoja. Pregled literature bo opravljen na podlagi zastavljenega cilja: možnosti upravljanja procesov načrtovanja in izvedbe v slovenskem poslovnem prostoru. Vzporedno s tem prvi sklop obsega pregled registrov in obstoječih podatkov s ciljem opredeliti kakovostnih vzorcev za izvedbo raziskave, ki bo razčlenjena na tri področja: gospodarska vizija, socialno okolje in okoljski kazalniki kakovosti.

R_2: Izvedba raziskave

Na podlagi povzetkov in rezultatov sklopa R_1, drugi sklop predvideva raziskavo razvojnega stanja mest v Sloveniji z vidika gospodarskega razvoja in možnosti uvajanja sodobnih ukrepov urbanega razvoja. Oblikovan je nabor kazalnikov, ki bodo v pomoč pri nadaljnjih raziskavah katerih cilj je prepoznati potenciale razvoja mest. Pomemben cilj sklopa je definiranje začetnega nabora možnih ukrepov urbanega razvoja z uporabo premišljenih in učinkovitih principov financiranja projektov kot celovite teritorialne naložbe. Dodatno sklop obsega analize stanje lokalnih skupnost z vidika aktivnosti v urbanem prostoru (civilne iniciative kot oblike neformalne participacije pri sprejemanju odločitev o posegih v prostor), z vidika gospodarstvenikov ter z vidika kakovosti bivanja. V ta namen bo v 2. fazi raziskave opravljeno terensko delo z razgovori oz. anketami med različnimi deležniki.

Rezultati prve faze kažejo na različen vpliv ravni obravnave mest po treh raziskanih vidikih (ekonomski, socialni in okoljski). Medtem ko pri ekonomskem vidiku zbrani podatki, kazalniki na ravni občin oziroma mest že kažejo na nekatere razvojne potenciale mest, je pri socialnem in okoljskem vidiku na podlagi kazalnikov, ki temeljijo na statističnih podatkih, skoraj nemogoče enotno opredeliti potenciale. S tovrstni kazalniki na ravni občin namreč ni moč zajeti pomena lokacije za posamezne potenciale, saj ne upoštevajo prednosti in pomanjkljivosti, ki jih prinašajo prostorske značilnosti. Prav tako z zajemom demografskih kazalnikov na ravni občine ni mogoče prepoznati potenciala, ki ga za razvoj mesta predstavlja vključevanje prebivalcev v razvojne strategije. Prostorske razlike, ki na socialne in okoljske potenciale vplivajo, tako na ravni občin ni moč upoštevati, kar kaže na presplošno zbiranje podatkov in potrebo po analizi na nižjih, podrobnejših prostorskih ravneh.

V naslednji fazi raziskave (leto 2019) se bomo osredotočili na naslednje aktivnosti, ki bodo potrdile ali ovrgle rezultate 1. faze.

R_3: Obdelava podatkov

Tretji sklop bo obsegal obdelavo pridobljenih podatkov in pregled pripravljenega kartografskega gradiva glede na podatke, terensko delo ter analizo vizij dokumentov (na primeru 4 izbranih mest). Izvedena bo sistematična obdelava podatkov in analiza le-teh. Sklop sloni na pridobitvi vpogleda v sodobne oblike gospodarstev, aktivnosti, socialnih odnosov in aktivnosti v lokalnih skupnostih, načel »zdravega« okolja in družbe, odnosa med deležniki v prostoru, izboljšavo financiranja urbanega razvoja ipd. Vizije

potencialov razvoja bodo tako preverjene preko treh nivojev: delovanje gospodarstva, aktivnosti deležnikov v socialnem okolju in glede na kakovost bivanja, na katerega vpliva stanje okolja in razmere v prostoru. Cilj je pridobiti celoviti pregled pridobljenih podatkov z vidika opredeljevanja ukrepov urbanega razvoja za definiranje principov celovitih teritorialnih naložb.

R_4: Ukrepi urbanega razvoja

Četrti delovni sveženj je namenjen preveritvi vseh zbranih raziskovalnih podatkov in opravljenega raziskovalnega dela z namenom opredelitve učinkovitih ukrepov vodenja in financiranja urbanega razvoja. Osrednji vsebinski del tega sklopa je izdelava priporočil za posamezne deležnike in vzpostavitev sistemov medsebojnega sodelovanja. Preverjena bo uspešnost predhodno opravljenih korakov raziskave ter predlagane metodološke dopolnitve pristopov po posameznih področjih (predvsem R_2 in R_3). V četrtek delovnem sklopu bodo opredeljene tudi možnosti »trajnosti« raziskave v obliki prenosa znanja enoletnega projekta na različne deležnike v prostoru (možnosti nadaljevanja v obliki izobraževanja).

Zaključek

Raziskava celovito in časovno neobremenjeno evidentira, valorizira in določa usmeritve in ukrepe za izboljšanje urbanega razvoja mest. Raziskava kaže na pomembnost uspešnega financiranja urbanega razvoja, ki je mogoče le z izvajanjem premišljenih ukrepov urbanega razvoja, določenih na podlagi prepoznanih potencialov mest. V projektu bo razvit nov metodološki pristop za prepoznavanje urbanega razvojnega potenciala za specifiko slovenskega urbanega prostora. Metodologija, ki sloni na raziskovalnem kombiniranju že uveljavljenih in novih analitičnih orodij (preplet statističnih podatkov s preveritvijo stanja na terenu kot tudi odzivnosti javnosti) za prepoznavanje razvojnih potencialov mest, je doprinos k razvoju znanstveno-raziskovalnih pristopov na področju urejanja urbanega prostora, saj je zasnovana kot splošno uporaben pristop, ki ga je mogoče ponavljati v različnih kontekstih in okoljih. Hkrati prinaša konkretna nova strokovna spoznanja o razvojnih potencialih konkretnih slovenskih mest, ki temeljijo na pregledu statističnih in drugih javno dostopnih podatkov dopolnjenih s ciljnim terenskim zbiranjem in analizo podatkov, ki so interpretirani na inovativen in slovenskemu kontekstu prilagojen način. Pri tem metodologija temelji na izrazitem prepletu treh osnovnih vidikov (ekonomski, okoljski in socialni) in je plod interdisciplinarnega sodelovanja med urbanistično in ekonomsko stroko, ki morata z ostalimi podpornimi strokami združiti moči, da pride do pravih razvojnih prebojev. Ugotovitve raziskave bodo imele poleg znanstvenih tudi izrazito aplikativne rezultate, ki bodo lahko uporabni za izboljšanje procesov na področju prenove, načrtovanja in gradnje v mestih v okviru financiranja najprimernejših ukrepov urbanega razvoja.

ABSTRACT

Spatial management and planning is a reflection of the civilization, social awareness, endeavours for a maintained, healthy and sustainable environment, and as such a reflection of a culture of every nation. Cities play an important role as engines of growth and development. In the new millennium cities face various challenges, such us: investing in competitiveness by promoting existing economic activities, innovation and creativity, and attracting new investment while achieving a vision of a high quality of urban life, in particular through good practice in sustainable urban development. In Slovenia differences in the development level of local communities (towns, cities) occur. The aim is to gradually reduce these differences, while ensuring sustainable and resilient development of the whole territory of Slovenia. When drafting city development policies, it is necessary to understand the factors that caused these differences and to recognize different development potentials as key factors. Only in this way it is possible to overcome various challenges that cities face and to contribute to the effectiveness of the local communities.

The main purpose of the research project is to identify the main development potentials of Slovenian cities in the context of a market-oriented socio-economic system in which spatial planning in general, and the development of cities in a specific sense, is strongly dependent on economic trends. City development potentials are determined in accordance with the development and executive visions of the various stakeholders that generate or have a potential to generate the economic activity of a city, while taking into account and verifying the social and environmental parameters that further affect the increase in the quality of life in the cities. The main objective of the project is to propose urban development measures that lead to the improvement of the quality of urban areas in Slovenia by upgrading social, spatial and environmental qualities. The research project is set up interdisciplinary. The participating experts are coming from the fields of urban planning, architecture, spatial planning, management and economics. The research framework of the project follows the paradigm of sustainable urban planning and management, which aims to overcome today's mechanistic and static forms of land use planning and management. The proposed approach includes actions that ensure the presence of public interest also in private and partial interventions in urban space.

Slika 1: Trajnostni razvoj slovenskih mest. Prepoznavanje in izkoriščanje potencialov, primer koncepta »mesto znanaja« razvitega v okviru urbanistične delavnice za območje Ljubjana Bežigrad-Stožice. Vir sikovnega gradiva: Mesto znanja, City of Knowledge – COK, UL, Fakulteta za arhitekturo, 2008; mentorji: prof. mag. Peter Gabrijelčič, izr. prof. dr. Alenka Fikfak; študentje: Janez Peter Grom, Matjaž Suhadolc, Aleš Benet.

Sistemska podpora odločanju pri urbani prenovi slovenskih naselij z vidika uravnoteženja energijske učinkovitosti in upravljanja z lokalnimi viri v soseskah

Urban renewal decision support system balancing energy efficiency and management of local resources in neighbourhoods in Slovenia

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Slovenian Research Agency

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GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*
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VSEBINA

1 Uvod

Obseg raziskav, ki preučujejo vpliv organizacije grajenega okolja (oblika in skupnost) na doseganje trajnostnih ciljev družbe, se je v zadnjih letih znatno povečal, pri čemer se, poleg multi-disciplinarnih raziskovalnih pobud, v skupnem interesu povezujejo načrtovalci prostora, posamezne civilne iniciative, občinski in nacionalni organi, s končnim ciljem zagotavljanja bolj učinkovitih vzorcev rabe lokalnih virov in splošne kakovosti bivanja. Pri tem je v slovenskem in širšem evropskem prostoru posebej zanimivo vprašanje trajnostne optimizacije obstoječih sosesk in naselij.

Glede na trenutne težnje gradnje je danes že zgrajeno 80% slovenskega stavbnega fonda, ki bo obstajalo leta 2050, pri čemer je bila večina zgrajena in oblikovana izven načel, ki jih danes štejemo za trajnostna[1]. Kot trdi tudi Batty (2012), ima grajeno okolje omejeno življenjsko dobo in je podvrženo nenehnemu obnavljanju. Novogradnja in nadomestna gradnja predstavljata le majhen delež v spremembah, ki se dolgoročno odvijajo v obstoječih naseljih (Zheng et al., 2017). Posledično največji delež in s tem tudi največjo priložnost ostaja v stavbah, soseskah in infrastrukturi, ki niso bili zasnovani po današnjih standardih učinkovitosti, in ki bodo v naslednjem obdobju podvrženi obnovi. To predstavlja priložnost za izboljšanje stanja, tako v smislu energetske učinkovitosti, zmanjšanih emisij, boljše prostorske ureditve (racionalna raba prostora), premišljene mobilnosti in infrastrukture, ustvarjaje uporabnikom prijaznih odprtih prostorov ter ureditev, varovanja naravne in kulturne dediščine, dviga družbenega zavedanja/osveščenosti in splošne kakovosti bivanja.

Raziskovalni projekt vzpostavlja podatkovno-osnovan sistem za podporo odločanju pri modularni urbani prenovi slovenskih naselij na ravni sosesk z vidika njihove energijske in trajnostne učinkovitosti. Reševanje te problematike na sistematičen in metodološko dorečen način narekuje zanesljive metrike za vrednotenje lastnosti grajenega okolja. Obenem daje konsistentno in jasno definirane ciljne kvalitete, ki lahko opredmetijo cilje trajnostnih politik in so obenem ključni nosilci pomena, tako za prebivalce kot načrtovalce in izvajalce smotrne prenove sosesk. Natančneje raziskava razvija model vrednotenja trajnostne učinkovitosti na osnovi modularnega sistema kazalcev in povezane metode interpretacije vrednosti. Gre za zasnovo instrumenta, ki na osnovi merljivih kvantitativnih in kvalitativnih kazalcev presoja trajnostno učinkovitost sosesk skozi pet temeljnih kategorij, in sicer z vidika: a) energijske učinkovitosti, b) okoljske učinkovitosti, c) racionalne rabe in ureditve grajenega prostora, d) stopnje aktivnosti prebivalcev (skupnosti) in e) stopnje uporabe pametnih tehnologij/rešitev. Vsaka od danih kategorij je motrena skozi optiko treh strateških ravni, in sicer: 1) stavbe oziroma gospodinjstva, 2) javnega/vmesnega prostora 3) organizacije prometa in infrastrukture.

Takšen okvir prinaša možnosti za vrednotenje sosesk tako v smislu naravnih in grajenih lastnosti, videza in funkcionalnosti, kot tudi aktivnosti, navad in demografsko-socialne strukture prebivalcev. Skozi te elemente in pojave je mogoče kvalitete prostora prenesti v merljivo obliko, ne zgolj v raziskovalne namene, ali kot podporo odločanju v prostorskih intervencijah, pač pa tudi kot sredstvo izobraževanja o prostorskih danostih ter spodbujanja odgovornega odnosa do njegovih zmogljivosti.

2 Metode dela

za doseganje opisanih raziskovalnih postavk trajnostne izkaznice, je obravnava sledila trem razvojnim fazam:

- razvoju strukturiranega in modularnega sistema kazalcev
- razvoju metodologije za interpretacijo vrednosti podatkov/kazalcev (prve faze)
- zasnovo in izvedbo pilotne raziskave za namen pridobivanja manjkajočih podatkov

V teoretičnem smislu smo raziskovali in potrjevali medsebojne povezave izbranih elementov/pojavov grajenega okolja in njihove vplive na izbrane vidike (segmente) učinkovitosti sosesk. V začetnih fazah dela je bila opravljena obsežna meta-analiza obstoječih, v večji ali manjši meri ustaljenih parametrov, ki dokazano vplivajo na posamezne segmente učinkovitosti. V nadaljevanju smo v podporo odločanju o vključevanju posameznih tematik, kriterijev in kazalcev v okvir zastavljenih kategorij vrednotenja, organizirali serijo panelnih diskusij članov raziskovalne skupine. Vsak od članov je s svojim strokovnim ozadjem, znanji in izkušnjami prispeval k celovitejšemu pregledu in obravnavi obsežnejšega števila vidikov trajnostne problematike v naseljih in delih naselij. Posebni pozornosti so bile podvržene relevantne tematike, ki so izkazale najmanj pogosto zastopanost v predhodno pregledanih literaturi, to so, vprašanja in metrike povezane s skupnimi javnimi prostori, njihovo ureditvijo, kazalci povezani s skupnostjo, navadami prebivalcev ter njihovim odnosom do prostora in dediščine ter identitete soseske, njihovo motivacijo pri vključevanju v soodločanje, uporabo pametnih tehnologij v podporo trajnostnim vzorcem, ipd. Pri razvoju novih kazalcev, ki bi sledili povezanim oprijemljivim elementom znotraj sosesk, smo si deloma lahko pomagali z rezultati nekaterih preteklih raziskav (Verovšek *et al*., 2013), ki so obravnavale razumevanje formacij, informacij in logike elementov urbanih prostorov.

Glede na predhodne faze dela in ovire, ki smo jih v procesu prvega dela raziskave identificirali, smo v zadnji fazi oblikovali anketno poizvedbo (N=321) v štirih slovenskih soseskah (Kamnik_1, Kamnik_2, Kranj in Komen). Vzorčenje so na podlagi registra prebivalstva opravili na Statističnem uradu Slovenije. Vloga za pridobitev slučajnostnega stratificiranega vzorca in naslovov ciljne populacije je bila odobrena s strani Komisije za varstvo podatkov. Pripravljeni vzorec je zajel 40% naključnih enot ciljne populacije vsake soseske. Anketa je bila zasnovana v skladu s tremi cilji, in sicer: 1) pridobiti nekatere manjkajoče podatke o učinkovitosti in trajnosti pilotnih sosesk oz. naselij 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/naselij. 3) pridobiti nekatera nova spoznanja v zvezi s predhodno postavljenimi hipotezami o

1 source: http://zenn-fp7.eu/

trajnostni osveščenosti prebivalcev sosesk/naselij v odvisnosti od različnih tipov bivalnih okolij/sosesk, geo-lokalnega konteksta le-teh ter demografskih značilnosti posamezne preučevane populacije.

3 Delne ugotovitve

V prvih fazah dela smo prišli do nekaterih zaključkov, ki usmerjajo nadaljnji razvoj doseganja ciljev projekta. Eden izmed dejavnikov, ki je močno zaznamoval raziskavo, je ugotovljeno pomanjkanje podatkov in ustreznih kazalcev za vrednotenje urbanih prostorov na ravni sosesk. Ugotovili smo znatno pomanjkanje zanesljivih in razpoložljivih virov podatkov za specifična tematska področja in za manjše administrativne ali statistične enote, kar se nadalje kaže v premajhni prostorski resoluciji obravnavanih podatkov, kronološko prekinjenih podatkovnih nizih, nezdružljivih podatkovnih nizih zaradi spremembe metodologije. Pri tem so podatkovne zbirke pogosto ločene, nepovezane, narejene namensko za posamezne, točno določene pobude in običajno niso medsebojno združljive zaradi različnih oblik podatkov, načinov shranjevanja, časovnih okvirov ipd. Obdelava podatkov in kompleksnejših podatkovnih poizvedb se zato trenutno pogosto izvaja z ročnim kombiniranjem in sintetiziranjem, kar zahteva veliko časa in vloženega dela, hkrati pa povečuje tveganja za nastanek napak v procesu pridobivanja in združevanja ustreznih podatkov.

Ena od kritičnih pripomb, ki so jo zabeležili tudi drugi avtorji (Clark *et al.,* 2013; Sharifi&Murayama, 2015) je, da modeli presoje trajnostne učinkovitosti ne ponujajo ovrednotenja manj oprijemljivih vidikov trajnosti, kot so izkustveno zaznana dinamičnost prostora, vzdušje, slikovitost, raznolikost v prostoru ali zaznavna identiteta prostora itd. To so težje merljive spremenljivke, ki pa vendarle znatno vplivajo na prostorske izkušnje uporabnikov in prebivalcev ter dojemanje kakovostnega življenjskega okolja. Percepcija slednjega v veliki meri izhaja tudi iz bodisi trajnostnih/preudarnih ali slabih oblikovalskih odločitev. Podobno nobeden od obravnavanih okvirov vrednotenja neposredno ne vključuje vprašanj navad prebivalcev povezanih z domom, potrošnjo gospodinjstev in navadami, ki so povezane z načini upravljanja lastnih virov, čeprav, kot trdi Säynäjoki s sodelavci (2012), osebna poraba predstavlja od 30% do 45% skupne porabe in emisij.

Podatke pridobljene iz tretjega, empiričnega dela raziskave v dani fazi projekta še obdelujemo in analiziramo. Rezultati in ugotovitve bodo dostopni v prihodnjih mesecih. Celotna anketna raziskava bo dostopna tudi v okviru zbirke Arhiva Družboslovnih podatkov[2].

4 Zaključek

Osmišljenje sosesk kot nosilcev prenove in trajnostnega razvoja na področju bivalne kulture je neposredno družbeno relevanten dejavnik pri zavezah po zmanjšanju porabe energije, emisij in večje uporabe alternativnih virov, a tudi oprijemljiva, obvladljiva in na ravni ukrepov še dovolj konkretna celota, ki omogoča tudi prenos vprašanj ohranjanja identitete, kulturno-zgodovinske dediščine, aktivnosti skupnosti in prenosa družbenih vrednot. Kot taka naslavlja prostor bivanja, ki vključuje tako zasebni prostor in navade prebivalcev kot tudi javno dobro – javni prostor in gradnike javne infrastrukture ter 'idealističnemu' povojnemu konceptu soseske v luči sodobne realnosti zopet vrača pomen, ki se je s porastom stihijskega individualizma porazgubil.

Slovenski prostor je, tako kot vsak drug, po mnogih značilnostih specifičen in sebi lasten. Zaradi preteklih družbeno-kulturnih in politično-gospodarskih razmer ima specifično strukturo stavbnega fonda znotraj naselij, ki se odraža tudi v soseskah. Variacija gostote in tipa pozidave v kombinaciji z variacijo gostote prebivalstva znotraj sosesk, sama velikost in obseg sosesk, klimatski, geografski in kulturno-družbeni dejavniki ter nenazadnje značilna slovenska kulturno-krajinska tipika, ki si jo prizadevamo ohranjati, ne dopuščajo neposrednih in enoznačnih prenosov tujih primerov dobrih praks in rešitev, temveč terja razvoj lastnega sistema presoje učinkovitosti in smotrnega upravljanja z lokalnimi viri, ki bo lahko predstavljal slovenskemu naravnemu in kulturnemu prostoru prilagojeno podporo pri modularni, trajnostno usmerjeni prenovi.

S sistemom vrednotenja trajnostne učinkovitosti sosesk v slovenskem prostoru oziroma njihovo t.i. trajnostno izkaznico smo korak bližje k celostnemu, operativnemu pregledu in vpogledu nad stanjem na področju bivanja in ravnanja s prostorom v urbaniziranih področjih Slovenije. Z naslavljanjem sledljivih in otipljivih prostorskih pojavov in elementov ter njihovim vzročno posledičnim povezovanjem z vsakdanjo bivanjsko izkušnjo na ravni soseske, stavbe, javnega prostora, se abstraktni pojem trajnostnega delovanja opredmeti in konkretizira. Na ta način z dano raziskavo prispevamo tudi k pomembnemu cilju, to je k boljšemu razumevanju prostorskega ustroja in delovanja (t.i. *spatial literacy*) ter ustvarjanju bolj občutljivega odnosa do prostora s strani splošne javnosti.

LITERATURA IN VIRI

Batty, M. 2012. Urban Regeneration as Self-Organization. V: Architectural Design, 215/1, str.: 54-59.

Clark, H., Aranoff, M., Lavine, E., Suteethorn, K. 2013. LEED for Neighborhood Development: Does it Capture Livability? V: Berkeley Planning Journal, 26/1, str.: 150-166.

Lützkendorf, T. and Balouktsi, M. 2017. Assessing a Sustainable Urban Development: Typology of Indicators and Sources of Information. Procedia Environmental Sciences, 38(1, 546-553, 2017

Verovšek, S., Juvančič, M., Zupančič, T. 2013. Understanding and Interpreting Urban Space (in)formation. V: International Journal of Architectural Computing, 11/2, str.: 135-155.

Säynäjoki, E., Kyrö, R., Heinonen, J., Junnila, S. 2012. An assessment of the applicability of three international neighbourhood sustainability rating systems to diverse local conditions, with a focus on Nordic case areas. V: Int. J. Sustain. Build. Technol. Urban Dev., 2012/3, str.: 96–104.

Sharifi, A., Murayama, A. 2015. Viability of using global standards for neighbourhood sustainability assessment: Insights from a comparative case study. J Environ Plan Manage, 58, 1–23.

Zheng, H.W., Shen G., Song, Y., Sun B., Hong J. (2016): Neighborhood sustainability in urban renewal: An assessment framework. V: Environment and Planning B, 44/5, 903 – 924.

2 https://www.adp.fdv.uni-lj.si/

ABSTRACT

The purpose of the research project is to establish data-based system to support decision-making process in modular urban renewal of Slovene settlements at the level of neighbourhoods. It focuses on their energy efficiency, prudent resources' management and sustainable performance. The solutions are searched for the reliable metrics that evaluate the characteristics of built environment. The project offers consistent and clearly defined targeted qualities, which make the aims of the sustainable policies more tangible and are at the same time fundamental, meaningful notions both, for the residents as well as for the planners and contractors in sustainable neighbourhood retrofitting. Specifically, the research develops the evaluation model for neighbourhood sustainability performance index, based on the modular system of indicators and to it connected methodology for the interpretation of resulting values.

The envisioned instrument evaluates sustainable performance of the neighbourhoods based on the measureable quantitative and qualitative indicators through five crucial categories, i.e.: a) energy efficiency, b) environmental efficiency, c) efficient use and management of the built environment, d) local residents' and communities' engagement level and e) exploitation of ICT, smart solutions. Each of the given categories is observed through the prism of three strategic levels of implementation, i.e.: 1) buildings or households, 2) public/in-between spaces, 3) organisation of traffic and its infrastructure. Such structuring introduces possibilities for evaluating neighbourhoods from natural aspects and built environment characteristics, appearances and functionalities, as well as activities, habits and socio-demographic structure of their inhabitants. The spatial qualities are, thus transformed into a measurable form, not only for the research purposes and for the decision-making support in renewal processes but also as an education and awareness raising tool for fostering responsible, environment-friendly behaviours when dwelling, homes, building, etc. are concerned. The design of the assessment model has been accompanied by the empirical study of four Slovene representative neighbourhoods. They provide the "research testing ground" for the indicator system design, testing of its convenience, functionalities and the reliability of the instrument on specific Slovene territory. Assuming and foreseeing the lack of data and indicators at the neighbourhood level, the research examine their availability and look for other possibilities (such as interpolation, calculations, use of smart and mobile technologies, crowdsourcing and even field sensing) to fill in the gaps. In line with the data capture possibilities we established data query among the residents of a pilot neighbourhoods (N=321). Probability sampling on the bases of residents' addresses was used to accomplish the query. With the results we are one step closer to the important goal, i.e., adaptability and flexibility of the system of indicators in a way that they enable evaluation and comparison between different types of neighbourhoods with different local-specific characteristics and with the insight of a resident's perspective.

PKP – Tehniška dediščina kot gonilo turističnega razvoja Občine Divača

PKP – Technical Heritage as a Driving Force of the Tourism Development in the Divača Municipality

Občina Divača

2018

TIP DELAVNICE *TYPE OF WORKSHOP*
Projekt javnega razpisa »PO KREATIVNI POTI DO PRAKTIČNEGA ZNANJA 2016 - 2020 - 1. odpiranje«

MENTORJI *MENTORS*
Pedagoški mentorici: dr. Mojca Foški (UL Fakulteta za gradbeništvo in geodezijo), dr. Katja Hrobat Virloget (UP Fakulteta za humanistične študije).
Delovna mentorja: Tilen Štolfa (Aporia, inženirske storitve in projektiranje d.o.o.), Sonja Terčič (Občina Divača).

ŠTUDENTJE *STUDENTS*
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PARTNERJI *PARTNERS*
Aporia, inženirske storitve in projektiranje, d.o.o., Sežana
Občina Divača

NAROČNIKI *CONTRACTING AUTHORITY*
Republika Slovenija, Ministrstvo za izobraževanje, znanost in šport ter Evropska unija iz Evropskega socialnega sklada.
Izvajalec javnega razpisa: Javni štipendijski, razvojni, invalidski in preživni ski sklad RS

DATUM IN KRAJ RAZSTAVE *DATE AND LOCATION OF EXHIBITION*

GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*
Jana Breznik

»Javni razpis delno financira Evropska unija iz Evropskega socialnega sklada ter Republika Slovenije, Ministrstvo za izobraževanje, znanost in šport. Javni razpis za izbor operacij se izvaja v okviru Operativnega programa kot neposredna potrditev operacije »Odprt, odziven in kakovosten sistem visokega šolstva - Projektno delo z gospodarstvom in negospodarstvom v lokalnem in regionalnem okolju – Po kreativni poti do znanja 2016 - 2020«.

