

TEORIJA IN PRAKSA UREJANJA PROSTORA

IGRA USTVA RJALNOSTI

THE CREATI VITY GAME

ŠT. 9 / 2021

NO. 9 / 2021

www.IU-CG.org

THEORY AND PRACTICE OF SPATIAL PLANNING

Univerza v Ljubljani



IGRA USTVARJALNOSTI

TEORIJA IN PRAKSA UREJANJA PROSTORA

ŠT. 9 / 2021 | NO 9 / 2021

CREATIVITY GAME

THEORY AND PRACTICE OF SPATIAL PLANNING

KAZALO CONTENTS

I. UVODNIK EDITORIAL	
Alenka Fikfak: Raziskovanje in kreativnost pisanja v letu 2020 RESEARCH AND WRITING CREATIVITY 2020	8
II. ČLANKI ARTICLES	
Jernej Červek: TRAJNOSTNI PRISTOPI V URBANISTIČNEM NAČRTOVANJU: RECIKLAŽNI URBANIZEM SUSTAINABILITY APPROACHES TO URBAN PLANNING: RE-CYCLING URBANISM	12
Kristijan Lavtižar: TEMELJI NARAVNEGA PREZRAČEVANJA STAVB FUNDAMENTALS OF NATURAL VENTILATION IN BUILDINGS	20
Martina Zbašnik-Senegačnik, Ljudmila Koprivec: GRADBENI ODPADKI KOT SUROVINA V TRAJNOSTNEM GRAJENEM OKOLJU CONSTRUCTION WASTE AS A RESOURCE IN A SUSTAINABLE BUILT ENVIRONMENT	28
Md. Nazmul Haque, Sharmin Siddika, Mizbah Ahmed Sresto: POVEZAVA MED MESTNIMI ZELENIMI ULICAMI IN TRAJNOSTNOSTJO: PRIMER OBMOČJA MESTA KHULNA (KCC), BANGLADEŠ NEXUS BETWEEN URBAN GREEN STREETS AND THE SUSTAINABILITY: CASE ON KHULNA CITY CORPORATION (KCC) AREA, BANGLADESH	37
Jaka Veber: JAVNI PROMET KOT PROSTORSKI OZNAČEVALEC PUBLIC TRANSPORTATION AS A SPATIAL MARKER	46
Špela Verovšek: VREDNOTENJE TRAJNOSTNE UČINKOVITOSTI SOSESK Z VIDIKA MOBILNOSTI IN POVEZLJIVOSTI NEIGHBOURHOOD SUSTAINABILITY ASSESSMENT – THE ASPECT OF MOBILITY AND CONNECTIVITY	54
Špela Verovšek: A-PLACE: KREPITEV VEZI MED PROSTORI IN LJUDMI S KREATIVNIMI PRAKSAMI A-PLACE: LINKING PLACES THROUGH NETWORKED ARTISTIC PRACTICES	60
Gregor Čok, Gašper Mrak: PROSTORSKA RAZPOREDITEV POSLOVNIH SUBJEKTOV V SLOVENIJI SPATIAL DISTRIBUTION OF BUSINESS ENTITIES IN SLOVENIA	64
III. PREDSTAVITEV PRESENTATION	
MEDNARODNA ZNANSTVENA KONFERENCA: MESTNA ULICA ⁴ INTERNATIONAL SCIENTIFIC CONFERENCE: CITY STREET ⁴ (CS4)	68
IV. DELAVNICE WORKSHOPS	
KLIS 2020: VERTIKALNOST POVEZANOST DRUŽBA THE KLIS CASE 2020: VERTICALITY CONNECTIVITY LIVES	74
»A HIDDEN PLACE« - ŠTUDENSKA DELAVNICA USTVARJANJA PROSTORA NA BEŽIGRAJSKEM GRADBISIČU »A HIDDEN PLACE« - A STUDENT WORKSHOP ON PLACEMAKING AT THE BEŽIGRAD CONSTRUCTION PIT	76
VELIKI DOGODEK V MESTU ZA VSAKOGAR? OLIMPIJSKE IGRE V PARIZU 2024 A (MEGA) EVENT CITY FOR EVERYONE? THE PARIS 2024 OLYMPICS	78
V. DIPLOME MASTER THESIS	
Tjaša Kogovšek: IDEJNA ZASNOVA REURBANIZACIJE MESTNEGA JEDRA KOPER: URBANA REGENERACIJA NA OBMOČJU BELVEDERJA DESIGN OF REURBANIZATION FOR THE CITY CENTER OF KOPER: URBAN REGENERATION IN THE BELVEDERE AREA	84
Ana Mestnik: SONARAVNI UKREPI V NAČRTOVANJU RABE PROSTORA ZA ZMANJŠANJE EROZIJSKE NEVARNOSTI NA POPLAVNIH OBMOČJIH SUSTAINABLE MEASURES IN LAND USE PLANNING TO REDUCE THE EROSION HAZARD ON FLOODPLAIN AREAS	88
Klemen Beličič: PREDLOG REGIONALNE ZASNOVE PROSTORSKEGA RAZVOJA TURIZMA NA PRIMERU BELE KRAJINE PROPOSAL FOR A REGIONAL SPATIAL DEVELOPMENT CONCEPT FOR TOURISM IN THE CASE OF BELA KRAJINA	92
VI. SEZNAM AVTORJEV LIST OF CONTRIBUTORS	

I.

UVODNIK

EDITORIAL



Izšla je nova številka Igre ustvarjalnosti. Izzivi, s katerimi se ukvarjamo v tovrstni reviji, so številni. Predvsem to, komu je namenjena revija, kdo so njeni bralci. V poplavi raznovrstnih in vsak dan številčnejših revij znanstvene odličnosti se sprašujemo, kam nas bo v naslednjih letih zapeljalo. Ali bo to postala zgolj raziskovalna znanstvena revija, ki bo osredotočena na objavo izjemnih rezultatov raziskovanja? Ali pa bo uspelo tej reviji ohraniti ravnovesje med znanstvenostjo in praktičnimi izzivi, raziskovanjem s preizkušnjo, iskanjem ustvarjalnosti v raziskovanju? In kako je ne nazadnje na to vplivalo delo na domu med pandemijo zaradi covid-19? To so bila vprašanja in izzivi, ki smo se jih lotili v letu 2021. V letu, ko smo bili z načinom dela vezani predvsem na Zoom in podobna okolja. To je mnogim olajšalo delo, a vendar se postavlja vprašanje: ali je ta način še ohranil interdisciplinarnost razmišljanja o razvoju prostora? V predhodnih številkah te revije je bilo veliko vsebine namenjene predstavitvam študentskih delavnic. V tej številki vam predstavljamo zgolj eno; v uvodu. Delavnica, ki je marsikateremu udeležencu omogočala stik z načeli, ki jih pri pedagoškem in raziskovalnem delu raziskujemo dnevno: povezovanje med strokami, vključenost lokalnega prebivalstva, ustvarjalnost izvedbe in preverjanja na terenu ipd. Delavnica Europe Readr, ki se je odvila po vsem svetu kot podpora predsedovanja Svetu Evropske unije.

V Sloveniji je Univerza v Ljubljani skupaj s partnerji pripravila funkcionalno umetniško inštalacijo Moja bralna soba, ki je delovala (in bo tudi v letu 2022) kot povsem javna čitalnica. Inštalacija Europe Readr je bila postavljena na odprtem prostoru v Izoli, v parku ob svetilniku in v senci borovcev. Kot praktična delavnica, z dodano izkušnjo sodelovalnih pristopov, je vključevala lokalno skupnost. Izvedena je bila v okviru digitalne platforme Europe Readr med predsedovanjem Slovenije Svetu EU, njen namen pa je bralcem vseh generacij po vsem svetu

približati aktualna družbena vprašanja – predvsem spodbujati razmislek o tem, v kakšnem svetu želimo živeti.

Projekt Europe Readr so spremljali številni dogodki po svetu, prav vsi pa so spodbujali vzpostavitev javnih prostorov za branje in medgeneracijsko izmenjavo idej. Ideja prostorske umetniške inštalacije v Izoli sledi konceptu knjižnice pod krošnjami, saj postajajo odprte knjižnice pod drevesi, na dvoriščih in v parkih del poletne urbane infrastrukture ter s tem vozlišče srečevanj uporabnikov različnih generacij. Inštalacija je bila izvedena v okviru študentske delavnice in že od začetka načrtovana v sodelovalnem procesu kot učenje s prakso (Learning by doing). Že proces izvedbe inštalacije je med študenti in vsemi drugimi udeleženi dosegel novo zavedanje o kakovosti življenja, ki presega potrošnjo in potrošniški tempo. Cilj projekta je bil spodbuditi potrebo po branju in pridobitvi znanja tako pri mladih kot starejših obiskovalcih bralne sobe.

Zamisel knjižnice na prostem ni nova, vendar je v zadnjih letih čedalje bolj prepoznana in prisotna v prostoru. V primeru projekta moje bralne sobe gre za otipljivo prostorsko inštalacijo knjižnico, v kateri se lahko uporabniki zadržujejo, jo obiskujejo ali le spremljajo dogajanje ob njej. Projekt je izveden kot serija vsebinsko ciljno organiziranih prireditev, ki združujejo raznovrstno množico zainteresiranih ljudi. Knjižnica obiskovalce in bralce z izborom v njej dostopnih knjig spodbuja k razmišljanju o aktualnih družbenih vprašanjih in k razmisleku o njihovi prihodnosti. V okviru projekta so študentje izdali tudi poseben večjezični časopis Palindrom. Izdaja časopisa je kot del projekta Europe Readr zagotovila, da se izmenjujejo izkušnje branja prispevkov generacijsko različnih avtorjev.

Direktorica Mestne knjižnice Izola Marina Hrs je o projektu Europe Readr Izola pojasnila: Prostor My reading room v borovem gozdičku ob plaži v Izoli je od 7. 7. do 30. 9. 2021 obiskalo

UVODNIK
EDITORIAL

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



The new issue of the journal *Igra ustvarjalnosti* (Creativity Game) is here. The challenges we face in a journal of this kind are numerous. First, who is the magazine aimed at and which readers are we addressing? In the light of diverse and growing numbers of journals of scientific excellence, we ask ourselves where the next few years will take us. Will it become a purely scientific research journal focused on publishing outstanding research results, or will it manage to maintain a balance between learnedness and practical challenges, research by use cases, the search for creativity in research? Moreover, all things considered, how has home-based work during the COVID-19 pandemic affected this? These were the questions and challenges of 2021, a year in which our way of work was primarily bound to Zoom and similar environments. That made the work easier for many, but was the interdisciplinarity of thinking about the development of space still maintained? In previous issues, a lot of content has been devoted to presentations of student workshops. In the introduction of this issue, however, only one workshop is presented. A workshop that allowed many of those involved to get in touch with principles that we explore on a daily basis in our teaching and research work: the integration between disciplines, involvement of local populations, creativity of implementation and field-testing, etc. – the Europe Readr workshop, which took place all over the world in support of the Slovenian Presidency of the Council of the European Union.

In Slovenia, the University of Ljubljana and its partners prepared the functional art installation "My Reading Room" at the Izola lighthouse, which has served (and will serve in 2022) as a public reading room. The Europe Readr installation was put in place in an open space in Izola in the park next to the lighthouse and in the shade of pine trees. As a practical workshop with the added experience of participatory approaches, it involved the local community. It was carried out as part of the Europe Readr digital platform during the Slovenian Presidency of the Council of the Eu-

ropean Union and aimed to bring the current social issues closer to readers of all generations around the world – in particular, to encourage reflection on the kind of world we want to live in.

The Europe Readr project was accompanied by a number of events around the world, all of which have contributed to promoting the creation of public reading spaces and the intergenerational exchange of ideas. The idea of a spatial art installation in Izola follows the concept of a library under the canopy, as open libraries under trees and in courtyards and parks are becoming a part of the summer urban infrastructure and thus a meeting point for users of different generations. The installation was carried out in the framework of a student workshop and planned from the outset in a participatory process as »learning by doing«. Among the students and all the other actors involved, the very process of creating the installation has brought about new awareness of a quality of life that goes beyond consumption and consumerism. The aim of the project was to stimulate the need to read and to acquire knowledge among both young and older visitors of the reading room.

The idea of an open-air library is not new, but it has been increasingly recognised and present in our communities in recent years. In the case of the "My Reading Room" project, it is a tangible spatial installation – a library where users can linger, visit or just watch what is happening around them. The project is also implemented as a series of thematically targeted events that bring together a heterogeneous set of interested actors. The library itself encourages visitors and readers to think about current social issues and to reflect on their future through the selection of books available in the library. As part of the project, the students also published a special multilingual newspaper – *Palindrom* (Palindrome). As part of the Europe Readr project, the publication of the newspaper allowed the students to share their experience of reading the contributions of different generations of authors.



7.176 mladih in odraslih obiskovalcev in ti so si izposodili 2.704 knjig. Študentje so otrokom vsak dan prebirali pravljice v slovenskem in italijanskem jeziku. Skupaj je bilo izvedenih 96 pravljčnih ur z delavnico. Pravljice so izbrali iz zakladnice ljudskih pravljic, tem pa so poleg otrok prisluhnili tudi starši, dedki in babice. Vsak torek popoldne je pravljčarka pripovedovala pravljice na tematiko dreves in gozda ter tako v okviru študijskega krožka Drevesa pripovedujejo, ki poteka v izolski knjižnici, ozaveščala o pomenu dreves kot živih bitij, pomembnih za življenje ljudi in planeta ter našega bivanja v prihodnosti. Ob svetovnem tednu jezikov so se v zadnjem tednu septembra Občina Izola, izolska italijanska narodna skupnost, Center za kulturo, šport in prireditve in Mestna knjižnica Izola vključili v izvedbo 28 prireditev in srečanj EUNIC bere (EUNIC Reads), ki so potekala v okviru Francoskega inštituta, skupaj s partnerji na treh lokacijah v Izoli, in sicer v umetniški inštalaciji Europe Readr pri morju, v prostorih narodne skupnosti v palači Manzioli in izolski knjižnici.

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

Info o Europe Readr – umetniška inštalacija v Izoli

Seminar: Fikfak_2021

Mentorji:

UL Fakulteta za arhitekturo: prof. dr. Alenka Fikfak, asist. Janez Grom, asist. Kristijan Lavtižar, doc. dr. David Koren, Jan Barič; zunanji sodelavci: Marko Lazič, Aleš Švigelj; UL Fakulteta za elektrotehniko: prof. dr. Grega Bizjak, Lanlan Wei, doc. dr. Matej Bernard Kobav; UL Biotehniška fakulteta: prof. dr. Manja Kitek Kuzman; UL Fakulteta za gradbeništvo in geodezijo: asist. dr. Gašper Mrak; Urbanistični inštitut RS: doc. dr. Matej Nikšič; Šolski center Nova Gorica, Učni izdelovalni laboratorij: Uroš Polanc

Študentje:

Nina Beganovič, Leon Rus, Manca Gjura Godec, Liza Štandeker, Tisa Lozej, Tadej Gregorič, Lovro Pinter, Vladimir Tripkovič, Laura Fontana, Anže Lopatic, Matija Kunstelj, Alexander Simič, Gašper Luka Pevec, Jure Polanc, Jernej Malik, Blaž Parežnik, Kaja Žnidaršič, Mara Vogrinec, Korina Kuzmič, Katarina Končina, Tajda Hladnik, Lara Zalokar, Tilen Fikfak Peršak, Filip Živkovič

Informacije o Europe Readr:

<https://europereadr.eu/>
<https://www.facebook.com/EuropeReadr>
<https://www.instagram.com/europereadr/>

Informacije o Europe Readr Izola:

<https://europereader.wixsite.com/website>

UVODNIK EDITORIAL

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



Marina Hrs (Director, Izola City Library) about the Europe Readr Izola project: The “My Reading Room” in the pine grove by the beach in Izola was visited by 7,176 young and adult visitors who borrowed 2,704 books between 7 July and 30 September 2021. Every day students read fairy tales in Slovenian and Italian to children. A total of 96 fairy tale sessions with a workshop were held. The fairy tales were selected from a treasure trove of folk tales, which were listened to by parents and grandparents, as well as children. In the framework of the Trees Tell Stories study circle, which takes place at Izola Library every Tuesday afternoon, a storyteller told fairy tales related to trees and the forest, raising awareness of the importance of trees as living beings important for the life of people and the planet, and for our future existence. On the occasion of World Languages Week, in the last week of September, the Municipality of Izola, the Italian National Community of Izola, the Centre for Culture, Sports and Events and Izola City Library took part in 28 EUNIC Reads events and meetings held in the framework of the French Institute together with partners at three locations in Izola: the Europe Readr art installation by the sea, the National Community of Izola in the Manzioli Palace and the Izola City Library.

Prof. Dr **Alenka Fikfak**
Editor of the Journal

Info about Europe Readr – art installation in Izola

Seminar: Fikfak_2021

Mentors:

University of Ljubljana, Faculty of Architecture: Prof. Alenka Fikfak, PhD, Assist. Janez Grom, Assist. Kristijan Lavtižar, Assist. Prof. David Koren, PhD, Jan Barič; external contributors: Marko Lazič, Aleš Švigelj;
University of Ljubljana, Faculty of Electrical Engineering: Prof. Grega Bizjak, PhD, Lanlan Wei, Assist. Prof. Matej Bernard Kobav, PhD;
University of Ljubljana, Biotechnical Faculty: Prof. Manja Kitek Kuzman, PhD;
University of Ljubljana, Faculty of Civil and Geodetic Engineering: Assist. Gašper Mrak, PhD;
Urban Planning Institute of the Republic of Slovenia: Assist. Prof. Matej Nikšič PhD;
Nova Gorica School Center, Learning Fabrication Laboratory: Uroš Polanc

Students:

Nina Beganović, Leon Rus, Manca Gjura Godec, Liza Štandeker, Tisa Lozej, Tadej Gregorič, Lovro Pinter, Vladimir Tripkovič, Laura Fontana, Anže Lopatic, Matija Kunstelj, Alexander Simič, Gašper Luka Pevec, Jure Polanc, Jernej Malik, Blaž Parežnik, Kaja Žnidaršič, Mara Vogrinec, Korina Kuzmič, Katarina Končina, Tajda Hladnik, Lara Zalokar, Tilen Fikfak Peršak, Filip Živković

Information about Europe Readr:

<https://europereadr.eu/>
<https://www.facebook.com/EuropeReadr>
<https://www.instagram.com/europereadr/>

Information about Europe Readr Izola:

<https://europereadr.wixsite.com/website>

II.

ČLANKI

ARTICLES

Ljudmila Koprivec, Martina Zbašnik-Senegačnik, Živa Kristl:

ANALIZA ODZIVOV ANKETIRANCEV NA MOTIV POGLEDA SKOZI OKNO

ANALYSIS OF SURVEY RESPONSES TO THE WINDOW VIEWS

DOI: <https://doi.org/10.15292/IU-CG.2021.09.014-023> ■ UDK: 711.4:612.881 ■ SUBMITTED: June 2021 / REVISED: July 2021 / PUBLISHED: November 2021



1.01 Izvirni znanstveni članek / Original Scientific Article

POVZETEK

Eden ključnih arhitekturnih elementov, ki omogočajo vidni stik z zunanostjo, so zastekljene površine. Pomen pogleda skozi okno je v praksi zanemarljiv, čeprav številne študije ugotavljajo, da ugodno vpliva na počutje in zdravje uporabnikov ter zvišuje bivalno in vizualno ugodje. Namen te študije je ugotoviti ali pri izbranih motivih ob pogledu skozi okno obstajajo skupni imenovalci, ki pri opazovalcih sprožajo primerljive odzive. V študiji je uporabljen širok nabor različnih motivov pogleda skozi okno. Obravnavni so kvantitativni in kvalitativni deleži različnih elementov v motivu in njihov vpliv na odziv opazovalcev, kot npr. delež zelenja, oddaljenost, kompleksnost in pripovednost. Odzivi uporabnikov so pridobljeni s pomočjo anketiranja, analiza pa je opravljena z orodjem SPSS v kombinaciji z Excelom ter s kvalitativnim vrednotenjem posameznih elementov. Študija je potrdila, da motiv pogleda skozi okno vpliva na subjektivne odzive anketirancev. Primerjava odzivov je pokazala konsistenten odziv uporabnikov na določene elemente v motivih. Pretežno enoznačen odziv je bil ugotovljen pri motivih, ki so vsebovali pripovednost in element fascinacije. Posredno je mogoče iz študije zaključiti, da so pogledi v naravno okolje bolj zaželeni in da so jih anketiranci ocenjevali kot sprejemljivejše, medtem ko je pogled v pretežno urbana okolja manj privlačen.