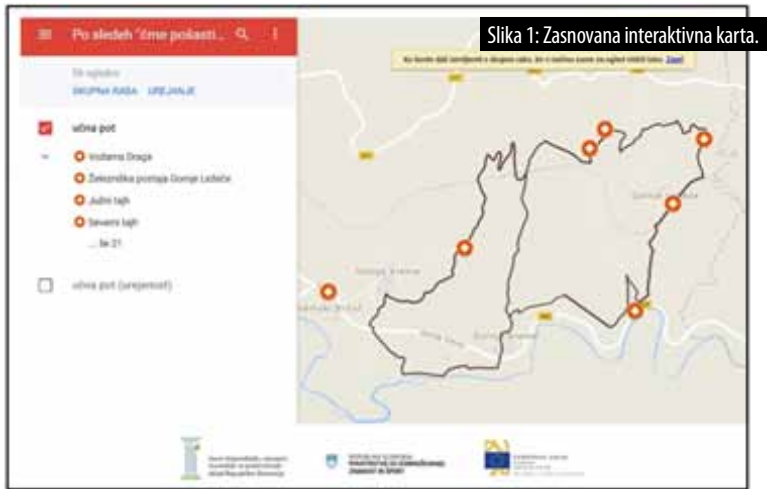
VSEBINA

Uspešno sodelovanje petih študentov s štirih različnih smeri študija in treh fakultet je plod ideje, ki so jo s skupnimi močmi zasnovali Občina Divača, lokalno podjtje Aporia d.o.o., Fakulteta za gradbeništvo in geodezijo Univerze v Ljubljani ter Fakulteta za humanistične študije Univerze na Primorskem. Uspešni smo bili na razpisu Po kreativni poti do znanja in pridobili finančna sredstva za projekt Tehnična dediščina kot gonilo turističnega razvoja Občine Divača. Namen projekta je oživiti tehniško dediščino v Vremski dolini (nastalo predvsem ob gradnji Južne železnice v začetku 19. stoletja) ter vzpostaviti uspešno sodelovanje med izobraževalnimi inštitucijami in gospodarstvom. Zastavili smo si naslednje cilje:

- seznanitev z zgodovino tehniške dediščine na območju občine Divača (južna železnica),
- evidentiranje objektov in naprav na terenu (terensko delo, popis, evidentiranje stanja, ipd.),
- zasnova tematske in učne poti,
- izdelava tematskih kart (analogne in interaktivne) in spremnega gradiva za podrobnejši opis poti,
- vključitev predlagane poti v turistično ponudbo lokalne skupnosti in regije.

Projekt je potekal od aprila do avgusta 2018 in vključeval različne metode dela: terensko delo, intervju, preučevanje razpoložljivih arhivskih gradiv, študije variantnih rešitev umestitve poti v prostor, sodelovanje z javnostjo, desiminacijo rezultatov dela ipd. Pri izbiri poti smo stremeli k čim manjšim stroškom izvedbe in hkrati k zanimivosti izdelane poti. Za pot smo (kjer je bilo to možno) uporabili obstoječe poti ali tiste, ki so bile nekoč že v uporabi, danes zaraščene, vendar utrjene. Le izjemoma smo pot speljali po brezpotju. Pripravili smo zgodbo, ki bo obiskovalca vodila po poti, ter kviz o Črni pošasti, ki je namenjen najmlajšim.

Projekt lahko služi kot strokovna podlaga za pripravo dokumentacije za projekt za realizacijo tematske poti. Trenutno stanje tehniške dediščine neprimerno za izvedbo obiskov (nezavarovani in nevarni tajhi, možnost padcev, možnost zrušenja stavb in mostu, neurejene in nevarne brežine…). Mnoge poti so zaraščene, posledično so objekti nedostopni. S projektom smo želeli opozoriti na propadajočo tehniško dediščino, z idejami in nakazanimi možnostmi realizacije pa vzpodbuditi Občino Divača in druge deležnike, da pristopijo k izvedbi poti. Upamo, da projekt ne bo ostal neopažen, ter da bo gradivo uspešno uporabljeno za nadaljnje aktivnosti.



Slika 1: Zasnovana interaktivna karta.


Slika 2: Trenutno stanje akvadukta pod Južnim Tajhom in predlog ureditve za obiskovalce (spodaj). Foto: Klemen Beličič

ABSTRACT

Students from different university and courses worked together under the project called "A creative path to knowledge", to establish a thematic educational trail running through railroad structures left behind by the south railroad on the slope of Vremščica. It was realized through different working approaches, the result of which are: an interactive map of the mentioned path, the text that will be shown on the information boards and a comprehensive overall design. The project enabled the participating students to experience a high level of teamwork, and is also especially important when it comes to bringing together the economic, noneconomic and educational sectors.

PKP – Uporaba novih metod za neporušno določitev trdnostnih karakteristik bukovine

PKP – Development of a New Non-Destructive Method for Strength Assessment of the Beech Timber

Ljubljana

2018

TIP DELAVNICE *TYPE OF WORKSHOP*
Projekt javnega razpisa »PO KREATIVNI POTI DO PRAKTIČNEGA ZNANJA 2016 - 2020 - 1. odpiranje«

MENTORJI *MENTORS*
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Delovna mentorja: Miha Jakšič (ILKON) dr. Tomaž Pazlar (ZAG).

ŠTUDENTJE *STUDENTS*
Sodnik Iva (UL FGG), Cerar Benjamin (UL FGG), Majhen Matija (UL FGG), Nizandžić Asmira (UL FGG), Špiler Jan (UL FGG), Dobravec Vid (UL BF), Dremelj Matjaž (UL BF)

PARTNERJI *PARTNERS*
ILKON, Inštitut za les in konstrukcije, d.o.o., Ljubljana
Zavod za gradbeništvo Slovenije, Ljubljana

NAROČNIKI *CONTRACTING AUTHORITY*
Republika Slovenija, Ministrstvo za izobraževanje, znanost in šport ter Evropska unija iz Evropskega socialnega sklada.
Izvajalec javnega razpisa: Javni štipendijski, razvojni, invalidski in preživninski sklad RS

GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*
prof. dr. Goran Turk

»Javni razpis delno financira Evropska unija iz Evropskega socialnega sklada ter Republika Slovenije, Ministrstvo za izobraževanje, znanost in šport. Javni razpis za izbor operacij se izvaja v okviru Operativnega programa kot neposredna potrditev operacije »Odprt, odziven in kakovosten sistem visokega šolstva - Projektno delo z gospodarstvom in negospodarstvom v lokalnem in regionalnem okolju – Po kreativni poti do znanja 2016 - 2020«.

VSEBINA

Bukev je prevladujoča lesna vrsta v Sloveniji in v primerjavi z iglavci izkazuje znatno boljše mehanske lastnosti. Kljub temu pa se je v konstrukcijske namene ne izkorišča v takšnem obsegu, kot bi se jo lahko. Razlog za to je, da v Sloveniji (pa tudi v Evropi) ni pravne podlage za proizvodnjo v trdnostne razrede razvrščene bukovine. Z delom na projektu smo želeli razširiti nabor podatkov in parametrov za pripravo nacionalnega standarda za vizualno razvrščanje bukovega lesa. Prav tako smo želeli pridobiti zadostno število rezultatov meritev za določitev nastavitev naprave za strojno razvrščanje bukovine. Uporaba bukovine je pogosta tudi v starejših objektih, ki jih smatramo kot kulturno dediščino, zato smo želeli na podlagi povezovanja rezultatov metode z mikro vrtanjem in vrednosti dejanskih mehanskih lastnosti bukovih desk pripraviti smernice, ki bi bile v pomoč pri bolj zanesljivi, ekonomični in manj invazivni presoji dotrajanosti objekta.

V laboratoriju Fakultete za gradbeništvo in geodezijo smo okoli tristotim deskam z vrsto neporušnih metod (frekvenca vzdolžnega nihanja in merjenje hitrosti preleta signala) izmerili dinamični elastični modul. Vse deske smo tudi vizualno ocenili z uporabo nemškega standarda DIN 407-5. Z dodatnim številom preizkušancev smo nadgradili bazo podatkov za predlog slovenskega standarda za vizualno razvrščanje bukovine. Pri preizkusih z napravo - rezistografom - smo uporabili že pripravljene (posušene in odžagane) koščke bukovih desk, ki smo jih porušili v okviru projekta PKP iz prejšnjega razpisa »Bukovina – razvoj naprednih metod za določitev trdnostnih razredov bukovine«. Vsak preizkušanec smo z uporabo mikro vrtanja skozi celotno globino vrtali na dveh stranicah, tako da smo pridobili podatke za radialno in tangencialno odžagan les. Na podlagi opravljenih raziskav smo potrdili, da je korelacija upora pri vrtanju najboljša v odvisnosti od gostote lesa. Ugotovili smo tudi, da je naprava učinkovita pri zaznavanju skritih notranjih oslabitev (grče, vključki skorje ipd.) in širine branik, kar predstavlja prednost pri določanju natezne trdnosti, saj so to parametri, ki pri vizualnem razvrščanju izkazujejo najboljšo korelacijo z dejanskimi mehanskimi lastnostmi lesa.

Priprava in potrditev standarda za vizualno razvrščanje ali določitev nastavitev naprave za strojno razvrščanje slovenskega bukovega lesa bi lastnikom žag ponudilo možnost prodaje v trdnostne razrede razvrščenega konstrukcijskega lesa. S povečano uporabo bukovine bi lastniki gozdov na ta način lahko lažje reševali problematiko prodaje bukovine. Cilj projekta je bila priprava podlage za dvig konkurenčnosti podjetij in krepitev slovenske lesne industrije. Z iskanjem novih rešitev za čim bolj ekonomično, zanesljivo in čim manj invazivno določanje kakovosti lesa, ki je že del nekega objekta, pa smo želeli prispevati k ohranjanju kulturne dediščine in prvotne arhitekture.

Slika 1: Delo z rezistografom.

Slika 2: Vizualno ocenjevanje.

ABSTRACT

Compared to softwoods, the mechanical properties of hardwoods, particularly beech, have higher values. Beech is the most common wood species in Slovenia, hence our project focused on this species. Due to more technically challenging wood processing and lack of regulation and standardisation the use of hardwoods in construction is limited. On the other hand, some of the oldest wooden buildings in Slovenia are made from beech and are considered a part of our cultural heritage. Our goals were to develop a new non-destructive method for strength assessment of existing timber structures and expand the mechanical property database for Slovenian beech. Approximately 300 beech boards were inspected visually and had their dynamic modulus of elasticity determined. Destructive tension tests were also done on all the boards. Data will be used in a proposal for visual strength-grading national standard. Results from micro-drilling experiments were compared to mechanical properties of beech boards in an attempt to determine reliable correlations between micro-drilling resistance and wood strength. The main objective of the project was to broaden the utilisation of beech as structural timber in Slovenia.

PKP – Ureditev prehodov za vodne organizme na reki Savi

PKP – Solutions for the Passage of Aquatic Organisms Through Transversal Obstacles on Sava River

Porečje Save

2018

TIP DELAVNICE *TYPE OF WORKSHOP*
Projekt javnega razpisa »PO KREATIVNI POTI DO PRAKTIČNEGA ZNANJA 2016 - 2020 - 1. odpiranje«

MENTORJI *MENTORS*
Pedagoški mentorji: prof. dr. Andrej Kryžanowski (UL Fakulteta za gradbeništvo in geodezijo), doc. dr. Simon Rusjan (UL Fakulteta za gradbeništvo in geodezijo), prof. dr. Mihael Jožef Toman (UL Biotehniška fakulteta).
Delovna mentorja: Jošt Sodnik (TEMPOS), dr. Polona Pengal (REVIVO).

ŠTUDENTJE *STUDENTS*
Hodnik Vasja (UL FGG), Košorok Blaž (UL FGG), Mavc Borut (UL FGG), Mauko Gašper (UL FGG), Mlekuž Jure (UL FGG), Rošer Rebeka (UL FGG), Močivnik Luka (UL BF), Potočnik Erzin Jan (UL BF)

PARTNERJI *PARTNERS*
Tempos, okoljsko gradbeništvo, d.o.o., Ljubljana
Zavod Revivo, Inštitut za ihtiološke in ekološke raziskave, Šmartno pri Slovenj Gradcu

NAROČNIKI *CONTRACTING AUTHORITY*
Republika Slovenija, Ministrstvo za izobraževanje, znanost in šport ter Evropska unija iz Evropskega socialnega sklada.
Izvajalec javnega razpisa: Javni štipendijski, razvojni, invalidski in preživninski sklad RS

GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*
Jana Breznik

Univerza v Ljubljani
Javni štipendijski, razvojni, invalidski in preživninski sklad Republike Slovenije
EVROPSKA UNIJA
EVROPSKI SOCIALNI SKLAD
NALOŽBA V VAŠO PRIHODNOST
REPUBLIKA SLOVENIJA
MINISTRSTVO ZA IZOBRAŽEVANJE, ZNANOST IN ŠPORT

»Javni razpis delno financira Evropska unija iz Evropskega socialnega sklada ter Republika Slovenije, Ministrstvo za izobraževanje, znanost in šport. Javni razpis za izbor operacij se izvaja v okviru Operativnega programa kot neposredna potrditev operacije »Odprt, odziven in kakovosten sistem visokega šolstva - Projektno delo z gospodarstvom in negospodarstvom v lokalnem in regionalnem okolju – Po kreativni poti do znanja 2016 - 2020«.

VSEBINA

Cilj projekta je bila izdelava tehničnih rešitev ki v polnosti omogočajo migracijo rib na odseku zgornje Save med Kranjem in Bohinjskim jezerom. Na odseku so bile predhodno identificirane glavne ovire, ki onemogočajo migracijo rib na odseku, in sicer: jez Soteska na Savi Bohinjki, Cajhnov jez in Majdičev jez na Savi.

Na projektu smo sodelovali študentje FGG in BF, pedagoški mentorji iz obeh fakultet in delavni mentorji iz podjetij Tempos in Revivo. Tekom projekta smo se študentje seznanili s problematiko migracij rib, osnovnimi parametri načrtovanja ribjih prehodov in potrebnimi zakonskimi podlagami.

Na osnovi trenutnega stanja, ki smo ga spoznali na terenskih ogledih, smo predlagali ukrepe za izvedbo ribjih stez. Podlaga za predvidene ukrepe so bile hidrološko-hidravlične analize, ki so temeljile na meritvah in dosegljivih uradnih hidroloških podatkih. Z upoštevanjem ekomorfoloških načel za ciljne populacije rib je v celoti izpolnjen pogoj za dosego funkcionalnosti ribjih stez. V zaključku je predlagan tudi monitoring učinkovitosti predlaganih projektnih rešitev z uvedbo telemetrije rib. Cilj načrtovanih ukrepov je omogočiti dovolj velik življenjski prostor za obstoj domorodnih ribjih vrst.

Rezultat projekta so projektne rešitve, ki so obdelane na nivoju idejne zasnove. Izdelane zasnove prehodov za izbrane prečne objekte na gornji Savi so pokazale različne možnosti reševanja tega problema, ki je prisoten na mnogih slovenskih vodotokih. Izkazalo se je, da je možno z multidisciplinarnim pristopom pripraviti rešitve, ki izpolnjujejo tako gradbeno-tehnične pogoje kot tudi biološke potrebe za omogočanje prehoda vodnih organizmov.

ABSTRACT

The aim of the project was to design technical solutions that will ensure passage of aquatic organisms through transversal obstacles on Sava river. Students from Faculty of Civil Engineering and Biotechnical Faculty got acquainted with the problematic of fish migration and basic parameters of fish passage design. The proposed measures are based on field visits, hydrological-hydraulic studies and consideration of ecohydrological principles that ensure operation and functionality of fish passages. The final results are project solutions at the level of conceptual design, that show various possibilities of solving the problems of fish migration, which are present on many Slovenian rivers.

With the help of multidisciplinary approach it was possible to prepare solutions that fulfill both the technical conditions as well as the biological needs.

Slika 1: Izvedba hidravličnih meritev na Savi Bohinjki pod jezom Soteska

Slika 2: Izvedba terenskih izmer na ribji stezi HE Blanca.

IV.

DELAVNICE

WORKSHOPS

RAZVOJ DEGRADIRANIH OBMOČIJ: NOVE PERSPEKTIVE OKRAJA »ZATON«

BROWNFIELD (RE)DEVELOPMENT: NEW PERSPECTIVES FOR «ZATON»

Irkutsk, Russia

2018

TIP DELAVNICE *TYPE OF WORKSHOP*
International Workshop of Urban Planning

MENTORJI *MENTORS*
Evalvators: Barbara Engel (Karlsruhe Institute of Technology), Marina Sapunova (Moscow, National Research University), Tanya Khoury (Technical University of Beirut), Spela Verovsek (University of Ljubljana), Sabine Kalke (Municipality of Belfast), and Michael Klamer (TU Wien)

ŠTUDENTJE *STUDENTS*
26 students from: Moscow (Russia), Irkutsk (Russia), Paris (Fance), Strasburg (France), Viena (Austria), Karhlsruhe (Germany), Beirut (Libanon), (Ireland), Gent (Belgium), Utrecht (Nederland), Marrakesh (Morocco), Seville, (Spain)

ORGANIZATOR *ORGANISER*
Irkutsk State Technical University, Russia; Karlsruhe Institute of Technology, Germany

DATUM IN KRAJ RAZSTAVE *DATE OF THE EXHIBITION*
3. 3. 2018, Irkutsk, Irkutsk State Technical University

GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*
asist. dr. Špela Verovšek

VSEBINA

ABOUT Baikal Winter University:
Baikal Winter University was founded in 1999 by the administration of Irkutsk, with Irkutsk State Technical University (ISTU), and with the participation of international institutes and public organizations. Yearly sessions are based on the experience of the Les Ateliers (France) as an original workshop model of training young professionals of various disciplines related to urban planning, and allows them to develop a higher level of conceptual thinking, communication, mastery of analytical and design approaches in an international multi- disciplinary partnership working with dynamically developing town planning system of the city in Siberia.

ABOUT 2018 Session:
The 2018 Baikal Winter University session was held in Irkutsk from February 10th to March 5th with 30 international student participants involved and 12 international expert evaluators and lecturers participating during the last period of the workshop.

The work of the students was organised in 5 teams on a competitive bases. The main objectives of the workshop covered the creation of competitive proposals to set a strategy for the redevelopment of a certain brownfield area in the city.

LOCATION AND PROBLEM:
In geo-locational terms, the workshop was focused to a brownfield area Zaton in the city of Irkutsk, a city in Eastern Siberia with population of about 623.000, located 60 km from Lake Baikal. The city owns many former industrial areas which now mainly lie dormant or are used inefficiently, waiting for reuse. Today, these harbour offer valuable resources for future developments. Concepts for a coordinated social, commercial, and ecological development of the conversion areas in Irkutsk which also take long-term horizons in to consideration are still lacking (Nuianzina&Kostrubova, 2018). Therefore, the multi-disciplinary and mixed-nationality student groups proposed a set of ideas on the level of site masterplan to revitalize the brownfield area in regard to its former development, identity, environmental condition and socio-economic potentials.

ACKNOWLEDGMENT:
The participation of Slovene mentor/evaluator (Faculty of Architecture, University of Ljubljana) was co-funded by the Slovenian Research Agency on the bases of bilateral agreement SI-RU.

POVZETEK

Urbanistična delavnica na temo razvoja degradiranih območij v mestu Irkutsk se je odvila v okviru programa mednarodne zimske šole »International Baikal Winter University of Urban Planning and Design«. Mednarodna zasedba mladih strokovnjakov (urbanisti, krajinski arhitekti, geografi, arhitekti ipd.) je v nalogi obravnavalo eno večjih centralnih in degradiranih območij (Zaton), ki se nahajajo v sotočju rek Irkutsk in Angara. Območje je bilo natančneje analizirano v ekološko-prostorskem smislu, preučene so bile ekonomske kapacitete območja, obravnavan je bila družbeno-kulturna struktura tega prostora. Prostor obravnave je bil naknadno kategoriziran v pet razredov trajnostne učinkovitosti. Kategorizacija je temeljila na različnih kriterijih in kazalcih: od naravno-geografskih, družbenih, kazalcih ekonomske vitalnosti, do okolijskih in nenazadnje arhitekturno-urbanističnih. Obravnava je bila ustrezno razširjena s primeri dobre prakse načrtovanja obrečnih prostorov v slovenskem okolju in na primeru nekaterih evropskih mest. Kot rezultat tritedenskega intenzivnega dela, je bilo predlaganih pet celostnih rešitev revitalizacije območja s poudarkom na ekološki sanaciji in družbeno-kulturni identiteti prostora.

Slika 1: Utrinki iz delavnice.

LITERATURA *REFERENCE*

NUIANZINA, Valeriia; KOSTRUBOVA, Alexandra. Winter University 2018 Brownfield (Re)Development: New Perspectives for Zaton. project baikal, Russian Federation, n. 55, p. 70-71, 2018

URBANIZACIJA GRAČANICE
URBANISATION OF GRAČANICA

Gračanica, Ljubljana, Kosovska Mitrovica Kosovo

2018

TIP DELAVNICE *TYPE OF WORKSHOP*
urbanistično-arhitektonska delavnica / mednarodna

MENTORJI *MENTORS*
Fakulteta za arhitekturo, Katedra za urbanizem, Univerza v Ljubljani (UL FA)
Mentors: Assoc. Prof. Dr. Alenka Fikfak, Prof. mag. Tadej Glažar, Assist. Prof. Dr. Luka Skansi, Assist. Janez P. Grom, Assist. Vid de Gleria, Assist. Miha Konjar, Urša Kalčič, Tech. Assist.
University Kosovska Mitrovica, Faculty of Technical Sciences, Department of Architecture UKM FTS; Mentors: assoc. prof. dr. Saja Kosanović, assist. prof. dr. Branislav Folić, assist. Olivera Lekić, assoc. Nenad Nikolić, dr. assist. Nebojša Gadžić

ŠTUDENTJE *STUDENTS*
UL Faculty of architecture: Grega Boltič, Peter Grudina, Hajdi Šinkovec, Aleš Švigelj, Marko Lazič, Jana Benedik, Jan Barič, Arta Krasniqi, Djellza Saramati, Andraž Podvez, Tjaša Kogovšek, Katja Frelih, Katarina Kuk, Rok Krznar, Jakob Smrekar, Zala Koleša.
UKM Faculty of Technical Sciences: Stefan Antić, Jelena Todorović, Aleksandar Crnoglavac, Petar Petrović, Dragana Božović, Filip Mijanović, Vildan Bajrami, Jovan Femić, Kristina Kasalović, Kristina Stoilković, Milan Pešić, Mirjana Živić, Petar Nešić, Petar Popović, Andjelija Kostić, Stefana Bojković, Marija Dakić, Stefan Živković.

PARTNERJI *PARTNERS*
Općina Gračanica, Srđan Popović, Župan
Dejan Jovanović, direktor oddelka za urbanizem
Turistička organizacija Gračanice, Boban Petrović

DONATOR PROJEKTA *DONOR OF THE PROJECT*
The Embassy of Norway, Priština

SINERGIJA Z DRUGIMI PROJEKTI *SYNERGY WITH OTHER PROJECTS*
Erasmus+ project of the European union Creating the Network of Knowledge Labs for Sustainable and Resilient Environments – KLABS

DATUM IN KRAJ RAZSTAVE *DATE OF THE EXHIBITION*
UL, Fakulteta za arhitekturo, Risalnica 21, 6. 6. 2018-24. 6. 2018
Kulturni dom Gračanica, 11. 6. 2018
LIVEABILITY IN URBAN TRANSFORAMTIONS. 13th Tallin Design Festival, v okviru projekta Human cities, 10.-16.9.2018

GRADIVO PRIPRAVIL *MATERIALS PREPARED BY*
Assoc. Prof. Dr. Saja Kosanović, Assoc. Prof. Dr. Alenka Fikfak

In the light of comprehensive spatial transition, the settlement of Gračanica, located only several kilometres away from the city of Priština, is faced with numerous challenges that could together be recognised as a challenge of planned transformation of rural village into the settlement with urban character. In collaboration with the Municipality of Gračanica, the Tourist Organisation of Gračanica, and the Norwegian Embassy in Priština, and in synergy with the Erasmus+ project KLABS of the European Union, the students and the educators from the University of Ljubljana – Faculty of Architecture and the University in Kosovska Mitrovica – Faculty of Technical Sciences were given an opportunity to respond to this challenge, and to organise and participate in a series of events from March to September 2018, including conference, workshop and exhibition.

The overall goal of collaborative work, entitled "Urbanisation of Gračanica", was to configure the plan of future development of Gračanica settlement. On the 22nd of March 2018, the conference aiming to define the desired outcomes of urbanisation of Gračanica was organised, and the topics such as spatial, social and economic conditions, architectural and urban design directions, and the methodological formats optimal for the achievement of set objectives, were set forth during the productive dialogue. Following the conference, the representatives from the Municipality of Gračanica – Urbanism Department, the Tourist Organisation of Gračanica, as well as the educators and students from the universities in Ljubljana and Kosovska Mitrovica got involved into a 4-day intensive workshop held in the Cultural Centre in Gračanica.

Four main overlapping strategies for "Urbanisation of Gračanica" were defined:
- to allow SUSTAINABILITY to become a decisive factor, especially considering its ecological dimension,
- to generate commercial and non-commercial URBANITY in an interactive process, with the protection of street life and the regulation of traffic system,
- to maintain and simultaneously re-develop the identity of town centre and its ARCHITECTURE,
- to protect cultural heritage which will become the main motif and regulator of TOURISM development as an input for increased economic development, better environment management and stronger social cohesion.

Based on a comprehensive survey previously undertaken among the residents of Gračanica, workshop participants started their collaborative work with the good insight regarding the community needs, problems and expectations. Visit of internationally mixed groups of students to numerous sites in Gračanica, data collection and evaluation, lectures, seminars and debates with educators and hosts, all led to the development of the vision for "Gračanica oasis of peace and beauty". On the 11th of June 2018, the exhibition of students' work was opened at the Cultural Centre in Gračanica. Presented results demonstrated the main proposed directions of further Gračanica development regarding planning and design solutions on urban and architectural levels:
- preservation of recognised values in traditional built forms,
- recognition of values intentionally used as main motifs for future Gračanica development, such as contemporary interpretation of traditional residential architecture, and, generally, the lifestyle,


Slika 1: Preobrazba glavne ulice v Gračanici v sodobne oblike mobilnosti.

- introduction of new, urban-like spatial models, such as co-housing that intends to fill vacuums in existing built tissue, or the dispersive hotel,
- spatial solutions for the accentuation of socio-cultural values, such as the models for the development of micro-farms that combine production with local gastronomic customs,
- solutions for modern redevelopment of existing public spaces and introduction of contemporary models that enhance pedestrian circulation, such as new pedestrian zone,
- traffic regulation solutions,
- development of urban metabolism through concrete solutions for the improvement of services for healthcare, education, or recreation,
- solutions for the preservation of existing natural heritage, such as the agricultural landscape, which is intended to become a part of new tourist offer, and the improvement of existing environmental conditions, such as through the designed system of a living machine, etc.

POVZETEK

»Urejanje Gračanice« bo sledilo 4 strategijam, ki se dopolnjujejo:
- *omogočiti TRAJNOSTNOST, da postane odločilen dejavnik, zlasti iz ekološkega vidika,*
- *ustvariti komercialno in nekomercialno URBANOST v interaktivnem procesu z zaščito uličnega življenja preko urejanja prometnega sistema,*
- *ohraniti in istočasno ponovno izpostaviti identiteto mestnega središča in njegove arhitekture,*
- *zaščititi kulturno dediščino, ki bo postala glavni motiv in regulator razvoja turizma kot prispevka k večjemu gospodarskemu razvoju, boljšemu upravljanju okolja in močnejši socialni koheziji.*

BULTHAUP

BULTHAUP

Ljubljana

2018

TIP DELAVNICE:
oblikovalska delavnica

MENTORJI *MENTORS*
Fakulteta za arhitekturo, katedra za urbanizem, Univerza v Ljubljani (ULFA)
Mentorji: izr. prof. dr. Alenka Fikfak, asist. Janez P. Grom, teh.sod. Urška Kalčič

ŠTUDENTJE *STUDENTS*
Nika Bronič, Jan Barič, Andraž Tufegdžić, David Vavtar, Hajdi Šinkovec, Tjaša Rus, Manca Zupan, Mateja Bavčar, Filip Ružič, Žiga Mljač, Lucija Kuhar

PARTNERJI *PARTNERS*
Salon ID:doma, Andrej Kovačič, Matevž Frančič
Bulthaup, Daniel Dobrogeanu, Head of Academy – Vodja Akademije

DATUM IN KRAJ RAZSTAVE *DATE OF THE EXHIBITION*
Predstavitev v podjetju Bulthaup, Aich, Nemčija - 12.7.2018

FOTOGARFIJE *PHOTOGRAPHED BY*
Jan Barič, Janez Grom

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

VSEBINA

Delavnica »Bulthaup« je bila zamišljena kot skupen izziv študentov smeri arhitektrua in urbanizem. Oblikovalsko naravnana delavnica je kot posledica sodelovanja z ljubljanskim salonom ID:doma in nemškim proizvajalcem ekskluzivnih kuhinj Bulthaup predstavljala tako študentom kot tudi mentorjem realen vpogled v načela in zakonitosti industrijskega oblikovanja, s to predispozicijo naravnanega konceptualnega razmišljanja in proizvodne procese.

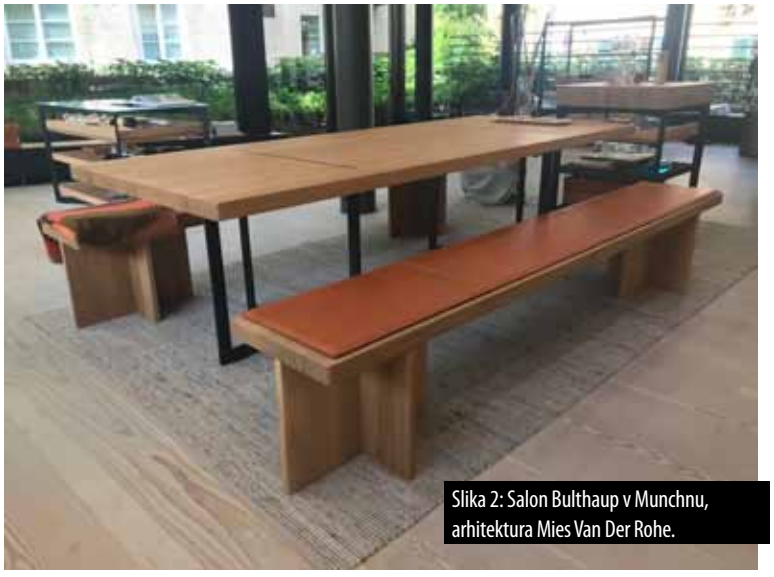
V proce delavnice je sta bila aktivno vključena predstavnik podjetja id:doma, arhitekt Matevž Frančič, ki je z edinstvenim vpogledom v svet in razvoj industrijskega sodelovanja prek serije predavanj in korektur spoznal študente z principi, ki so bili kasneje aplicirani tudi v praksi. Iz Bulthaupa je Daniel Dobrogeanu, vodja akademije, ob obisku na fakulteti za aritekturo predstavil filozofijo podjetja, nove proizvode in tehnološke procese, ki jih pri tem ekskluzivnem proizvajalcu obvladajo. Študentje so pri razvoju idej imeli proste roke. Okvirna usmeritev, da naj bo končni produkt mobilna kuhinja, je bil prožno zastavljen, tako da so študentje dejansko imeli popolnoma proste roke pri izbiri teme.

Ravno absolutna kreativna svoboda je predstavljala v začetku največji izziv in potrebo pri razmišljanju izven okvirov znotraj katerih so se gibala razmišljanja samega oblikovalskega oddelka pri Bulthaupu.

Raziskovanje je bilo usmerjeno predvsem v drugačne oblike dojemanja principov kuhanja in kuhinje kot družabnega otoka znotraj intime privatnega bivalnega prostora ali kot središčna točka dogajanja v javnih odprtih prostorih mest. Projekti so bili z vsemi vsebinami predstavljeni v multimedijski obliki preko izvirnih zgodb na sedežu podjetja v Aichu pri Munchenu pred vodstvom podjetja. Istočasno so bila odprta vrata v sicer javnosti težko dostopne proizvodne in razvojne hale. Organiziran je bil tudi ogled Bulthaup salona v Munchnu, ki je urejen v poslovni arhitekturi Herzog de Meurona.

Poleg vpostavitve resnega odnosa s proizvajalcem Bulthaup in podjetjem Id:doma se je kot pozitiven rezultat izkazalo tudi izjemno sodelovanje in dopolnjevanje znanj med študenti obeh študijskih smeri na Fakulteti za arhitekturo.

Slika 1: Skupina študentov in mentorjev na obisku v proizvodnji Bulthaup v Munchnu.



Slika 2: Salon Bulthaup v Munchnu, arhitektura Mies Van Der Rohe.

ABSTRACT

The principal goal of the workshop was to exchange ideas an work flow principles of the students of the architectural and urban departments at the Faculty of architecture in Ljubljana and confront them with a real case scenario of cooperation with market and industry leaders. In this specific case the student manage to test their abilities by fully exploiting the possibilities of cooperation with the leading Ljubljana design saloon and exhibitor in cooperation with the industry leader in high-end kitchen solutions - Bulthaup. students, divided in teams formed conceptual proposals to Bulthaup through the perspective of young, millennials and still forming architects. A selection of fresh views materialised in a selection of concepts pushing the boundaries and provoking the well established design department of the manufacturer might as a result of this cooperation yet find a way in specific details or ideas to a future industrial product.

CELOSTNA URBANA PRENOVA TRŽAŠKE ULICE V POSTOJNI

URBAN RENEWAL WORKSHOP ON TRŽAŠKA STREET IN POSTOJNA

Postojna

2017/2018

TIP DELAVNICE:
urbanistična delavnica

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NAROČNIK
Občina Postojna

DATUM IN KRAJ RAZSTAVE *DATE OF THE EXHIBITION*
maj 2018, Fakulteta za arhitekturo v Ljubljani

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VSEBINA

'Celostna urbana prenova Tržaške ulice' se je odvila na pobudo občine Postojna in društva Prostor, ki v Postojni že nekaj let deluje na področju taktičnega urbanizma in aktiviranja lokalnih prebivalcev pri prostorskih vprašanjih. Cilj delavnice je bil urbana prenova Tržaške ulice, ki je bila nekoč najpomembnejša mestna ulica, danes pa je programsko degradirana ter je v celoti podrejena lokalnemu tranzitnemu avtomobilskemu oz. motornemu prometu.

Študentje so najprej spoznali ulico, njene prebivalce in se seznanili z razlogi, ki so privedli do današnjega degradiranega stanja. V grobem lahko naštejemo tri razloge za degradacijo. Gradnja avtoceste, ki je zmanjšala število tujih tranzitnih potnikov preko mestnega središča, predvsem turistov, gradnja trgovskih središč v predmestju, kar je doprineslo k upadu obiska domačih obiskovalcev ter izrazita usmerjenost lokalnega turističnega gospodarstva v dve glavni znamenitosti, Postojnsko jamo ter Predjamski grad, pri čemer je mestno središče bolj ali manj izpuščeno iz obravnave. K prej naštetim dejavnikom, pa je treba pripisati še slabo občinsko prometno politiko, ki na tej ulici dopušča absolutno prednost tekočemu in stoječemu motornemu prometu.

Vse prej našteto, je pripomoglo k temu, da je danes ulica relativno izpraznjena, da so programi, ki se razvijajo na tej ulici slabo obiskani ter da večino odprtega prostora zaseda avtomobilski promet.

V proces razmišljanja o prenovi mestnega središča in ulice so organizatorji in študentje vključili vse aktivne uporabnike prostora, prebivalce in ponudnike različnih storitev in dejavnosti, ter skupaj z odločevalci iskali rešitve za oživitev in prenovo Tržaške ulice. V okviru javnih prezentacij, odprtih debat, možganskih neviht so pripravili svoje predloge preureditve ulice. Zasnovali so premišljene prostorske intervencije, jih postavijo na ulico in tako prispevajo k procesu postopnega in taktičnega preurejanja mestnega središča v prijetnejši prostor za življenje in delo.

Intervencije so bile enostavne, saj so jih študentje morali izdelati sami, velik poudarek pa je bil tudi na te, da so uporabili lokalno znanje za izdelavo in material. Uporabljen material je bil les, katerega so študentje skupaj z dijaki obdelovali v lokalni srednji lesarsko gozdarski šoli.

Prvi projekt je bila postavljena klop na degradiranem in neurejenem predelu javnega prostora in talne označbe na mestih, kjer je praktično nemogoče peš priti mimo stavb, ne da bi moral stopiti na vozišče ali na parkirišče. S talnimi označbami so želeli izpostaviti ta prostor, ki bi moral biti namenjen pešcem, pa danes bolj pripada avtomobilom.

Drugi projekt je obravnaval tematiko ekoloških otokov ter njihovega neprimernega izgleda za mestno središče. Študentje so posvetili veliko časa razvoju lesene teksture – strukture, ki bi lahko obdajala te ekološke otoke in zastirala pogleda na njih, hkrati pa v prebivalcih vzpostavljala nek pozitiven odnos do tega prostorskega elementa, ter posledično s tem uporabo recikliranja. Zasnovano je bilo več različnih tekstur, ki so bile uporabljene kot ograja ali zaslon, ki je cestišče ločilo od prostora za smetnjake.

Slika 1: Uporaba avtobusne postaje. (vir: foto Polona Filipič).

Tretja instalacija, ki je nastala v okviru delavnice pa je bila manjša avtobusna postaja in paviljon v parku pred dijaškim domom. Oba elementa sta bila postavljena v neposredni bližini drug poleg drugega ter s tem ustvarjala zanimiv dialog. Kot osnovni gradnik, so študentje uporabili lesen skelet, ki je ustvarjal neskončno oblikovnih možnosti ter postal neke vrste prostorska platforma, na katero so kasneje dodajali elemente kot so sedalo, ležalna površina, informacijska tabla in koš za odpadke.

Pri evalvaciji projekta, se je za uspešen projekt izkazal drugi sklop, torej zasloni za ekološke otoke, saj je kar nekaj prebivalcev take elemente želelo uporabiti tudi pri sebi doma. Ostala dva sklopa sta imela manj interakcije s prebivalci, oziroma bi za boljšo uporabo bilo potrebno izvesti še nekaj drugih strukturnih projektov, ko je na primer omejiti tranzit po ulici, vzpostaviti lokalni avtobus ter zmanjšati količino parkirnih mest.

Evalvacija študentskega dela je pokazala, da so se le ti naučili projektnega vodenja od prepoznavanja problema do končne izdelave produkta, kar zajema celotno načrtovanje, planiranje logistike ter dejansko izvedbo elementa.

ABSTRACT

Urban renovation of Tržaška street in Postojna was organized by Postojna municipality and Prostor society (NGO). Students from faculty of architecture, University of Ljubljana first analysed the area and the causes that created today's situation, where once main and lively city street is now lacking of a program and is fully subordinated to a car traffic. After few brainstorming and public meetings, students proposed three tactical projects, which would help to revitalize the street. Use of local wood and local know-how from a carpenter school was also used at the project. All three tactical installations were projected, organized and build by students themselves.

URBANISTIČNA DELAVNICA CINTO - CAOMAGGIORE
URBANISTIC WORKSHOP CINTO-CAOMAGGIORE

Cinto caomaggiore, Italija

2017/2018

TIP DELAVNICE:
mednarodna urbanistična delavnica

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DATUM IN KRAJ RAZSTAVE *DATE OF THE EXHIBITION*
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VSEBINA

'Urbanistična delavnica Cinto - caomaggiore' se je odvila na pobudo občine Cinto caomaggiore in društva Nova iz Italijanskega Portogruara. Cilj delavnice je bil pripraviti strokovne podlage in razvojne ideje za prenovo kraja Cinto caomaggiore.

Študentje so najprej spoznali kraj, njegove prebivalce in se seznanili z razlogi, ki so privedli do današnjega degradiranega stanja. Naštejemo lahko več razlogov za degradacijo. Gradnja avtoceste med Trstom in Benetkami, ter gradnja hitrih povezovalk med obmorskim zaledjem in Alpami. Drugi razlog je gradnja trgovskih središč v predmestju ter v bližnjem Portogruaru, kar je doprineslo k upadu obiska domačih obiskovalcev krajevnega središča. Tretji razlog pa je pomanjkanje delovnih mest v kraju, zaradi česar se mladi izseljujejo v večja mesta kot na primer Benetke, Milano ali Rim,kjer dobijo veliko več priložnosti za delo. K prej naštetim dejavnikom je treba dodati še slabo občinsko prometno politiko, ki na tej ulici dopušča absolutno prednost tekočemu in stoječemu motornemu prometu, hkrati pa še ni uspela zagotoviti obvozne ceste za težki tovorni promet, ki iz okoliških krajev preko Cinta najhitreje pride do avtoceste.

Vsi ti razlogi so pripomogli k temu, da je danes središče kraja izpraznjeno, da so programi, ki se razvijajo na tej ulici slabo obiskani, ter da večino odprtega prostora zaseda avtomobilski promet. Študentje so stanje celostno analizirali ter poiskali okoliške točke interesa, ki bi jih lahko vkomponirali v sam projekt in s tem pomagali jedru naselja.

Delo je potekalo v ločenih skupinah, ki so bile sestavljene iz po enega študenta z vsake sodelujoče fakultete, torej fakulteta za arhitekturo iz Italijanskega Vidma, fakulteta za arhitekturo iz Špitala na Dravi ter fakulteta za arhitekturo iz Ljubljane. Mešanje študentov se je izkazalo za zelo produktivno, saj so bili le ti postavljeni v pozicijo, ko so morali svoje argumente predstavljati sovrstnikom iz drugega okolja in drugačnim urbanistično – arhitekturno – oblikovalskim predznanjem.

V okviru delavnice so nastali trije projekti in sicer, projekt CONTINUOUS SURFACE, je obravnaval tematiko krajevnega središča kot enovite površine, študentje so predlagali da se izvede deljeni prometni prostor, ki briše nivoje, razmejitve ter se zajeda tudi v stranske ulice. Ambiciozni projekt predlaga tudi obvozno cesto, ki bi sprostila prostor v mestu pred tovornim prometom, ter tako ustvarila pogoje za uporabo. Kritika na ta projekt je bila ravno v njegovi velikopoteznosti - da bi tak projekt deloval, bi občina morala investirati veliko sredstev v cestno infrastrukturo. Projekt je zagotovo prinesel nov pogled na to, kako bi bila lahko po nekaterih delih urejena cestna infrastruktura, ter mestu dal idejo o deljenem prometnem koridorju.

Drugi projekt, poimenovan FRAME IT, je kraj obravnaval na programskem nivoju. Študentje so preko analize ugotovili, da je kraj razdeljen na določene prepoznavne programske sklope, katere bi bilo potrebno le nekoliko bolj definirati ter jih povezati med seboj. Da bi dosegli to, so študentje zasnovali lahko palično modularno kovinsko konstrukcijo, katera se lahko

Slika 1: Predstavitvena maketa projekta CONTINUOUS SURFACE. (vir: foto NOVA Portogruaro).

sestavlja v poljubne sisteme ali kompozicije, glede na zahtevo programa ali funkcije. Ti sestavljeni elementi – "atraktorji", bi v prostoru opozarjali na določene pozitivne programe ali funkcije, katere obiskovalci in domačini lahko uporabljalo. Med seboj so tej posamezni "atraktorji" povezani s potmi. Projekt je naletel na zelo pozitivne odzive, saj je predstavil zanimivo in dokaj enostavno izvedljivo potezo, ki bi precej pripomogla k razvoju lokalnega - mikro turizma.

Tretji projekt, URBAN FOREST pa je obravnaval glavno prečno urbano os v kraju Cinto caomaggiore, ki tako na eni strani povezuje občinsko stavbo z zalednimi parkirišči, ter na drugi strani star mlin, danes prenovljen v lokalno knjižnico obdano z zelenimi površinami in gozdom. Študentje so predlagali, da se poteza uredi s pomočjo zelene" urbane preproge", torej sistema dreves, posajenih na pravilno mrežo. Mrežo po potrebi puščajo prazno, da se tako umaknejo določenim drugim zahtevam prostora. Drevesa, kjer jih ni mogoče posaditi v tla, bi bila posajena v večja lesena korita, ki služijo tudi kot urbana oprema. Tudi ta projekt je bil na predstavitvi sprejet pozitivno, saj je pokazal na novo os v prostoru, ter hkrati to os uredil na zelo enostaven način.

Pri evalvaciji projekta po končni razstavi so študentje na svoje delo dobili odzive direktno s strani zainteresirane javnosti, ki se je udeležila predstavitve v opuščeni proizvodnji hali tik v neposredni okolici krajevnega središča. Evalvacija študentskega dela je pokazala, da so se le ti naučili projektnega vodenja, predstavljanja svojih argumentov, komuniciranja s študenti v tujem jeziku in osvojili proces dela od prepoznavanja problema do končne javne prezentacije.

ABSTRACT

Urban renovation workshop of Cinto caomaggiore was organized by municipality and NOVA society from Portogruaro, Italia (NGO) in order to get some new ideas how to further develop a town. Students of architecture from Ljubljana, Udine and Spital am Drau first analysed the area and the causes that created today's situation. After few brainstorming sesions and meetings, students proposed three tactical and strategical projects, which would help to revitalize the town. Use of local attractors and local know-how, establishing a shared space on the main road and establishing a new pedestrian green axes were the main topics of proposed projects. All three tactical installations were presented and showed to the public..

MEDNARODNI TEDEN 2018 - OD CEST DO ULIC: URBANA REGENERACIJA V NAMENE SOBIVANJA NA ULICI
FROM ROADS TO STREETS - URBAN REGENERATION FOR STREET CONVIVIALITY – THE CASE OF SUBURBS OF LJUBLJANA

LJUBLJANA

2018

TIP DELAVNICE:
mednarodna urbanistična delavnica

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VSEBINA

V projektu »International Week« so študentske ekipe v mednarodni sestavi raziskovale strategije za reševanje vprašanj vezanih na motorizacijo odprtega mestnega javnega prostora v primestnih območjih in iskale možne alternativne rešitve prihodnosti v kontekstu strategij urbane regeneracije. V uvodnem teoretičnem okviru so se študentje spoznali s kompleksnostjo motorizirano usmerjenega razvoja mest ter raziskali alternative, ki v ospredje postavlja človeka in njegovo merilo. Natančno so preučili uporabo javnih prostorov in strategij za načrtovanje infrastrukture v merilu pešca. Obravnavana so bila vprašanja strateškega načrtovanja, politik urbane regeneracije, ukrepov za povečanje mobilnosti, vprašanj lastništva, finančnih ovir, vidikov mestne pravičnosti itd. Tuji predavatelji so predstavili posamične primere iz Francije, Švedske, Nemčije in Italije. Izčrpno je bil predstavljen tudi primer Ljubljane. V študijskem delu so bile razviti alternativni prihodnji scenariji za urejanje javnih odprtih prostorov v izbranih predmestjih Ljubljane. Obravnavani so bili Litostrojsko naselje, Savsko naselje in soseska Ruski car. Lokacije so študentske ekipe pod vodstvom tutorjev analizirale in se osredotočile na specifična vprašanja vezana na uporabo javnih prostorov. Na podlagi ogleda na terenu in izvedbe analitičnega procesa so skupine študentov neodvisno razvijale koncepte za revitalizacijo ali aktivacijo javnih odprtih prostorov. Z neobremenjenim pristopom in poglobljenim poznavanjem sodobnih teoretičnih izhodišč je bila predstavljena široka paleta inventivnih rešitev, ki so sledile osnovnemu cilju delavnice in mednarodnega sodelovanja: kako prekomerno motorizirana predmestja preoblikovati tako, da bodo prilagojena potrebam in merilu človeka.

ABSTRACT

The International Week was oriented into development of strategies addressing motorisation of urban public open spaces in aged up urban areas and seek the possible alternative futures as part of urban regeneration strategies. The introductory theoretical framework has put light onto the complexity of turning a car-centred urban open space into a human-oriented one. The uses of public space and pedestrian oriented planning strategies have been closely looked at. The issues of strategic planning, regeneration policies, mobility measures, ownership issues, financial obstacles, urban justice aspects etc. have been addressed. In the form of a Studio work students developed alternative future scenarios for public open spaces of concrete locations in suburban Ljubljana. Each students' group has chosen one type of a typical element of Ljubljana's road/street network. Based on the field analyses each student-team has developed its own urban design concept for the reclamation of public space in the selected area.

Slika 1: Po ogledu terena in opravljenem analitičnem procesu so skupine študentov neodvisno razvijale koncepte za revitalizacijo ali aktivacijo javnih odprtih prostorov na različnih lokacijah v Ljubljani.

OD CEST DO ULIC: URBANA REGENERACIJA V NAMENE SOBIVANJA NA ULICI – SAVSKO NASELJE

FROM ROADS TO STREETS: URBAN REGENERATION FOR STREET CONVIVIALITY – SAVSKO NASELJE

LJUBLJANA

2018

TIP DELAVNICE:
mednarodna urbanistična delavnica

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DATUM IN KRAJ RAZSTAVE *DATE OF THE EXHIBITION*
Univerza v Ljubljani, Fakulteta za arhitekturo, Fabianijeva predavalnica
2.2.2018

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asist. Sinan Mihelčič

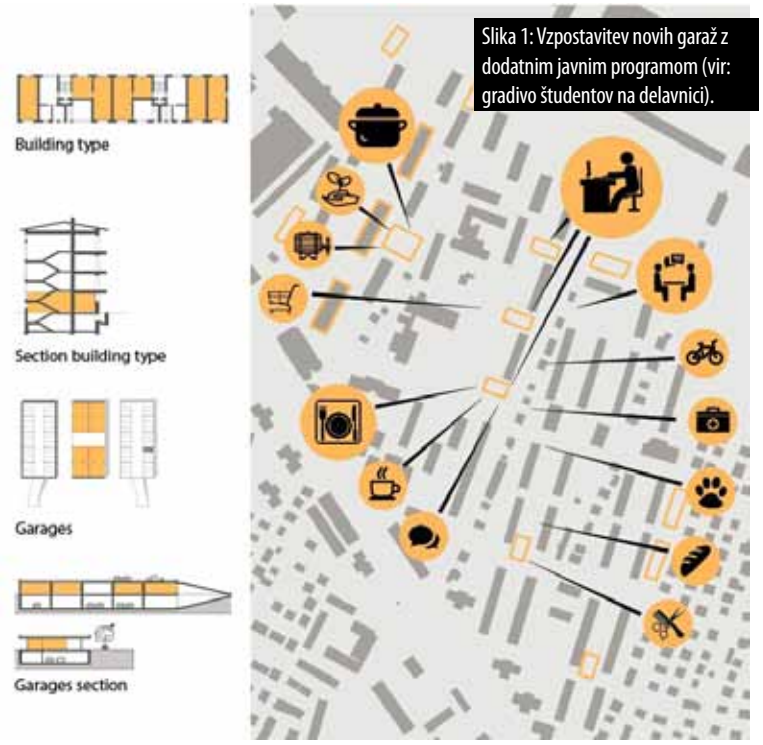
VSEBINA

V okviru delavnice From Roads To Streets: Urban Regeneration for Street Conviviality, so študentje obravnavali ljubljansko sosesko Litostroj, ki spada med najstarejše po vojni zgrajene soseske v Sloveniji. Ideja o zasnovi naselja je sledila načelom Atenske listine, na podlagi katere so v naselju načrtovali vrtec, šolo, trgovino in otroška igrišča, posamezni bloki pa naj se dvignejo na stebre, da se pod njimi lahko vzpostavi javni prostor. V stavbah so bile predvidene tudi notranje ulice. Soseska je bila kasneje zgrajena z manj javnimi programi od načrtovanih, zaradi racionaliziranja stroškov pa se je deloma izgubila tudi zasnova z odprtimi pritličji in notranjimi ulicami. Danes je soseska kljub svoji dobri strateški lokaciji, socialno in funkcionalno degradirana, večino javnega prostora zasedajo garaže ali parkirni prostori, javni programi znotraj soseske pa z nekaj drobnimi izjemami, niso vzpostavljeni. (A monofunctional neighbourhood).

Udeleženci delavnice so analizirali socialno strukturo, strukturno zasnovo soseske vključno z mirujočim, javnim in tekočim prometom, pozicije še delujočega javnega programa, zelene strukture ter vizualno ugotavljali kvaliteto ohranjenosti posameznih blokov. Ugotovili so, da so prebivalci praviloma upokojenci ali študentje, ter da večino javnega prostora zapolnjujejo parkirišča. Redka zgrajena odprta pritličja stavb so tekom let postale drvarnice, manjše popravljalnice ali skladišča za potrebe stanovalcev. Študentje so na podlagi analize odprli dve vprašanji in sicer vprašanje razvoja novega programa (developing new program) ali kako bi vzpostavili atraktivnejše socialno okolje ter vprašanje parkirišč, oziroma razvoja novih funkcij - infrastrukture znotraj naselja (developing new functions).