KLJUČNE BESEDE

motivi pogledov skozi okno, dnevna svetloba, naravna okolja, urbana okolja, hibridna okolja

ABSTRACT

Glazing elements are main architectural elements that allow visible contact with the exterior. The importance of looking out the window is neglected in practice, although many studies find that it has a beneficial effect on the well-being and health of observers and increases their living and visual comfort. The purpose of this study is to determine whether there are common denominators in the selected window views, which trigger comparable responses in observers. The study used a wide range of motifs of the window view. Quantitative and qualitative shares of various elements in the motif such as greenery, distance, complexity, and narrative elements are discussed and their impact on the response of observers. Responses are obtained through survey. The analysis is performed with the SPSS tool and with the qualitative evaluation of individual elements. The study confirmed that the motive of the window view influences the subjective responses of the respondents. The comparison of responses showed a consistent response of observers to a specific element in the motive of the window view. A predominantly unambiguous response was found in the motifs, which contained narrative element and an element of fascination. Indirectly, it can be concluded that the views of the natural environment are more desirable, while the views of predominantly urban environments are less attractive.

KEY-WORDS

motives of the window view, daylight, natural environments, urban environment, hybrid environments

UVODNIK
EDITORIAL
ČLANEK
ARTICLE

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

1. UVOD

V zahodnem urbaniziranem svetu danes ljudje večinoma prebivajo v mestih, kjer je stik z naravo precej omejen. Veliko odtujenost od narave občutijo predvsem tisti, ki živijo v visokih stavbah v gosto naseljenih stanovanjskih soseskah, z oteženim dostopom do zelenih površin. V gosto naseljenih urbanih okoljih je zato zelo pomembno vključevanje naravnih elementov v bližnje okolje, saj izpostavljenost naravnim elementom vpliva na vizualno zaznavanje prostora ter izboljša zdravje in počutje uporabnikov (Elsadek et al. 2020). Dokazani so potencialni pozitivni učinki narave na zdravje ljudi, vključno s hitrejšo psihično regeneracijo, spodbujanjem telesne aktivnosti in krepitevijo imunskega sistema (Jennings in Bamkole 2019; Grinde in Patil 2009; James et al. 2015). Ulrich (1984) je dokazal, da so bolniki po odstranitvi žolčnika, ki so bivali v sobi s pogledom v naravo, okrevali 8,5% hitreje, potrebovali 22 % manj zdravil, občutili pa so manj bolečin.

Ker velik del populacije večino časa preživi v zaprtih prostorih, vedno več študij obravnava kakovost notranjega okolja ter njen vpliv na zdravje in kakovost življenja (Stenberg et al. 1994, Pajek et al. 2017). Eden ključnih arhitekturnih elementov v notranjih prostorih, ki vpliva na njihovo kakovost, je okno oz. zasteklitev. Če se ljudje dalj časa nahajajo v zaprtem prostoru brez oken, lahko občutijo težave z osredotočenostjo, pomanjkanje stimulacije, pojavljajo se negativna čustva in druge oblike psihološkega nezadovoljstva, lahko celo trpijo zaradi hudih simptomov kot so depresija, nespečnost in izguba občutka za resničnost (Sommer 1974; Logar et al. 2014). Dnevna svetloba vpliva na psihološki odziv človeka, npr. njegove kognitivne funkcije, razpoloženje in ciljno vedenje (Kristl in Zbašnik-Senegačnik 2020). Nekateri raziskovalci menijo, da pogled na naravo skozi okna na ljudi učinkuje na podoben način, kot če bi bili dejansko v naravi (Ko et al. 2020). Chang et al. (2020) in Kaplan (2001) ugotavljajo, da bližnji pogled na naravo skozi okna pozitivno sovпада z zadovoljstvom z življenjem. Vse to potrjuje pomen vidnega stika z naravo iz stanovanjskih, vzgojno-izobraževalnih in delovnih okolij.

Okno posreduje zunanje vizualne informacije, te pa povzročijo v človeku določene vizualne dražljaje in vplivajo na njegovo razpoloženje (Collins, 1976). Kakovost vizualnih informacij je odvisna od vrste in lastnosti motiva. Primeren motiv ob pogledu skozi okno običajno obsega tako ospredje kot obzorje (Littlefair 1996). Bell in Burt (1995) sta natančneje opredelila tri »vidne sloje«, ki jih mora obsegati pogled: zgornji sloj (v daljavi, vsebuje nebo in naravno ali umetno obzorje), srednji sloj (naravni ali umetni elementi, kot so polja, drevesa, hribi ali stavbe) in spodnji sloj (v ospredju, vključno z zelenjem in tlemi). Najustreznejši so motivi, ki vsebujejo veliko različnih informacij, zato je bolje, če so skozi okno vidni vsi trije sloji. Spodnji sloj je še posebej pomemben, saj se pogled opazovalca tja pogosto usmeri zaradi gibanja (npr. vozila, pešci itd.) in zagotavlja tudi vizualne informacije o razdalji in s tem tudi o velikosti predmetov v srednjem sloju.

Med motivi je najbolj zaželen pogled na naravo in naravne elemente – drevesa in drugo zelenje, nebo, sončno svetlobo in vodo. Po Wilsonovi hipotezi o biofiliji je razlog za to dejstvo, da so človekovi senzorični sistemi razvili povečano občutljivost na žive in naravne dražljaje naravnega sveta (Wilson, 1984), kar se kaže v obliki senzibilnosti do narave, še posebej ob bivanju v odtujenem grajenem okolju. Motivi iz narave omogočajo sproščanje in regeneracijo po stresnih situacijah (Van Esch et al. 2019). Kaplan (2001) tudi ugotavlja, da kratki in ponavljajoči se odmori ob pogledu skozi okno v naravo izboljšajo subjektivno počutje in zmanjšajo stres. Grajena okolja, zlasti delovna, namreč zahtevajo

stalno usmerjeno pozornost, kar povzroča duševno utrujenost. Po drugi strani pogledi v naravo ne zahtevajo usmerjene pozornosti, temveč vključujejo fascinacijo. Fascinacija sproži neozorno pozornost, ki človeka regenerira. Van Esch et al. (2019) tudi trdijo, da smo v svoji evolucijski zgodovini razvili psihološke prilagoditve, ki nas motivirajo in pritegnejo, zato se pozitivno odzovemo ob pogledu na motive valovite trave, raztresena drevesa in naravne pregrade ter občasna vodna telesa. Posebej privlačni so motivi, ki ponujajo možnost zatočišča (kot npr. jame, gosto grmičevje in naravne niše). Zatočišče zagotavlja zaščito pred neugodnimi vremenskimi razmerami, omogoča zadrževanje toplote in varuje pred plenilci. Po drugi strani so ljudem privlačni motivi, ki so skrivnostni in skladni (Kaplan in Kaplan, 1989). Skrivnostni motivi vsebujejo nekatere informacije, ki namigujejo, da prizorišče ponuja nekaj več, to pa vzbuja radovednost. Tak motiv je npr. gorska veriga v daljavi (Van Esch et al. 2019).

Kent in Schiavon (2020) sta ugotovila, da je oddaljen motiv bolj zaželen kot ozek ali bližnji. Raziskovala sta tudi pomen oddaljenosti opazovalca od okna, kar vpliva na vidni kot in s tem na zadovoljstvo ob pogledu skozi okno. Avtorja trdita, da je raznolik in dinamičen motiv zanimivejši od monotonega in da je pomen oddaljenosti motiva od okna manjši, če motiv vsebuje zelenje. Pri ocenjevanju motiva pogleda skozi okno sta pomembna tudi estetska vrednost elementov, vključenih v motiv, in kompozicija motiva. Poleg tega pogled skozi okno zagotavlja informacije, ki jih potrebujemo pri vsakodnevnih dejavnostih kot so lokacija, čas, vremenski pogoji in dejavnosti v okolici, kar je vključeno tudi v standard, ki se nanaša na dnevno osvetljevanje v stavbah (SIST EN 17037, 2019).

Najnovejše raziskave kažejo, da niso vsi motivi ob pogledu skozi okna enako privlačni in da je treba pri proučevanju prednosti motivov upoštevati njihove značilnosti oz. sporočilo. Posebne značilnosti in informacije v motivu namreč lahko sprožajo drugačne odzive pri uporabniku kot splošni nediferencirani naravni ali urbani motivi (Aries et al. 2010). Tudi motivi iz narave se razlikujejo – nekatere značilnosti motiva imajo blagodejne učinke, medtem ko druge lahko povzročajo nevtralne ali celo neželene učinke (Martens et al. 2011). Ljudem je neprijetno zaradi nekoherentnih, nečitljivih in zapletenih motivov tako v naravnih kot v urbanih okoljih. Takšna okolja je namreč težko razumeti in se orientirati v njih. Na primer – gost, zapleten gozd je za večino ljudi nečitljiv in preteč. Človek ima le omejen pogled na tisto, kar je v daljavi, zaradi česar se je težko orientirati v okolici, skozi gosto rastlinje pa se je težko gibati (Van Esch et al. 2019).

Pomen pogleda skozi okno na kakovosten motiv v vidnem polju je v praksi zanemarjen, čeprav številne študije kažejo, da vpliva na počutje in zdravje ter zagotavlja bivalno in vizualno ugodje. Poraja pa se vprašanje, kateri elementi v motivu sprožijo v opazovalcu določen odziv ob pogledu skozi okno. Večina študij obravnava to vprašanje na majhnem številu motivov in odzivov. Izhodišče naše študije je bilo obratno – poiskati velik nabor motivov in evidentirati raznolike čustvene odzive, ki jih sprožajo. Obravnavni so bili kvantitativni in kvalitativni deleži različnih elementov v motivu in njihov vpliv na odziv opazovalcev, kot npr. delež zelenja, značilnosti zelenja in pripovednost motiva.

V študiji so bila postavljena sledeča raziskovalna vprašanja:

- ali se opazovalec na določene značilnosti v motivu pogleda skozi okno odziva konsistentno,
- kako se opazovalec odzove na določene značilnosti v motivu pogleda skozi okno,
- katere značilnosti motiva vplivajo na določen odziv.

Učinke različnih motivov na odzive smo preverjale na skupini študentov Fakultete za arhitekturo UL s pomočjo anketnega vprašalnika in analizo s statističnim orodjem SPSS v kombinaciji z Microsoft Excelom. Rezultati lahko služijo kot priporočila za orientacijo okenskih odprtih proti potencialno zanimivim motivom v okolici stavb ali/in za primerno oblikovanje zunanega okolja stavbe za kakovosten pogled iz notranosti stavb v zunanost.

2. ZASNOVA ŠTUDIJE IN RAZISKOVALNE METODE

Za evidentiranje parametrov v motivu, ki vplivajo na odziv anketirancev, smo oblikovale anketni vprašalnik zaprtega tipa, ki je sestavljen iz treh delov: (1) osnovni podatki (spol, letnik študija, vrsta/način bivanja), (2) nabor pogledov skozi okno z različnimi motivi z naborem predizbranih odzivov, (3) predstavitev motivov, ki jih anketiranci opazujejo skozi okno svojega študijskega prostora, in zadovoljstvo z njim. V tem prispevku predstavljamo prva dva dela ankete. Anketirani so bili študenti 3., 4. in 5. letnika Fakultete za arhitekturo UL, ki predhodno niso bili seznanjeni z vplivi motivov pri pogledu skozi okno na sprožanje odzivov v človeku. Anketirancem smo predstavile 33 različnih motivov ob pogledu skozi okno, ki vsebujejo primere naravnega okolja z različnimi stopnjami človekove intervencije, različno urejena urbana okolja in motive s kombinacijo urbanega in naravnega okolja. Motivi so izbrani tako, da vsebujejo različno število vidnih slojev (SIST EN 17037, 2019; Bell in Burt 1995), različno število elementov in imajo različno kompozicijsko in vsebinsko kvaliteto.

Zaradi preverjanja konsistentnosti odzivov je bilo med motivi nekaj podobnih. Da bi preprečile vpliv konteksta pogleda na odzive anketirancev, smo motivom dodale enak okenski okvir. Vsak motiv so anketiranci opazovali 8 sekund in nato podali odgovor. Zanimala nas je subjektivna reakcija anketirancev na vizualni dražljaj, ki ga je sprožil pogled na motiv, v analizi rezultatov smo zanj uporabljale termin »odziv«. Anketiranci so kot odgovor za vizualne dražljaje, ki jih je sprožil motiv, lahko izbirali med 11 predizbranimi odzivi. Za posamezen motiv so lahko izbrali le en odziv in sicer: A – nevaren, zastrašujoč, srhljiv; B – nerazumljiv, neprijeten, moteč; C – zelo moteč, odbijajoč, moreč; D – dolgočasen; E – pomirjujoč, prijeten; F – razumljiv, skladen, čitljiv; G – atraktiven, fascinanten, poživljajoč; H – zasanjan, romantičen; I – skrivnosten; J – sprejemljiv, nemoteč; K – ne vzbuja posebnih občutkov. Specifični predizbrani odzivi so bili določeni subjektivno, na podlagi preteklih izkušenj in študija primerov iz literature (Kim et al. 2018; Brown et al. 2013; Aries et al. 2010; Kent in Schiavon 2020, Van Esch et al. 2019).

Anketa je bila izvedena v januarju 2021, anketirancem je bila posredovana preko e-pošte. Preučevale smo pomen in vpliv dveh lastnosti v motivih, ki smo jih določile v preliminarnem delu raziskave. V nadaljnji evalvaciji smo jih uporabile kot spremenljivki v statistični analizi (preglednica 1):

- »vrsta motiva«: naraven, urban, hibriden (N – pretežni delež naravnega tkiva, U – pretežni delež urbanega tkiva v pogledu, H – hibriden, kombinacija urbanega in naravnega tkiva);

Preglednica 1: Analiza motivov po posameznih spremenljivkah in najpogostejše izbrani odzivi anketirancev.

Motiv št.	Naziv motiva	Vrsta motiva Naraven / Urban / Hibriden	Pripovednost P	Najpogostejši odzivi anketirancev *
1	Tropski park	H	P	E
2	Tropska plaža	N	P	E
3	Obala z gorami	N	P	G
4	Gozdno jezero	N	P	EI
5	Drevesna krošnja	N	-	JDEK
6	Nogometno igrišče	H	-	FKJG
7	Skrivno jezero	N	P	EI
8	Preorano polje	N	-	DEI
9	Gozdno pobočje	N	-	DJGK
10	Pogled na planine	N	-	EFGH
11	Tropski gozd	N	P	I
12	Sončni zahod	N	P	H
13	Bambusov gozd	H	P	GI
14	Prerija	N	P	E
15	Skalna razpoka	N	-	AGIK
16	Dvorišče s paneli	U	-	BCDK
17	Zelena dvoriščna stena	H	-	JK
18	Zelena fasada	H	P	G
19	Dvorišče	U	-	JK
20	Pogled na strehe	U	-	GJ
21	Ruševina	U	-	CIAB
22	Parkirišče	U	-	CDK
23	Hiša v gozdu	H	-	ABC
24	Stanovanjski blok	H	-	JK
25	Strnjeno mestno tkivo	H	-	K
26	Urbana panorama	U	P	G
27	Urbani gozd	H	-	FJ
28	Breg reke v meglici	H	-	JIEF
29	Pot med bloki	H	-	DJKF-
30	Obalna promenada	U	-	BJGF
31	Urbani zaliv	H	-	EF
32	Urbani park	H	-	JF
33	Urbani park ob reki	H	-	JF

* A – nevaren, zastrašujoč, srhljiv; B – nerazumljiv, neprijeten, moteč; C – zelo moteč, odbijajoč, moreč; D – dolgočasen; E – pomirjujoč, prijeten; F – razumljiv, skladen, čitljiv; G – atraktiven, fascinanten, poživljajoč; H – zasanjan, romantičen; I – skrivnosten; J – sprejemljiv, nemoteč; K – ne vzbuja posebnih občutkov
(Vir: avtorice)

Preglednica 2: Delež odzivov anketirancev pri posameznih motivih (%).

Motivi		Odziv (%)										
Motiv št.	Naziv motiva	A	B	C	D	E	F	G	H	I	J	K
1	Tropski park	0	6	0	0	53	3	6	16	0	16	0
2	Tropska plaža	0	0	0	0	59	4	31	6	0	0	0
3	Obala z gorami	0	0	0	0	19	3	56	22	0	0	0
4	Gozdno jezero	13	2	0	0	38	0	13	6	25	3	0
5	Drevesna krošnja	3	3	0	19	19	3	0	0	9	31	13
6	Nogometno igrišče	0	6	0	3	6	13	16	6	0	19	31
7	Skrivno jezero	0	0	0	3	38	3	0	9	38	9	0
8	Preorano polje	3	3	0	37	18	6	0	3	21	0	9
9	Gozdno pobočje	6	3	0	22	6	6	13	3	6	22	13
10	Pogled na planine	0	0	0	0	25	22	22	22	0	9	0
11	Tropski gozd	0	4	0	3	13	0	9	0	56	9	6
12	Sončni zahod	0	0	0	0	16	0	6	72	3	3	0
13	Bambusov gozd	0	0	0	0	16	0	28	12	38	3	3
14	Prerija	0	0	0	6	50	6	3	0	0	19	16
15	Skalna razpoka	22	3	6	6	0	0	22	0	19	6	16
16	Dvorišče s paneli	0	22	28	28	0	0	3	0	3	0	16
17	Zelena dvoriščna stena	0	0	4	0	19	0	9	3	6	31	28
18	Zelena fasada	0	6	0	0	16	6	66	0	0	6	0
19	Dvorišče	0	13	0	19	0	9	0	0	0	25	34
20	Pogled na strehe	0	0	0	0	0	10	31	3	3	39	14
21	Ruševina	16	19	28	0	0	0	3	0	22	9	3
22	Parkirišče	7	9	31	25	0	3	0	0	0	3	22
23	Hiša v gozdu	28	34	17	6	0	0	0	0	3	3	9
24	Stanovanjski blok	0	13	0	3	3	9	3	0	0	31	38
25	Strnjeno mestno tkivo	0	9	3	16	0	0	0	0	0	19	53
26	Urbana panorama	0	3	0	6	0	13	50	0	6	16	6
27	Urbani gozd	0	6	0	9	3	37	10	3	0	29	3
28	Breg reke v meglici	6	0	3	9	13	13	0	0	16	34	6
29	Pot med bloki	0	0	6	16	8	16	0	0	0	40	16
30	Obalna promenada	0	16	3	0	0	19	22	0	0	34	6
31	Urbani zaliv	0	0	0	0	34	25	16	0	0	22	3
32	Urbani park	0	0	0	3	10	28	10	0	0	40	9
33	Urbani park ob reki	0	0	0	0	3	39	12	3	0	43	0

(Vir: avtorice)

- »pripovednost« P (zgodba/sporočilo v motivu, ki spodbuja radovednost, pozornejšo opazovanje, premišljevanje in miselni pobeg (Van Esch et al. 2019)).

Odzive anketirancev ob pogledu na posamezne motive smo ugotavljale z izračunom deleža posameznih odgovorov. Podatke iz izbranih spremenljivk smo primerjale z odzivi anketirancev ob pogledu na posamezne motive. Zbrane podatke smo analizirale s statističnim orodjem SPSS v kombinaciji z Microsoft Excelom. S pomočjo SPSS smo preverjale povezanost spremenljivk »vrsta motiva« in »pripovednost« z »odzivi anketirancev« v anketnem vprašalniku.







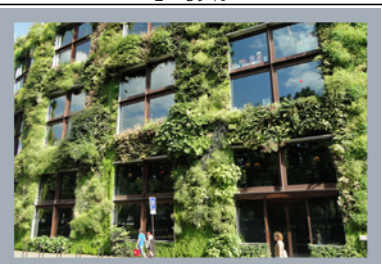


3. REZULTATI

Na vprašalnik je odgovorilo 32 anketirancev, 24 žensk (75 %) in 8 (25 %) moških. Anketiranci so izrazili odzive ob pogledu skozi okno za vse posredovane motive. Uporabili so vse ponujene odzive, vsak od ponujenih predizbranih odzivov pa bil izbran pri vsaj devetih motivih. Odziva J – sprejemljiv, nemoteč in E – pomirjujoč, prijeten sta bila izbrana največkrat, sledil pa je odziv G – atraktiven, fascinanten, poživljajoč. Ostali odzivi so bili izbrani bistveno manjkrat. V preglednici 2 so zbirno prikazani deleži izbranih odzivov anketirancev na motive pogledov skozi okno. Odzivi, označeni debelo, so vključeni v analizo.

Analiza subjektivnih odzivov anketirancev na prikazane motive pri pogledu skozi okno pokaže, da je pogostost izbora določene-ga odziva odvisna od vsebine oz. kakovosti motiva. To je pokazala tudi analiza s statističnim orodjem SPSS. Pearsonov hi-kvadrat test neodvisnosti dveh nominalnih (kategoričnih) spremenljivk je pokazal povezanost med spremenljivkama »vrsta motiva« in »pripovednost« z »odzivi anketirancev«, ki so izbrali enega od predizbranih možnih odzivov, ki so jih sprožili posamezni motivi. Vrednost statističnih značilnosti p je bila za obe spremenljivki pod mejo 0,05 (spremenljivka »vrsta pogleda«: $p = 0,006$, spremenljivka »pripovednost«: $p = 0,004$).

V nadaljevanju raziskave smo se glede na statistično zaznane povezave osredotočile na analizo odgovorov anketirancev in vsebino oz. kakovost posameznih motivov. Glede na odzive smo jih razdelile v tri skupine in iskale skupne značilnosti, ki so pomembne za odziv anketirancev, nadalje pa bi lahko služile kot usmeritev pri koncipiranju zasteklitev v stavbah in oblikovanju motivov pogledov.

V prvi skupini so motivi s pripovedno vsebino, pri katerih so bili odgovori pretežno koncentrirani v enem samem odzivu anketirancev (50 do 72 % delež vseh odzivov). V drugi skupini so motivi, ki vsebujejo zanimive informacije. Anketiranci so jim dodelili približno enakovreden delež dveh odzivov (vsaj 25 % delež

Motiv z zaporedno številko, opisom vsebine, vrsto motiva (N, U, H), podatku o pripovednosti (P) in odzivi anketirancev (%)		
		
Motiv 11: Tropski gozd, N, P I = 56 %	Motiv 12: Sončni zahod, N, P H = 72 %	Motiv 1: Tropski park, H, P E = 53 %
		
Motiv 2: Tropska plaža, N, P E = 59 %	Motiv 14: Prerija, N, P E = 50 %	Motiv 3: Obala z gorami, N, P G = 56 %
		
Motiv 18: Zelena fasada, H, P G = 66 %	Motiv 26: Urbana panorama, U, P G = 50 %	Motiv 25: Strnjeno mestno tkivo, U K = 53 %

Slika 1: Motivi s pripovedno vsebino (foto: avtorice).

v vsakem od odzivov). Tretja skupina je sestavljena iz motivov brez sporočila, pri katerih so bili odzivi zelo raznoliki in razpršeni. V nadaljnjo obdelavo so bili vključeni po trije ali štirje odzivi iz te skupine.

3.1 Motivi s pripovedno vsebino

Nekateri motivi so sprožili zelo enotne odzive anketirancev, med vsemi preizbranimi ponujenimi odzivi so se odločili večinsko za enega. Takih motivov je 9 (slika 1). Zanimivo je, da je bilo v preliminarnem delu raziskave 8 motivov opredeljenih za izrazito pripovedne. Pri motivu 11 (tropski gozd) je bila večina odzivov I – skrivnosten (56 %), pri motivu 12 (sončni zahod) so anketiranci (pričakovano) opredelili kot H – zasanjanega (72 %). Podobne odzive so prejeli motiv 1 (tropski park), motiv 2 (tropska plaža) in motiv 14 (prerija), kjer je bila večina odgovorov E – pomirjujoč, prijeten (53 %, 59 % in 50 %). Motiv 3 (obala z gorami), motiv 18 (zelena fasada) in motiv 26 (urbana panorama), so izzvali največ odzivov G – atraktiven, fascinanten, poživljajoč (56 %, 66 % in 50 %). Zgoraj omenjeni motivi so naravni (N) ali predvsem naravni v kombinaciji z manjšim deležem grajenih elementov (H – hibridni motivi), samo motiv 26 je izrazito urban (U), vendar zelo atraktiven in pripoveden.

Zanimiv je bil odziv anketirancev pri motivu 26 (strnjeno mestno tkivo). Več kot polovica (53 %) anketirancev se je odločila za odziv K – ne vzbuja posebnih občutkov. Motiv je izrazito urban, urejen, skladen, vendar ni pripoveden, zato nevtralen odnos do njega.

3.2 Motivi z zanimivimi informacijami

V drugo skupino spada 11 motivov, pri katerih so anketiranci izbrali po dva odziva (slika 2). Motivi vsebujejo zanimive informacije. Med odzivi je bil najpogosteje izbran odziv J – sprejemljiv, nemoteč v kombinaciji z drugimi odzivi, npr. E – pomirjujoč, prijeten, F – razumljiv, skladen, čitljiv in I – skrivnosten in G – atraktiven, fascinanten, poživljajoč. Taka sta motiv 4 (gozdno jezero) in motiv 7 (skrivno jezero), pri katerih so anketiranci izbrali E (oba 38 %) in I (25 % in 38 %). Motiv 13 (bambusov gozd) se je anketirancem zdel I – skrivnosten (38 %) pa tudi G – atraktiven, fascinanten, poživljajoč (28 %). Vsi trije motivi so naravni. Motivi 27 (urbani gozd), 32 (urbani park) in 33 (urbani park ob reki) so hibridni, vsebujejo pogled na park z visoko vegetacijo (drevesa, grmičevje) in gosto pozidavo v ozadju. Vsi motivi so konsistentno sprožali odzive F – razumljiv, skladen, čitljiv in J – sprejemljiv, nemoteč. Deleži posameznih odzivov so se gibali med 28 % in 40 %.

Zanimivi so prevladujoče nevtralni odzivi na motive 17 (zelena dvoriščna stena), 24 (stanovanjski blok) in 31 (urbani zaliv), ki vsebujejo bližnji pogled na fasade. Vsi trije motivi so hibridni, vsebujejo zelenje. Za prva dva motiva so anketiranci izbrali odzive J – sprejemljiv, nemoteč (oba po 31 %) in K – ne vzbuja posebnih občutkov (28 % in 38 %). Tretji motiv vsebuje pogled z vodo v daljavi, kar sproža odziv E – pomirjujoč, prijeten (34 %) in F – razumljiv, skladen, čitljiv (25 %).

Motiv z zaporedno številko, opisom vsebine, vrsto motiva (N, U, H), podatku o pripovednosti (P) in odzivi anketirancev (%)		
		
Motiv 4: Gozdno jezero, N, P E = 38 %, I = 25 %	Motiv 7: Skrivno jezero, N, P E = 38 %, I = 38 %	Motiv 13: Bambusov gozd, H, P I = 38 %, G = 28 %
		
Motiv 27: Urbani gozd, H F = 36 %, J = 29 %	Motiv 32: Urbani park, H J = 40 %, F = 28 %	Motiv 33: Urbani park ob reki, H J = 43 %, F = 39 %
		
Motiv 17: Zelena dvoriščna stena, H J = 31 %, K = 28 %	Motiv 24: Stanovanjski blok, H K = 38 %, J = 31 %	Motiv 31: Urbani zaliv, H E = 34 %, F = 25 %
		
	Motiv 19: Dvorišče, U K = 34 %, J = 25 %	Motiv 20: Pogled na strehe, U J = 39 %, G = 31 %

Slika 2: Motivi z zanimivimi informacijami (foto: avtorice)

Motiv 20 (pogled na strehe) je sicer izrazito urban (kljub neznatnemu deležu zelenja na strehah), sprejet je bil kot J – sprejemljiv, nemoteč (39 %), gre pa za impozantno kompozicijo, zato je v anketirancih sprožil tudi odziv G – atraktiven, fascinanten, poživljajoč (31 %). Tudi motiv 19 je urban (dvorišče), popolnoma brez zelenja, 34 % anketirancev ga sprejema kot K – ne vzbuja posebnih občutkov, 25 % pa kot J – sprejemljiv, nemoteč.


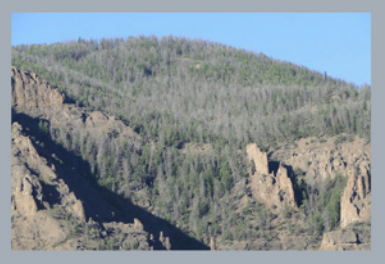
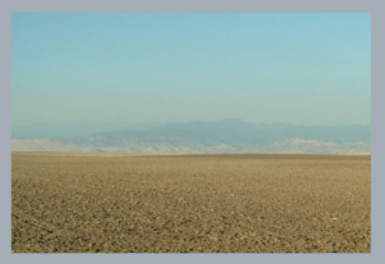



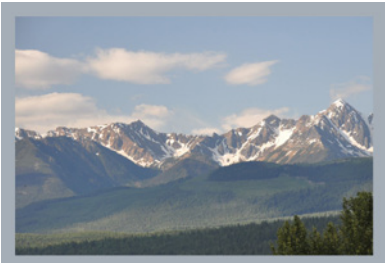





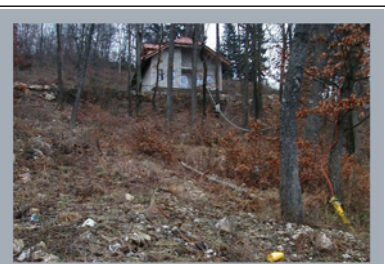
Vsebinska analiza pokaže, da motivi v drugi skupini, kjer so anketiranci izbrali po dva odziva, večinoma nimajo pripovednosti. Izjema so motivi 4, 7 in 14, ki so bili v preliminarni analizi označeni kot pripovedni, vendar pa pripovednost ni dovolj močna, da bi med anketiranci izzvala enake odzive, so pa zato njihovi odzivi skladni oz. si ne nasprotujejo.

3.3 Motivi brez sporočila

Tretja skupina vključuje motive, ki ne nosijo nobenega sporočila

in niso bili opredeljeni kot pripovedni oz. so precej nedinamični in nezanimivi. V tej skupini je 13 motivov (slika 3). Nekateri so naravni, vendar neizrazni. Večina motivov je hibridnih, urbano okolje z elementi zelenja. Manjši del motivov je urbanih, brez zelenja. V tej skupini so bili odgovori zelo razpršeni, anketiranci so se odločali za zelo heterogene odzive.

Podrobnejša analiza heterogenih odzivov pokaže, da se odzivi pri nekaterih motivih med seboj dopolnjujejo, lahko pa si nasprotujejo. Primer dopolnjujočega se odziva je motiv 5 (drevesna krošnja), ki ne vzbuja močnih ali izrazitih odzivov (J – sprejemljiv, nemoteč 31 %, E – pomirjujoč, prijeten 19 % in K – ne vzbuja posebnih občutkov 13 %). 19 % anketirancev se je motiv 5 zdel D – dolgočasen. Podobno so se anketiranci odzvali na motiv 9 (gozdno pobočje), kjer jih je 22 % menilo, da je D – dolgočasen, 22 %, da je J – sprejemljiv, nemoteč in 13 % K – ne vzbuja posebnih občutkov. 13 % vprašanih se je motiv zdel G – privlačen, fascinanten, poživljajoč. Nekoliko presenetljiv je tudi del odzivov na motiv 8 (preorano polje), kjer se je največji delež anketirancev

Motiv z zaporedno številko, opisom vsebine, vrsto motiva (N, U, H), podatku o pripovednosti (P) in odzivi anketirancev (%)		
		
Motiv 5: Drevesna krošnja, N J = 31 %, D = 19 %, E = 19 %, K = 13 %	Motiv 9: Gozdno pobočje, N D = 22 %, J = 22 %, G = 13 %, K = 13 %	Motiv 8: Preorano polje, N D = 37 %, I = 21 %, E = 18 %
		
Motiv 29: Pot med bloki, U J = 38 %, D = 18 %, F = 18 %, K = 18 %	Motiv 28: Breg reke v meglici, H J = 34 %, I = 16 %, E = 13 %, F = 13 %	Motiv 30: Obalna promenada, U J = 34 %, G = 22 %, F = 19 %, B = 16 %
		
Motiv 10: Pogled na planine, N E = 25 %, F = 22 %, G = 22 %, H = 22 %		Motiv 6: Nogometno igrišče, H K = 31 %, J = 19 %, G = 16 %, F = 13 %
		
Motiv 15: Skalna razpoka, N A = 22 %, G = 22 %, I = 19 %, K = 16 %	Motiv 21: Ruševina, U C = 28 %, I = 22 %, B = 19 %, A = 16 %	
		
Motiv 16: Dvorišče s paneli, U C = 28 %, D = 28 %, B = 22 %, K = 16 %	Motiv 22: Parkirišče, U C = 31 %, D = 25 %, K = 22 %	Motiv 23: Hiša v gozdu, H B = 34 %, A = 28 %, C = 16 %

Slika 3: Motivi brez sporočila (foto: avtorice).

odzval z D – dolgočasen (37 %), pa tudi z I – skrivnosten (21 %) in E – pomirjujoč, prijeten (18 %). Anketiranci so se podobno odzvali na motiv 29 (pot med bloki) in menili, da je pogled J – sprejemljiv, nemoteč (40 %), K – ne vzbuja posebnih občutkov (16 %) in F – razumljiv, skladen, čitljiv (16 %). Nekateri so menili tudi, da je D – dolgočasen (16 %). Motiv 28 (breg reke v meglici) so anketiranci sprejeli kot J – sprejemljiv, nemoteč (34 %), I –

skrivnosten (16 %), E – pomirjujoč, prijeten (13 %) in F – razumljiv, skladen, čitljiv (13 %). Pri motivu 30 (obalna promenada) prav tako prevladuje odgovor J – sprejemljiv, nemoteč (34 %), sledita pa mu odgovora F – razumljiv, skladen, čitljiv (19 %) in G – privlačen, fascinanten, poživljajoč (22 %), vendar tudi B – nerazumljiv, neprijeten (16 %).

Motiv 10 (pogled na planine) je naraven. Izbrani odzivi E – pomirjujoč, prijeten (25 %), po 22 % pa odzivi F – razumljiv, skladen, čitljiv, G – privlačen, fascinanten, poživljajoč in H – zasanjan, romantičen so precej skladni.

Pri motivu 6 (nogometno igrišče) se je 31 % anketirancev odločilo za K – ne vzbuja posebnih občutkov, izbrali so tudi odzive J – sprejemljiv, nemoteč (19 %), G – privlačen, fascinanten, poživljajoč (16 %) in F – razumljiv, skladen, čitljiv (13 %). V motivu je močno prisoten element narave, vendar dogajanje na njem očitno ni dovolj atraktivno, da bi bil motiv sprejet bolj enoznačno.

Nekoliko izrazitejše in nasprotujoče si odzive sta sprožila motiv 15 (skalna razpoka) in motiv 21 (ruševina). Velik del anketirancev je motiv 15 ocenil kot A – zastrašujoč, strašljiv, nevaren (22 %), hkrati pa tudi kot G – privlačen, fascinanten, poživljajoč (22 %). Nekoliko manjši delež so prejeli odzivi I – skrivnosten (19 %) in K – ne vzbuja posebnih občutkov (16 %). Podobno je motiv 21 vzbudil precej močan negativen odziv C – zelo moteč, odbijajoč, moreč (28 %), B – nerazumljiv, neprijeten (19 %) in A – zastrašujoč, strašljiv, nevaren (16 %), vendar tudi precej velik delež odziva I – skrivnosten (22 %).

Med negativnimi odzivi pri anketirancih je mogoče izpostaviti urbana motiva 16 (dvorišče s paneli) in 22 (parkirišče), ki sta vzbudila predvsem odzive C – zelo moteč, odbijajoč, moreč (28 % in 31 %) in D – dolgočasen (28 % in 25 %), pa tudi K – ne vzbuja posebnih občutkov (16 % in 22 %). Motiv 16 sproža tudi odzive B – nerazumljiv, neprijeten (22 %). Motiv 23 (hiša v gozdu) je vzbudil negativne odzive (B – nerazumljiv, neprijeten, moteč (34 %), A – nevaren, zastrašujoč, srhljiv (28 %) in C – zelo moteč, odbijajoč, moreč (17 %)). Vsi trije motivi so neurejeni, tudi delno nepregledni, kar je vzrok za negativen odziv pri opazovalcih.

4. RAZPRAVA

Rezultati kažejo, da so odzivi na podobne motive oziroma značilnosti v motivih medsebojno primerljivi kar pomeni, da so se anketiranci nanje odzivali konsistentno. Primeri ujemanj so npr. motiva 4 in 7, ki sta si zelo podobna in imata tudi podoben delež odzivov H – zasanjan, romantičen in I – skrivnosten. Enako velja za motive 31 – 33 s podobnim deležem odzivov F – razumljiv, skladen, čitljiv. Za določene skupine motivov so anketiranci ponavljajoče izbirali enake ali precej podobne odzive, kar se odraža tudi na pogostosti izbire posameznih odzivov.

V nadaljnji analizi smo iskale odgovor na drugo in tretje raziskovalno vprašanje – kako se opazovalec odzove na določene značilnosti v motivu pogleda skozi okno in katere značilnosti motiva vplivajo na določen odziv. Osredotočile smo se na elementa »pripovednosti« in »vrsta motiva«, ki sta s statistično analizo potrjeno povezana z odgovori anketirancev.

Pomemben element v motivu, ki se odraža pri odzivanju anketirancev, je pripovednost. Na pripovedne motive so se anketiranci namreč odzivali najbolj enotno. Natančnejša analiza je pokazala, da sta se med odzivi anketirancev najpogosteje pojavila odziva G – atraktiven, fascinanten, poživljajoč in E – pomirjujoč, prijeten. S tem smo potrdile tudi navedbe drugih avtorjev, ki izpostavljajo pomembnost elementa fascinacije in skrivnostnosti pri odzivanju ljudi. Kaplan (1993, 2001) trdi, da element fascinacije aktivira v človekovih možganih nehoteno pozornost, ta pa povzroči sproščanje po stresnih situacijah, zato so pogledi na take motive zaželeni. Element skrivnostnosti v motivu sproža radovednost, kar človeka motivira in poživlja (Kaplan in Kaplan 1989; Van Esch et al. 2019). V skupini motivov, ki imajo izrazit element »pripove-

dnost«, element »vrsta motiva« ni imel močne vloge. Prevladujoč odziv pri pripovednih motivih je bil izbran ne glede na razmerje naravnih in urbanih elementov v teh motivih. Edini motiv brez elementa pripovednosti v tej skupini je skladna kompozicija strnjenelega mestnega tkiva, ki je pogost v urbanem okolju, nanj so anketiranci navajeni in ga dokaj enotno sprejemajo kot nevtralnega, K – ne vzbuja posebnih občutkov.