Pri vprašanju programa so študentje razvili idejo o uporabi že obstoječih struktur – nekoč odprtih pritličij, katera bi danes namenili novemu javnemu programu, ki bi sosesko oživil. Program bi se v pritličja stavb integriral postopoma s čim večjo participacijo lokalnega prebivalstva, s tem načinom reaktivacije neuporabljenega prostora pa bi se lahko pridobila tudi sredstva za več kot potrebno celovito obnovo starih stavb.

Vprašanje parkirišč so študentje rešili na način, da se obstoječe garaže na novo predelajo na način, da se parkirni prostori prestavijo v klet, v pritličju se vzpostavi javni program, na strehi pa prav tako dobimo dodatna parkirna mesta. S tem so količino površin za parkiranje zmanjšali za polovico in vzpostavili prostore za športna igrišča, otroška igrišča ali parke.



Slika 1: Vzpostavitev novih garaž z dodatnim javnim programom (vir: gradivo študentov na delavnici).

Slika 2: Vizualizacija, kako bi soseska ahko izgledala ob zmanjšanju površin, danes namenjenih za parkirišča (vir: gradivo študentov na delavnici).

ABSTRACT

At the international workshop "From Roads to Streets: Urban Regeneration for Street Conviviality", students worked on the Litostroj neighbourhood, as one of the first after WWII planed neighbourhood in Ljubljana, Slovenia. Proposed solutions were about the introducing program variety, adding new functional elements into the neighbourhood, solving the parking issues and revitalizing the green areas around the apartment blocks. Students tried to revitalize the neighbourhood from the social and functional point of view.

OD CEST DO ULIC: URBANA REGENERACIJA V
FROM ROADS TO STREETS: URBAN REGENERATION
NAMENE SOBIVANJA NA ULICI – LITOSTROJ
FOR STREET CONVIVIALITY – LITOSTROJ

LJUBLJANA

2018

TIP DELAVNICE:
mednarodna urbanistična delavnica

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2.2.2018

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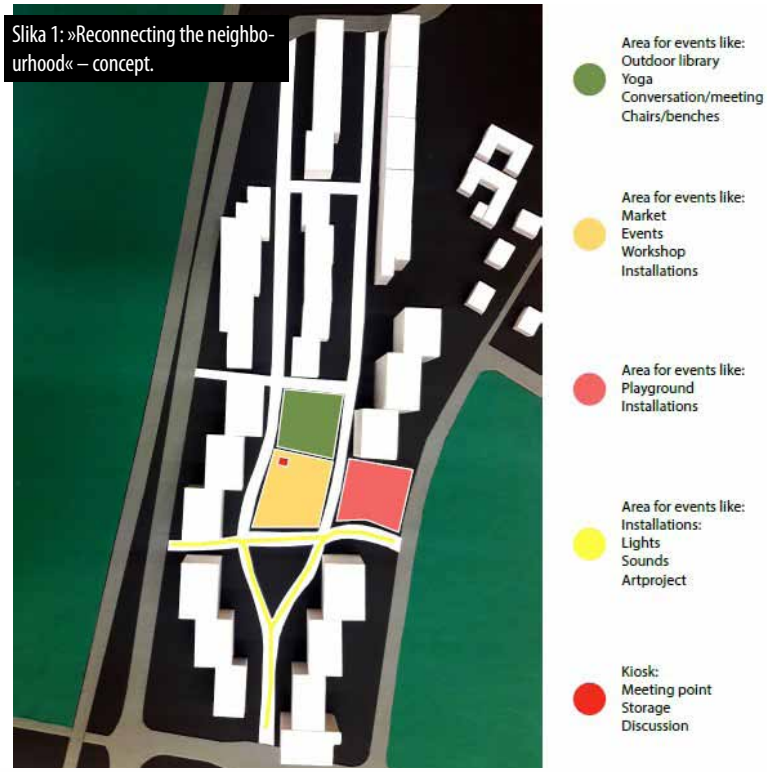
VSEBINA

V okviru delavnice From Roads To Streets: Urban Regeneration for Street Conviviality, so tri skupine študentov obravnavale prostor Ruskega Carja. Posamezne skupine so po opravljenem terenskem ogledu in izvedenih osredotočenih analiz stanja in prosotrskih analiz identificirale različno problematiko in jo v svojih rešitvah poskušile razrešiti. Ruski car je kot ena največjih modernističnih sosesk izgrajenih v povojni Ljubljani sledila načelom modernistične ideje. Vkolikor je v času izgradnje odgovarjala na določena prostorska in socio-ekonomska vprašanja, pa je danes, v svoji velikopoteznosti in ravno kot posledica iskanju odgovorov na takrat pereča prostorska vprašanja, prostor odtujene skupnosti in z avtomobili zasedenih nekdaj zelenih površin.

Prva skupina študentov se je osredotočila na fazno reševanje problematike uporabe in izrabe odprtih površin, ki so v celoti preoblikovanje v divja parkirišča. Idejo so razvili v smislu organizacije začasnih in vedno spreminjajočih se rab prostora s ciljem motiviranja skupnosti. Na površinah je ukinjeno parkiranje, na novo urejenih zelenicah in tlakovanih površinah pa je zasnovan nov »javni oder«, ki omogoča organizirani skupnosti preživljanje prostega časa in izvajanje aktivnosti na odprtem. Ta projekt je bil naslovljen kot »Eksperimental Collaboration«. Projekt druge skupine z naslovom »Enhancing the urbanity in Bratovševa ploščad« je reševal problematiko Bratovževe ploščadi. Skupina je preko prostorskih analiz ugotavljala tokoe ljudi in prometa. Ugotovljeno je služilo kot podlaga za vzpostavitev novih potez v prostoru, ki so predvidele tudi odstranitev nekaterih dotrajanih objektov ob Dunajski ulici, da je s tem omogočen jasen in neposreden stih z mestnim prevozom. Prej zaprt, introvertiran prostor je prev vzpostavitve novih povezav in z njimi omogočenimi novimi tokovi interakcije postal v celoti odprt. Kompozitivno pa je s temi preboji Bratovževa ploščad v projektu dobila tudi nove vizualne dominante in ustvarjene nove atraktivne poglede, s tem je prostor ploščadi pridobil na ambientalni atraktivnosti.

Tretja skupina se je ukvarjala s programsko opremljenostjo Bratovževe ploščadi. S projektom »Bringing Social Life back to Bratovševa Ploščad« so ugotavljali vplive prisotnosti storitev in dejavnosti na socialno življenje v določeni skupnosti in na podlagi ugotovljenega predstavili predlog za celovito preoblikovanje in programsko opremljanje Bratovževe ploščadi in garažnih prostorov pod njo. Na novo lokacijo umaknjen promet je dal prostor trgovinam in storitvenim dejavnostim, za povezavo s ploščadjo pa so bili preoblikovani že obstoječi svetlobniki. Sama ploščad je v nalogi prenovljena v odprto in atraktivno zeleno parkovno ureditev.



Slika 1: »Reconnecting the neighbourhood« – concept.

Slika 2: »Bringing Social Life back to Bratovševa Ploščad« - Concept of programme reinvention and redesign of the Bratovževa Ploščad.

ABSTRACT

In frames of the international workshop "From Roads to Streets: Urban Regeneration for Street Conviviality", three groups of students intensively worked on the current spatial and socio-economic problems of Ruski Car, as one of the oldest large-scale residential neighbourhoods built after WWII in Ljubljana. Proposed solutions were congregated around the main issues identified, these are, parking and motorized traffic within the area, lack of quality public open spaces, lack of activities and services offered to engage and facilitate the residents or to sustain the economic vitality of the place etc.

OD CEST DO ULIC: URBANA REGENERACIJA V NAMENE SOBIVANJA NA ULICI – RUSKI CAR

FROM ROADS TO STREETS: URBAN REGENERATION FOR STREET CONVIVIALITY – RUSKI CAR

LJUBLJANA

2018

TIP DELAVNICE:
mednarodna urbanistična delavnica

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Občina Cinto - Caomaggiore

DATUM IN KRAJ RAZSTAVE *DATE OF THE EXHIBITION*
Univerza v Ljubljani, Fakulteta za arhitekturo, Fabianijeva predavalnica
2.2.2018

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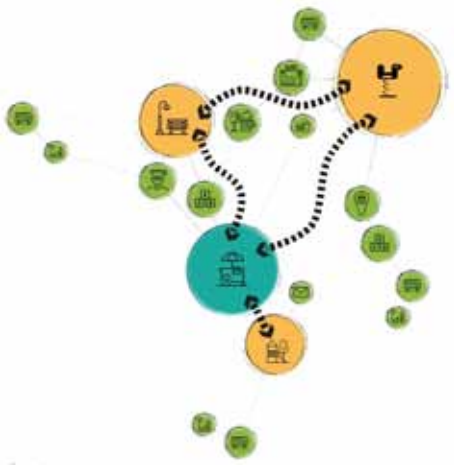
VSEBINA

V okviru delavnice From Roads To Streets: Urban Regeneration for Street Conviviality, so tri skupine študentov obravnavale prostor Savskega naselja, vsaka na temelju problematik, ki so jih študenti zaznali v prostoru oziroma jih identificirali v analitični fazi dela. Savsko naselje je ena najstarejših blokovskih sosesk v Ljubljani, ki so bile zgrajene v povojnem času in se danes soočajo tako s prostorskimi problemi (nerešena lastništva, neurejen javni prostor in prometne težave), socialnimi vprašanji (popolno nezaupanje v institucije, odsotnost socialnih servisov na ravni soseske) ter tudi ekonomskimi zagatami, kot so brezposelnost, pomanjkanje centralnih dejavnosti in priložnosti za mlade (Velkavrh in Korenjak, 2017).

Prva skupina študentov se je osredotočila na močnejše povezovanje soseske, in sicer v fizičnem, prometnem smislu na eni strani, ter povezovanju družbeno-kulturne sfere soseske na drugi strani. Predlog skupine »Mobile meetings« se zato osredotoča na oživitev treh odprtih javnih prostorov v soseski in okrepitev fizičnih povezav med njimi. Druga skupina (Turning car-dedicated areas into public spaces) je kot najbolj moteče izpostavila preobremenjenost in zasedenost prostih javnih površin z avtomobili znotraj soseske in predlagala rešitve, ki v časovnih korakih razrešujejo probleme mirujočega prometa v soseski ter obenem na novo definirajo sproščene površine z novimi aktivnostmi za prebivalce. Tudi tretja skupina je kot vodilo razvoja določila povezovanje znotraj soseske in oblikovala predlog z naslovom »Reconnecting the neighbourhood«, pri tem pa se je (bolj kot prva skupina) osredotočila na fizične povezave oziroma krepitev pešpoti in »bližnjic«, ki spontano nastajajo v prostoru in kažejo na potrebo po njihovi ureditvi.



Slika 1: »Reconnecting the neighbourhood« – concept.

Slika 2: »Mobile meetings« - concept and prototype of a multifunctional street furniture.

Slika 3: »Reconnecting the neighbourhood« - visualization of the proposed central square.

Slika 4: »Towards street conviviality« - transformation of the car-dedicated areas into public spaces for all generations.

ABSTRACT

In frames of the international workshop "From Roads to Streets: Urban Regeneration for Street Conviviality", three groups of students intensively worked on the current spatial and socio-economic problems of Savsko naselje, as one of the oldest large-scale residential neighbourhoods built after WWII in Ljubljana. Proposed solutions were congregated around the main issues identified, these are, parking and motorized traffic within the area, lack of quality public open spaces, lack of activities and services offered to engage and facilitate the residents or to sustain the economic vitality of the place etc.

REFERENCE:

Velkavrh, Z., Korenjak, A., 2017. Regeneracija javnega prostora v stanovanjskih soseskah – problemi, priložnosti, rešitve. Urbani izziv, strokovna izdaja, str. 64-69.

RAZVOJ PODEŽELSKIH VASI V ZALEDJU NOVEGA MESTA
THE DEVELOPEMENT OF THE RURAL VILLAGES IN THE HINTERLAND OF NOVO MESTO

NOVO MESTO

2018

TIP DELAVNICE:
študentska planerska delavnica

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Kulturni dom Janeza Trdine, Novo mesto, 6.12.2018

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Meta Krivic

VSEBINA

Študentje prostorskega načrtovanja iz Fakultete za gradbeništvo in geodezijo smo bili povabljeni k sodelovanju pri projektu Razvoj podeželskih vasi v zaledju Gorjancev, Mestne občine Novo Mesto. Namen projekta je bil preučitev prostora in predstavitev vizij potencialov, ki jih prostor omogoča. Prebivalcem teh krajev želimo omogočiti kakovostno življenje in privlačno okolje s spremembami, ki jih v prostor prinaša tretja razvojna os. Povezovala bo odmaknjene kraje z zaposlitvenimi središči in vplivala na mirno podeželsko življenje pod Gorjanci.

V sklopu delavnice smo najprej smo preučili širše območje v katerega so vpeti Gorjanci, nato pa se podrobneje osredotočili na izbrano območje, ki zavzema naselja Dolž, Vrhe, Iglenik, Mali Cerovec, Veliki Cerovec, Vinja vas, Konec, Podgrad, Pristava in Mihovec (slika 2). V širšem kontekstu smo spoznali značilnosti in lastnosti prostora na podlagi izdelanih naravno geografskih, družbeno geografskih in demografskih analiz ter analiz prostorskih aktov občine Novo Mesto. Odpravili smo se na teren in si ogledali posamezna naselja ter se pogovorili z domačini. Ogledali smo si tudi hrvaško stran Gorjancev in naravni park Žumberak.

Pri detajlnih analizah naselij smo se osredotočili predvsem na funkcije, ki jih naselja že nudijo in na problematiko ter potenciale, ki jih v naseljih zaznamo. Zaradi dostopnosti se niso razvijala enako kot Novo mesto, kar je povzročilo izseljevanje prebivalcev. S tem se je začelo opuščati tudi kmetijstvo posledično pa zaraščanje kmetijskih površin. Danes večina prebivalcev vozi na delo v bližnja večja zaposlitvena središča. Z izgradnjo tretje razvojne osi, ki je na območju predvidena in ga celo preseka, lahko pride do ključnih sprememb v razvoju obravnavanega prostora, zato je pomembno usmerjeno načrtovanje razvoja.

Po izdelanih analizah smo ugotovili, da imajo naselja kljub bližini, različne značilnosti in lastnosti. Zato smo smernice za nadaljnji razvoj najprej določili za vsako posamezno naselje z izdelavo scenarijev in ukrepov. Vse smo nato združili v celostno podobo razvoja z dopolnjujočimi se dejavnostmi in funkcijami (slika 2). V sklopu delavnice smo izdelali knjigo, ki vsebuje grafične in opisne analize, scenarije in ukrepe. Izdelali smo tudi maketo območja obdelave s prikazom naselij in povzetkom njihovih razvojnih ciljev ter potek tretje razvojne osi (slika 1).

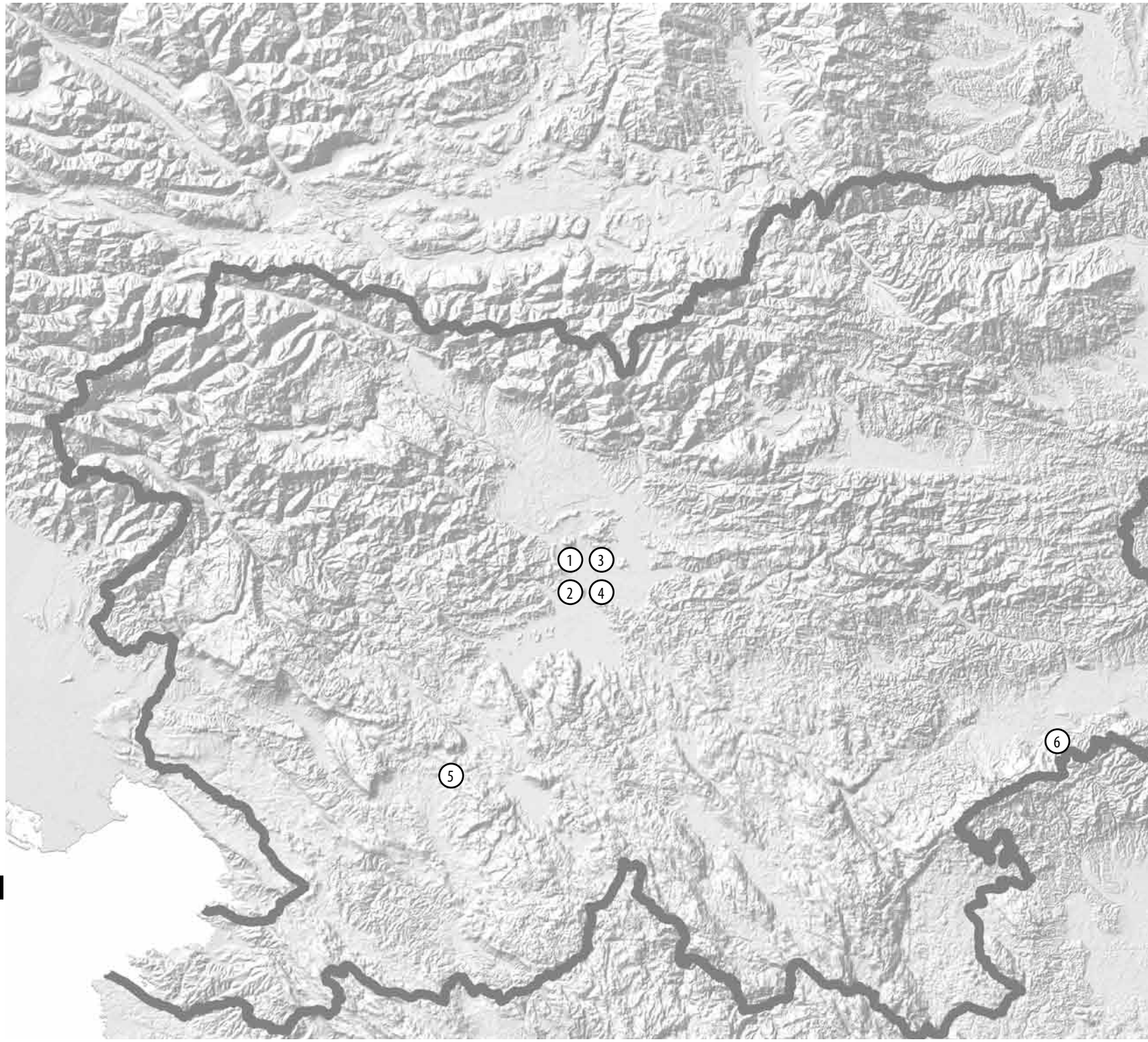
Ugotovili smo, da ima območje velik razvojni potencial. Narava in ohranjanje tradicionalnega načina življenja nudi idilično bivanjsko možnost. Vse to pa se bo s tretjo osjo in priključkom nanjo skrajšalo čas potovanja v mesto. Predvidevamo povečanje poselitve, na kar opozarja trend poselitve ob priključkih v Sloveniji. Nadzorovati bo potrebno način gradnje, značilnosti pozidave in širitve naselij ter umeščanje novih funkcij v prostor in pri tem ohranjati kulturno krajino.

Slika 1: Maketa vasi pod Gorjanci in naslovnica publikacije.


Slika 2: Prikaz posamznega naselja in montaža prikaza negativnega razvoja vasi Dolž (desno).

ABSTRACT

The students of Spatial planning from the University of Ljubljana, Faculty of Civil and Geodetic Engineering had an opportunity to participate in a workshop called Development of rural villages in Gorjanci. The municipality of Novo mesto invited us to make a project about development of villages in this area. Gorjanci are hilly and mountains area in the south-east part of Slovenia. Poor accessibility to the area is causing people to emigrate to the nearby cities. This also resulted in the abandonment of agriculture and as a result the overgrowing of agricultural land. By building a new highway through the area, population might grow. Analyses of the area and villages were made and possible scenarios of the development were considered. The project was presented in a book and with a model.



LOKACIJE DELAVNIC

WORKSHOP LOCATIONS

V.

DIPLOME

MASTERTHESIS

STARA OBALA V BEJRUTU - ZGOŠČEVANJE SPOMINOV

BEIRUT'S OLD SHORELINE – A CONDENSER OF MEMORY

AVTOR *AUTHOR*
Youmna Saliba, Notre Dame University-Louaize / Ramez Chagoury Faculty of Architecture, Arts and Design,

TIP ZAKLJUČNEGA DELA *TYPE OF THESIS*
Architecture - Senior Project

MENTOR *MENTOR*
Ms. Layla Jabbour

LETO *YEAR*
2018

INŠTITUCIJA *INSTITUTION*
Notre Dame University-Louaize / Ramez Chaghoury Faculty of Architecture, Arts and Design

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Youmna Saliba

Figure 1: Mass plan highliting the different interventions.

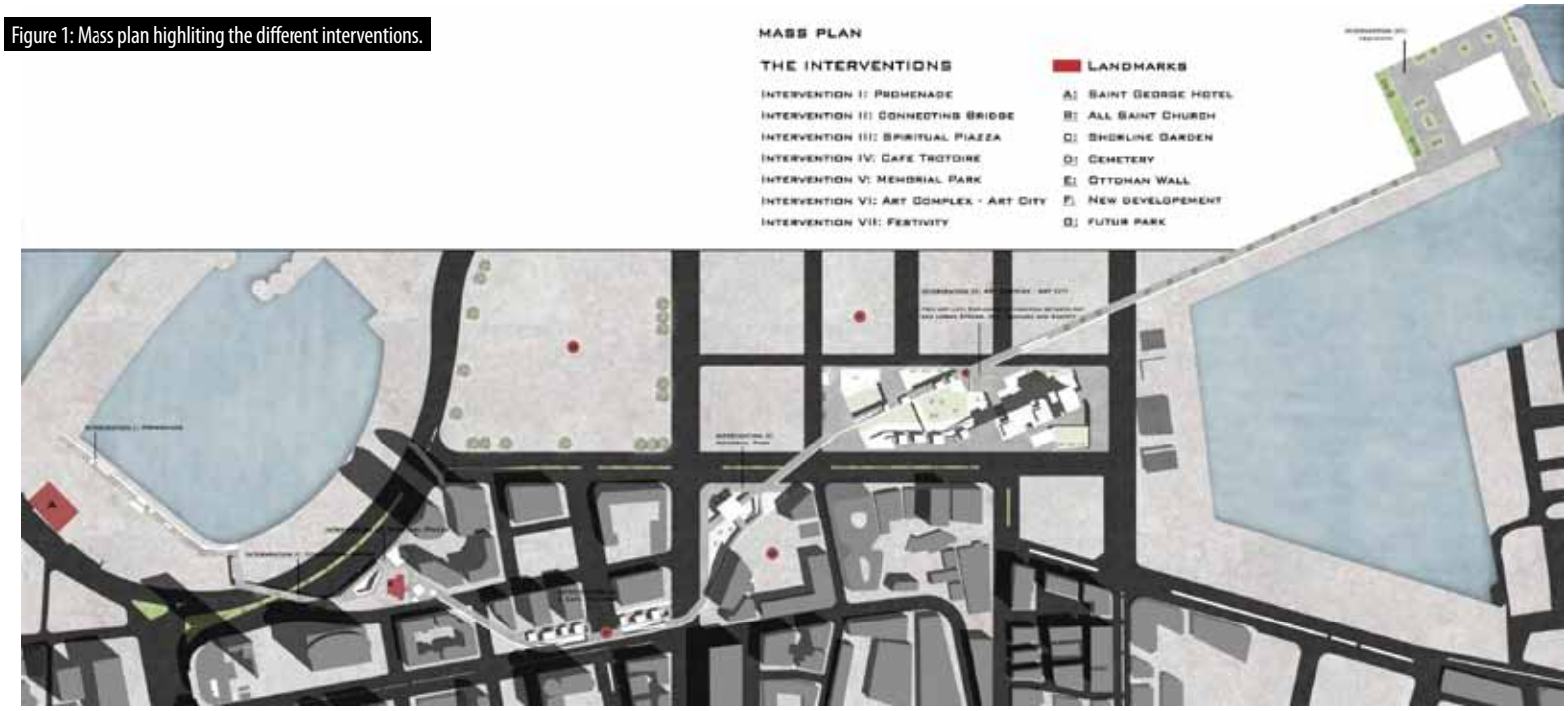


Figure 2: Promenade next to the St. Gorge Hotel.

Figure 3: The elevated park.

The old shoreline of Beirut, is the old coastal limit going from the corniche to the port which was named Avenue des Francais. It used to be a public domain, for cultural and social interaction among people of different classes, a memorable experience not evident in the current urban setting. Following post-war reconstruction, this shoreline became the interface between the reclaimed land and the Beirut central district. By comparing the prewar map with the current situation, it is evident that only few physical and social remains of the 1975 are still present. Hence the problematic is how to highlight the history, culture and social identity of the city center as a condenser of memory.

The chosen sites were selected from a wide cameo of landmarks, different timelines different layers and different functions, retracing the old shoreline (Figure 1). As a result the proposal is a sequence of cultural and artistic projects that will enhance the identity and activities in the city center. The proposed promenade starts from the petrified skeleton of St. George hotel creating a corridor filled with urban furniture comprising benches, children's play area, cycling path, and so on (Figure 2). This promenade is connected to an elevated park invite the passerby to discover the city leading to a public piazza next to the All Saints Church humbled by the soaring scrapers (Figure 3), providing small fragmented functions such as café, restaurants, and entertainment (Figure 4) as a reminiscence of the no longer existing Avenue des Francais. This avenue marked the colonial period that at a certain moment in time was a reclaimed land that extended Beirut beyond the Santiyeh cemetery. Descending to a memorial space where a sculpted fragmented wall on which is written the old streets and memories of Beirut, its flexible space may be used for exhibitions and projections showing Beirut's different history layers, freeing the ground

level for pedestrian flow (Figure 5). Along the old Ottoman wall, a complex of multi-arts training and performance center that acts as an interface for local and international exchange that encourages artists, producers, musicians, dancers and the public (Figure 7). The axis acts as a catalyst changing the static form of the lot into a dynamic one leading to a park, a connective spine for the city (Figure 6). Hence a cultural parkour is generated by strategically locating the different entry points leading to the education, mediatheque, workshops, toward the performance permanent and temporary exhibitions with their extensions, café, restaurants reaching the souk which reacts with the park where all the artistic and cultural activities takes place (Figure 8). Going from the public park, urban scale to a floating volume which will opt for an artistic stratification by creating boxes and flexible platforms where almost any activity can occur (Figure 9). In addition the project goes vertically showing the education of multi-arts with its various departments. The circulation strategy is a key element in how the project is experienced and how the program elements are interconnected through a continuous ramp and stair system (Figures 10 and 11). The building's south façade carries photovoltaic solar cells which store solar energy while acting as a shading device and protecting it against excessive heat gain. The energy consumption will be released during the night along the media mesh transforming the space into an overwhelming visual experience in the city of Beirut. The education section is protected by a double skin improving the performance of the building thus reducing its cooling system (Figure 12). Reaching the terminus of the project where all the festivities take place and a prospect for future development exposed to the sea. This complex influences on reintroducing cultural activities, and strengthening memories of Beirut in the current urban context and for the future development of the maritime front.