V drugo skupino motivov so bili uvrščeni motivi, pri katerih so anketiranci izbrali dva odziva, ki sta bila približno enakovredna, ostali predizbrani odzivi v anketi pa so bili izbrani v manjši meri. Ugotovile smo, da ti motivi nosijo zanimive informacije in vsebujejo kombinacijo urbanih in naravnih elementov, nimajo pa močne pripovednosti, ki bi v človeku vzbudila razmišljanje ali zgodbo. Motivi se vsebinsko razlikujejo, izhajajo pa iz narave, urbanega okolja ali pa so hibridni. Trije naravni motivi (motivi 4, 7 in 13) nosijo sicer v sebi pripovednost, ki pa ni bila dovolj izrazita, da bi sprožila samo eden odziv, so se pa zato anketiranci odločili za dva skladna. Pri ostalih motivih elementa pripovednosti ni. Motivi 27, 32 in 33 predstavljajo urbana okolja z urejenimi in negovanimi parki in nasadi, anketiranci jih sprejemajo kot sprejemljive in razumljive.

Med izbranimi v anketi so bili tudi motivi brez posebne vsebine, ki bi v človeku vzbudila zanimanje. Motivi v tej skupini se precej razlikujejo po sestavi elementov in obsegajo naravne, urbane in hibridne motive. Analiza je v posameznih primerih pokazala, da so se anketiranci na motive odzivali zelo raznoliko, lahko tudi protislovno. Po eni strani so pri istem motivu izbrali nevtralne odzive, kot so sprejemljiv, dolgočasen, ne vzbuja posebnih občutkov, manjša skupina anketirancev jih je označila kot fascinantne, skrivnostne, prijetne, pa tudi moteče, nerazumljive, skrivnostne, dolgočasne.

Medtem ko je iz analize jasno razvidno, da je pri motivih z izrazito pripovednostjo z veliko gotovostjo mogoče pričakovati dokaj enoten odziv opazovalcev, tega ne moremo trditi za motive z zanimivimi informacijami, ki so izzvali dva pretežno enakovredna odgovora oziroma heterogene odgovore. Pri motivih, ki nimajo jasnega sporočila oz. zgodbe, so si anketiranci sami ustvarili asociacije, posledica pa so tudi različni odzivi nanje.

V študiji smo ugotovile, da element »vrsta motiva« pri motivih z izrazito pripovednostjo nima močnega vpliva. Pri teh so se anketiranci odzivali enotno ne glede na to ali je bil motiv naraven, urban ali hibriden. Element »vrsta motiva« ima pomembnejšo vlogo pri motivih, ki nosijo zanimive informacije, in tudi pri motivih brez posebnega sporočila. Pregled posameznih odzivov je pokazal, da so se anketiranci precej dosledno odzivali na hibridne motive z odgovori J – sprejemljiv, nemoteč, F – razumljiv, skladen, čitljiv in K – ne vzbuja posebnih občutkov, zlasti na tiste z zelenjem v ospredju in stavbami v ozadju. Podobno so anketiranci naravne motive pogosto ocenjevali z odzivom E – pomirjujoč, prijeten, kar je v skladu z ugotovitvami nekaterih predhodnih študij (Van Esch et al. 2019; Kent in Schiavon 2020), ki so pogled na naravne elemente opredelile kot zaželen. Zelenje v urbanih motivih je na splošno sprožilo pozitivnejše odzive kot so jih prejeli podobni motivi brez zelenja, kar je v skladu z Wilsonovo hipotezo o biofiliji (Wilson 1984) in njegovo trditvijo o povezanosti človeka z naravo, v kateri se je v dolgi evolucijski dobi razvil. Hibridni motivi z znatnim deležem zelenja so bili za anketirance sprejemljivejši predvsem, če je bil urbani pogled opazovan od daleč in če se je dovolj visoko in gosto zelenje nahajalo v ospredju. Tudi naravni in hibridni motivi pa so lahko neželeni, če so neurejeni, nepregledni, preteči. V študiji je bil pri nekaterih zaznan nevtralen ali odklonilen odziv, podobno kot so to že nakazali nekateri raziskovalci (Martens et al. 2011).

5. SKLEP

Namen študije je bil ugotoviti ali pri izbranih motivih ob pogledu skozi okno obstajajo skupni imenovalci, ki pri opazovalcih sprožajo podobne odzive. Raziskovalno izhodišče so predstavljale študije, ki so vrednotile pomen motivov pogledov skozi okno, in anketni vprašalnik z naborom različnih motivov pogledov skozi okno, s katerim smo evidentirale odzive anketirancev in jih kasneje analizirale. Študija je potrdila, da motiv pogleda skozi okno vpliva na subjektivni odziv opazovalca. S pomočjo primerjave odzivov anketirancev je bilo ugotovljeno, da se opazovalci na motive s podobnimi značilnostmi odzivajo konsistentno. Ravno tako statistična primerjava odzivov pokaže, da obstaja povezanost med spremenljivkama »vrsta motiva« in »pripovednost« z »odzivi anketirancev«, ki so jih sprožili posamezni motivi. Posredno je mogoče iz študije zaključiti, da so na splošno pogledi v naravno ali hibridno okolje bolj zaželeni, medtem ko je pogled v urbana okolja manj privlačen. V urbanih okoljih bi bilo zato smiselno dodati zelenje v smeri pogleda skozi okno, predvsem je pomembna vertikalna komponenta (npr. visoko grmičevje, drevesa, ozelenjene stene). Ob tem je potrebno upoštevati tudi pripovednost in element fascinacije, ki lahko znatno izboljšata kakovost pogleda skozi okno.

Glede na analizo anketnih rezultatov lahko pri večini opazovalcev pričakujemo specifičen odziv na motiv pogleda skozi okno:

- Pretežno enoznačen odziv ugotavljamo pri motivih, ki vsebujejo pripovednost in element fascinacije. Prevladujoč odziv pri pripovednih motivih je ugotovljen ne glede na vsebnost naravnih ali urbanih elementov v teh motivih.
- Naravni motivi in urbani motivi z ustreznim deležem primerne zelenja (hibridni motivi) so najpogostejše ocenjeni kot skladni in nemoteči. Iz rezultatov je mogoče sklepati, da primeren delež zelenja v motivih sproža odzive kot so sprejemljiv, prijeten, razumljiv, skladen, čitljiv, privlačen, skrivnosten.
- Zelenje v urbanih motivih na splošno sproži pozitivnejše odzive kot jih izzovejo podobni motivi brez zelenja. Hibridni motivi z znatnim deležem zelenja so za anketirance sprejemljivejši predvsem, če je urbani pogled opazovan od daleč in če se dovolj visoko in gosto zelenje nahaja v ospredju.
- Motivi, ki vsebujejo neurejeno okolje oziroma posredujejo malo informacij, povzročajo občutek z dolgočasnosti in nelagodja.
- Zapleteni in nediferencirani motivi vzbujajo tesnobne odzive.

Ugotovitve, da doživljanje narave z opazovanjem skozi okna izboljša subjektivno počutje, naj bodo vzpodbuda za vključevanje zelenja v mestna okolja in vizualno povezavo zelenja z notranjostjo stavb. Strinjamo se z ugotovitvami študij, da je ključno oblikovanje stavb z večjim upoštevanjem uporabnika v notranjosti stavbe in da bi moralo biti izhodišče za dimenzioniranje in lego oken v večji meri vezano na pogled navzven. Pridružujemo se uvajanju novih trendov v arhitekturnem oblikovanju, ki spodbujajo koncept restorativnega okoljskega oblikovanja (RED – Restorative Environmental Design). Ta združuje ideje trajnostnega oblikovanja in ideje biofilije ter na ta način spodbuja povezovanje z naravo – med drugim tudi z razgledi na naravo. Dodajamo, da je prav zato pomembno tudi skrbno načrtovanje zunanega prostora in kakovostnih motivov, ki se navezujejo na poglede skozi okna. V nadaljnjih študijah bi bilo smiselno podrobneje raziskati pripovednost v pogledu, ki se je izkazala kot zelo pomemben faktor, jo podrobneje opredeliti in ovrednotiti njen učinek.

Članek je rezultat raziskovalnega dela v okviru raziskovalnega programa P5-0068, ki ga financira ARRS. Avtorice se zahvaljujejo študentom UL FA za sodelovanje v anketi.

VIRI IN LITETATURA

- Aries, M.B.C., Veitch, J. A., in Newsham, G. R. (2010). Windows, view, and office characteristics predict physical and psychological discomfort. *Journal of Environmental Psychology*, 30(4), str. 533–541. <https://doi.org/10.1016/j.jenvp.2009.12.004>
- Bell, J., in Burt, W. (1995). *Designing buildings for daylight*. London: Construction Research Communications Ltd.
- Brown, D. K., Barton, J. L., in Gladwell, V. F. (2013). Viewing Nature Scenes Positively Affects Recovery of Autonomic Function Following Acute-Mental Stress. *Environmental Science & Technology*, 47(11), str. 5562–5569. <https://doi.org/10.1007/s40471-015-0043-7/10.1021/es305019p>
- Chang, C.-C., Oh, R.R.Y., Nghiem, L.T.P., Zhang, Y., Tan, C. L.Y., Lin, B. B., et al. (2020). Life satisfaction linked to the diversity of nature experiences and nature views from the window. *Landscape and Urban Planning*, 202, 103874. <https://doi.org/10.1007/s40471-015-0043-7/10.1016/j.landurbplan.2020.103874>
- Collins, B.L. (1976). Review of the psychological reaction to windows. *Lighting Research & Technology*, 8(2), str. 80–88. <https://doi.org/10.1007/s40471-015-0043-7/10.1177/14771535760080020601>
- Elsadek, M., Liu, B., in Lian, Z. (2019). Green façades: Their contribution to stress recovery and well-being in high-density cities. *Urban Forestry & Urban Greening*, 46, 126446. <https://doi.org/10.1007/s40471-015-0043-7/10.1016/j.ufug.2019.126446>
- Grinde, B., in Patil, G. G. (2009). Biophilia: Does Visual Contact with Nature Impact on Health and Well-Being?. *International Journal of Environmental Research and Public Health*, 6(9), str. 2332–2343. <https://doi.org/10.3390/ijerph6092332>
- James, P., Banay, R. F., Hart, J. E., in Laden, F. (2015). A Review of the Health Benefits of Greenness. *Current Epidemiology Reports*, 2, str. 131–142. <https://doi.org/10.1007/s40471-015-0043-7>
- Jennings, V., in Bamkole, O. (2019). The Relationship between Social Cohesion and Urban Green Space: An Avenue for Health Promotion. *International Journal of Environmental Research and Public Health*, 16(3), 452. <https://doi.org/10.1007/s40471-015-0043-7/10.3390/ijerph16030452>
- Kaplan, R. (2001). The Nature of the View from Home: Psychological Benefits. *Environment and Behavior*, 33(4), str. 507–542. <https://doi.org/10.1007/s40471-015-0043-7/10.1177/00139160121973115>
- Kaplan, R., in Kaplan, S. (1989). *The Experience of Nature: A Psychological Perspective*. Cambridge: Cambridge University Press.
- Kent, M., in Schiavon, S. (2020). Evaluation of the effect of landscape distance seen in window views on visual satisfaction. *Building and Environment*, 183, 107160. <https://doi.org/10.1016/j.buildenv.2020.107160>
- Kim, J., Cha, S. H., Koo, C., in Tang, S. (2018). The effects of indoor plants and artificial windows in an underground. *Building and Environment*, 138, str. 53–62. <https://doi.org/10.1016/j.buildenv.2018.04.029>
- Ko, W. H., Brager, G., Schiavon, S., in Selkowitz, S. (2017). *Building envelope impact on human performance and well-being: experimental study on view clarity*. Berkeley: Center for the Built Environment, University of California. Pridobljeno 14. 1. 2021 s spletne strani: <http://www.escholarship.org/uc/item/0g8j8h384>
- Kristl, Ž., in Zbašnik-Senegačnik, M. (2020). Študija pomena dnevne svetlobe v prostorih vrtca in šole. *Sodobna pedagogika*, 71(3), str. 98–114.
- Littlefair, P.J., (1996). *Designing with innovative daylighting*. Watford, Herts: IHS BRE Press.
- Logar, V., Kristl, Ž., in Škrjanc, I. (2014). Using a fuzzy black-box model to estimate the indoor illuminance in buildings. *Energy and buildings*, 70, str. 343–351. <https://doi.org/10.1016/j.enbuild.2013.11.082>

- Martens, D., Gutscher, H., in Bauer, N. (2011). Walking in “wild” and “tended” urban forests: The impact on psychological well-being. *Journal of Environmental Psychology*, 31(1), str. 36-44. <https://doi.org/10.1016/j.jenvp.2010.11.001>
- Pajek, L., Košir, M., Kristl, Ž., Kacjan Žgajnar, K., in Dovjak, M. (2017). Indoor environmental quality (IEQ) in Slovenian children daycare centres. Part 1, Results of in-situ measurements. *Sanitarno inženirstvo*, 11(1), str. 4-18.
- SIST EN 17037. (2019). *Dnevna svetloba v stavbah*. Mednarodni standard. CEN
- Sommer, R. (1974). *Tight spaces; hard architecture and how to humanize it*. Upper Saddle River: Prentice-Hall.
- Stenberg, B., Eriksson, N., Höög, J., Sundell, J., in Wall, S. (1994). The Sick Building Syndrome (SBS) in office workers. A case-referent study of personal, psychosocial and building-related risk indicators. *International Journal of Epidemiology*, 23(6), str. 1190-1197. <https://doi.org/10.1093/ije/23.6.1190>
- Ulrich, R.S., 1984. View through a window may influence recovery from surgery. *Science*, 224, str. 420-421. <https://doi.org/10.1126/science.6143402>
- Van Esch, E., Minjock, R., Colarelli, S. M., Hirsch, S., 2019. Office window views: View features trump nature in predicting employee well-being. *Journal of Environmental Psychology*, 64, str. 56-64. <https://doi.org/10.1016/j.jenvp.2019.05.006>
- Wilson, E. O., 1984. *Biophilia*. Cambridge: Harvard University Press.

Kristijan Lavtižar: URBANISTIČNO NAČRTOVANJE, JAVNO ZDRAVJE IN URBANA KLIMATOLOGIJA SKOZI ZGODOVINO

URBAN PLANNING, PUBLIC HEALTH AND URBAN CLIMATOLOGY THROUGH HISTORY

DOI: <https://doi.org/10.15292/IU-CG.2021.09.024-033> ■ UDK: 711.4:551:614 ■ SUBMITTED: September 2021 / REVISED: October 2021 / PUBLISHED: November 2021



1.02. Pregledni znanstveni članek / Review Scientific Article

POVZETEK

V stroki klimatologov je povsem uveljavljeno dejstvo, da antropološki procesi v mestni pokrajini ustvarjajo lastno specifično podnebje, čemur je sledilo spoznanje, da na to sliko pomembno vpliva tudi urbanistično načrtovanje. Kljub temu znanju, se danes s tem vprašanjem v praksi pogosto ne ukvarjamo in to dejstvo ne vpliva na sam proces urbanističnega načrtovanja, urbanističnega oblikovanja, ali na druge discipline, ki se ukvarjajo z načrtovanjem prostora. Odgovore na to vprašanje skušam poiskati v pregledu zgodovine in ugotoviti, kdaj in v kakšnem kontekstu znanstvenih spoznanj in razumevanja področja urbane klimatologije ter javnega zdravja, se je v preteklosti načrtovalo posege v prostor. Raziskovanje obsega pregled in primerjavo literarnega gradiva z obravnavo nekaterih izjemnih primerov načrtovanja prostora v praksi, ki so bili značilni za posamezna obdobja ustvarjanja v arhitekturi in urbanizmu. Cilj študije je tudi raziskati, kakšni so bili razlogi, zaradi katerih so se načrtovalci zanašali na študije klimatskih razmer v procesu oblikovanja prostora. Ali obstajajo specifični razlogi, ki so botrovali nastanku nekaterih načrtov, ki jih danes dojemamo drugače ali nepopolno, brez razumevanj ozadja družbenih problemov? Osrednji del prispevka predstavlja nekaj ključnih zaključkov, ki obravnavajo posamezne klimatološka izhodišča, ki so izpostavljenim urbanističnim teoretikom in referenčnim projektom skupna.

KLJUČNE BESEDE

klimatologija, klimatski urbanizem, urbanistično načrtovanje, zgodovina urbanizma, javno zdravje

ABSTRACT

It is a well-established fact in the profession of climatologists that anthropological procedures in an urban landscape create a region-specific climate. This was followed by the realization that urban planning is an important variable as well. While this is already known, today this issue is often not addressed in practice and does not affect the very process of urban planning, urban design or other disciplines dealing with spatial planning. The article includes an overview of the history of urban planning to try to determine when and in what context of urban climatology and public health have interventions in space been planned in the past. The scope of research includes a review of literary material with addressing some exceptional cases of spatial planning in practice that were characteristic of individual periods in architecture and urbanism. The aim of the study is also to investigate the reasons why the urban planners of the past have used climate studies the process of spatial design. Are there special reasons that led to the emergence of some plans, that we perceive differently or incompletely today, without understanding the important social background? The central part of the paper presents some key conclusions that deal with individual climatological starting points, which are common to the relevant urban theorists and reference projects cited.

KEY-WORDS

climatology, climate urbanism, urban planning, history of urbanism, public health

UVODNIK
EDITORIAL
ČLANEK
ARTICLE

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

1. UVOD

Urbana klimatologija je veda o klimatologiji, v katero štejemo zlasti preučevanje osončenja, vetrovnih pogojev, onesnaženja ozračja in padavin, ter spada v sekundarne vede druge skupine teoretikov urbanističnega načrtovanja (Lowry, 1988; Oke, 2017; Hebbert in Mackillop, 2013). Ukvarja se z interakcijami med mestnimi območji in ozračjem, učinki, ki jih imajo drug na drugega, in različnimi prostorskimi in časovnimi merili, v katerih se ti procesi odvijajo. Zanj je značilna uporaba meteoroloških podatkov za reševanje praktičnih problemov, kar lahko imenujemo tudi praktična klimatologija (Oke, 2017). Prve omembe urbane klimatologije segajo v začetke 19. stoletja. Kemik in meteorolog Luke Howard je v delu »Climate of London 1833« objavil natančno raziskavo meteoroloških razlik med podeželjem in mestom. Kasneje se je razvilo med-disciplinarno področje, ki povezuje podatke lokalno opazovane meteorologije s (fizično) geografijo, medicinsko epidemioologijo in gradbeno fiziko (Hebbert in Mackillop, 2013). Zlasti v začetku 20. stoletja se je ta veda razvila zaradi potrebe po oblikovanju metodologije za preučevanje vpliva industrializacije in urbanizacije na klimo. Iskali so odgovor na vprašanje: ali mesto lahko ustvarja lastno karakteristično klimo in ali ima urbana klima učinek na okolje. Nova disciplina je združila nazore zdravstvene in urbanistične stroke, ki sta tedaj doživljali prepoved na področju javnega zdravja.