Figure 4: Small fragmented Functions.

Figure 5: Memorial Space.

Figure 6: Reviving the ottaman wall axe.

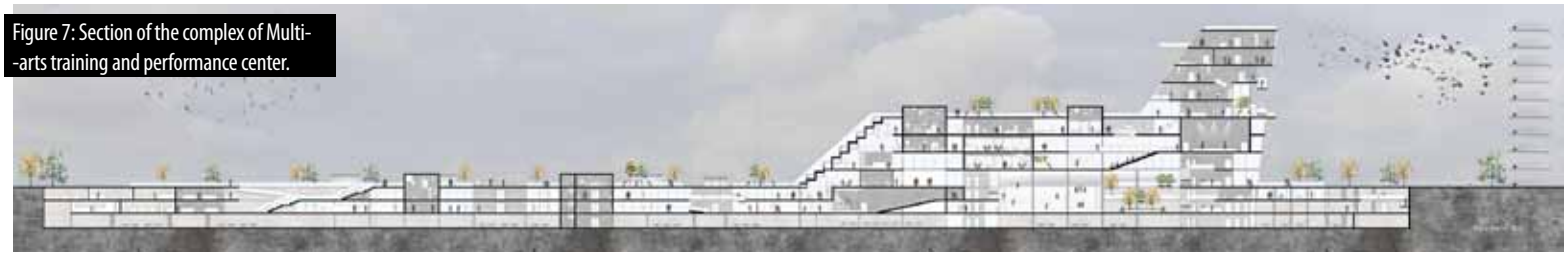


Figure 7: Section of the complex of Multi--arts training and performance center.

Figure 8: Plans showing the different platforms and functions along the cultural parcour.

Figure 9: Floating volume equipped with photovoltaic system on the South facade.

Figure 10: Plans showing the flexible platforms and its program.

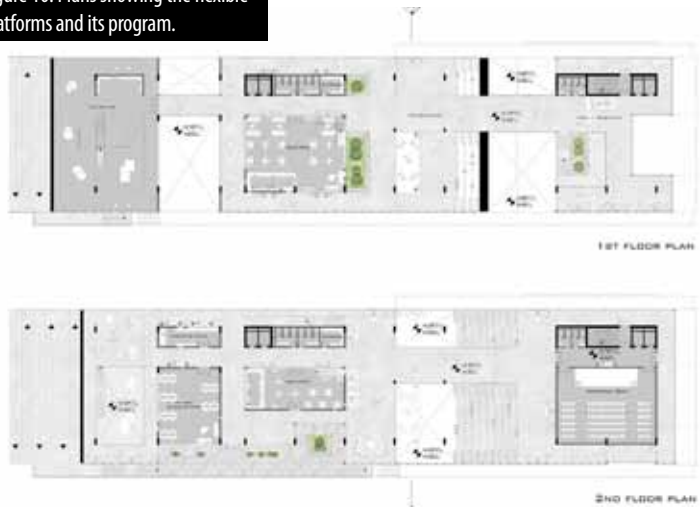
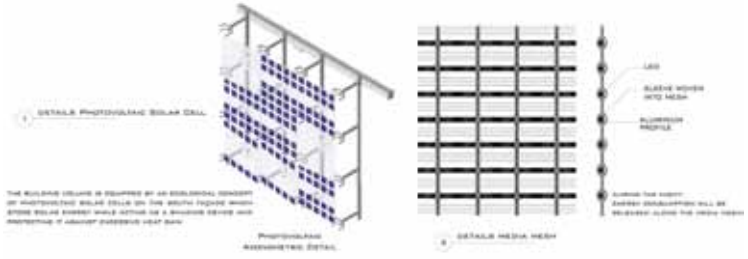


Figure 11: View of the flexible platforms and its program.

Figure 12: Photovoltaic and media mesh details.



POVZETEK

Niz kulturnih in umetniških projektov bo okrepil kulturno in družbeno identiteto središča mesta kot sistem zgoščevanja spominov. Sam projekt omogoča srečevanje in komunikacijo med Libanonci predvsem pa mladimi Libanonci. Cilj projekta je prispevati k širjenju kulture in pomoči kreativnosti na različnih področjih umetnosti in kulture. Ob stari obali Bejruta in skozi niz arhitekturnih intervencij na velikem prizorišču z znamenitostmi se tako pojavljajo različne časovne linije, različni sloji in različne funkcije. Križanje vseh kulturnih, glasbenih in umetniških aktivnosti se zgošča v jedru, točki, kjer se različne mreže srečajo in prepletajo in ki hkrati zaključuje promenado v pristanišču.

ABSOLUTNA ESTETIKA: QORNET EL SAWDA – LIBANON

THE ABSOLUT ASCETICISM: QORNET EL SAWDA – LEBANON

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Architecture - Senior Project

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LETO *YEAR*
2018

INŠTITUCIJA *INSTITUTION*
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GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*
Nada Keyrouz

Figure 1: Mass Plan .

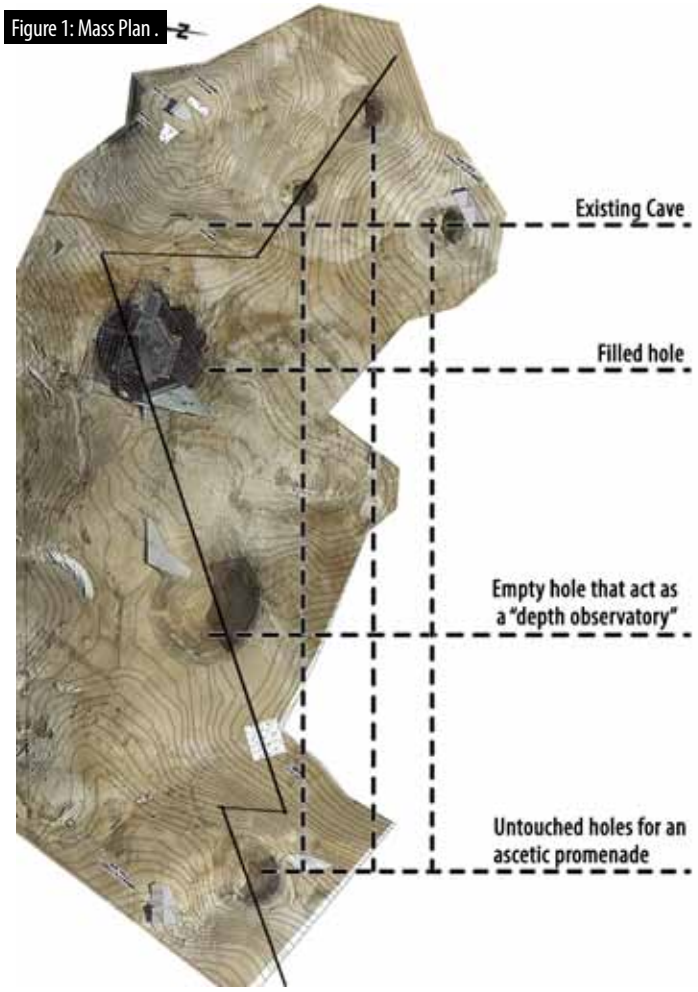


Figure 2: Strategy During Winter and Summer.

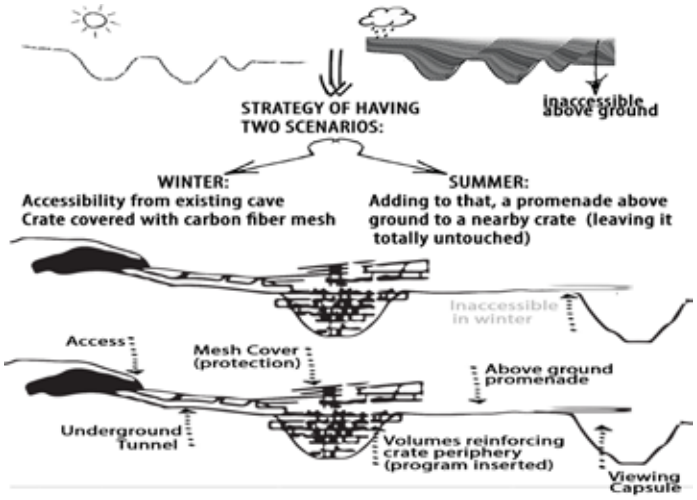
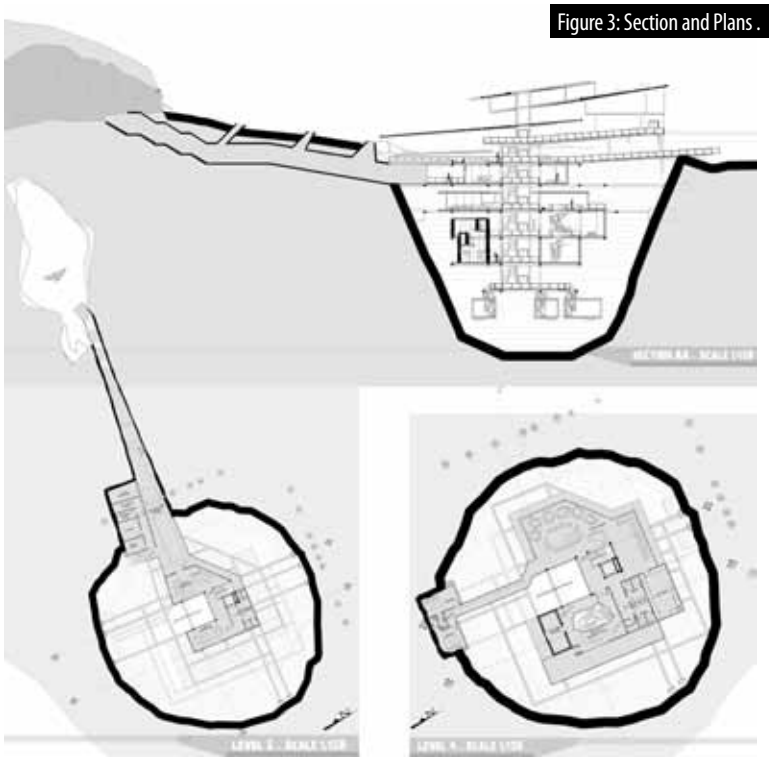


Figure 3: Section and Plans .



The Project uses the natural extreme weather conditions and the natural intriguing craters that exist in the area as a way to accentuate and emphasize the visitors sensory systems, vision, hearing, touch, taste and smell (Figure 5).The main purpose is to make their senses more lively and active by experiencing deep profound sensations.

Starting at the natural cave on the east side, and going through the man-made tunnel in the west direction, the visitors will reach the main crater that houses the central part of the project (Figure 4). The east to west direction of the tunnel make it a perfect place for experiencing different states of sun light during different times of the day and the four seasons. The light experience is further emphasized at the end of the tunnel by the effect of light beams passing through the glass floors of the hot and cold pools that are located at the top edge of the crater (Figure 6).

The crater itself has a diameter of 48 meters on its top level with a depth of 34 meters (Figure 3). The main architectural perception that ruled the conceptual process was to keep the crater untouched. Thus came the idea of hanging the project in its middle, leaving the natural walls and the bottom of the crater in their natural original states (Figure 1).

From the Reception area, which is located at the top level, the visitors can go down through a three level geological museum on the south side or through a two level speleology museum on the north side. The levels of each of the museums are vertically connected by a stairs through open

Figure 4: Section Passing Through the Cave and Tunnel.

Figure 5: Exterior 3D View.

Figure 7: Top to Bottom View.

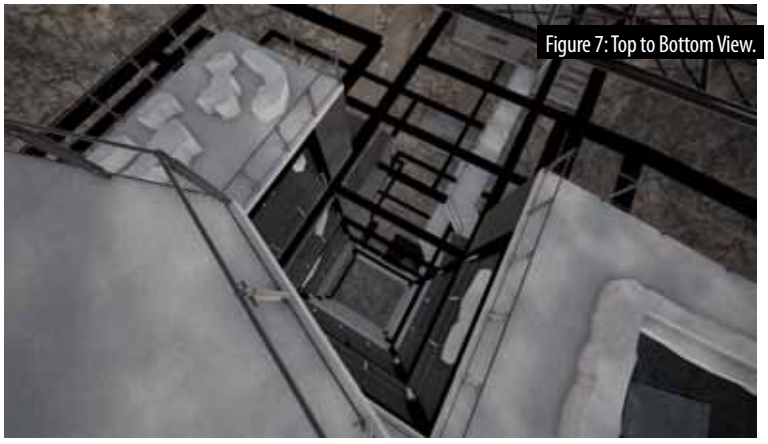


Figure 6: Exterior Perspective.

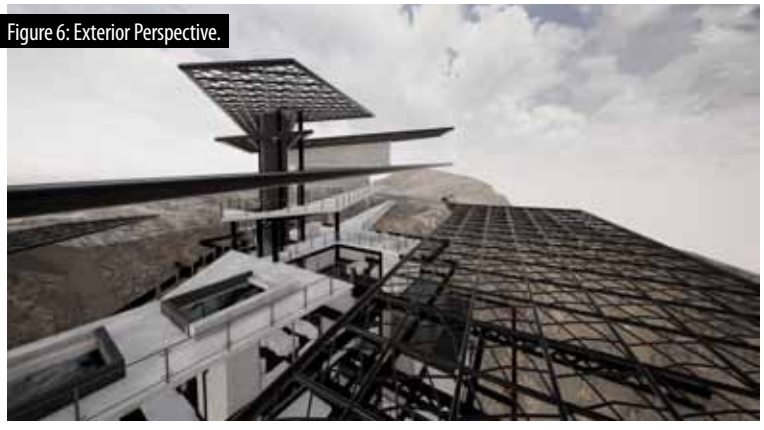


Figure 8: Bottom to Top View.

voids that overlook the museum spaces. The natural crater walls can be seen from all levels of the museums, giving the visitors a sensation of being inside earth itself (Figure 7).

The lower the visitors go, the quieter the surrounding areas become, until they reach the meditation level that consists of six independent capsules. All suspended, the meditation capsules can only be reached from their ceilings through spiral stairs, which emphasizes the calmness and the detachment atmosphere in preparation for an "inside the earth" meditation (Figure 9).

In order to extend the sensory experiences of the visitors, the project has a more scientific aspect. Almost rising above the ground on the western side of the crater, a modern astronomy room and observatory help the visitors to experience a nearer space, either by naked eye star gazing or by the use of a hi-tech radio-telescope.

South of the project crater, and a small promenade away, the visitor can overlook another hole. From a lookout cantilevered platform, it is possible to oversee the immensity and the depth of those naturally made holes.

For long stay visits, the project has natural carved rooms, like caves, in the crater walls. Visitors can feel the security and the warmth provided by the earth inside those natural lodges (Figure 8).

A metallic mesh covers the whole crater and the project inside it. This metallic mesh acts as partial shading system in summer time and most importantly, it works as a snow catcher dur ing extreme hard winter when snow levels can reach 20 meters thick (Figure 2). At the beginning of winter, the snow will start accumulating on the mesh, closing it off progressively. Eventually the metallic mesh will be transformed into an igloo type cover, keeping the whole project in the crater warm and accessible during winter. In spring time, the melted water from the igloo ice mesh will be collected and used as a water source for the project (Figure 10).

In all its part, the project, is a gateway that helps the visitor observe the exterior extreme elements of nature in order to open a way for his or her inner self. By stimulating all human sensory systems, it reconnects the visitor to his/her deeper existence form as well as to nature's deepest core.

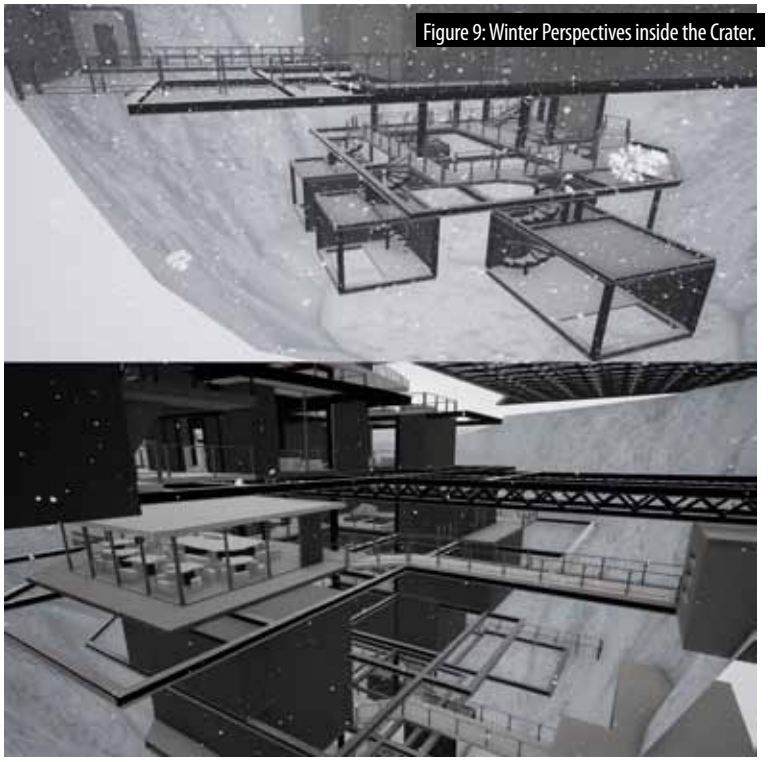


Figure 9: Winter Perspectives inside the Crater.

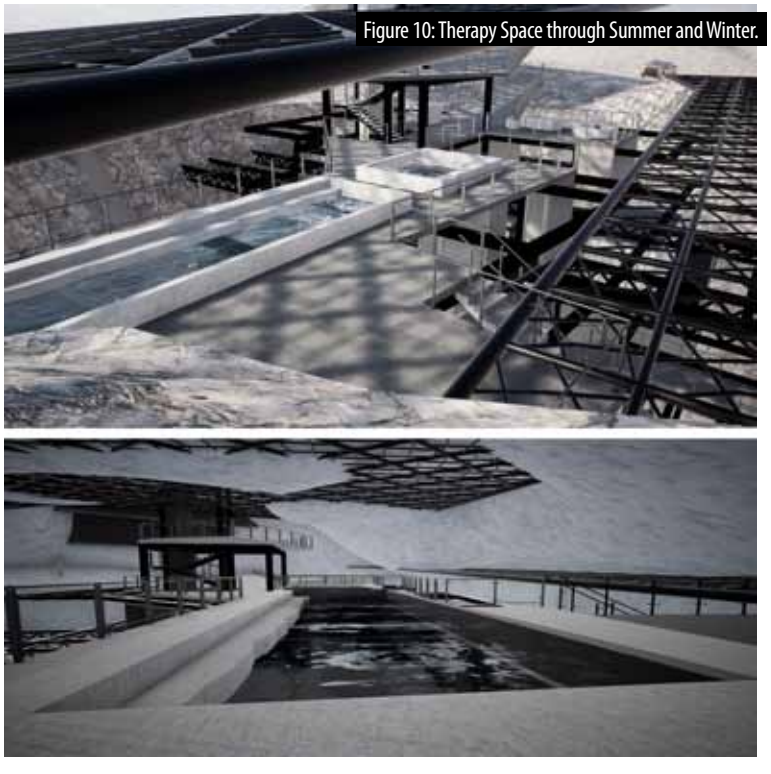


Figure 10: Therapy Space through Summer and Winter.

POVZETEK

Projekt absolutne estetike je kraj, kjer je naše lastno senzorično zavedanje izkoriščeno do maksimuma z ekstremenimi pogoji atmosfere in okolja. Lokacija projekta je Qornet El Sawda, najvišji vrh na Srednjem vzhodu -višina 3088 metrov. Vhod za obiskovalce je načrtovan v antični naravni votlini, ki se navezuje na novozgrajeni tunel. Votlina in tunel sta prostor za doživljanje zvoka, svetlobe in vetra, ki se zaključi na robu zanimivega, naravnega in 34 metrov globokega kraterja, ki je bil ustvarjen z udarom močne strele, kasneje pa preoblikovan zaradi klimatskih vplivov in ekstremnih vremenskih pogojev, ki so tudi glavna značilnost območja Qornet El Sawda. Sam objekt visi v sredini kraterja, minimalistično sidran na zgornjem robu kraterja, kar tudi omogoča intaktnost sten kraterja. Tako bo to postal kraj, kjer strop tvori neskončno vesolje in tla predstavlja gola zemlja.

KULINARIČNO PRISTANIŠČE - KULINARIČNA IZKUŠNJA OB REKI BEJRUT; LIBANON

FOODPORT-THE CULINARY EXPERIENCE BY THE BEIRUT RIVER, LEBANON

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TIP ZAKLJUČNEGA DELA *TYPE OF THESIS*
Architecture - Senior Project

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LETO *YEAR*
2018

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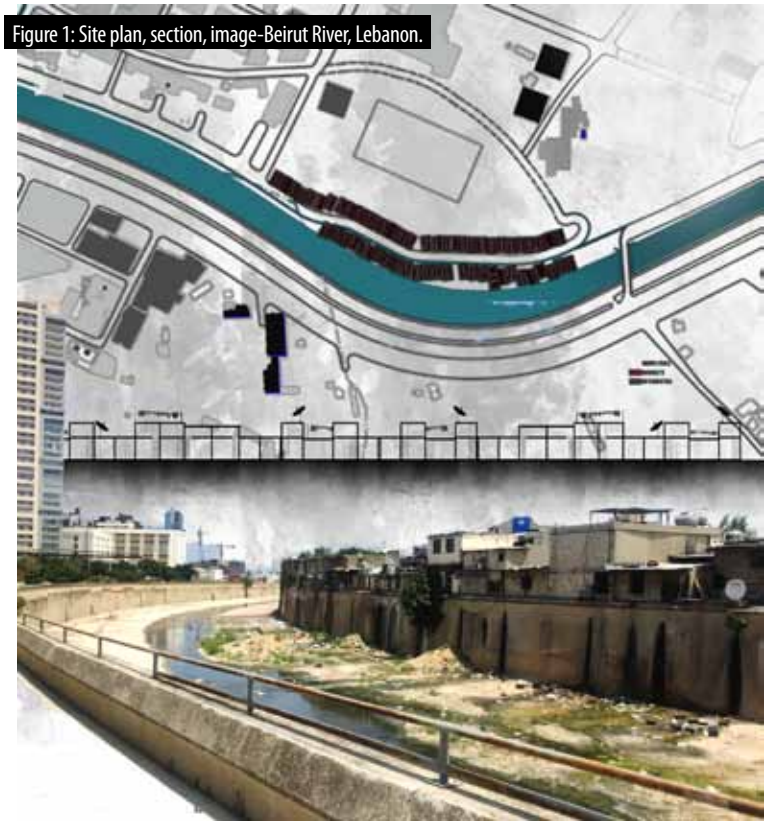


Figure 1: Site plan, section, image-Beirut River, Lebanon.

Located in Sin el fil, Lebanon Souk el khodra or the vegetable market is built right on the edge of the Beirut River (Figure 1). It is known for its disorder, causing numerous conflicts from blocking the major road to solid waste generation that contributes to an unhealthy environment. The Souk is adjacent to the industrial area that is witnessing an increase in its abandoned industrial buildings and an emergence of commercial and residential units. Zooming in to the site, the disorder is seen very clearly by having only a single street passing through the souk that acts as a vehicular and pedestrian road. The souk is also characterized by its informal settlements, where the labor force of the souk lives in each market. The proposal is to take this isolated unit, this neglected and unorganized system, that promotes poverty and insalubrities and transform it into a landmark in the city, a place for people and a home for its laborers by introducing the Foodport. This will replace the existing souk but keep the memory of the place alive. It will be driven by three main pillars: the commerce and agriculture pillar, the gastronomy pillar and the research pillar. On a macro level metabolism will be used as a conceptual framework to reintegrate and reorganize the city and help in the regeneration process following cultural destruction and environmental devastation (Figure 2). Beirut River will be considered the dead strip of the city and different nodes will be activated along this dead strip as the process of regeneration. The Foodport will be the first node to be awakened on the dead strip. On a micro level people are the main catalyst and major element in the activation process of the pillars of the project (Figure 3).

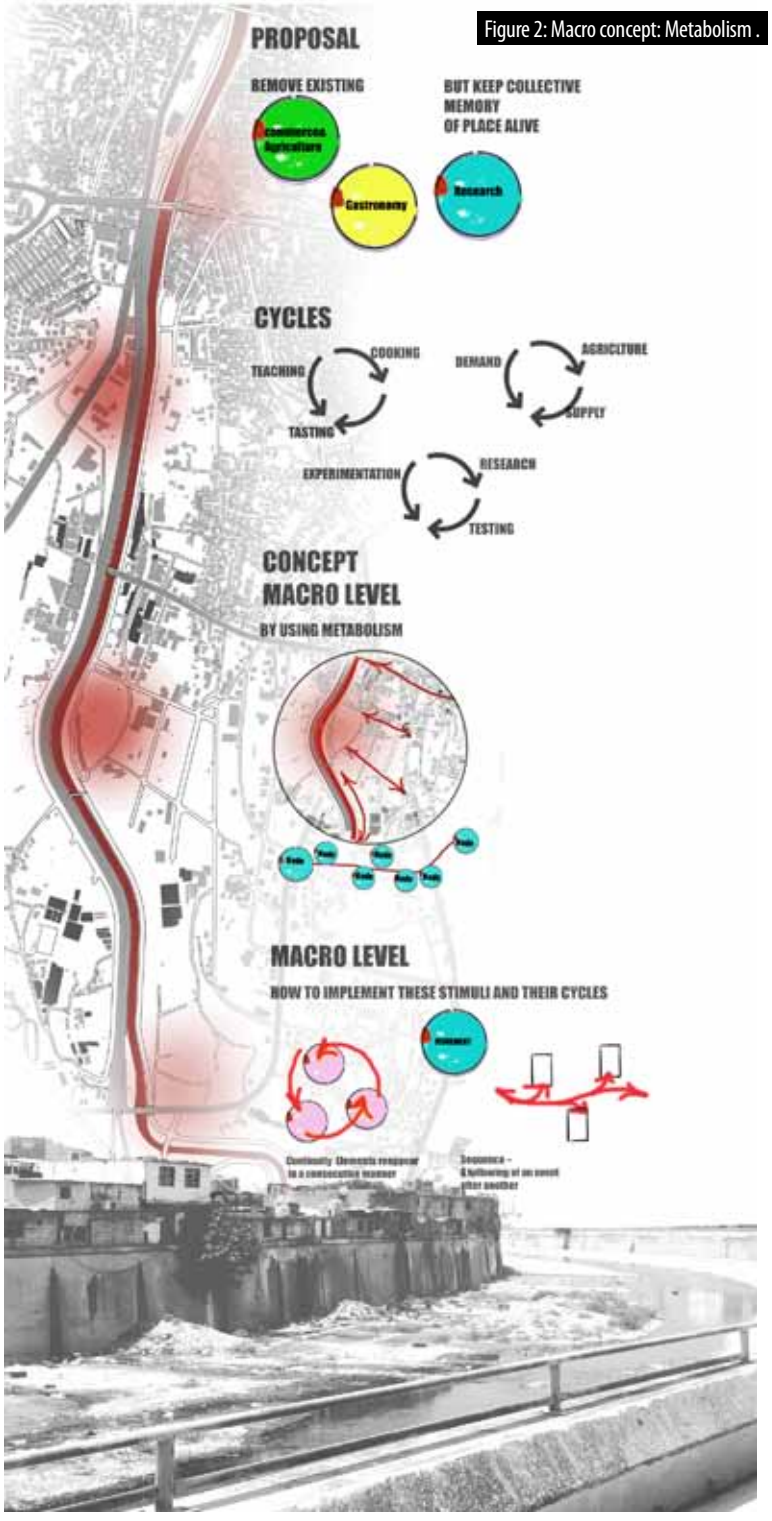


Figure 2: Macro concept: Metabolism .