Moderno javno zdravje, kot ga poznamo danes, se je izoblikovalo vzporedno s sanitarnimi kampanjami v mestih (Zaletel-Kragelj, et al., 2016). Pomen javnega zdravja se je nato razširil na vse ravni družbe. Po definiciji Svetovne zdravstvene organizacije zdravje namreč ni le odsotnost bolezni, ampak tudi duševno, telesno, čustveno in socialno ugodje oziroma blagostanje (SZO, 1995). Nacionalni inštitut za javno zdravje (NIJZ, 2017) javno zdravje opredeli kot znanost in spretnost preprečevanja bolezni, krepitev zdravja in podaljševanje življenja s pomočjo organiziranih naporov družbe. Gre za širok pojem, vendar so med vsemi okoljskimi dejavniki, ki vplivajo na javno zdravje, dejavniki mikroklima ključni in spremenljivka, na katero ima oblikovanje grajenega okolja pomemben vpliv (SZO, 2016). Za razliko od kurativne medicine, ki je usmerjena v obravnavo posameznika, je pri javnem zdravju v ospredju zdravje ljudi, v smislu obvladovanja nalezljivih bolezni, odzivanja na različne grožnje zdravju, izvajanja preventivnih programov ali usklajevanja medsektorskih politik za izboljšanje zdravja ter zmanjševanje neenakosti v zdravju (Ministrstvo za zdravje, 2013).

V nadaljevanju bodo predstavljeni primeri reformacije urbanističnega načrtovanja v zgodovini; od obdobja industrijskega mesta, sanitarnega urbanizma, obdobja funkcionalizma, modernizma in na zadnje na primeru modela trajnostnega in pametnega mesta. V posameznih obdobjih je opisano, kako se je vzporedno razvijala tudi urbana klimatologija. Načrtovanje t.i. odprtih šol in sanatorijev sta posebej izpostavljena, kot primera integralnega urbanističnega načrtovanja in arhitekture z uporabo klimatološke teorije.

2. UPORABA TEORIJE URBANE KLIMATOLOGIJE V URBANISTIČNEM NAČRTOVANJU

Začetna prizadevanja za gradnjo zdravih mest, v katerih se je načrtno gradilo zdravo okolje za prebivalce, so vključevala strategije namenske rabe, normative gostote, subvencioniranje javnega prevoza, načrtovanje urbanih vrtičkov, uličnih dreveredov, zdravstvenih objektov, otroških igrišč in stanovanjskih sosesk. Načela urbane klimatologije so poudarjala pomen zraka in svetlobe, širokih ulic in odprtih zelenih površin. To so bili

principi, ki so bili skupni tudi znanima načrtovalcema Georgeu-Eugeniju Haussmannu in Idefonzu Cerdí pri njunih načrtih prenove Pariza in Barcelone. Kasneje, proti koncu 19. stoletja, so se ti koncepti ponovno pojavili v teoretskih delih reformatorjev Ebenezerja Howarda, Patricka Geddesa in Lewisa Mumforda, ter v zasnovi konceptov novih vrtnih ter regionalnih mest.

Prve omembe prizadevanja za reševanje javnega zdravja segajo v obdobje Antike. Iz tistega časa izhajajo prepričanja, da ima okolje vpliv na človekovo zdravje. Natančneje, okolje ima »vpliv na mešanico tekočin v človeškem telesu« (Duhl in Sanchez, 2010). Rimljani so ta koncept razširili in poudarili potrebo po spreminjanju okolja, ki bi se prilagodilo potrebam človeka (ibid.). Od 13. do sredine 18. stoletja se postopoma razvija miazmatična teorija, ki izhaja iz antičnih prepričanj. Ta trdi, da bolezni, kot so kolera, klamidija ali črna smrt, povzročata miazma (μίασμα, starogrško) – kar pomeni onesnaženje, v kontekstu škodljivega ali slabega zraka. Zagovorniki te teorije so menili, da vse epidemične bolezni izvirajo v razpadajoči materiji. Rešitev so videli v umikanju od posamičnih virov miazme, za katere so menili, da so izvori bolezni, ter v kontroli »umazanega« zraka (Last, 2007).

Do konca 18. stoletja so bila mesta v Evropi že visoko industrializirana. Onesnaženje mestnega ozračja s smogom, zaradi kurjenja lesa in premoga, je ponekod doseglo kritično raven, kar se spodbudilo začetek sistematičnega opazovanja meteoroloških razmer v mestih. Še kasneje, v 19. stoletju, se razvija teorija virusov in bakterij (teorija patogenov, ang. germ theory), ki trdi, da lahko mikroorganizmi (patogeni) povzročajo infekcijske bolezni z vdorom v telo gostitelja, človeka ali živali. Umazanija v najbolj splošnem pomenu se je s tem ločila na »škodljivo« in »neškodljivo«, kar je pomenilo osredotočanje na posamezne elemente in njihovo izločanje iz človekovega okolja. Ponovno je higiena (lat. hygieina) v Evropi pridobila na pomenu. Ta se nanaša na tiste prakse, ki pomagajo ohraniti zdravje in preprečujejo širjenje bolezni. Denimo čiščenje okolja, sterilizacija medicinske opreme, higiena rok, ohranjanje čiste voda in sanitarnih razmer (SZO, 2020). Novo zavedanje o pomembnosti čistoče je pripeljalo v razvoj sanitarnega inženirstva in sanitarnega načrtovanja mest.

2.1 Sanitarno načrtovanje mest

Začetki reformizma urbanističnega načrtovanja v sanitarno urbanistično načrtovanje torej izhajajo iz teorij miazme. Sprva so bili posegi izrazito gradbeniški, šlo je za disciplino okoljskega inženirstva. Sredi 19. stoletja so posamezne povzročitelje bolezni (takrat so se osredotočali predvsem na onesnažila) izločali iz mestnega okolja. To je bilo doseženo predvsem z zbiranjem in ločevanjem kanalizacije (Jeffries, 2006; Peterson, 1983), za katero je bila uporabljena infrastrukturna (tehnoška) rešitev kanalov, ki je bila v uporabi že tisočletja - v organizaciji namakalnih sistemov v kmetijstvu ali akveduktov za distribucijo pitne vode. Z naraščanjem števila prebivalcev v mestih je ravnanje s človeškimi odpadki in fekalijami postala čedalje večja prioriteta. V večjih mestih so bile razmere že nevdržne in slabe epidemio-loške razmere, zaradi izbruhov različnih bolezni, so posegale na vse ravni življenja. Odvijala se je industrijska revolucija in mesta so se nekontrolirano zgoščevala in širila na račun slabih bivalnih pogojev. V industrijskih mestih v Evropi so se zidale delavske kolonije in soseske vrstnih hiš z neustreznim prezračevanjem (Gates in Stout, 2015). Bolezni, kot so črne koze, davica, ošpice, škrlatinka, tifus, kolera in tifus, so se prenašale preko kontaminirane vode. V času londonske epidemije kolere leta 1854 se je v zgodovino zapisal John Snow. Več kot stoletje pred uporabo prvih računalniških tehnologij za kartiranje, je Snow ročno kartiral posamične izbruhe bolezni v četrti Soho v Londonu (Slika 1).

Slika 1: Kartiranje lokacije smrti ljudi, ki so podlegli koleri v londonski četrti Soho, 1854 John Snow (Snow, 1855).



Na podlagi celovite prostorske analize je postavil kontroverzna teorijo, da je kolera bolezen, ki se prenaša z vodo, ob okuženih vodnjakih pitne vode. Do petdesetih let se je v reko Temzo v Londonu izpustilo več kot 400.000 ton odplak in leto 1858 se je v zgodovino zapisalo kot leto velikega smrada »the great stink«, zaradi nevdzdržnih razmer, ki so jih povzročile nakopičene odplake in razkrajajoči odpadki, ki jih je še poslabšal vročinski val (Flanders, 2015; Hardy, 1984). Pojav je sprožil vrsto administrativnih odločitev, po katerih so pod vodstvom Josepha Bazalgettija na novo načrtali komunalni sistem Londona ter odplake speljali izven metropolitanskega območja (Wood, 2004). Po novem izbruhu leta 1866 se je potrdilo prepričanje, da se kolera zares prenaša z vodo in da ne gre za pojav miazme (Cicak in Tynan, 2015).

Na zakonodajnem področju je bil eden izmed pomembnejših in danes poznanih likov sanitarnega gibanja Edwin Chadwick - predstavnik gibanja utilitaristov in avtor reformistične politike v viktorijanski Angliji. Njegov manifest za javno zdravje, objavljen leta 1842 v Veliki Britaniji (Chadwick, 1965), je postavil temelje za vrsto pomembnih reform. Vključeval je najbolj znan prvi zakon o javnem zdravju, sanitarno reformo, reformo lokalne uprave in pogrebne dejavnosti, reformo usposabljanja in zaposlitve medicinskega osebja, reševanje londonske kanalizacije v obliki tehničnih rešitev in financiranje obsežnega programa javnih higienskih del. Zakon si je prizadeval, da vsako mesto v državi zagotovi vsaki hiši dostop do vode ter kanalizacijskih sistemov, kot tudi urejene tlakovane površine (Calman, 1998).

»Nenadzorovana rast mest je prepuščena na milost in nemilost lastnikom zemljišč in nepremičnin ter špekulantom, ki jih kakovost urbanega okolja, zdravje prebivalcev ali prihodnost mesta neposredno ne zanima.« Stephen J. Corbet, 2007

Chadwick sicer zaradi svojih prizadevanj, ki so načenjala državno blagajno, politično ni bil priljubljen. Spričo njegovih revizij

zakona o revežih »the Poor Laws« je bil v svojem času med pripadniki višjega sloja označen za najbolj osovražene človeka v Angliji. Po njegovi smrti je časopis Times slavil in urednik je o njem zapisal sledeče: »raje bi preživeli kolero, kot da bi imeli opravke s Chadwickom« (Corbet, 2007). Zdravstvena reforma je bila sicer nujna in je nastala kot prisiljena reakcija na katastrofalne posledice podivjanega kapitalizma, eksplozivne rasti mest, industrije in gospodarstva (Ringen, 1979). Torej v prenovi mesta nikakor ni šlo za zavestno ali načrtno reševanje zdravstvenega problema. Navkljub številnim kritikom se je tedaj uveljavilo prepričanje, da je javno zdravje stvar državne odgovornosti. Nekaj let kasneje po reformah v Londonu se je po navodilih Napoléona Bonaparte začel prenavljati tudi Pariz, ki je želel po britanskem zgledu revolucionarno urediti Pariz. Nalogo prenove je zaupal takratnemu administratorju Georgu-Eugèniu Hausmannu (Mumford, 2018). V letih od 1853 do 1870 je uresničil njegovo idejo prenove mesta. Gosto, prašno in onesnaženo mesto je s pomočjo razlastitvenih zakonov, podobno kot v načrtih za prenavo Londona, popolnoma prenovil. Ti zakoni so odražali visoko politično motivacijo, ki je bila za tako obsežne in drage prenove nujno potrebna. Na primeru zarisa nove Londonske ulice Regent Street so ti zakoni presegle tudi oviro visokih cen nepremičnin (Lavtižar in Čerpes, 2015). Politično motivacijo pa je gnalo tudi zanimanje bogatih družin in plemstva za dolgoročne in visoko donosne investicije (Olsen, 1986).

»Prizadevajmo si, da polepšamo to veliko mesto. Odprimo nove ulice, uredimo prostore delavskega razreda, ki jim primanjkuje zraka in svetlobe, naredimo jih bolj zdrave in pustimo, da blagodejna sončna svetloba seže povsod znotraj ulic.«-L.N. Bonaparte (povzeto iz: Moncan in Heurteux, 2002)

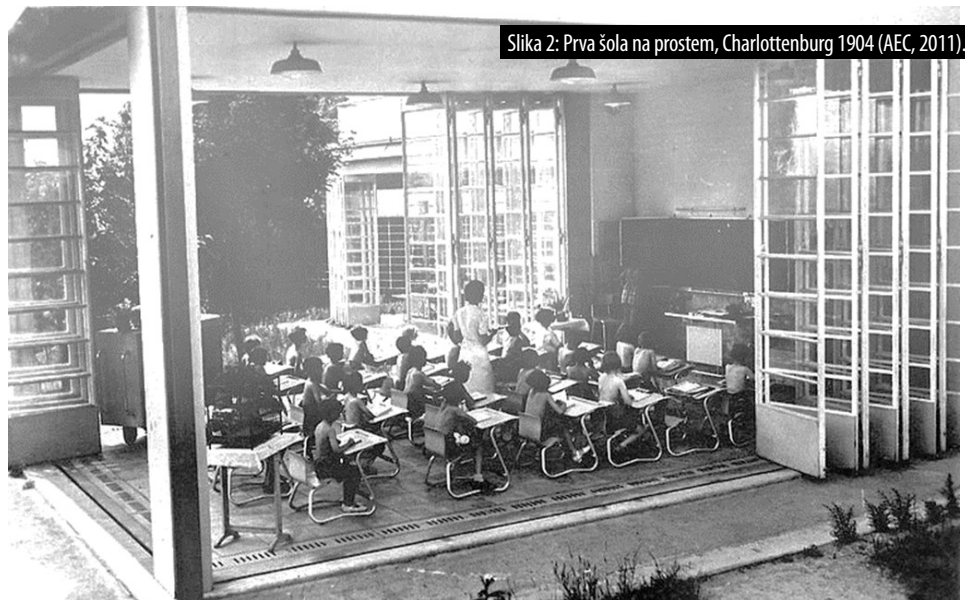
Poleg širokih in zračnih ulic ter bulvarjev je mesto dobilo tudi nove parke, šole in zdravstvene ustanove, proge za tramvaj ter železnico. Urbanistični načrtovalec Ildefonso Cerdà, ki je sredi stoletja zasnoval nov načrt Barcelone, je ta model prenove

mesta razvil iz inženirskega in tehnično-pravilnega sistema. Načrt je razvijal v skladu z lastno teorijo načrtovanja mest »Teoría de la Construcción de Ciudades, 1859« in »Teoría general de la urbanización« iz leta 1867, s katero je osnoval progresistični model načrtovanja. Ta je vpeljeval temelje klimatološkega urbanizma; dovolj svežega zraka, sonca, zelenja in pešpoti. Postavil je življenjski standard, ki je bil izražen v minimalnih 6 m³ prostornine zraka na človeka (Aibar in Bijker, 1997). Navkljub številnim kritikam in kontroverznosti – Cerdo so označili za socialista, stroški prenove pa so bili izredno visoki, je bil nov načrt Barcelone sprejet (ibid.). Kasneje se je izkazalo, da načrt mesta vseeno ni bil uresničen tako, kot je bil zasnovan. Zaradi naraščajočih cen zemlje, nepremičnin in zgoščanja prebivalstva so nizko gradnjo zamenjali visoki karejski bloki, številne notranje zelene atrije so kasneje v večji meri pozidali. Preobrazbe velikih mest so sicer predvidevale prirast mestnega prebivalstva, vendar so številni podcenjevali takratne demografske spremembe. Razlog za visoko rast je bilo priseljevanje iz podeželja v mesta, ki so ga gnale nove ekonomske priložnosti. Priseljevalo se je zlasti v prestolnice, tako v Franciji, kot drugod po Evropi.

Takratne prenove velikih evropskih mest, ki jih zaznamujejo obsežni sanitarni, razlastitveni zakoni in regulacijski načrti, so nanzanile prehod urbanističnega načrtovanja iz liberalnega mesta v post-liberalno mesto (Mumford, 2018). Mogoče je opaziti, da je ta čas naznanjal preobrat nadzora nad mestom, saj je politična moč premikala iz rok kapitala v roke širšega prebivalstva. Osnovni življenjski standardi so se v veliki meri izboljšali, zgradile so se tlakovane ceste, široke ulice, uredila se je komunalna oprema, uredila se je mreža zdravstvenih ustanov in možnost ustreznega pokopa umrlih. Šele kasneje se je teorija sanitarnega načrtovanja prevesila na ostala področja, kot je urbanizem, kjer so se načrtovanju mest pridružila teorija sanitarnega inženirstva. S tem se je začelo gibanje sanitarnega urbanističnega načrtovanja. Skozi stoletja se je veliko spremenilo na področju upravljanja z odpadnimi vodami. Skokovit napredek na področju mikrobiologije, kemije in tehnike je področje spremenilo še bolj drastično.

2.2 Načrtovanje zdravih šol

V začetku 19. stoletja se je oblikovalo gibanje vzgojnikov, pediatrov in drugih delavcev v šolstvu, ki so zagovarjali šolanje na prostem. Zgradile so se šole, ki so bile grajene po konceptu »open-air«, kar je pomenilo čim večjo odprtost, zračnost in pretok svežega zraka. To je ustvarjalo maksimalno izpostavljenost okolju in povezavo med notranjostjo in zunanostjo učilnic (Chatalet, 2008). Njihov namen je bil preprečiti hitro napredovanje tuberkuloze v času med svetovnjima vojnama (Cruickshank 1977). Grajene so bile na odmaknjenih predelih naselij, stran od glavnih virov onesnaževal in mestne množice (Nicolas, 2003 v Worpole, 2000). Njihova zasnova je odražala gradnjo tedanjih sanatorijev za paciente s tuberkulozo, pri katerih se je načrtovanje popolnoma podredilo zahtevam po higieni in čistemu zraku. Otroke so poučevali v učilnicah, ki so bile zasnovane tako, da so bile delno ali v celoti izpostavljene zunanosti. Nekateri otroci so spali celo zunaj šole (Cruickshank, 1977). Prvi primer po tem



Slika 2: Prva šola na prostem, Charlottenburg 1904 (AEC, 2011).

principu načrtno zasnovanega vzgojno-izobraževalnega zavoda je leta 1904 zgrajena nemška šola v Charlottenburgu v Nemčiji (Slika 2), ki jo je zasnoval arhitekt Walter Spickendorff. Zgrajena je bila kot eksperiment tedanjega mednarodnega kongresa za higieno, skrita v gozdu in namenjena izključno bolnim otrokom (Nicolas, 2003). Od takrat so se začele graditi prve tovrstne šole in gibanje se je ohranilo vse do 70ih let 19. stoletja.

Značilen primer tovrstne arhitekture je leta 1935 v Parizu zgrajena šola École de plein air de Suresnes. Arhitekta Eugène Beaudouin in Marcel Lods sta pred vsakim razredom zasnovala senčen prostor, ki je bil namenjen poučevanju na prostem. Ob prihodu je vsak otrok opravil zdravniški pregled, nato pa si je umil roke in si umil zobe, preden se je vrnil v svoj razred paviljona (Franchon & Bellot, 2020). Leta 1930 je bila po principu zračnih šol in načrtih arhitektura Jana Duikerja na Nizozemskem zgrajena podobno odprta in svetla šola. Zgrajena je bila iz skeletne betonske konstrukcije z vgrajenimi velikimi tračnimi okni, ki so omogočala kar največjo stopnjo prezračevanja. Medijsko poročanje o takšnih šolah je bilo tedaj izredno pozitivno. V času Le Populaire so leta 1935 zapisali:

»... otroci bolje dihajo. So bolj umirjeni, bolj disciplinirani. Tudi akademski rezultati so bili dobri, saj je bil odstotek opravljenih izpitov višji kot v drugih šolah. Intelktualni izkoristki so bili več kot zadovoljivi in rezultati kažejo, da je bil eksperiment povsem zadovoljiv.« - Léon Blum (povzeto iz: Frachon, 2020)

Podobni principi načrtovanja šol so se uveljavili zlasti v državah z milim podnebjem, denimo v Avstraliji, Oceaniji ali Srednji Ameriki. V drugih državah s hladnejšim ali tropskim podnebjem so negativne plati odprtega koncepta šol pretehtale pozitivne, zato so se šole vrnile k tradicionalnim zaprtim arhitekturnim modelom. Izpostavljenost elementom okolice in zunanje klime je šla v določenih primerih tudi v skrajnost. V nekaterih šolah na prostem je bilo ogrevanje prepovedano in v eni takšni šoli so novembra 1915 zabeležili rekordno nizko temperaturo - zgolj -1°C (Worpole, 2000). Po 2. svetovni vojni se v Evropi ponovno obudi gibanje za načrtovanje odprtih šol (Chatalet, 2008). Arhitekti, kot je bil Alfred Roth, so na ta način gradili šole, izhajajoč iz elementarnega koncepta sanatorijev za tuberkulozo. Z

razvojem novega načina gradnje s skeletno železobetonske konstrukcijo pa je nastopilo obdobje uporabe velikih steklenih površin, s katerimi so se stavbe ponovno zaprle pred zunanjo klimo.