Figure 3: Skin massing-mesh conception.

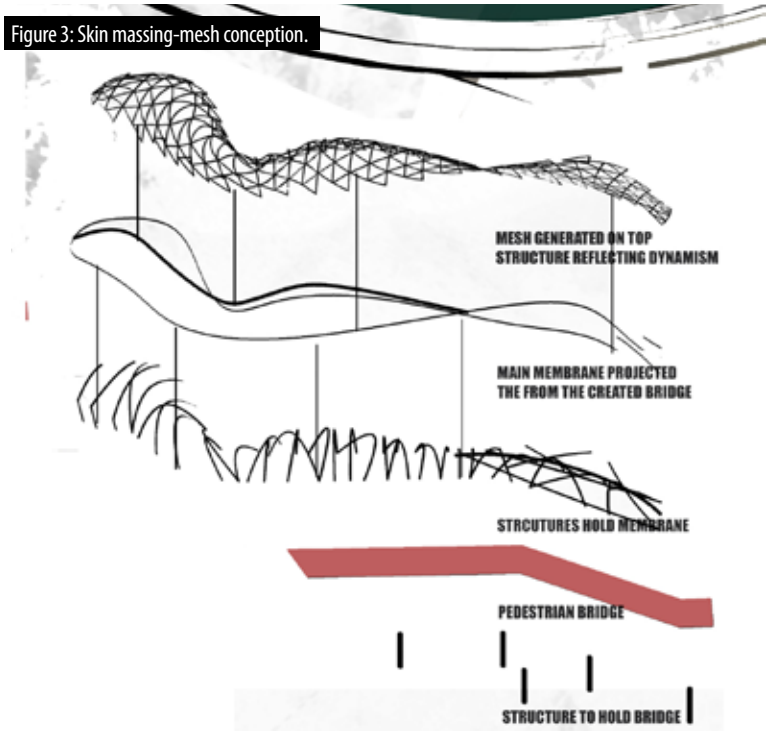


Figure 4: Mass plan.

Figure 5: Ground floor plan, section passing through pedestrian pathway.

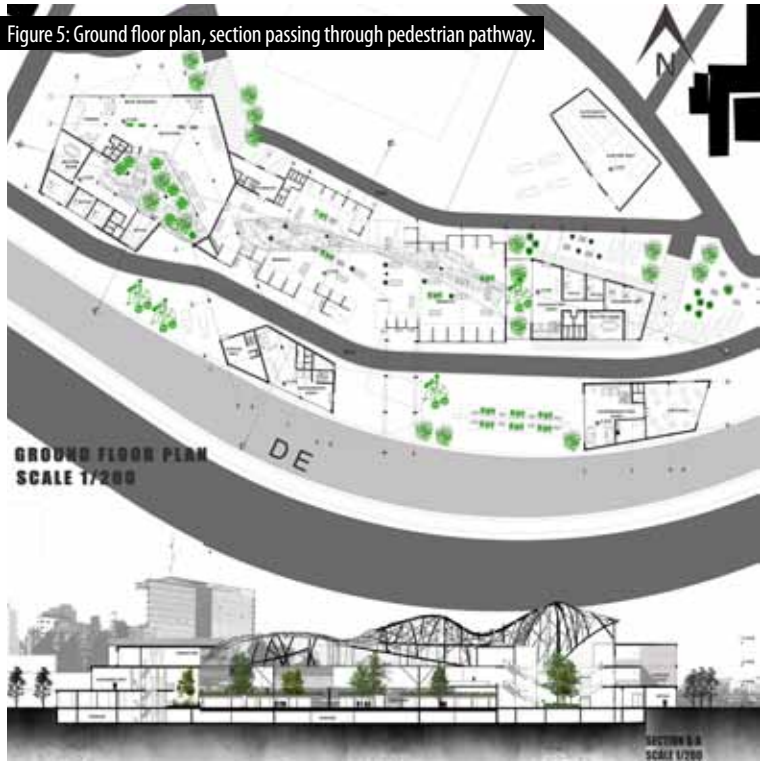
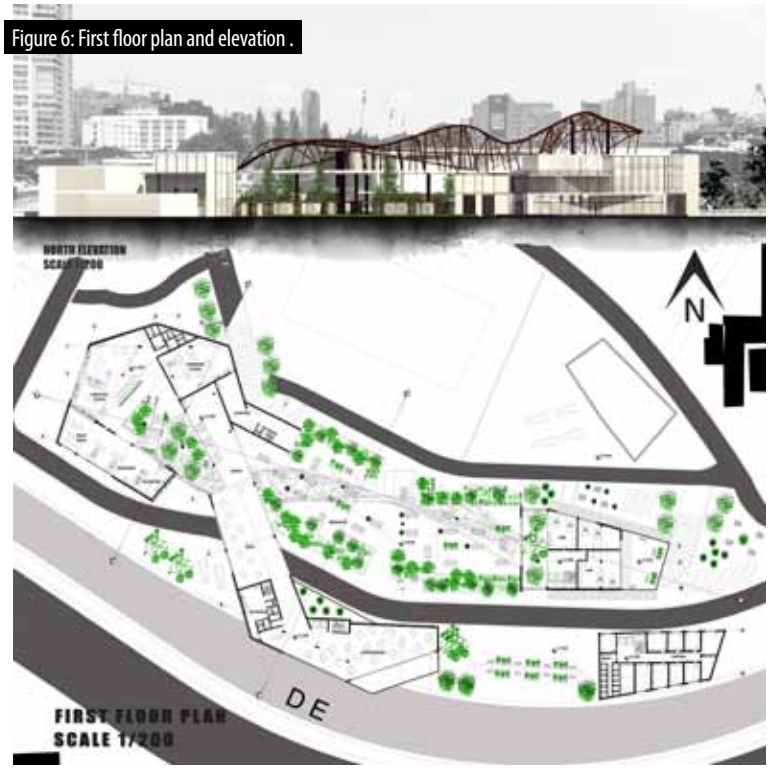


Figure 6: First floor plan and elevation .



As an architectural approach on how the Foodport will be implemented on site, Tropism will be used which is the scientific term of how contextual, environmental elements have a very strong impact in forming the shape of a plant during its growth. Tropism will guide the massing process by taking into account the contextual elements of the site from the vehicular roads to the importance of attracting the newly emerging commercial and residential units to visit the project (Figure 4). Consequently, the three pillars will be situated on the ground floor separated from one another on both sides of the road. The river is an essential tropism entity where the pillars are created around green pockets, recreational spaces for the project, that are situated facing the river as a means to bring the river inside the project and taking the user closer to it. Other than the river orientation plays an essential role locating the functions. A secondary volume situated above the detached pillars will act as a continuous connecting entity linking them together. Finally, and as a dynamic reflection of the visitors' movement, a connection is created between the green pockets of the project. All the functions of the project are interrelated with one another thus as you move from the main entrance you reach the markets that are aligned parallel to the vehicular road (Figure 5). The market is also the main connection between the culinary pillar and the research pillar on the ground floor. The culinary pillar void, the green pocket meant for recreational purposes, takes the visitor from the main lobby up to the cooking classrooms that are also linked to the tasting units, on the other side of the road passing over the markets creating a green promenade for the visitor (Figure 6). The tasting unit lies cantilevered over the river facing the residential unit for the labor force (Figure 7). The void continues to take the visitor to the 3d food printing classes that are directly connected to the exhibition unit of the research pillar, through the dynamic bridge (Figure 8). Finally an electricity generating unit is situated adjacent to the service road to take in the food wastes of the Foodport and generate electricity for the project. The Foodport will not only revive the area as a whole, provide good living conditions for its labor force reintroduce the area to the long gone green spaces but will also act a self sufficient unit in the city (Figure 9).

POVZETEK

Zelenjavna tržnica Souk El Khodra v Libanonu je poznana po neurejenosti, po negativnih vplivih onesnaženosti območja in po številnih nelegalnih bivališčih delovne sile prav na vseh trgih. Kulinarično pristanišče bo zamenjalo bazar, ti. souk, vendar bo ohranjalo spomin na tržnico živo. Tako preoblikovan kompleks bo postal stična točka prenove družbe in lokalne kulture. Sestavljale ga bodo različne funkcije: od tečajev kuhanja, raziskovalnih enot, degustacijskih lokalov in razstavnih prostorov. Z umeščenimi zelenimi rekreativnimi površinami bo območja ponovno pridobilo zelene otoke. Tako bo Kulinarično pristanišče postala mestna znamenitos, kraj namenjen prebivalcem mesta in dom delavcem na tržnici.

Figure 7: View from adjacent Beirut river side.

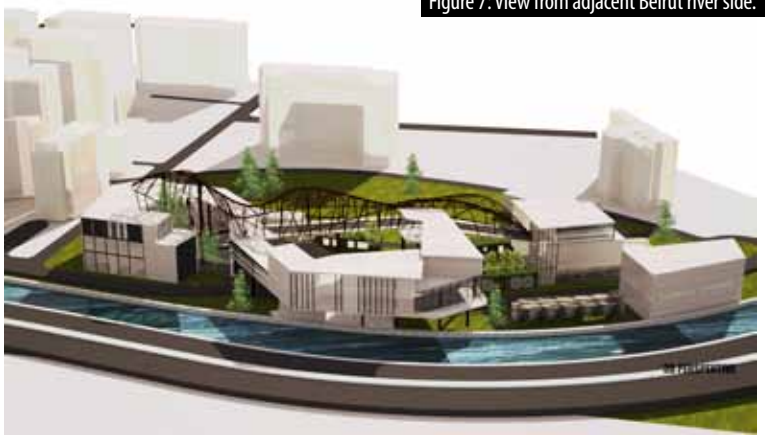


Figure 8: Market view under pedestrian bridge.

Figure 9: Perspective view from residential side of surrounding.

MANIFESTO: PLATFORMA REVOLUCIJE – AL BOURJ - BEJRUT

MANIFESTO: REVOLUTION PLATFORM – AL BOURJ - BEIRUT

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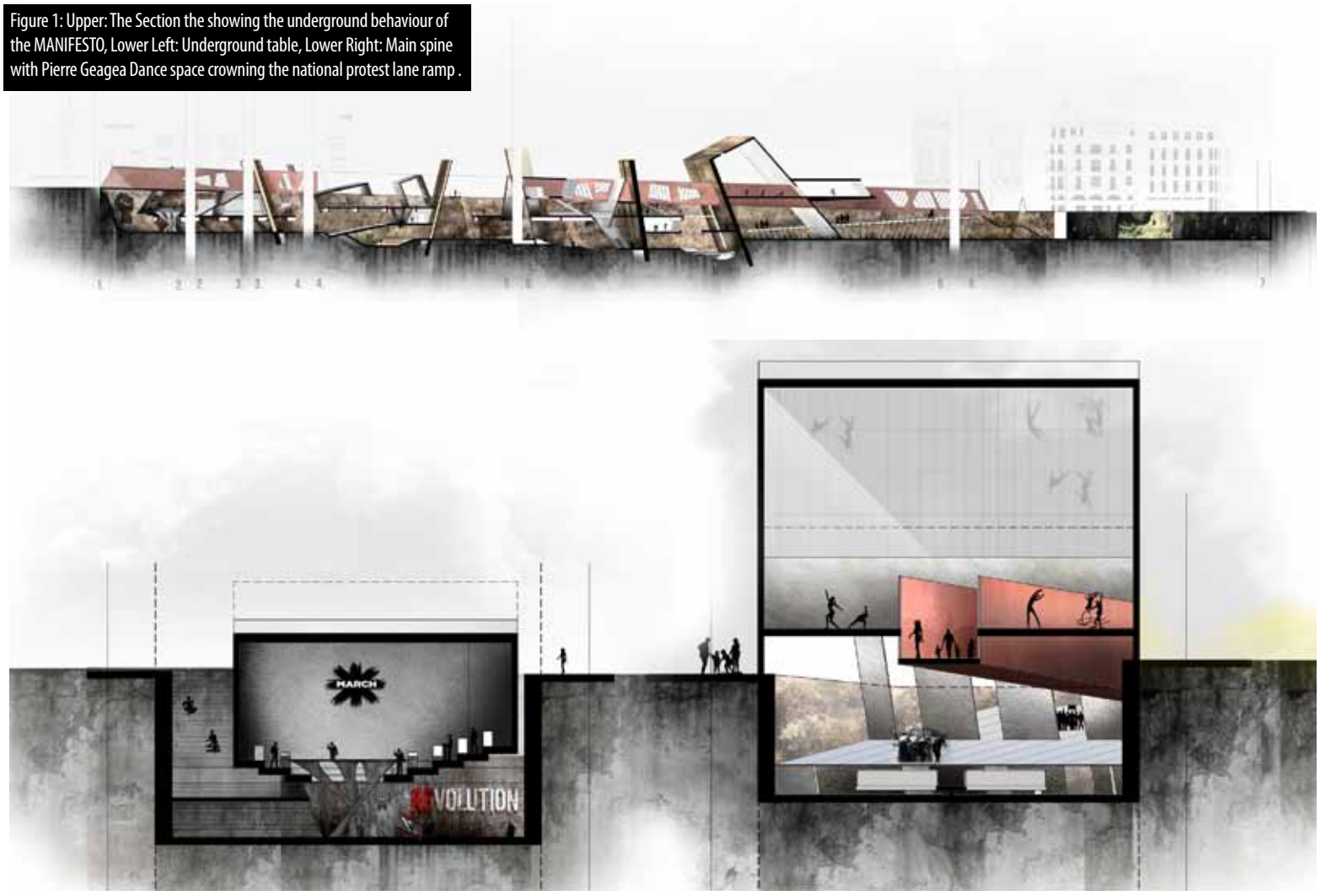


Figure 1: Upper: The Section the showing the underground behaviour of the MANIFESTO, Lower Left: Underground table, Lower Right: Main spine with Pierre Geagea Dance space crowning the national protest lane ramp .

Different manifestations occurred in the heart of Beirut, specifically in Martyrs Square, but none shaped a consistent manifesto due to the inertness of the majority of the citizens, and more importantly, because it is a failing site. The surrounding is planned by Solidere, a real estate firm that happens to regularly renew its "ownership" of Beirut Central District due to its strong political affiliation between the board of Solidere and the corrupted political strata. For many reasons Martyrs Square is kept empty at the moment, with Solidere fondly knowing that snatching this valuable site would create an internal schism. The goal of the MANIFESTO is to revitalize the spirit of the site, vertically, horizontally and in all directions, disregarding the current hostile context, which has bitten every inch of the square, thinking they can dilute the sense of revolution. Architecturally, the project behaves underground (Figure 1), keeping a secretive spirit to a womb ready to explode at any time, also to intrigue the users curious enough to know what is going in underneath this square.

The platform comprises five labels, each characterized by a different rebellious public figure. Other threshold spaces create the coalition needed between the labels to give awareness to the users. Users experience non--sequential spaces, to give the needed awareness and shed light on the truth, hidden by the corrupted leaders, through different architectural spaces; hence, the revolution. After squeezing the functions in this narrow site, and sculpting the mass to make the project viable, MANIFESTO took its shape (Figure 2). Walls with no origins, no directions turned towards natural elements, giving a series of walls that are inclined in an absurd manner. The program was then translated into architectural spaces, organized along the

Figure 2: Upper: Massing squeezing and interlocking. Lower: Massing sculpting according to each one of the five labels.

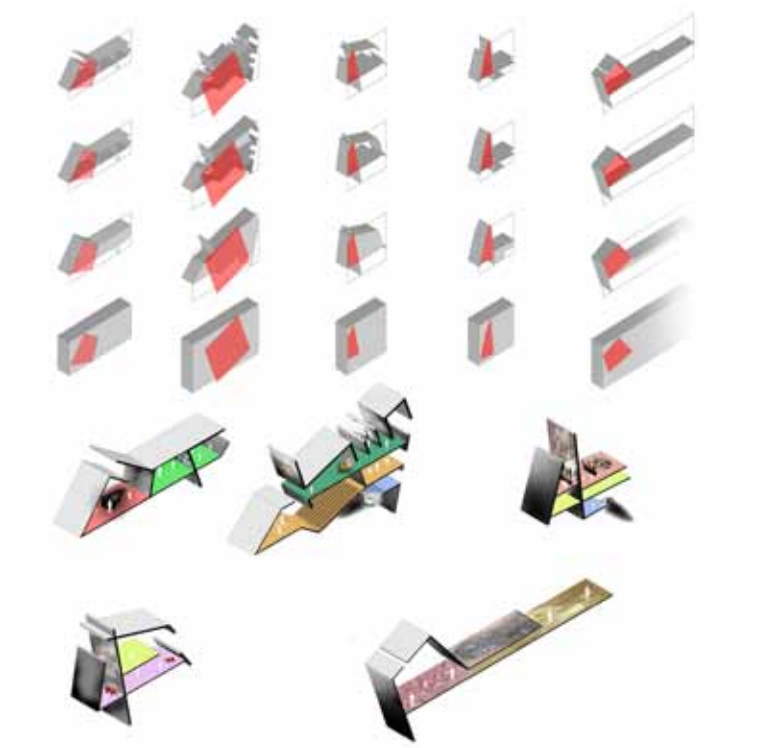


Figure 3: Upper: Entrance of the MANIFESTO with an intriguing red spine. Lower: Night view of the MANIFESTO showing the interlocking of different spaces with the main spine.

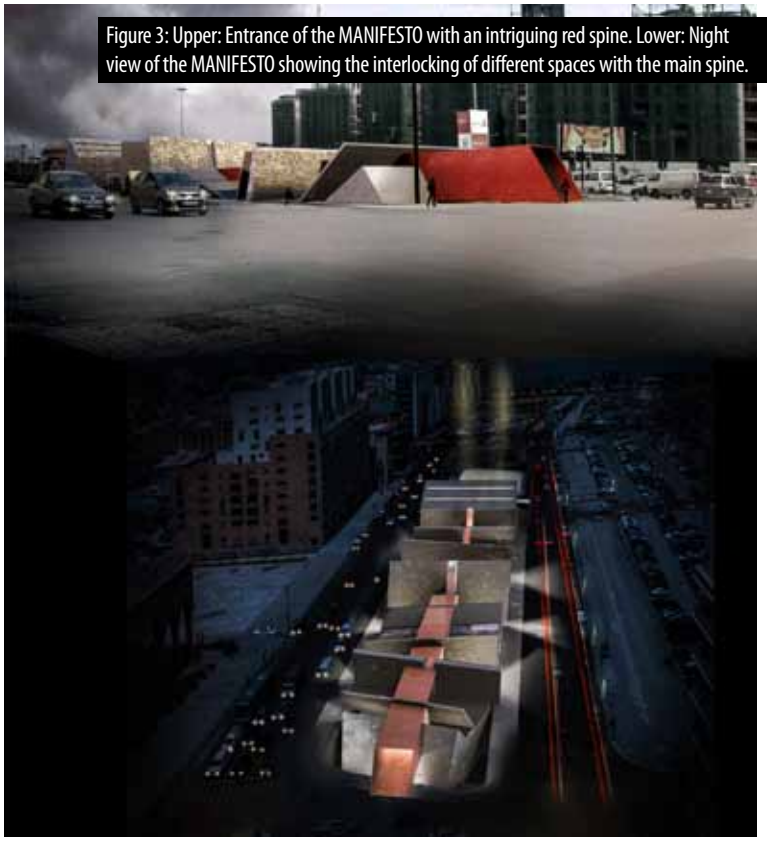
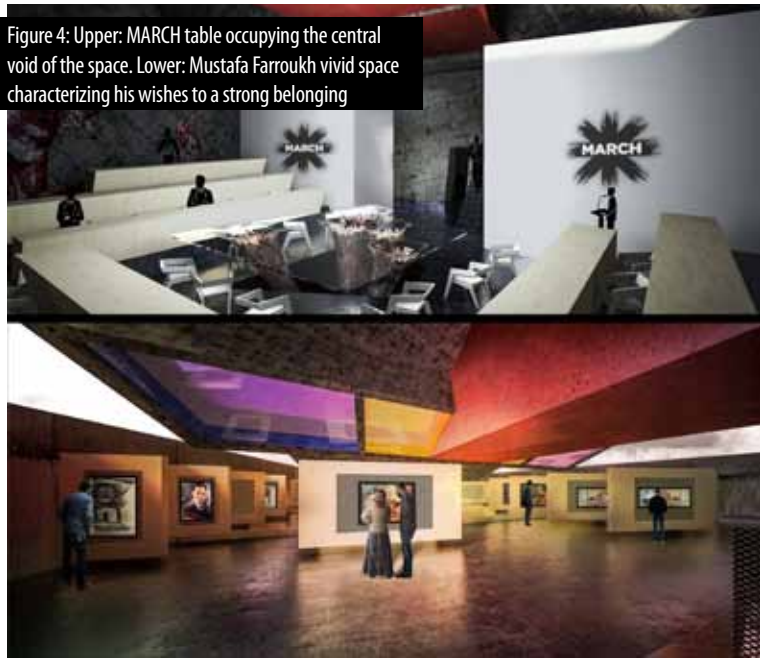


Figure 4: Upper: MARCH table occupying the central void of the space. Lower: Mustafa Farroukh vivid space characterizing his wishes to a strong belonging



main spine, which is a resting element over the slightly sloping topography of the site, and serving as the "free flow", becoming the breathable element that allows the users to go in and out without exploring the project, or to be intrigued enough by the openings all along the strip that interacts with several functions underneath. The spine is attractive enough and is perceived from different vistas. Several elevators are stretched along the diagonal walls formed by the massing (Figure 3). At level -7 meters below ground level is located the Youssef Bey Karam planning room; a cascading like shaped space, free and floating with a minimal surface hitting the massive bearing walls holding the entire project. It is revolving around a void, where a custom- designed table is set in the middle, within the void, hitting the bottom excavated ground of Martyrs Square. On the -5.2 meter level lies the Mustafa Farroukh artistic space, which is characterized by its vivid and multicolored spirit, symbolizing the honest yet drastic character of his figure; he was always keen on stitching a strong connection between motherland and its nationals (Figure 4). The visual brainstorm on level -7m is defined by slender walls absorbing the natural light, and diverting it to hit the lithographic maps of Ali Cherri, and project them onto the ground. There, users can map different layers of Beirut and see how it evolved when a malfunctioning urban planning turned the city into a ghost town (Figure 5). The latter is connected to an improvised room where the architecture itself - due to the interlocking of different massing sculpture - gives a rage

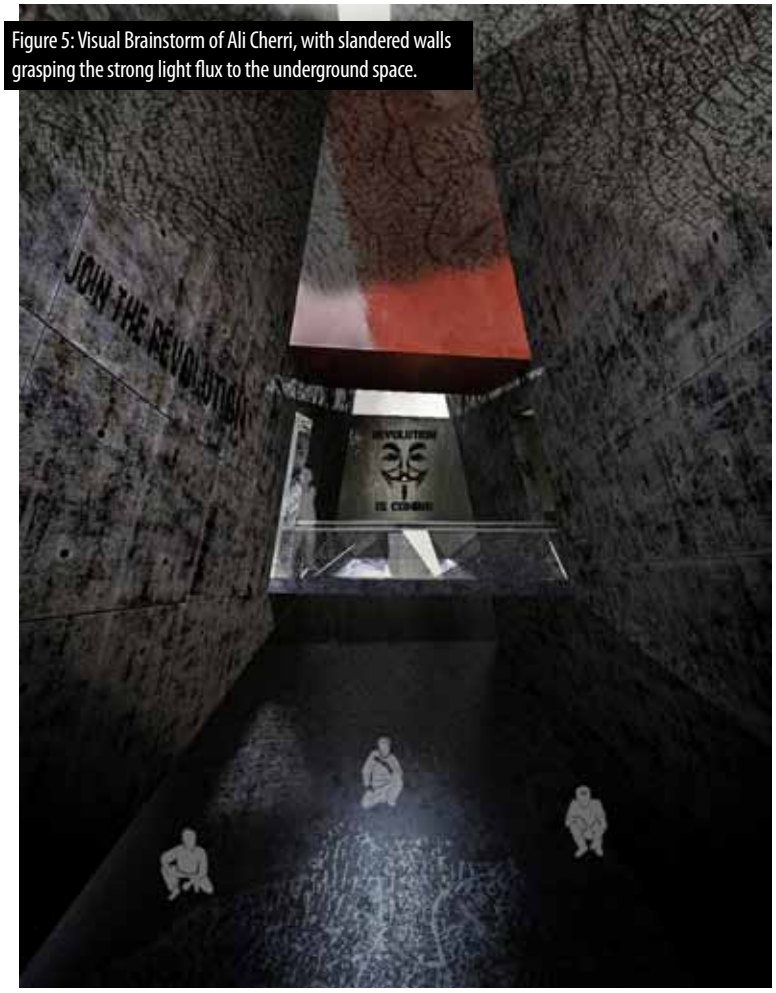


Figure 5: Visual Brainstorm of Ali Cherri, with slandered walls grasping the strong light flux to the underground space.

Figure 6: Mixed Bathhouse caged underneath all the spaces and their thresholds, as the last social contact before the re-insertion.

architectural stance. Social contact and sharing knowledge is a basic asset in this project. Therefore, the design engages a public book fair, accessed from the street, for users to mix and share experiences and ideas. The fair is crowning a book club underneath with its own outdoor reading space, overlooking the last social contact, which is a "mixed bathhouse" caged underground yet carefully free and naturally lit (Figure 6). This avant-garde ideology gives openness to society in Lebanon, which is still intimidated by such spaces. A steep path is taken by the users - the national protest lane - a glass ramp that symbolizes the scream of this machine, before being reinserted into the city as awakened, nourished, free citizens (Figure 7).