2.3 Zdraviliški urbanizem

Z zgodovinskim prepričanjem, da so mesta resnično gojišče bolezni, zlasti tuberkuloze, je vzniknila tudi teorija o osamelem zdravilišču ali sanatoriju zunaj mesta. Medicinska teorija o »kraju imunosti«, ki jo je v letih 1826–1889 razvil Hermann Brehmer, je utemeljila razvoj sanatorija za tuberkulozo (Eylers, 2014). Čeprav tuberkuloza ni bila izključno bolezen revnih, se je zdelo, da je delavski razred bolj verjetna žrtev. »...uravnavanje socialnih razlik, dobrodelno ali humanitarno dejanje, je bil pomemben vidik tega gibanja« Condrau, F. (2000). Finski arhitekt Alvar Aalto, uveljavljen predstavnik gibanja humanistov, se je v srednjih letih ustvarjanja obračal k modernizmu. Leta 1929 je izdelal načrt za zdravilišče Paimio Sanatorium, ki je služil predvsem zdravljenju bolnikov s tuberkulozo do leta 1960, in velja za eno izmed njegovih najpomembnejših del. Celoten koncept je temeljil na temu, da je stavbo zdravilišča načrtoval kot pomemben medicinski pripomoček pri zdravljenju pacientov. »Načrtoval je vijugaste poti v okolici bolnišnice in vključil vodne elemente, ki so spodbujali bolnike k sprehodom. Na koncu vsakega nadstropja bolnika je bil dodan sončni balkon, ki je bil usmerjen neposredno proti jugu, z namenom, da prileženi bolniki na balkonih dobijo čim več naravne sončne svetlobe.« (Anderson, 2010).

Gradnja zdravilišč je bila po značilnostih izbire lokacije, izoliranosti od preostalih naselij in programa zdraviliških vsebin podobna gradnji sanatorijev. Zdravilišče Rogaška (Rohitsch Sauerbrunn) štejemo med pomembnejše kraje v Sloveniji, saj je ohranilo značilno urbanistično in arhitekturno zasnovo zdravilišč iz prve polovice 19. stoletja (Slika 3). Takrat se je zdravilišče razvilo v najpomembnejše letovišče južnega dela habsburške monarhije (Sajko, 2009). Zdraviliško območje vsebuje osrednji klasicistični zdraviliški trg, zahodno mestno ulico s posamičnimi hoteli, pensioni, prenočišči in drugimi stavbami, vrelni in odprtimi parkovnimi ter gozdnimi površinami na okoliških vzpetinah, funkcionalno povezanimi z zdraviliščem (ZVKDS; Ur.l. RS, št. 85/97-3976). Območje kompleksa uvrščamo tudi v območja arheološke dediščine, zaradi potencialnih najdišč okrog termalnih vrelnic, ki izvirajo iz rimskih časov.

Slika 3: Gruss aus Bad Rohitsch-Sauerbrunn - zdraviliški park Rogaška Slatina leta 1899. (Zieher, 1902).



Zdravilni učinki so presegali le koristi vode iz tamkajšnjih vrelnic ali balneoterapije, saj je k zdravju koristilo tudi samo okolje zdravilišča. Zasnova je zagotavljala umik v čisto naravno okolje z ugodno klimo, kjer so bile potrebne zdravstvene in terapevtske storitve zagotovljene znotraj kompleksa. V 20. stoletju so se evropska zdravilišča še naprej razvijala na osnovi toplih ali hladnih naravnih vrelnic, zdravega morskega ali gorskega podnebja in zdravljenja s počitkom, posebnimi dietami ter telesno vadbo.

»V sodobnih zdraviliščih velja prepričanje, da je lepa pokrajina z bogato kulturno in naravno dediščino naklonjena bolnikom v procesu zdravljenja... nedvomno pa slikovita arhitekturna in naravna krajina zdraviliških mest prispevata k privlačnosti takšnih krajev za obiskovalce, ki si želijo spokojnega okolja« (Pawlikowska-Piechotka, 2014).

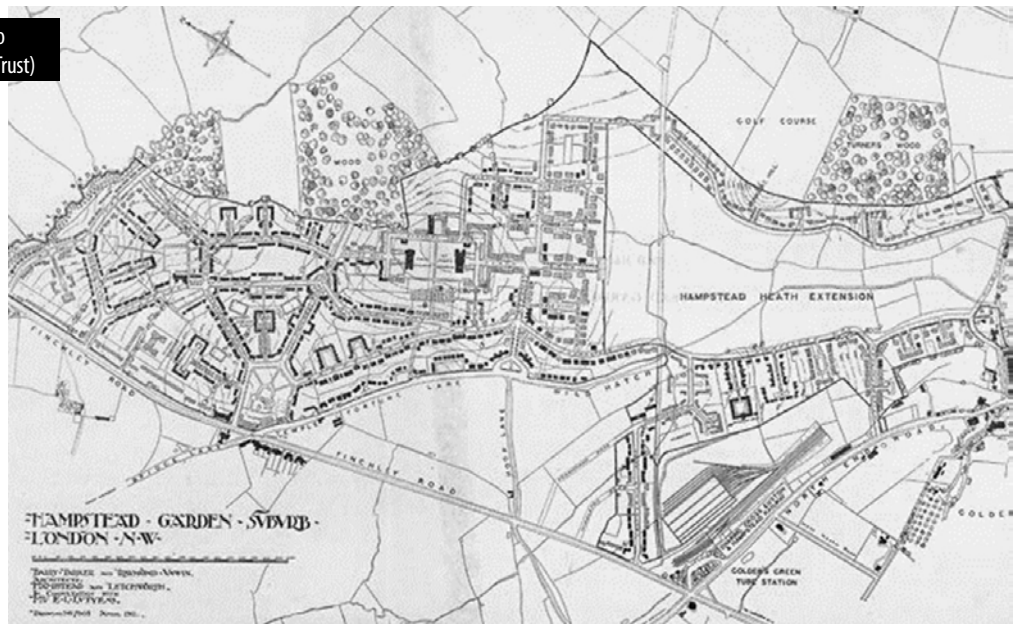
V zgodnjih letih gradnje zdravilišč in sanatorijev je bilo edino znano »zdravilo« za tuberkulozo popoln počitek v okolju s čistim zrakom in soncem. Kompleksi zdravilišč so se skozi stoletja postopoma širili in v povezavi z njihovim vaškim okolišem, kjer so se nahajala tudi stanovanja za zaposlene v zdraviliščih, so skupaj tvorili zdraviliška mesta. Ta danes veljajo za prve primere urbanističnega načrtovanja, kjer je bilo zagotavljanje zdravega okolja in spoštovanju načel urbane klimatologije stvar prioritete. Njihova posebnost je sicer izrazita gospodarska monofunkcionalnost in večinoma strogo sezonski ritem, saj je delo in življenje v takšnem kraju neposredno odvisno od zdraviliškega turizma, kar je takšna mesta in kraje razlikovalo od ostalih.

Zamisel o mreži izoliranih zdravilišč ali sanatorijev se je kasneje povezala z idejo vrtnega. Gostota prebivalstva in drugi statistični ali merljivi kazalniki, so v političnih odločitvah o prostoru postali pomembnejši od regionalnih karakteristik ali dostopnosti določenih zemljišč (Eylers, 2014). To je državi omogočilo, da je oblikovala povezano več-središčno, institucionalno mrežo upravnih enot in stabilizacijo svoje moči tudi na podeželju, kar je bilo ključnega pomena za kasnejši prostorski razvoj (ibid.). Izgradnja sanatorijev je ljudem pomenila poskus pobega iz obremenjenega industrijskega mesta v naravo in zdraviliški urbanizem je vzpostavil novo definicijo odnosa med mestom in regijo. Pomanjkljivosti industrijskega mesta so bile očitne.

2.4 Obdobje modernizma

Vzporedno s sanitarno revolucijo in velikimi prenovami mest, se razvijejo številni drugi urbanistični nazori. Kulturnistični model, katerega predstavnik je bil tudi Camillio Sitte, je v ospredje postavi tradicionalne poglede na likovno oblikovanje mestnih prostorov (Carriou in Rataouis, 2014). Mesto in krajino v model vrtnega decentraliziranega mesta poveže Frederic Law Olmsted, eden izmed najbolj vidnih predstavnikov naturalističnega modela. Proti koncu 19. stoletja se razvijejo teorije vrtnega mesta, razseljenega in regionalnega mesta, v obliki mrežastega ali trakastega-linearnega razvoja. Urbanističnim teoretikom, kot so bili Olmsted, Raymond Unwin, Leon Krier ali Franck Lloyd Wirght, je bilo veliko idej skupnih. Iskali so nove alternativne modele načrtovanja mest s primerno gostoto gradnje in gostoto prebivalstva, z zagotavljanjem mešane rabe in do-

Slika 4: Raymond Unwin - načrt za sosenko Hampsted Garden v Londonu, 1911. (HgsTrust)



stopa do javnih storitev, delovnih mest in zelenih površin ter urejenega prometa na nivoju širših urbanih aglomeracij ali celo regije. Eden izmed takšnih urbanističnih načrtov je Unwinov načrt za sosenko Hampsted Garden v Londonu (Slika 4). Sociolog in biolog Patrick Geddes v delu »Cities In Evolution, 1915« razvije pojem konurbanosti, ki obsega policentrično strukturo, se sestavlja iz številnih metropol in mest (Geddes, 1915).

Z začetkom 20. stoletja so se v uporabo ponovno vrnila urbanistične teorije, ki so v ospredje postavljale inženirske tehnološke rešitve, čemur pravimo tehnološki model mesta. Izum avtomobila in gradnja cestne mreže je postavila povsem nova vprašanja o prometu v mestih, ki so zahtevala nov razmislek o njihovi gradnji. V Združenih državah Amerike so z popularizacijo avtomobilov predmestne suburbane soseske doživele razcvet, kar je vodilo v razgradnjo mestnih središč. Razvila se je teorija modernega industrijskega mesta in funkcionalističnega mesta. Arhitekt in urbanistični načrtovalec Tony Garnier si je zamislil utopično samoupravno družbo v industrijskem mestu. To je osnovano na funkcionalni delitvi dejavnosti na 4 cone; bivanje, delo, zdravje in zabava (Wiebenson, 1960). Izpostavljal je načela, kot so funkcionalnost, prostornost, zelenje in osončenost, kar so za svoje vzeli nasledniki ideje funkcionalizma. Z nastopom avtorjev, kot so Le Corbusier, Karl Moser in Hendrik Berlage, se okrog leta 1928 začne obdobje moderne, ki ga poganjajo kongresi CIAM (Congrès internationaux d'architecture moderne). Združevali so ustvarjalne discipline arhitekture, urbanizma, krajinskega načrtovanja, industrijskega načrtovanja in številne druge, kjer so avtorji skupaj razvijali nove ideje funkcionalizma (Giedion, 1955). David Harvey je opredelil takrat nasprotnoče si tradicionalne ideje mestnega načrtovanja. Na eni strani načelo zaprtih ulic ter na drugi razvejane mreže širokih prometnih cest – avtorji obeh usmeritev so trdili, da imata svoje prednosti za zdravje, zaradi prezračevanja in higijene zraka (Harvey 1989).

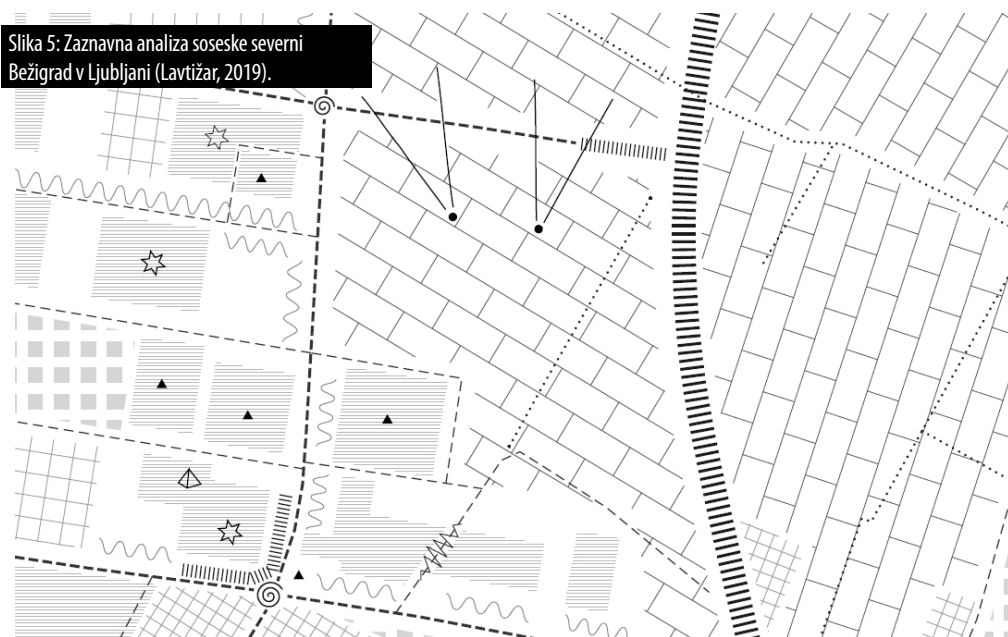
V arhitekturi in oblikovanju se je funkcionalizem razvil v industrijske stile, kot je Bauhaus - primer arhitekta Walterja

Gropiusa. Uveljavilo se je Courbusijejevo načelo »hiša je stroj za bivanje«, ki je bivanjska vprašanja reševala z uporabo mehanskih-tehnoloških rešitev (Stralen, 2015). Vrtno mesto se dvigne v vertikalno mesto, ki ga opredeljuje visoka gradnja, ločena od cestne mreže, stran od hrupa in onesnaženja. Opredelijo se odmiki med stavbami, določi se oprema servisnih prostorov in uveljavijo se standardi velikosti ter osončenosti stanovanj. Tako se nekoliko izboljšajo klimatski pogoji v bivanjskih prostorih, vendar za visoko ceno. Posledično se poveča število nadstropji in javni prostor v pritličju zasedejo avtomobili na cestah in parkiriščih, ki se v mestu pomnožijo. S to korenito spremembo v načrtovanju mest zamre tudi tradicionalen koncept mestne ulice.

2.5 Post moderno mesto

Kritiki funkcionalizma se po 2. svetovni vojni začnejo organizirano sestajati. Leta 1953 se izoblikuje skupina »Team 10«, ki je oporekala urbanistični doktrini gibanja CIAM (Martin, 2007). Za razliko od prizadevanj skupine CIAM za nizko gostoto v mestih, kjer so stavbe široko narazen in je med njimi prostor za svetlobo in kroženje zraka, so v skupini Team 10 poudarjali ravno nasprotno – poudarek je na grozdih, zgoščevanju in pešcem prijaznemu okolju, ki ima prostorske in socialne kvalitete historičnih mest (Mumford, 2018). Kasneje se kritikom pridružijo še drugi, ki imajo tudi drugačne poglede na stroko. Funkcionalnost matematičnega reda se umakne potrebi po upoštevanju merilu človeka, humanizmu, spoštovanju narave in kulture. Kritiki v letih 1965-1985 začenejajo novo obdobje post-modernega mesta. Kevin Lynch, Jane Jacobs, Robert Krier, in drugi, vsak s svojimi teorijami o kakovostnih mestnih prostorih postopoma rušijo gibanje funkcionalizma. Pojavijo se ideje metabolizma ali presnove mesta, zgodovinskega mesta, analognega mesta, tehnopije, javne participacije, behaviorizma v urbanizmu, v katerih se ideje urbanistične klimatologije nekoliko umaknejo drugim. V novem obdobju postmodernizma se avtorji z javnim zdravjem tako ne ukvarjajo več v enaki meri (ibid.). Skrb za svetle in zračne

Slika 5: Zaznavna analiza soseske severni Bežigrad v Ljubljani (Lavtižar, 2019).



javne prostore zamenja skrb za identiteto, slikovitost in duh prostora, skozi prostorsko doživljanje prebivalcev mesta. Nova paradigma raziskovanja doživljanja mest je danes tako razširjena, da se analiza prostorske zaznavne (Slika 5) v različnih oblikah pojavi že v skoraj vsakem procesu snovanja arhitekturnega ali urbanističnega projekta.

Na področju klimatologije se v istem obdobju zanimivo pojavi istoimenska ideja urbanega metabolizma. Velja omeniti, da definicija urbanega metabolizma z arhitekturnim gibanjem nima neposredne povezave. Kenzo Tange, Kiyonori Kikutake in preostali, so sledili biološkemu procesu narave, pri katerih je bistvena izmenjava materialov in energije med organizmi in zunanjim svetom (Lin, 2010). V arhitekturnem pomenu stavba raste ali se manjša, njeni deli pa se ves čas zamenjujejo. Douglas (1983) odpira širšo opredelitev metabolizma v kontekstu mesta in trdi, da mesto predstavlja odprti sistem živih bitij, ki vzajemno bivajo v fizičnem okolju. Odprto v smislu, da se energija in masa v prostor mesta stekata in iztekata iz njega, življenje pa tako ne more obstajati brez okoljske podpore izven sistema. V mesto ves čas prihajajo hranila, voda, surovi materiali, energija, plin itd.. Iz njega izhajajo izdelki, onesnažena voda, trdi odpadki, nastajajo zračna onesnaževala, toplogredni plini, odvečna toplota in novi zračni tokovi. Svež zrak, ki pritaka v mesto pridobi nove primese in mestno ozračje, se spremeni (Christen, 2014; Kennedy, et al., 2011). Zunanjo materijo urbani sistem presnavlja, čemur lahko pravimo urbani metabolizem, v kolikor na mesto gledamo kot okoljski oziroma krajinski element.

Pogled na zdravje se v tistem času preobrne. Leta 1947 Svetovna zdravstvena organizacija opiše zdravje kot vsoto fizičnega, duševnega in družbenega dobrega počutja – ne le kot stanje odsotnosti bolezni. Leta 1993 poteka v Chicagu kongres »New urbanism« (Wear, 2016), kjer avtorji gibanje tudi uradno poimenujejo. Ustanovitelji sledijo idejam arhitektov in avtorjev druge polovice 20. stoletja, kot sta Aldo Rossi in Léon Krier. Spodbujajo okolju prijazno mestno življenje z ustvarjanjem prehodnih sosesk za pešce, ki zagotavljajo dostopna stanovanja in delovna mesta

v okolju mešane rabe. Gre za antitezo takrat že tradicionalnemu avto-centričnemu načrtovanju mest, ki se je uveljavilo zlasti na zahodu. Arhitekti tega gibanja so si delili pogled na mesta kot žive organizme, ki se lahko prilagajajo in razvijajo v obdobjih hitre rasti ali se krčijo, ter vseskozi spreminjajo glede na način življenja ljudi. Zavzemajo se za podporo regionalnemu načrtovanju prostora, spoštovanju konteksta, uravnavanju gostote, mešani rabi ter zagotavljanju družbene infrastrukture, kot so zdravstveni in športni objekti, knjižnice in domovi

za ostarele. Na področju javnega zdravja je bilo v tem obdobju bistveno spoznanje, da ljudje ne moremo nadzorovati vseh patogenov v okolju – to je privedlo k prizadevanjem za imunizacijo gostitelja (človeka) s cepljenjem. Tako je lahko okolje obstajalo nespremenjeno (Duhl in Sanchez, 2010). Skozi pregled razvoja javnega zdravja v 20. stoletju lahko ugotovimo, da so prizadevanja za uveljavljanje sanitarnih predpisov in zagotavljanje čistega okolja v mestih, zaradi novih tehnologij v zdravstvu, kot je javna imunizacija, nekoliko popustila.