POVZETEK

Umeščen na kontroverno lokacijo je bil Trg mučenikov vedno vozlišče kjer se je manifestiralo svobodno izražanje in svoboda preko javnih shodov. MANIFESTO je katalizator, ki že leta zaznamuje lokacijo je obkrožen s sovražnim kontekstom, ki je pripravljen na soočenje z vsakim signalom svobode. Izbruh državljanske vojne v zgodnjih sedemdesetih letih je v Libanonsko zavest zarezal globoke rane z daljnosežnimi posledicami za propagacijo svobodnega govora: družbo je prevzela diktatorska politična doktrina in v tej obliki razvejan politični sistem. Tako je nastal MANIFESTO,očem skrita platforma, ki kontinuirano vlaga v ljudi, da postanejo družbeno in politično zreli, da se ponovno vstavijo v sistem, v cilju zasledovanja pravice in se boja proti korupciji.

Figure 7: Outdoor ruins connected to the underground existing ruins.

STIMULATOR BULVARJA - KULTURNO IN UMETNIŠKO SREDIŠČE V AMCHITU

THE BOULEVARD'S CATALYST – AMCHIT CULTURAL AND ART CRAFT DESTINATION

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LETO *YEAR*
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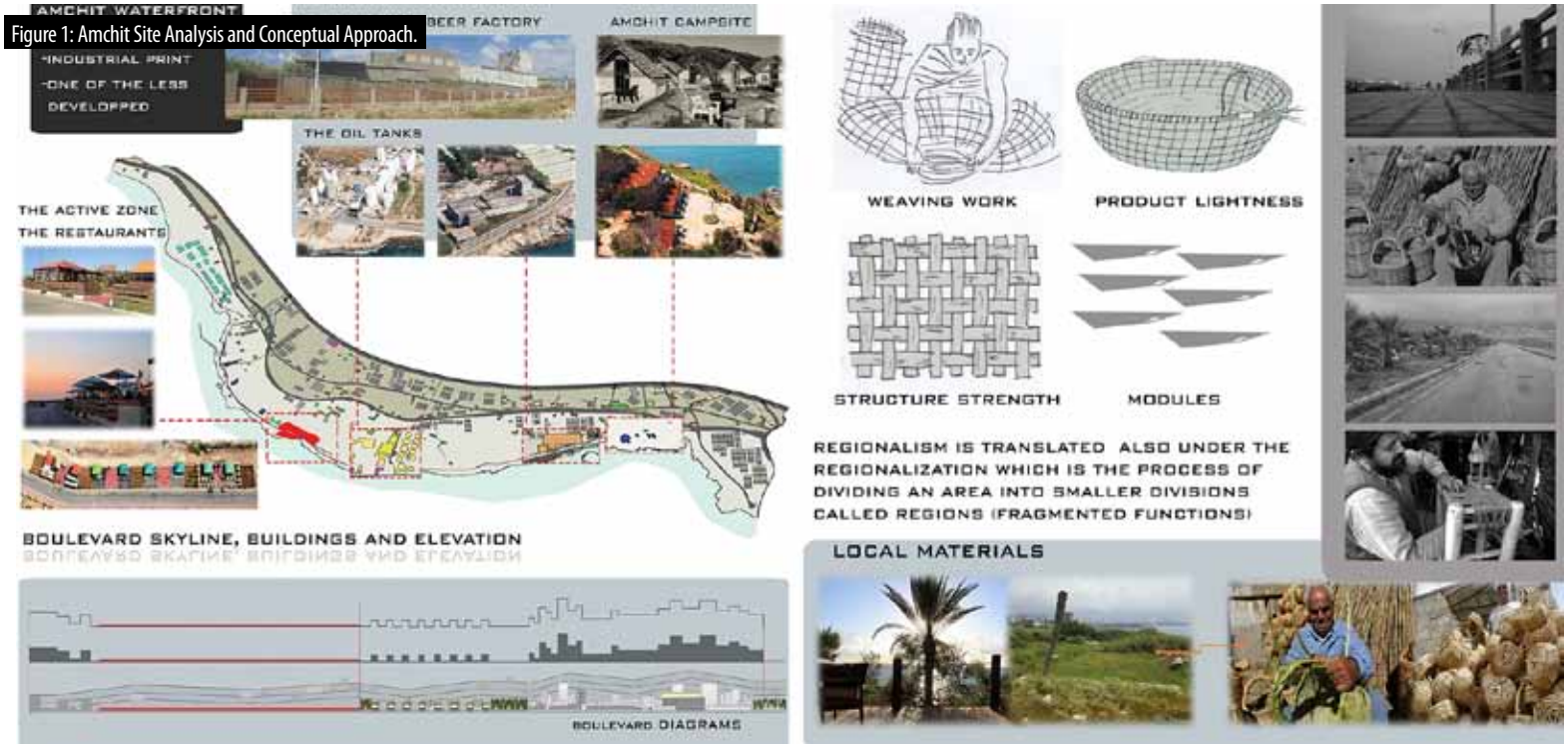


Figure 1: Amchit Site Analysis and Conceptual Approach.

Amchit, the coastal town located on the northern side of Byblos is known for its patrimonial village rich with authentic architecture and its boundaries touching the sea exposing a waterfront that is considered one of the less developped on the lebanese shoreline. Apart from the archeological and historical sites that are present in the town, Amchit boulevard extends 5km along the coastline, and is a sea side promenade and an activity lane. This waterfront rich in local resources such as palm and cane trees has been a source of income for the locals however fuel tanks and abandoned industries are taking over a big part of the area conceiving it as an industrial print. (Figures 1, 2)

For generations, Amchit crafstmen developped their tradition with the close commercial and cultural connections with Egypt and Iraq and used to make fishing basket out of palm leaves, and hats to protect them from the sun, not to forget the woodwork and boat making during the Phoenician era all along the coast including this town (Skinner,B, 2002) but recently less and less people have been employing their knowledge and the struggle to keep the traditional crafts alive is real. However in the last 6 years the municipality has been organizing annual cultural exhibition events that include sculptures and crafts live competitions to promote the true culture and art side of this town.

The project aims to revive both the existing boulevard and crafts and in particular the weaving tradition based on the theory of regionalism that is considered a solution for the local, the place and the genius loci.

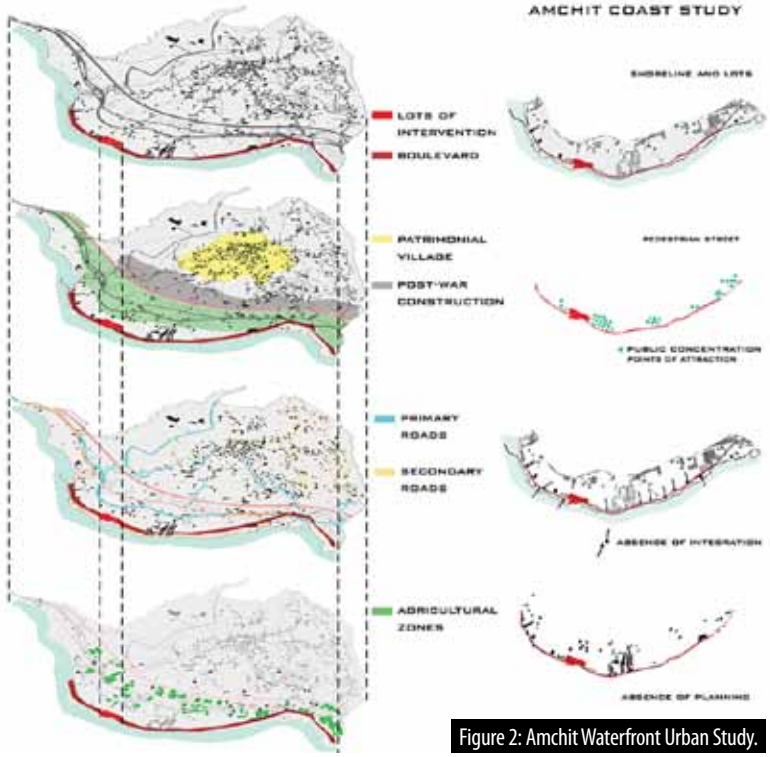


Figure 2: Amchit Waterfront Urban Study.

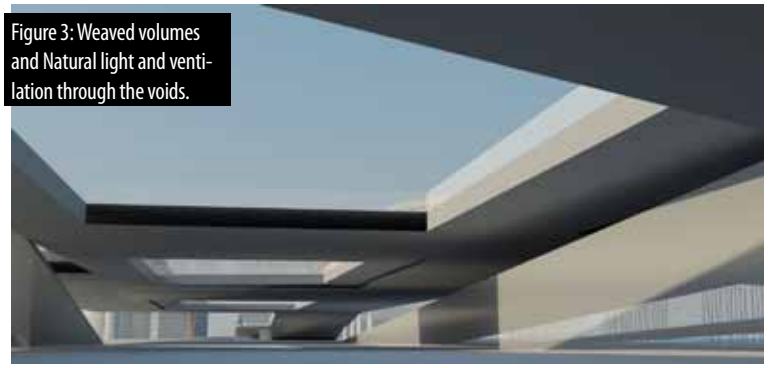


Figure 3: Weaved volumes and Natural light and ventilation through the voids.

Figure 4: Accessibility to all the functions through pedestrian ramps.

Figure 5: Urban Park linked to the Vocational school through a pedestrian ramp.

Figure 6: Main intervention: The Vocational school.

The unification of the ligthness of the product and the strength of its structure are the main characteristcs applied in the architectural design in addition to the porosity translated in the voids present allowing a maintained graduation of light and a natural ventilation through outoor and indoor spaces. (Figure 3)

Moreover the weaving process is manifactured structurally by having an elevated structural sheet allowing the flow of people to enter the open space on the Ground floor and connecting four intervention lots through pedestrian ramps while weaving the desired spaces for each function highlighting the plasticity character.

The local resources present on the boulevard are main design elements and tools to achieve the strength needed; for this purpose the steel reinforced concrete is replaced with bamboo structure reinforcing the slabs.

Figure 7: Visual Perception through different levels

Figure 8: Art Platform on ground and underground levels.

Figure 9: Market Place Destination for promoting and exhibiting locals work.

The program consists on having a cultural promenade of weaving through different levels (Figure 4); starting with an urban park where poeple can experience different phases of weaving from pre-production, production and post-production; water ponds and harvesting areas are main elements in this park in order to collect and produce the weaved products. (Figure 5)

Facing the urban park is an educational area occupying a library, an auditorium, workshops, classrooms, laboraroty and a services area grouped in the Vocational school (Figure 6, 7); this latter is connected to an art exhibition that goes underneath the ground level to create a calmer environment similar to a museum of paintings and sculptures (Figure 8), next to the the market place where locals exhibit their work in craft stores. (Figure 9)

Sugar canes poles are the chosen material for this project. It is a low cost and sustainable material that grows intensively locally. They are treated against moulds and pests then stained and varnished and protected by ledges that also prevent the direct sunlight from penetrating into the project, while on the top floor the layers of bamboos are doubled creating the interior spaces and enhancing the privacy based on each function. (Figure 10)

Figure 10: Sugar canes allowing facade shading and interior spaces partitioning.

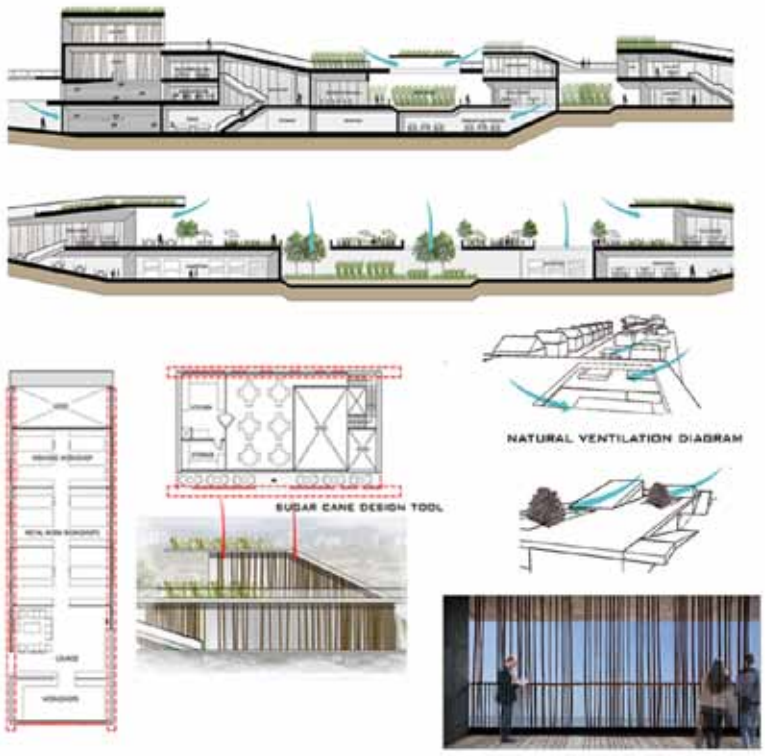


Fig.9: Sugar canes allowing facade shading and interior spaces partitioning

Reference:

Skinner, B. (2002). "Architect and artist born in Amchit", Retrieved from http://www.dailystar.com.lb//Culture/Art/2002/Jul-08/108438-artist-and-artisans-revive-dying-amchit-tradition.ashx

ABSTRACT

Želja projekta je bila, da se ugotovi medsebojno povezanost med lokalnimi surovinami in skupnostjo obrtnikov skozi prepletanje arhitekurne zasnove, ki temelji na teoriji regionalizma. Amchit je obalno mesto, ki je znano po tradicionalnih izdelkih domače obrti. V zadnjem času se spopada z padanje produktivnosti zaradi uvoza cenenih izdelkov in nepovezanostjo tradicionalnih izdelkov z sodobnimi tehnologijami. V projektu smo predstavili načrt ureditve kulturne promenade na manjhen delu bulvarja, v katerega smo vključili izobraževalne, komercialne in javne površine, s pomočjo katerih želim oživiti turistično obalno območje in izginjajoče tradicije.

'DRUGA' TRŽNICA IN OSTALI TRGI – GEMMAYZEH, BEJRUT – LIBANON

THE 'OTHER' MARKET & OTHER PLACES. GEMMAYZEH, BEIRUT – LEBANON

AVTOR *AUTHOR*
Jessica Lahoud, Notre Dame University; Zouk Mosbeh (Main Campus), Lebanon, Ramez Chagoury Faculty of Architecture, Arts and Design. Department of Architecture

TIP ZAKLJUČNEGA DELA *TYPE OF THESIS*
Architecture - Senior Project

MENTOR *MENTOR*
Dr. Christine Mady

LETO *YEAR*
2018

INŠTITUCIJA *INSTITUTION*
Notre Dame University; Zouk Mosbeh (Main Campus), Lebanon. Ramez Chagoury Faculty of Architecture, Arts and Design. Department of Architecture

GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*
Jessica Lahoud

BEIRUT AND GEMMAYZEH

Lebanon's capital city is known as the city that adapts to change. What really happens along the lines of change? Beirut lies within the fields of a virtual battle: between the old and the new; people cultures and consumer driven economies, traditional fabric and new development. One area in Beirut, Gemmayzeh, known for its flourishing Commercial Street and artisanal culture, falls within this; where gentrification is occurring and high-rise developments are emerging. The displacement of old residents is erasing traces of the architectural and social layers of the city. The real problematic, however, is not only the corporatization of the cityscape, but also the high density and gradual disappearance of community space. The area remains in a liminal position, between the new Beirut Central District and other saturated areas, where one can still make a difference.

INTERVENTION

After surveying the area (Figure 1), the architectural proposal was to intervene on the highlighted site and give back a com-

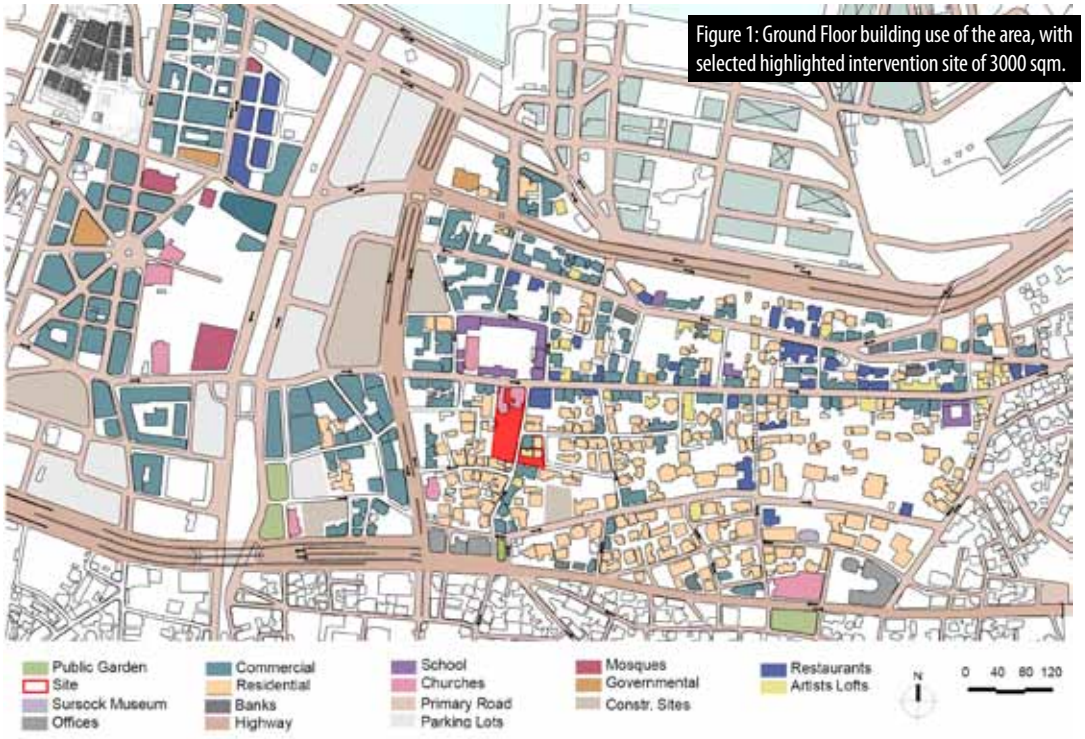


Figure 1: Ground Floor building use of the area, with selected highlighted intervention site of 3000 sqm.

Figure 2: Section cut through Lebanon Street and looking west towards the site, wedged between new high rise residential developments, the old existing church, and guest house annexes.

Figure 3: The conceptual challenges faced and the proposed open spaces (in red) linking the heritage buildings (in grey), existing open spaces and the street.

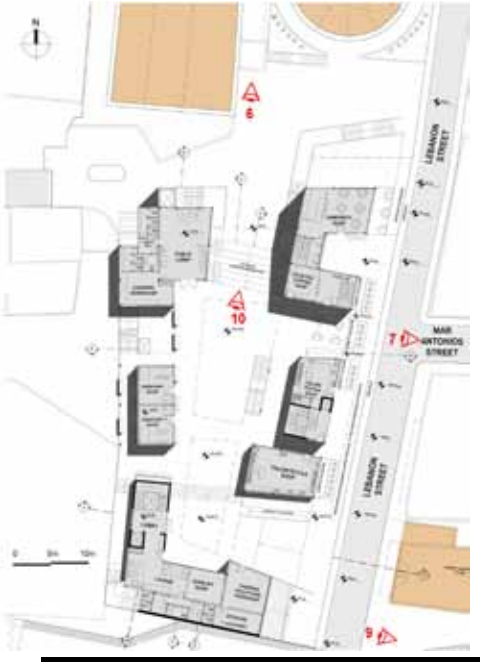


Figure 4: Ground floor plan showing the different shops, workshops, in relation with the street, the main piazza, and the heritage buildings (in brown).

Figure 5: Longitudinal section D cutting through the main piazza linking the two heritage buildings (the church and the old house), and showing the interior series of shops

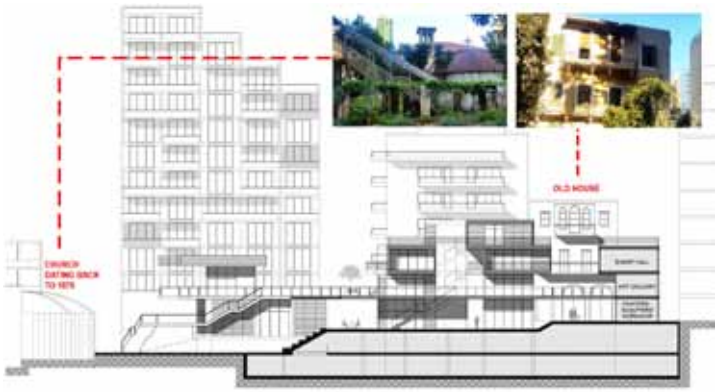
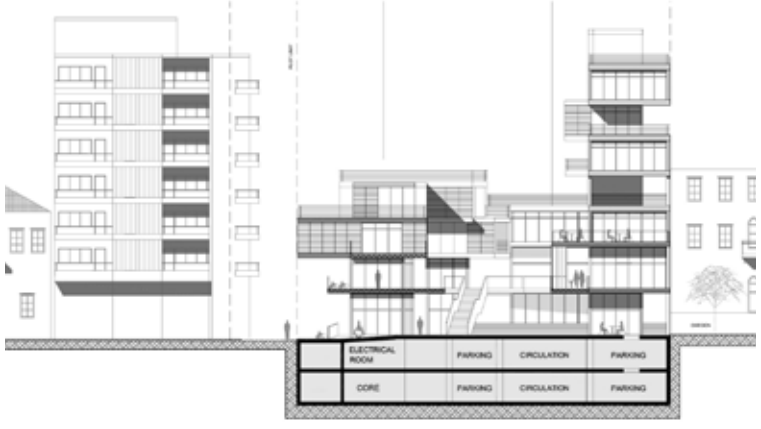


Figure 6: View from the church looking up and showing the open space separating the "secular" area from the "sacred" one and the possible spontaneous gatherings.

Figure 7: View from Lebanon Street where the porosity of the market invites people in.

Figure 9. Entrance/exit from Lebanon Street's highest level and the public space/staircase facing the old house.

Figure 8: Section cutting through Mar Antonios Street and showing the existing street façade piercing into the project.



munity space. The site is sloped and wedged between residential towers and traditional houses surveyed and listed as protected heritage by APSAD "Association pour la protection des sites et anciennes demeures au Liban" (personal correspondence, September 26, 2016). It also houses an old existing church from 1870 (Figure 2) which is accessible from Gemmayzeh Street. The intervention will be the stage of the "Other" market and other places, an extension of the existing shops and an expression of the people of Gemmayzeh. This market can "provide unique social spaces that increasingly matter within the context of modernization and advanced urbanism" (Mele, Ng & Chim, 2015: p.105). It could make way for one to meet with the "other".

Figure 10. The interaction between the two sides of the market and the connection to the upper workshops' level.

Architects can largely influence the possibility of meeting other people. The configuration of markets, unlike shopping malls, allows individuals to temporarily appropriate physical space as their social space. The idea is to allow the user to extend indoor activities to outdoor protected areas, and make way for spontaneous gatherings. Thus, the driving component is the provision of open spaces and their relation to the built environment.

One challenge is to celebrate Gemmayzeh's tangible heritage: the church and the old house facing the site. A main piazza thus frames these monuments (Figure 3) and places them as focal points along a trajectory of local food, textile, grocery, jewelry shops and artists' workshops. It also provides a secure meeting point for the people who can interact under the cantilevering upper areas (Figures 4 & 5). Another challenge is how to experientially separate the "sacred" area from the "secular" one. Thus, a big square acts as a buffer zone (Figure 3) and upper gathering halls frame an outdoor auditorium. This auditorium acts as a gateway to the main piazza and a space for temporal gatherings looking onto the church (see Figure 6). The market also opens up facing the existing intersection (see Figure 3) and the pedestrian can thus infiltrate from the crossing of Mar Antonios and Lebanon streets (Figures 7 & 8). Along Lebanon Street, the pedestrian is led from the enclosed food market to a series of shops and outdoor extensions, until getting to the highest level(Figure 9). The porosity of the upper level is achieved through staircases (Figures 9 and 10) and car access is limited to a back road. This consistent ease of infiltration is meant to draw pedestrians, not only to the market, but also to workshops and gathering areas, where individuals can pass down their craftsmanship in a convivial lively setting. Wood, glass and steel were chosen as the material and structure for the project, to express this same skillfulness of the locals and provide a light intervention within a dense context. In attempt to address high density and the need for housing, affordable compact homes overlook the people's market and places. Ultimately, the hope is to attenuate the effects of market-led development through preservation of heritage, social habits and communal space.

References

Mele C. , Ng M. and Chim M.B (2015). Urban Markets as a 'corrective' to advanced urbanism: The social space of wet markets in Contemporary Singapore. Urban Studies 52(1) 103-120. Retrieved from www.sagepub.co.uk/journalsPermission.nav [Accessed September 14, 2016]

POVZETEK

Z idejo Urbane tržnice na območju Gemmayze je želja vrniti mestu prostor, kjer se lahko srečamo z »drugim v poskusu obravnave korporizacije Bejrutove mestne krajine, visoke gostote grajenih struktur in postopnega izginjanja skupnostnih prosotrov. Tržnica bi izkazovala pomembnost dediščini, dajala prostor in možnost poučevaju rokodelstva domačih obrtnikov in jim omogočala povezavo s skupnostjo. Oblikovno predvideva projekt urejanje serije scenarijev in odprtih prostorov, ki povezujejo dve stavbni dediščini in s prepletom odprtih prostorov vzpostavlja priložnosti za spontana srečanja mimoidočih. Občutek varnosti je dosežen z oblikovanjem kompaktnih stanovanjskih enot, s pogledi usmerjenimi na tržnične prostore in na tržnični vrvež, s ciljem novega pozitivnega vrednotenja dediščine tržničnih prostorov in specifičnega tipa socializacije na oblikovno reinterpretirani tržnici.

PROSTORSKA UREDITEV OBALNEGA PASU MED KOPROM IN IZOLO NA OSNOVI ANALIZE POTREB LOKALNEGA PREBIVALSTVA

SPATIAL ARRANGEMENT OF THE SHORELINE STRIP BETWEEN KOPER AND IZOLA BASED ON LOCAL POPULATION NEEDS ANALYSIS

AVTOR *AUTHOR*
Andraž Miculinič, UL Fakulteta za gradbeništvo in geodezijo

TIP ZAKLJUČNEGA DELA *TYPE OF THESIS*
Magistrsko delo

MENTORJA *MENTORS*
doc. dr. Alma Zavodnik Lamovšek, udia; asist. dr. Gašper Mrak, udia

LETO *YEAR*
2018

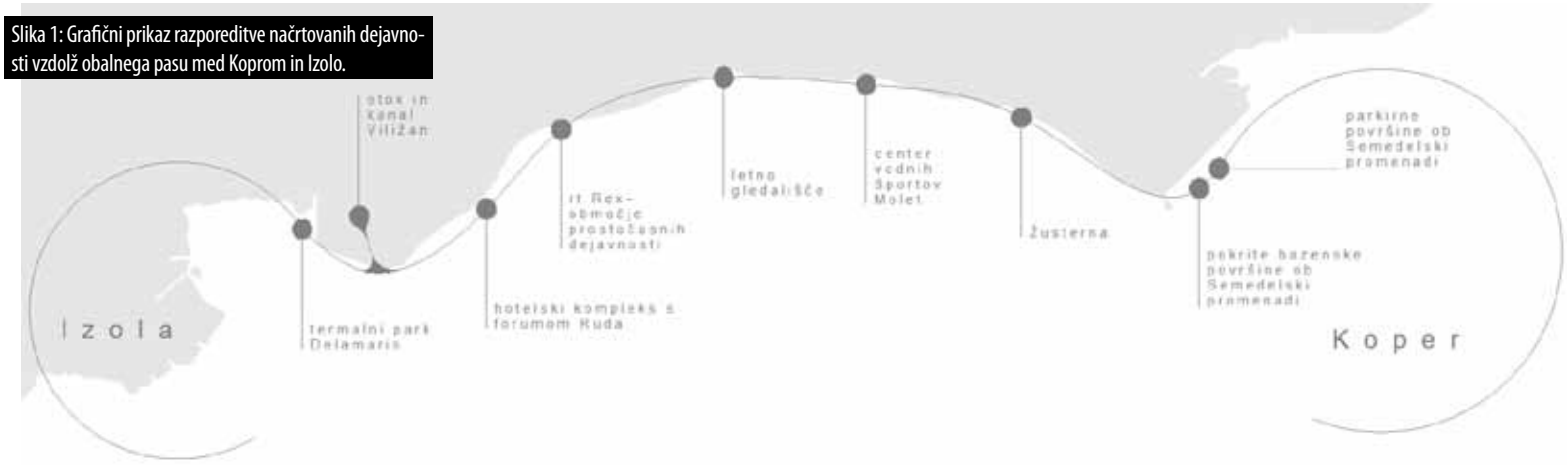
INŠTITUCIJA *INSTITUTION*
Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo

DATUM IN KRAJ ZAGOVORA *DATE AND PLACE OF DEFENCE*
Ljubljana, 27. 3. 2018

GRADIVO PRIPRAVIL *MATERIALS PREPARED BY*
Andraž Miculinič, mag. prost. načrt., dipl. inž. geod.

COBISS:

Miculinič, A. 2018. Prostorska ureditev obalnega pasu med Koprom in Izolo na osnovi analize potreb lokalnega prebivalstva. Magistrsko delo, Ljubljana, Univerza v Ljubljani, Fakulteta za gradbeništvo in geodezijo (samozaložba A. Miculinič): 118 f. [COBISS.SI-ID 8396129]



Slika 1: Grafični prikaz razporeditve načrtovanih dejavnosti vzdolž obalnega pasu med Koprom in Izolo.

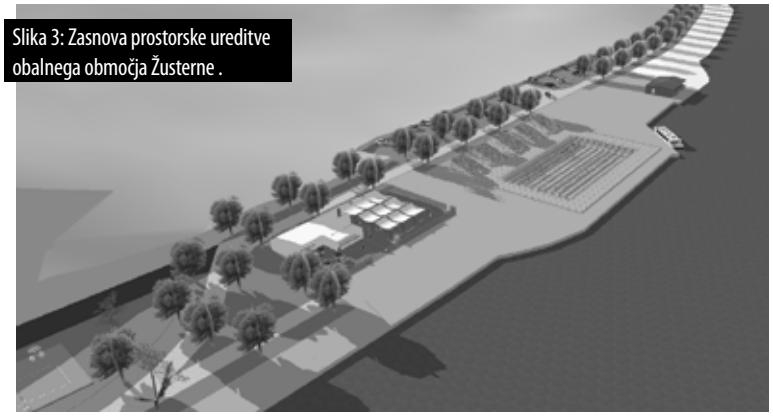
VSEBINA

V okviru magistrskega dela smo na osnovi analize potreb lokalnega prebivalstva izdelali idejno zasnovo prostorske ureditve obalnega pasu med Koprom in Izolo, ki je trajnostno naravnana in v ospredje postavlja čim večjo kakovost bivanja. Z njo smo želeli v največji meri izpolniti prostorske, ekološke, ekonomsko-socialne, kulturne in bivanjske potrebe za prebivalce in obiskovalce, tako na ožjem, kot tudi na širšem obravnavanem območju. Njen namen je predvsem spodbuditi nadaljnjo javno razpravo o ureditvi obravnavanega obalnega pasu ter izpostaviti pomen zgodnje participacije javnosti v procesu prostorskega načrtovanja.

Z odprtjem predora Markovec smo pridobili približno 5 kilometrov obalnega pasu, ki ima velik razvojni potencial. Glede na dokaj močno urbanizacijo Slovenskega primorja, kratko obalno linijo ter številnimi interesi in konflikti med njimi, ki so posledica težnje po širjenju in uvajanju novih dejavnosti ter s tem tudi gradnje novih objektov na tem delu slovenske obale, je treba območje urejati sonaravno, ga v čim večji meri nameniti javnemu dobru, obenem pa si prizadevati za ohranitev in oplemenitenje naravne in kulturne dediščine v smislu integracije izročila objektov naravne in kulturne dediščine v prostorsko ureditev in zgodbo celotnega območja urejanja.

Vodilo naloge je bilo zgodnje vključevanje javnosti v proces prostorskega načrtovanja z upoštevanjem načel Aarhuške konvencije. S pomočjo sodobnih informacijskih komunikacijskih tehnologij hitro in enostavno pridobimo informacije s strani javnosti, ki jih lahko upoštevamo pri nadaljnjem načrtovanju. Tako smo poleg različnih prostorskih in statističnih analiz obstoječega stanja prostora izvedli še spletno anketo, s katero smo preverili v kolikšni meri se prebivalci obalnih občin strinjajo s predlaganimi variantnimi predlogi idejnih zasnov prostorskih ureditev posameznih delov obalnega pasu med Koprom in Izolo. Na osnovi njihovih komentarjev in predlogov smo oblikovali končni predlog ureditve ter podali smernice in predloge za nadaljnji prostorski razvoj obravnavanega območja. V izvedeni anketi je lokalno prebivalstvo izrazilo precejšnjo nenaklonjenost

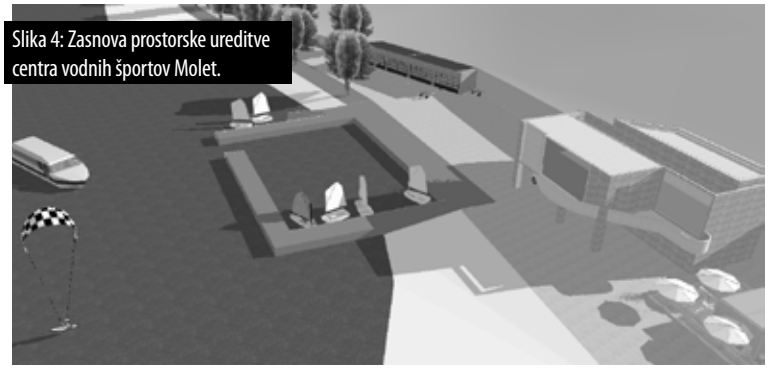
Slika 2: Zasnova prostorske ureditve semedelske promenade in mandrača – pokrite bazenske površine.

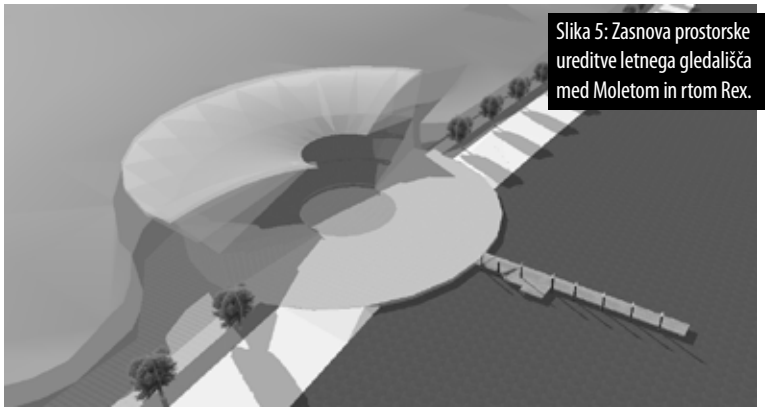


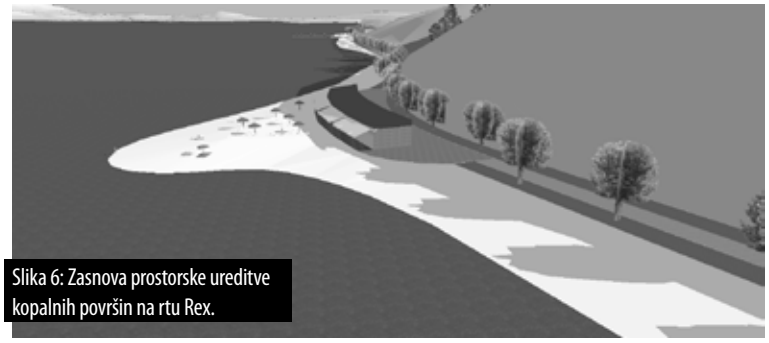
Slika 3: Zasnova prostorske ureditve obalnega območja Žusterne .

novim gradnjam na obravnavanem območju ter zelo jasno izrazilo željo po ohranjanju narave.

Vzdolž trase obstoječe obalne ceste smo zasnovali sprehajališče in kolesarsko pot, kjer bi bil motorni promet dovoljen le za turistični potniški promet


Slika 4: Zasnova prostorske ureditve centra vodnih športov Molet.


Slika 5: Zasnova prostorske ureditve letnega gledališča med Moletom in rtom Rex.


Slika 6: Zasnova prostorske ureditve kopalnih površin na rtu Rex.


Slika 7: Zasnova prostorske ureditve hotelskega kompleksa Ruda s forumom in parkirišči.

(električni turistični vlakec / minibus), oskrbo gostinskih in turističnih objektov ter intervencijske službe, kar sovpada z doktrino trajnostne mobilnosti, ki narekuje načrtovanje prometne ureditve z vključevanjem in ozaveščanjem javnosti o alternativi javnega prevoza. Za obratovanje obalnega območja smo namenili najmanj 7 servisnih (obstoječih) poti, ki bi jih bilo treba v sklopu ureditve sanirati. Predvideli smo pomorsko potniško linijo (vodni avtobus po zgledu beneškega vaporetta), ki bi povezovala Koper in Izolo, z vmesnimi postajami Žusterna, Molet, rt Rex, rt Viližan, otok Viližan in Delamaris. Možna bi bila tudi vzpostavitev mednarodne morske potniške linije, ki bi povezovala večje kraje Slovenskega primorja s Trstom, Umagom in Novigradom. Ker gre za izrazito longitudinalno območje, pri katerem je osrednji del težje dostopen in neprimeren za parkiranje večjega števila vozil, smo predvideli, da bi bile vse dejavnosti (slika 1) v sredinskem delu enako dostopne, kot tiste na obeh krajiščih. V prihodnosti bi bilo treba obstoječo prometno mrežo, predvsem v obalnem delu Slovenskega primorja, celovito prenoviti, posodobiti oziroma prilagoditi vedno večjemu obsegu prometa.

Ob sprehajališču smo zasnovali vrsto dejavnosti, ki so v sintezi z morjem. Ob semedelski promenadi in mandraču (slika 2) smo zasnovali pokrite bazenske površine in površine za parkiranje (garažna hiša), celovito prenovo obalnega območja Žusterna z novimi zelenimi površinami in površinami za šport in rekreacijo (slika 3), ureditev območja Molet kot center vodnih športov (slika 4) ter letnega gledališča med Moletom in rtom Rex (slika 5), ureditev kopalnih površin in površin za prostočasne dejavnosti na rtu Rex (slika 6), ureditev hotelskega kompleksa s forumom in parkirišči na območju Ruda (slika 7) ter termalnega parka Delamaris (slika 10).

Obravnavali smo možnost izgradnje otoka Viližan (slika 8). Vprašanje, ki se nam je zastavljalo še pred izdelavo predloga idejne zasnove je bilo, kakšna je dejansko potreba po umetnem otoku v akvatoriju med Koprom in Izolo. Rezultati izvedene ankete so pokazali neopredeljenost anketirancev do te ideje, zato le-te nismo zavrgli, ampak smo jo obravnavali kot možno prostorsko ureditev. To pomeni, da je idejna zasnova umetnega otoka še vedno lahko uresničljiva, v kolikor bi dobila podporo politične, strokovne, pa tudi širše javnosti. Umetni otok smo zasnovali tako, da bi s celino tvoril Kanal Viližan z dvosmernim vodnim prometnim režimom (slika 9). Z ureditvijo kanala bi vzpostavili novo središče dogajanja, otok pa bi v slabih vremenskih pogojih lahko odigral vlogo valobrana ter tako nudil zavetje privezanim vodnim plovilom. Otok bi bil namenjen novemu in večjemu avtokampu Jadranka (sedaj je le-ta utesnjen med obalo zaliva Viližan in nekdanjo obalno cesto Koper - Izola), s celino pa bi ga povezoval (dvižni) premostitveni objekt.

Predlagamo, da bi celotno promenado na posameznih, z vidika kulturne dediščine zanimivih točkah, opremili z informativnimi panoji (tematska pot) ter tako obiskovalcem območja nudili osnovne informacije o posameznem kulturnem objektu.

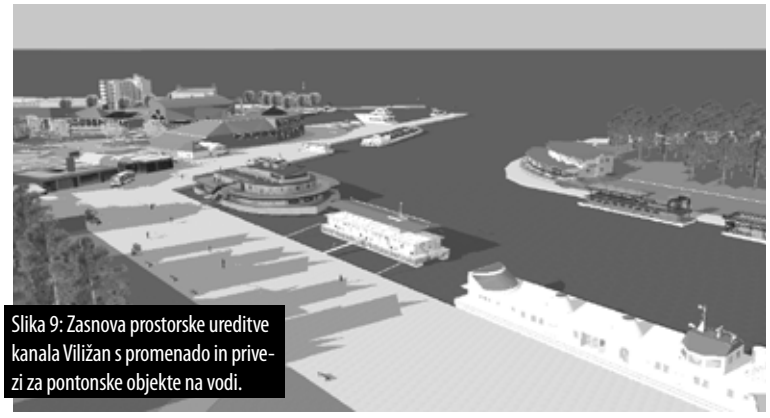
V okviru nadaljnjega prostorskega načrtovanja na obravnavanem območju predlagamo izvedbo (mednarodnega) javnega natečaja za izdelavo idejne zasnove prostorske ureditve na obravnavanem območju, z upoštevanjem

načel Aarhuške konvencije (podrobna in obsežnejša raziskava javnega mnenja z zgodnjim vključevanjem javnosti v proces prostorskega načrtovanja), ter pogojem, da so rešitve okoljsko, prostorsko in finančno sprejemljive ter izvedljive v realnem času.

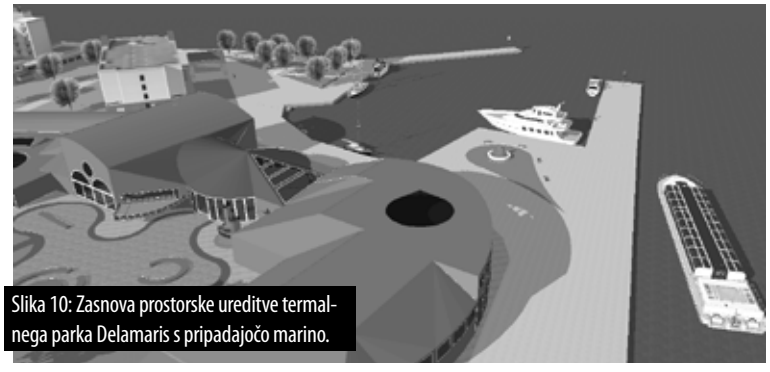
ABSTRACT

This article presents the conceptual design of the spatial arrangement of the shoreline strip between Koper and Izola, which is based on statistical, geographical and other analyses of the individual spatial phenomena. The concept, including the proposal of the placement of an artificial island in the marine region between Koper and Izola, was verified through a survey with the local population. The wishes and needs of the local population have been then included in the submitted conceptual design for the spatial arrangement of the shoreline strip between Koper and Izola. The project presents proposals for further research and guidelines for spatial planning in the considered area and also highlights the importance of the public participation in the spatial planning process.

Slika 8: Zasnova prostorske ureditve otoka Viližan in kanala Viližan.



Slika 9: Zasnova prostorske ureditve kanala Viližan s promenado in privezi za pontonske objekte na vodi.



Slika 10: Zasnova prostorske ureditve termalnega parka Delamaris s pripadajočo marino.

DEGRADIRANA OBMOČJA KOT POTENCIAL ZA RAZVOJ ALTERNATIVNIH KULTURNIH DEJAVNOSTI

DEGRADED AREAS AS A POTENTIAL FOR THE ESTABLISHEMENT OF THE ALTERNATIVE CULTURAL ACTIVITIES

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VSEBINA

V magistrskem delu smo povezali dve aktualni temi, ki sta pogosto slabše obravnavani: (1) degradirana območja, za katera je v večini evropskih držav že prepoznan njihov potencial za prenovo, v Sloveniji pa šele v zadnjem času ta prihaja v ospredje ter (2) alternativna kultura, ki se v večini primerov ta začne razvijati prav na degradiranih območjih.

V delu najprej opredelimo pojem in tipologijo degradiranih območij ter razlike v definiciji po različnih državah. Pregled razmer v Sloveniji je pokazal, da se problematiki degradiranih območij posveča pozornost že od leta 1998, ko je Koželj izdal publikacijo Degradirana urbana območja. Vendar še ne poznamo enotne opredelitve degradiranega območja, saj je v vsakem dokumentu, ki se ukvarja s tem področjem podana drugačna definicija (ZPNačrt, Degradirana urbana območja, itd.). Zadnja in ena pomembnejših raziskav je študija Celovita metodologija za popis in analizo degradiranih območij, v kateri je oblikovana definicija funkcionalnih degradiranih območij, s katero avtorji pokažejo na potencial degradiranih območij za notranji razvoj naselij. Isto leto je bil sprejet tudi nov ZUreP-2 (2017), s katerim se slovenska prostorska zakonodaja oddaljuje od pojma degradirano območje, saj so ta izraz popolnoma opustili in namesto njega uporabili razvrednotena območja.

Podrobneje smo opredelili tudi prenovo degradiranih območij, pri čemer jo je ZUreP-1 (2002) definiral kot »sklop načrtovalskih in drugih ukrepov za gospodarsko, socialno in kulturno prenovitev degradiranih območij«. Nato smo predstavili njeno problematiko, deležnike, pomen sodelovanja javnosti pri procesu oživitve degradiranih območij ter predstavili ukrepe za prenovo. Na koncu smo na kratko opisali model postopka prenove in ponovne oživitve, ki nam je kasneje služil kot podlaga za model prenove degradiranega območja z vzpostavitvijo samoniklega prizorišča.

Po pregledu literature o alternativni kulturi in samoniklih prizoriščih smo ugotovili, da je takšno delovanje prizorišč po Evropi prisotno že dlje časa, pri čemer se je razvilo dobro sodelovanje med lokalnimi oblastmi in centri alternativne kulture in je v veliko primerih tudi finančno podprto. V Sloveniji je to področje prav tako zelo dobro razvito, kjer poznamo kar nekaj primerov uspešnega sodelovanja samoniklih prizorišč z oblastmi, vendar precej manj v primerjavi z Evropo, predvsem zaradi strahu pred drugačnostjo, kritičnosti vsebine, prekomerne glasnosti in dogajanja pozno v noč ter nerazumevanja pomena centrov alternativne kulture.

Stara usnjarna Koteks, Dravska ulica 14 (28.10.2016)

Značilnosti DO (obseg, trenutno stanje,...)	Objekt je v slabem stanju, fasada je v slabem stanju, streha se sproti sanira v najbolj kritičnih predelih. Pripadajoča zemljišča se uporabljajo za parkirišče.
Tip DO: Podtip DO:	FDO industrijskih in obrtnih dejavnosti; /
Opuščenost: Vzdrževanost:	Pretežno opuščeno; Ni vzdrževano.
Površina DO	2.832 m^2
Dostop in urejenost dostopa	Asfaltiran dovoz iz ceste
Obstoječa infrastruktura	E, V, K, ZP, T
Lastništvo	Javno - MO Ptuj
Namenska raba (OPN)	Osrednje območje centralnih dejavnosti (CU)

E - električna energija, V - vodovod, K - kanalizacija, ZP - zemeljski plin, T - telekomunikacije

Slika 1: Primer izpisa iz kataloga (vir: lasten).

STOPNJE	AKTIVNOSTI
I. Priprave	/
II. Začetna faza	• izbira lokacije; • informiranje o izbrani lokaciji; • vključevanje javnosti/deležnikov; • potencialne nevarnosti v procesu nastajanja in delovanja.
III. Strateško načrtovanje in odločanje	• organizacijski vidik - struktura upravljanja; • oblikovanje upravljavskega modela; • oblikovanje scenarija; • priprava končnega strateškega načrta.
IV. Podrobno načrtovanje in zasnova	• struktura skupnega načrta prenove; • grajenje podobe, promocija.

Slika 2: Štiri-nivojski model prenove DO za alternativne kulturne dejavnosti (vir: lasten).

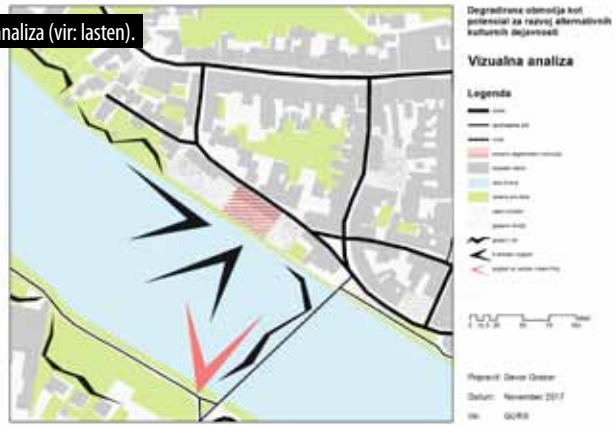
Slika 3: Vrednotenje in izbira degradiranega območja (vir: lasten).

ID	Tip FDO	Opmš. vzdrž.	Dostop	Infr.	Last.	Namen. raba	Okolica	Σ
1. Klavnica	1	1 / 0	1	2	1	1	1	8
2. Metalka	1	1 / 1	1	2	0	2	1	9
3. Don Caffe	1	1 / 1	1	2	0	2	0	8
4. TEŠ Center	1	1 / 1	1	2	0	1	1	8
5. Market Žerak	1	1 / 1	1	2	0	1	1	8
6. Konfuštnica	1	1 / 0	1	0	1	1	1	6
7. Večnadstr. objekt	1	1 / 1	1	1	1	1	1	8
8. Koteks	1	1 / 1	1	2	1	2	1	10
9. dr. Ljudevita Pivka	1	1 / 1	1	2	1	1	1	9

Prikaz degradiranega območja nekdanje usnjarne Koteks

Prikaz največkrat prikazane vedute Ptuja z nekdanjo usnjarno Koteks

Slika 4: Vizualna analiza (vir: lasten).



Slika 7: Tri-nivojski model razvoja stare usnjarne Koteks (vir: lasten).

Zaradi navedenih problemov smo se odločili, da bomo z magistrskim delom podrobneje predstavili področje samoniklih prizorišč in prikazali njihov pomen, predvsem na področju urejanja prostora. Večina samoniklih prizorišč je nastalo na degradiranih območjih, ki so s svojim delovanjem uspešno revitalizirala takšna območja, pri tem izboljšala kakovost urbanega okolja in s svojo ponudbo kulturnih vsebin dodatno poživila dogajanje v mestu. Zato smo za potrebe dela popisali vsa potencialno primerna degradirana območja in jih predstavili v obliki kataloga. Nato smo popisana območja vrednotili z izbranimi kriteriji ter na koncu na podlagi vrednotenja izbrali najprimernejšo degradirano območje, na katerem smo preizkusili teoretičen model.

Glavni rezultat magistrskega dela je izdelan teoretičen model prenove degradiranega območja z vzpostavitvijo samoniklega prizorišča, ki smo ga uporabili na izbranem primeru v mestu Ptuj. Gre za štiristopenjski model, pri čemer je na vsaki stopnji razdeljen na vmesne korake, ki podrobneje opisujejo aktivnosti v podanem sklopu.

Z modelom smo želeli vzpostaviti vez med (1) vzpostavitvijo in obratovanjem samoniklih prizorišč, ki pogosto delujejo na meji nelegalnosti, (2) z administrativnimi postopki, ki so potrebni za ustanovitev in delovanje organizacij ter (3) prikazom možnih deležnikov za sodelovanje. Tako smo oblikovali postopne aktivnosti od neformalnega druženja mladih, do izbire primerne lokacije in naprej do strateškega načrta za delovanje prizorišča in prenovo degradiranega območja. Zato menimo, da je model dober pripomoček za vse, ki že oziroma še bodo delovali na področju alternativne kulture, saj so v njem predstavljene smernice za izdelavo strokovne podlage strateškega dokumenta s pomočjo dolgoletnih izkušenj delujočih prizorišč.

V delu smo prikazali uporabo modela le na strateški ravni, v prihodnosti pa bi bilo zanimivo ta model uporabiti tudi v praksi. Takrat se bo pokazala ustreznost modela pri vzpostavitvi prizorišča na degradiranem območju. Je pa potrebno poudariti, da z ustreznim načrtovanjem na strateški ravni veliko lažje izvajamo kasnejše aktivnosti v praksi. Prav tako lažje poteka komunikacija z zunanjimi deležniki (npr. lokalna skupnost), saj je več možnosti za uspešno sodelovanje, če ima organizacija pripravljen strokovni dokument, kjer so zapisane smernice razvoja, upravljavski model in predvidene učinke delovanja prizorišča.

ABSTRACT

The thesis connects two current topics that are often poorly addressed: (1) degraded areas, for which the potential of renewal has already been recognized in most European countries, while in Slovenia it has only recently come to the foreground and (2) alternative culture, which in most cases, begins to develop precisely in degraded areas. In the field, we have listed all potential degraded areas for the establishment of a self-established site in the city of Ptuj and presented them in the form of a catalogue. Using the selected criteria from the analysis of the self-established sites and with the help of the theoretical model for renewal, all the covered degraded areas have been evaluated, after which we have selected the most suitable location and prepared a strategic plan for the renewal of the degraded area with self-established site on the example of the old tannery Koteks.

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