2.6 Trajnostni urbanizem

Devetdeseta leta prinesejo ekonomsko in okoljsko krizo in z njo nove družbene spremembe. V ospredje preide potreba po novem naravnem ravnovesju med družbo, okoljem in gospodarstvom, saj se urbanistično načrtovanje sreča z verjetno največjim izzivom v zgodovini – spopadanjem s klimatskimi spremembami. Poleg okoljske trajnosti je bilo za spopadanje z gospodarsko in družbeno krizo v mestih potrebno sestaviti tudi družbeno vzdržnost, solidarnost ter socialno odgovornost. Novim dognanjem v znanosti na področju urbane in splošne klimatologije sledi obdobje trajnostnega mesta. Političarka Gro Harlem Brundtland leta 1987 v Združenih narodih izda poročilo, ki je odgovarjalo na konflikt med svetovno gospodarsko rastjo in pospešeno okoljsko degradacijo, ki jo je ta povzročala. Odporen sistem življenja naj bi dosegli s prestrukturiranjem gospodarskega razvoja v smer »trajnostnega razvoja«. Na ta način se oblikuje široka definicija trajnosti (Keeble, 1988; Imperatives, 1987).

»Urbane skupnosti so neposredno izpostavljene vplivom podnebnih sprememb, zato je potrebno mesta pripraviti na spremenjeni svet... podnebne spremembe bodo preizkušale odpornost mest in sposobnost urbanega in regionalnega načrtovanje na prilaganje v takšen obsegu, ki dosedaj še ni bil viden.« (Wheeler, 2011)

V modelu trajnostnega urbanističnega načrtovanja vnovič postane javno zdravje ena izmed prioritet, poleg skrbi za blaginjo in čisto okolje. Kasneje, leta 1992, so Združeni

narodi ustanovili komisijo za trajnostni razvoj in nadzor napredka pri uresničevanju ciljev iz Agende 21 – sklenega dokumenta konference OZN o okolju in razvoju. Ti premiki so bili ključni za razumevanje kolektivnega učinka mest na svetovno klimo ter povod, da se je v urbanistično načrtovanje preneslo kriterije za doseganje trajnostnega razvoja. Svetovna velemesta, mesta in predmestja so namreč neposredno odgovorna za več kot 60% emisij toplogrednih plinov (Maldonado, 2009). »Medtem ko so bile začetne razprave o podnebni politiki v EU razmeroma šibke na začetku enaindvajsetega stoletja, je bilo planiranje na podnebne spremembe predmet široke razprave med oblikovalci politik in načrtovalcev skoraj vsakega večjega mesta sveta« (Watts 2017). Po desetletjih močne cepilne kampanje, so strokovnjaki za javno zdravje ugotovili, da so za javno zdravje poleg infekcijskih bolezni pomembni tudi povzročitelji obolenj – fizikalni povzročitelji nesreč, onesnaženo okolje in socialni dejavniki. »Pri številnih vprašanjih javnega zdravja je potrebno za rešitev veje problema rešiti več manjših. To načelo pravi, da bi moralo področje javnega zdravja iskati tudi alternative tradicionalni imunizaciji - od tod nova paradigma javnega zdravja.« (Duhl in Sanchez, 2010). Proti koncu 20. stoletja se je ob boku okolju prijaznega in trajnostnega načrtovanja že oblikovala teorija in smer, ki popolnega klimatskega udobja ni več postavljala za prvobiten cilj. Takšen pristop arhitekture je učila Sydneyjska šola arhitekture. Zagovarjala je uporabo lokalnih, neobdelanih materialov ter avtohtonih vrst vegetacije (Lavtižar, 2020). To je nakazalo prvi odmik od popolnega strojniškega reševanja klime in vrnitev k tradicionalnim načinom klimatskega načrtovanja.

Do začetka 21. stoletja so se strategije neoliberalne rasti in načela trajnostnega urbanega razvoja zblížala v sklop političnih pobud, ki so v Severni Ameriki in večjem delu Evrope opredelile obdobje trajnostnega urbanizma za uravnotežene gospodarskih in okoljskih vprašanj (While et al. 2004). Nova razmišljanja o urbanizmu skozi trajnostno načrtovanje so privedle do ponovne uporabe starih tehnologij in razvoja novih. Razvije se proaktivni princip v načrtovanju mest, z integriranim infrastrukturnim sistemom lokalne proizvodnje in kogeneracije energije, zbiranja odpadkov, daljinskega omrežja gretja in hlajenja. Na področju prometa se vračajo oblike linijskega javnega transporta, kot so mestne železnice in tramvaji z uporabo električne energije, spodbuja se kolesarjenje in hoja. Urbanistične smernice naj bi zagotavljala območja z ustrezno gostoto mešane rabe, ki so inkluzivna in dostopna za vse vrste uporabnikov. Mehanizmi za doseganje teh ciljev so v veliki večini posledica političnih odločitev in finančnih spodbud. Skupno vodijo v izboljšanje kakovosti bivalnega okolja, manjše izpuste onesnaževal in čistejše okolje ter posledično v doseganje ciljev urbane klimatologije. Uveljavi se novo razmišljanje o mestu kot odprtem ekosistemu.

V 21. stoletju razvojem informacijskih tehnologij urbanistične teorije preidejo k razvoju idej »smart city«. V modelu pametnega mesta se zbirajo podatki različnih vrst senzorjev v mestu, ki se uporabljajo za učinkovito upravljanje nepremičnin, virov in storitev in posledično za izboljšanje dela in bivanja v mestu (McLaren et al., 2015). Eden izmed takšnih sistemov je tudi pametni sistem prezračevanja stavb, ki se odziva glede na mikroklimat-

ske pogoje v okolici. Danes se področje trajnostnega urbanističnega načrtovanja z uporabo urbane klimatologije še razvija. Raziskave klimatologije v povezavi z urbanističnim oblikovanjem in načrtovanjem so še v povojih (Brazel and Quatrocchi, 2005), pri čemer najbolj pripomore razvoj meteorološke znanosti in napredek v procesorskih zmogljivostih sodobnih računalnikov. Senzorji, ki zajemajo in prenašajo podatke, znižujejo stroške meteorološkega opazovanja. Več-operativni računalniški modeli, povezani z geografskimi informacijskimi sistemi in tridimenzionalnim modeliranjem urbane oblike olajšajo kartiranje klime z visoko ločljivostjo (Hebbert in Mackillop, 2013).

3. ZAKLJUČEK

V prejšnjih poglavjih omenjeni koncepti in teoretične usmeritve za urbanistično načrtovanje so osnova za razumevanje prepletanja urbane klimatologije, javnega zdravja ter urbanizma. Združuje jih dejstvo, da ima fizično in socialno okolje neizpodbitno vlogo na zdravje ljudi.

Prvo načrtovanje zdravih mest je zaživelo sredi 19. stoletja. Z razumevanjem škodljivega učinka prenaseljenih in umazanih mest na razvoj mesta in gospodarstva je zaživela tudi ideja, da sta urbanizem in zdravje področji, ki sta neposredno povezani. Prehod iz industrijskega v post-industrijsko mesto je zaznamovalo prvi in največji premik v smeri načrtovanja čistejših mest. Zavzemanje za čistejše in okolje in zrak je obsegalo discipline medicine, arhitekture in urbanizma ter spremembe družbenega življenja, kar je gnalo pomembne politične premike. Na primeru gradnje novih sanatorijev in osnovnih šol v prvi polovici 20. stoletja so bile smernice na podlagi urbane klimatologije najbolj izrazite. Urbanistične teorije so se presnavljale in nadgrajevale, vendar se ni nobena uveljavila do te mere, da bi zasenčila druge. Teorija odprtih, zračnih in zdravih prostorov je bila denimo v času industrijskega mesta nekoliko pozabljena, vendar v posameznih zgodovinskih obdobjih ni nikoli povsem zamrla. V naslednjih desetletjih in proti koncu 20. stoletja je zopet zaživela in prešla v splošno uporabo. S tehnološkim napredkom se je urbanistično načrtovanje razvilo do te stopnje, da se lahko v načrtovanju mest klimatološke in trajnostne vidike sočasno preizkuša že v fazi načrtovanja, kot je denimo preučevanje prizadetosti mesta zaradi pojavnega mestnega toplotnega otoka. Z razpoložljivostjo tehnoloških orodij se povečuje tudi odgovornost obeh poklicev in strok do družbe, da se nove teorije javnega zdravja in urbane klimatologije tudi preizkusijo. V kolikor so uspešne, naj se tudi udejanjijo v praksi.

Skozi pregled zgodovinskih primerov urbanističnih načrtov in razvoja urbanistične teorije skozi zgodovino lahko ugotovimo, da so se nove ideje vseskozi ponavljale, nekatere so se opuščale, večino njih pa se je, tako kot mesta, presnavljalo, nadgrajevalo in vedno znova oživljalo.

LITERATURA IN VIRI

- AEC architecture of early adulthood (2011). OPEN-AIR SCHOOLS IN EUROPE. Pridobljeno 28.7.2021, na: <http://www.architectureofearlychildhood.com/2011/05/open-air-schools-in-europe.html>
- Anderson, D. (2010). Humanizing the hospital: design lessons from a Finnish sanatorium. *Cmaj*, 182(11), E535-E537. <https://doi.org/10.1503/cmaj.090075>
- Galman, K. (1998). The 1848 Public Health Act and its relevance to improving public health in England now. *Bmj*, 317(7158). <https://doi.org/10.1136/bmj.317.7158.596>
- Carriou, C., & Ratouis, O. (2014). Is there a model for sustainable urban planning? Series: *The Renewed Relevance of Urban-Planning Models*, 1-7.

- Chadwick E. (1965). Report on the sanitary condition of the labouring population of Great Britain 1842. Edinburgh: Edinburgh University Press. <https://doi.org/10.1093/owc/9780199554652.003.0058>
- Châtelet, A. M. (2008). A breath of fresh air: Open-air schools in Europe. *Designing modern childhoods: History, space, and the material culture of children*. <https://doi.org/10.1080/14733280802631013>
- Christen, A., 2014: Atmospheric measurement techniques to quantify greenhouse gas emissions from cities. *Urban Climate*, 10, 241–260. <https://doi.org/10.1016/j.uclim.2014.04.006>
- Cicak, T., & Tynan, N. (2015). Mapping London's water companies and cholera deaths. *The London Journal*, 40(1). <https://doi.org/10.1179/0305803414Z.00000000057>
- Condrau, F. (2000). Lungenheilstalt und Patientenschicksal: Sozialgeschichte der Tuberkulose in Deutschland und England im späten 19. und frühen 20. Jahrhundert 137(1). Vandenhoeck & Ruprecht. <https://doi.org/10.13109/9783666357015.37>
- Corbett, S. J. (2007). Channelling Edwin Chadwick: beyond utopian thinking in urban planning policy and health. *New South Wales public health bulletin*, 18(10). <https://doi.org/10.1071/nb07095>
- Crook L. (2019). Hopkins' Portcullis House demonstrated that high-tech could be adapted to historic settings. Pridobljeno 8.4.2021, na: <https://www.dezeen.com/2019/12/05/michael-patty-hopkins-portcullis-house-high-tech-architecture/>
- Cruickshank, M. (1977). „The Open-Air School Movement in English Education“. *Paedagogica Historica* 17. <https://doi.org/10.1080/0030923770170105>
- Douglas, I., (1983). *The Urban Environment*. Edward Arnold, London.
- Duhl, L. J., Sanchez, A. K., & World Health Organization. (1999). *Healthy cities and the city planning process: a background document on links between health and urban planning* (No. EUR/ICP/CHDV 03 04 03). Copenhagen: WHO Regional Office for Europe. <https://doi.org/10.4337/9781781955727.00009>
- Eylers, E. (2014). Planning the nation: the sanatorium movement in Germany. *The Journal of Architecture*, 19(5), 667–692. <https://doi.org/10.1080/13602365.2014.966587>
- Flanders, J. (2015). *Victorian City: Everyday Life in Dickens' London*. Atlantic Books.
- Frachon M. & Bellot, M. (2020). The Outdoor School: A Revolution. *Suresnes Mag No. 315*. Pridobljeno 3.5.2021, na: <https://suresnes-mag.fr/decouvrir/histoires-suresnoises/lecole-de-plein-air-une-revolution/>
- Geddes, P. (1915). *Cities in evolution: an introduction to the town planning movement and to the study of civics*. London, Williams. <https://doi.org/10.2307/1779702>
- Giedion, S. (1955). *Walter Gropius: work and teamwork*. <https://doi.org/10.2307/1425872>
- Hardy, A. (1984). Water and the search for public health in London in the eighteenth and nineteenth centuries. *Medical history*, 28(3), 250–282. <https://doi.org/10.1017/s0025727300035936>
- Harvey, D. (1989). *The condition of postmodernity*. Blackwell, Oxford.
- Hebbert, M., & Mackillop, F. (2013). Urban climatology applied to urban planning: a postwar knowledge circulation failure. *International Journal of Urban and Regional Research*. <https://doi.org/10.1111/1468-2427.12046>
- HgsTrust. Raymond Unwin's map 1911. Pridobljeno 5.5.2021, na: <https://www.hgsttrust.org/the-suburb/maps.shtml>
- Imperatives, S. (1987). Report of the World Commission on Environment and Development: *Our common future*. 10, 1–300.
- Jeffries, N. (2006). The Metropolis Local Management Act and the archaeology of sanitary reform in the London Borough of Lambeth 1856–86. *Post-Medieval Archaeology*, 40(2), 272–290. <https://doi.org/10.1179/174581306x143115>
- Keeble, B. R. (1988). The Brundtland report: 'Our common future'. *Medicine and war*, 4(1), 17–25. <https://doi.org/10.1080/07488008808408783>
- Kennedy, C., Pincetl, S., & Bunje, P. (2011). The study of urban metabolism and its applications to urban planning and design. *Environmental pollution*, 159(8–9), 1965–1973. <https://doi.org/10.1016/j.envpol.2012.04.012>
- Last, J. M. (2007). A dictionary of public health. Oxford University Press, USA. <https://doi.org/10.1093/acref/9780191844386.001.0001>
- Lavtižar, K. (2019). Uporaba vetrnih modelov pri modeliranju zazidave na primeru soseske Novi Bežigrad v Ljubljani : magistrsko delo. [K. Lavtižar].
- Lavtižar, K.; Čerpes, I. (2015). John Nash - Regent Street: mestna prenova s kraljevo pomočjo = John Nash - Regent Street: urban renewal with royal support. *Igra ustvarjalnosti/Creativity Game*, (3). <https://doi.org/10.15292/iu-cg.2015.03.068-076>
- Lavtižar K., (2020). Temelji in tehnologije naravnega prezračevanja stavb. *Igra ustvarjalnosti/Creativity Game*, (8). <https://doi.org/10.15292/iu-cg.2020.08.020-027>
- Lowry, W.P., 1988: Atmospheric Ecology for Designers and Planners, Peavine Publications, McMinnville, Oregon.
- LeGates, R. T., & Stout, F. (Eds.). (2015). *The city reader*. Routledge. <https://doi.org/10.1177/0739456x9000900207>
- Lynch, K., & Lynch, K. R. (1960). *The image of the city (Vol. 11)*. MIT press.
- Lin, Z. (2010). *Kenzo Tange and the Metabolist movement: urban utopias of modern Japan*. Routledge.
- Nacionalni inštitut za javno zdravje (2017). Letno poročilo Nacionalnega inštituta za javno zdravje (2016). Pridobljeno 13.9.2021 na strani: https://www.nijz.si/sites/www.nijz.si/files/uploaded/letno_porocilo_2016.pdf
- Maldonado, J. M. (2009). Cities and pollution. *Revista de Ingeniería*, (30), 66–71.
- Martin, L. (2007). Team 10, 1953–1981: In Search of a Utopia of the Present.
- McLaren, Duncan; Agyeman, Julian (2015). *Sharing Cities: A Case for Truly Smart and Sustainable Cities*. MIT Press.
- Ministrstvo za zdravje (2013). Strategija razvoja dejavnosti javnega zdravja 2013–2023, Ministrstvo za zdravje Republike Slovenije, Ljubljana. Pridobljeno 2.9.2021 na strani: http://www.mz.gov.si/fileadmin/mz.gov.si/pageuploads/javno_zdravje_2013/-javna_obravnavna.pdf
- Molero-Mesa, J. (2010). »The right not to suffer consumption«: Health, welfare charity, and the working class in Spain during the restoration period. In *Tuberculosis Then and Now: Perspectives on the History of an Infectious Disease* (pp. 171–188).
- Mumford, E. (2018). *Designing the modern city: Urbanism since 1850*. Yale University Press. <https://doi.org/10.37862/aaportal.00037>
- Oke, T. R., Mills, G., Christen, A., & Voogt, J. A. (2017). *Urban climates*. Cambridge University Press. <https://doi.org/10.22201/ffyl.26832275e.2019.2.1091>
- Olsen, D.J., (1986). *The city as a work of art: London, Paris, Vienna*. New Haven, CT: Yale University.
- Pawlikowska-Piechotka, A., & Piechotka, M. (2014). Phenomenon of spa town as a health resort and leisure destination. *Architecture Civil Engineering Environment*, 7(2), 23–32.
- Peterson, J. A. (2018). The impact of sanitary reform upon American urban planning, 1840–1890 (pp. 13–39). Routledge. <https://doi.org/10.4324/9781351309967-2>
- Ringen, K. (1979). Edwin Chadwick, the market ideology, and sanitary reform: on the nature of the 19th-century public health movement. *International Journal of Health Services*, 9(1), 107–120. <https://doi.org/10.2190/lr4g-x2nk-9363-f1ec>
- Sajko, S. (2009). *Krajevna kulturna zgodovina Rogoške Slatine*. Doktorska disertacija, Univerza v Mariboru, Filozofska fakulteta.

- Snow J. (1855). On the mode of communication of cholera. London: John Churchill. Pridobljeno 8.9.2021 na strain: <https://archive.org/details/b28985266/page/n57/mode/2up>
- Slovenski šolski muzej (1999). Šolstvo na Slovenskem skozi stoletja do 1918 (II.) del. Ljubljana.
- Svetovna zdravstvena organizacija (1995). Constitution of the world health organization.
- Svetovna zdravstvena organizacija (2016). Ambient air pollution: A global assessment of exposure and burden of disease. Geneva: World Health Organization.
- Svetovna zdravstvena organizacija (2020). Hygiene overview. Pridobljeno 2.6.2021 na strani: <https://www.afro.who.int/health-topics/hygiene>
- Stralen, M.v. (2015). »The machine for living in the conversational age«. *Kybernetes, Vol. 44* (8/9), pp. 1388-1396. <https://doi.org/10.1108/K-11-2014-0241>
- Watts, M. (2017). Cities spearhead climate action. *Nature Climate Change, 7*(8), 537. <https://doi.org/10.1038/nclimate3358>
- Wear, A. (2016). Planning, funding and delivering social infrastructure in Australia's outer suburban growth areas. *Urban policy and research, 34*(3), 284-297. <https://doi.org/10.1080/08111146.2015.1099523>
- While, A., Jonas, A. E., & Gibbs, D. (2004). The environment and the entrepreneurial city: Searching for the urban 'sustainability fix' in Manchester and Leeds. *International Journal of Urban and Regional Research, 28*(3), 549-569. <https://doi.org/10.1111/j.0309-1317.2004.00535.x>
- Wiebenson, D. (1960). Utopian Aspects of Tony Garnier's Cité Industrielle. *Journal of the Society of Architectural Historians, 19*(1), 16-24. <https://doi.org/10.2307/987962>
- Wood, F. D. (2004). Oxford dictionary of national biography. Oxford University Press. <https://doi.org/10.1093/ref:odnb/91810>
- Worpole, K. (2000). Here comes the sun: architecture and public space in twentieth-century European culture. Reaktion Books. <https://doi.org/10.1016/j.puhe.2008.01.001>
- Zaletel, K. L., Eržen, I. & Kukec, A., (2016). Zdravje in okolje študijsko gradivo za EMŠ medicina. Ljubljana (Mestna občina Ljubljana): Katedra za javno zdravje Medicinske fakultete.
- Zieher, O. (1902). Gruss aus Bad Rohitsch-Sauerbrunn - zdraviliški park. Pridobljeno 22.4.2021, na: <https://www.kamra.si/mm-elementi/item/gruss-aus-bad-rohitsch-sauerbrunn.html>

Aleksander Vujović: PRIMERJAVA URESNIČITVE JAVNEGA INTERESA V PROSTORU NA PRIMERIH OBMOČIJ KOLIZEJA V LJUBLJANI IN KINO KOMPLEKSA CINEPLEXX PALACE NA DUNAJU

COMPARISON OF FULFILLMENT OF PUBLIC INTEREST IN AN URBAN SPACE WITH THE EXAMPLES OF KOLIZEJ IN LJUBLJANA AND CINEPLEXX PALACE COMPLEX IN VIENNA

DOI: <https://doi.org/10.15292/IU-CG.2021.09.034-047> ■ UDK: 711.432:332.2 ■ SUBMITTED: September 2021 / REVISED: October 2021 / PUBLISHED: November 2021



1.02. Pregledni znanstveni članek / Review Scientific Article

UVODNIK
EDITORIAL
ČLANEK
ARTICLE

POVZETEK

Praksa nam razkriva vedno močnejši investitorski pritisk na pomembne mestne lokacije. Zanimalo nas je, kakšen je izkoristek uresničitve javnega interesa v takšnih primerih. Za to raziskavo smo izbrali metodo primerjave primerov praks (case study method), opazovali pa smo primera dveh primerljivih pomembnih projektov v Ljubljani (območje nekdanjega Kolizeja – Schellenburg) in na Dunaju (območje nekdanjega kompleksa Cineplexx Palace – Danube Flats). Rezultati raziskave kažejo, da razvitost in predvidljivost slehernega sistema načrtovanja lahko vplivata na večjo uresničitve javnega interesa v urbanem prostoru. Omočata tudi, da se projekti lahko bolj konsistentno razvijajo. Pri tem je bistveno, da imata deležnika v pogajanju (mestna uprava in investitor) na voljo fleksibilne urbanistične instrumente, ki so predvsem namenjeni doseganju javnega interesa v prostoru. Tako bi se lahko bolje odgovorilo na specifičnost posameznih primerov in doseglo boljši rezultat, ki bo tako v zasebnem kot javnem interesu.

KLJUČNE BESEDE

javni interes, urbanizem, prostor, pogajanja, mesto, investitor

ABSTRACT

The practice shows growing investment pressure on important city locations. We wanted to know how effective was the fulfilment of public interest potential in two of such cases. For this study, we selected a case study method to compare two important projects: one in Ljubljana (the area of the former Kolizej – now Schellenburg), and one in Vienna (the area of the former Cineplexx Palace – now Danube Flats). The results of the survey show that the maturity and predictability of the planning system can have an impact on the greater fulfilment of the public interest in an urban space. Both characteristics allow projects to develop more consistently. In this respect, it is essential that the negotiating parties (the city administration and the investor) have flexible urban planning instruments, which are essentially aimed at securing spatial public interest. This enables a better response to the particularity of individual cases and to achieve a better outcome, that is at the same time in both the private and public interest.

KEY-WORDS

public interest, urbanism, space, negotiations, place, investor

1. INTRODUCTION

In 1938, the famous sociologist Louis Wirth gave some important definitions of a city. While defining a city, he also concluded that city dwellers are organised into a number of social groups based on their common interest. This organizing is based on a collective effort to use advantages and resources for the dweller's own benefits. At the same time, the great diversity allows for dwellers to belong to several different social groups, which means increased social mobility, anonymity and freedom of choice (Wirth, 1938). History therefore teaches us how the city, as an area of all-round densification, brings substantial benefits for both the individual and the community, but also poses a difficult challenge of reconciliation between different interests, which is reflected in the city space. As space in a city is a very limited and precious commodity, especially in dense urban formations, it is subjected to different visions and ambitions, which all stem from different interests. In modern societies, citizens elect municipal authorities, which organise various professional bodies to assess and reconcile different private interests, but above all they have to secure public interest in urban space on the grounds that are important to all city dwellers. We are here referring to the conflicting interests of different stakeholders, who gain or lose from certain city developments, if they did not align their mutual benefits beforehand. When planning major interventions in urban space, what the public often sees is only the role and capital of the investor. But the investor is not the only stakeholder in this process. There is the aforementioned elected (municipal) authority. Then there is the building and architectural profession, that through professional bodies and organisations, suggest to the municipality most appropriate solutions. Last but not least, there is both the professional and the general public, which both have a constitutional right to participation and information. In addition to public hearings and submission of comments, the general public has other powerful instruments for voicing its opinion, such as a referendum on urban developments. As an important extension of the general public, the media can make an important contribution to informing, raising awareness or even promoting certain proposals. The coordinated consideration and participation of all stakeholders have the capacity to make significant contributions to solutions that maximise public interest in urban city space.

1.1. Public interest in urban space

Public interest is a concept that appears in many legal instruments of various different fields. It is defined as interest "that of the wider community and not just of the individual, and is identified and given substance in each specific case. Thus, the public interest, despite any additional conditions that may need to be taken into account when interpreting it, undoubtedly also has a value component, or, to be more practical, a political component" (Petek, 2019).

These modest definitions are not sufficient in practice, however, which is why city administrations in their work also pursue broader objectives that they define as being in the public interest, for instance through urban development in the city, through its economical "metabolism" and physical development.

If we want to analyze the notion of public interest, we must start with the notion of the common good, as known in philosophy since Plato. In his work *The Republic* he defines the best political order as the one that has "promoted social peace in an environment of cooperation and friendship among different

social groups, each benefiting from and adding to the common good." (Plato in Simm, 2011, p. 555). Marijana Vugrin, on the other hand, sums up that the right to property, "which we can no longer look at as an absolute and unlimited right to use and exploit a thing, cannot be pursued without reservation only in the private interest (Virant, 1996 in Vugrin, 2005, p. 417). In doing so, we must note that many real estate and consequently legal conflicts in Slovenia stem from the interpretation of the "inviolability" of private property (i. e. land, buildings, areas), which is still partially subordinate to the community interest - public interest.

Zakon o graditvi objektov (ZGO-1), The Construction Act, had recognized for our analysis a too narrow term of the "built common good", which had been divided by the Construction Act into the ones of national and local importance. The latter is defined as a "built common good, which belongs to a network of the public infrastructure of local importance and public surface on them, as well as buildings or parts of buildings whose use is intended for all under the same conditions, such as road, street, square, passage and other public transport surface of local importance, market, playground, parking lot, cemetery, park, green area, sports or recreational area and the like" (ZGO-1, Article 2). However, this concept does not fully address the public interest, especially not in areas that are outside the lands mentioned before and the facilities built on them, but are at the same time publicly accessible. Therefore it does not address the public interest on private land.

The public interest in space is therefore realized on several levels (strategic documents and laws at the state and municipal level, OPN, OPPN, DGD, etc.). At each level, there is a set of instruments that directly or indirectly address the public interest.

1.2. Theoretical and practical basis

The review of literature has led us to the conclusion that there are different development and legislative "families" when it comes to urban planning, which results in different practices between countries. Some of them are project-oriented (e.g. the English and American systems), based on well-established examples from the past, while plan-normative-oriented systems (e.g. the German and Austrian systems) are closer to the planning system in Slovenia.

For the purposes of this article we have chosen to focus on practice established in the city of Vienna. Among the relevant contributions, we would like to highlight Tarek Diebäcker's article *Städtebauliche Verträge und öffentliche Räume* (Urban development contracts and public spaces). This examines the effects of a specific instrument - the urban planning contract - on public space, using a comparative method for two projects in Vienna. In 2014, the City of Vienna made it possible to conclude special contracts between the City and landowners, which are known as urban planning contracts. The author notes that these treaties are heavily used in the field of public space. Based on two cases in the city of Vienna, it investigates on which levels of public interest in urban space between the city and a private party have been discussed and agreed upon. The author divides each project into several spatial segments and assesses each one according to six categories. Among other things, he also examines different degrees of the resulting publicly accessible space. Diebäcker's analysis of the cases of the Danube Flats residential tower block and the Continental Hotel on the Heumarkt shows that preservation of the public character and interest can in fact be ensured by such a contract. The article also notes the growing tendency towards privatisation of public space.

In this article we will therefore be interested in how and to what extent the public interest in urban space has been fulfilled through the (non-)use of urban planning instruments on two important locations in two cities: in Ljubljana and in Vienna. Because we observed extensive procedural and substantive development differences between comparable projects in Ljubljana and Vienna but with both on a comparable legislative basis, we decided to carry out a comparative analysis of the two cases and the urban planning instruments used.

2. METHOD

2.1. Explanation of the method

For the purpose of studying the topic, we have chosen the case study method. In this case, the comparisons of events, situations are not quantitative, but qualitative. We cannot influence the course of events, but compare how different courses of events have triggered different outcomes (Yin, 2003). In this way, we observe events not (only) with quantitative levers through which we would describe the events but also through the usage of qualitative descriptions, which help us detect mechanisms that have influenced the development of projects, but cannot be scientifically quantified. Because we are looking at two long-term projects, which are complex and take place over several years, this method is the most appropriate.

As Robert K. Yin explains in his book "Case Study Research: Design and Methods", the essential questions in the case study method are: how something happened and why, which is similar to the historical method, but with an important difference for us: "The strength of the comparative method lies in its ability to address the full spectrum of evidence - documents, artefacts, interviews, and observations" (Yin, 2003, p. 8). It is this diversity of observation, where, in addition to the research, we can also directly contact the individuals involved in the observed events, that allows us, in our case, to get a holistic picture of the development and unfolding of the processes.

We have therefore opted for the comparison method. We have established objective criteria, by which we mean categories, to compare the characteristics of the two projects. The criteria were determined in such a manner that the data obtained are comparable to each other and that the results obtained can contribute to a conclusion on the fulfilment of the spatial public interest of the area. The categories of the criteria are:

- Location,
- Project phasing (development of the project through phases),
- Change in gross floor area, building coverage ratio (BCR), value of floor space index (FSI) in both areas (before and after intervention),
- Investment and duration of the project development (from intention to construction),
- Urban planning instruments used.

When processing the data, we decided to describe each criterion, which contains a description of both cases in the context of each category with an accompanying comparison or comment.

2.2. Selection of cases

We have compared the case of the redevelopment of the former Kolizej building of Kolizej in Ljubljana and the former cinema complex Cineplexx Palace in the Viennese district Kaisermü-

hlen. The site selection criterion was a culturally comparable environment in Central Europe. Austria and Slovenia share a centuries-long history, which also includes similarly standardised spatial planning legislation. Schellenburg (on the Kolizej site) and Danube Flats (on the Cineplexx Palace site) are both distinctly urban projects. They are both extremely limited in space in comparison to the amount of space that is planned on their sites. They are, in a sense, on the edge of the city centre – Kolizej is on the edge of the district Centre, and in the context of a larger city, Danube Flats are only a stone's throw away from the city centre of the enclosed river island in the 22nd district of Kaisermühlen. In the context of each city, they are located next to a good transport infrastructure: Kolizej is at the intersection of important city thoroughfares (Celovška Street and Bleiweisova Street), while Danube Flats is at the intersection of a six-lane road (Donauuferautobahn and Wagramer Strasse). Both locations are directly adjacent to frequent lines of public transport and two stops away from an important urban node – in case of Kolizej, LPP stop Gosposvetska is nearby and two stops away is the LPP station Konzorcij, while Danube Flats is next to the U-Bahn station Reichsbrücke and only two stops away from Praterstern.

2.3. Data collection

We compared the data that was available and relevant for urban planning. Our research is based on two main corpora of sources: review of relevant literature (scientific and professional articles, media publications on the topic) and data collection through meetings and interviews (with institutions and investors).

In case of the area of former Kolizej, we have obtained the pictorial material and the expected gross floor area programme cut of the winning solution of the 2004 competition from the professional journal *Wettbewerbe aktuell*, published in 2005. For further evaluations of gross floor plans, we have relied on the conceptual designs of the competition's winning solution, which were published on *Trajekt.org* (Neutelings & Riedijk, 2004). As for other media coverage, we searched the websites of various media outlets for news and reports on the project. These sources helped us to obtain information on the history of Kolizej from its construction to its demolition, the timeline of all phases of the project from 2004 to 2021, and some specific estimates on the total gross floor plan, programme cut of gross floor plan and the height of the towers. There are, however, scarce mentions of the project on the website of Neutelings Riedijk Architects, architecture office behind the winning solution. Some more general information and images are archived on the Wayback machine website that archives web pages' content changes in timestamps, including the architects' webpage. For the material from the institutions, we obtained information from the Ljubljana Municipality decrees, published on their website (alongside with the information about the hearings of the proposals and amendments to the municipal detailed spatial plan for the area of Kolizej) and on the website of the *Uradni list Republike Slovenije*, Official Gazette of the Republic of Slovenia. At the time of the consultation on the proposal to amend municipal detailed spatial plan for the area of Kolizej in 2021, the latest decision of the Ministry of Culture was published (No. 3510-23/2020/4), which gives an insight into the current contractual agreement (on compensation for the unbuilt culture hall) and the one from 2009 (on compensation for the demolished monument under the condition of the construction of a large concert hall) (MOL, 2021). The INDOK archive at Municipality of Ljubljana's (MOL) Department of Urban Planning (DUP) holds some documen-

tation of conceptual projects from the 1980s and 1990s and from the 2004–2013 period. The latter consists of the promotional material after the competition, conceptual designs from 2007, 2009, 2010 done by Neutelings Riedijk Architecten, the expert basis for the OLN (a more detailed urban plan) for the part of the CO 2/16 development area of Kolizej (Krog, d. o. o., 2005), the conceptual design from 2013 (Hilmer Sattler Architekten) and the proposal for the municipal detailed spatial plan documentation from 2013 by the LUZ company (2014). The INDOK archive documentation provided most of the information on the project's layout in the individual phases and on the urban design parameters (gross floor plan, project programme, dimensions, etc.). On 7 September 2021, we asked the Ministry of Culture for a permission to inspect the agreement document from 2009. On 16 September 2021, the Ministry of Culture replied to us by forwarding us a document No. 3510-33/2008/25, the so-called "cultural heritage consent for the survey and removal of the heritage building" from 2009. Information about the latest current state of the project was found on the commercial website of the project Schellenburg, which conduct the sale of the apartments in new building. Through a phone call and an e-mail to Reitenburg Ltd., we obtained information on the gross and net floor area and the area dedicated to different uses (residential, commercial, etc.).

In the case of Vienna, the already mentioned article *Städtebauliche Verträge und öffentliche Räume* (written by Tarek Diebäcker) describes in detail the effect of the introduction of the urban planning instrument *Staetebauvertrag*, urban planning contract, in the city-state of Vienna. The article focuses on the impact of the contract and the maintenance of the "public" on a private land, which is set by the contract. The urban planning contract for this specific project is not publicly available, but some researchers and journalists can obtain access to it. This article describes the main public benefit measures of the project Danube Flats. The article on the website of the trade journal *Architektur aktuell* describes the historical arc of the process and provides some gross floor plan data. Media publications have given us an insight into the history of the process and the necessary gross floor data, but with slight contradiction between the data available in online articles by ORF and *Der Standard* by Martin Putschögl, the commercial website for the sale of the apartments in Danube Flats and the websites of the investors SORAVIA GmbH and S+B GmbH. The website A01 Architects provides the most comprehensive overview of the gross floor areas and dimensions of the project. These figures were taken as a basis for the assessment of other parameters (e.g. the aforementioned FSI and BCR). As far as the data about spatial plan and land use in the City of Vienna is concerned, we have obtained *Plandokument 8079* from the official city website, which features an explanation in text and graphic of the changes that have been implemented so far in the spatial plan for the small area of the district of *Kaisermühlen*: namely permitted uses of space, height dimensions, general traffic layout, layout of public areas, etc. The local Chamber of Architects (*Kammer der Architekten und Ingenieurkonsulten*) was the source of certain gross floor plan data. We contacted the commercial office of the Danube Flats and the office of A01 Architects via phone and e-mail for general information on the gross floor areas and the programme mix of the Danube Flats project. They refused to answer our questions by phone – the impression is that this is due to confidentiality business etiquette. We have never received an e-mail reply either.

3. THE RESULTS

3.1. The locations are comparable

As cities, Ljubljana and Vienna belong to different classes when it comes to the size. But regardless of this difference, two areas under consideration have quite a few similarities. Both sites are located on the edge of an important and demarcated space: Kolizej is situated on the edge of the wider city centre within the inner ring of the city. The area of the Ljubljana around Kolizej, at the intersection of *Gospodsvetska Street* and *Župančičeva Street*, has long been an urbanistic neuralgic point in the space of the wider city centre, while the *Cineplexx Palace* is located on the edge (along the waterfront) of Viennese district *Kaisermühlen*, which is surrounded by the new canal of the Danube (*Neue Donau*) and the old branch of the Danube (*Alte Donau*). The area is dominated by residential housing, recreational areas and the rapidly developing *Donau City*, an administrative and business centre with high-rise buildings. Any treatment of the area is controversial, or at least delicate, precisely because of the micro-location of the intervention. The project envisages a tall and varied building structure with a hybrid programmatic design that could easily fit into *Donau City*. Yet the site is located beyond the six-lane *Reichsbrücke*, on a side that is heavily dominated by residential development.

3.2. How both enterprises unfolded

3.2.1. The Kolizej to Schellenburg case (Ljubljana)

3.2.1.1. 1st phase: Potential for preserving heritage from demolition (1847–2011)

Businessman *Josef Benedikt Withalm* built a multi-purpose military accommodation building in Vienna and Graz, and in the years 1845–47 also in Ljubljana. The barracks were built on the outer edge of the town in a gravel pit (Kolizej, d. o. o., 2004). The building had 126 rooms for accommodation, pub, café, bakery and indoor riding arena. In 1851, an evangelical church was built next to the barracks (Dolničar, 2016) and eventually, the town eventually grew around the complex. The building was later used for housing and craftsmen. After World War II, the building was nationalized. Before its demolition, it had been in a very bad state for a long period of time, and was used only as emergency housing for more socially deprived residents. In 1993, the building of Kolizej was de-nationalized and declared a monument of local importance (Krajčinović, 2011). Then in 2003, the building was bought by the investor (DK, 2005). The old building of Kolizej was thus the last building of its kind in Slovenia from the time of the Austro-Hungarian monarchy, its purpose constantly adapting to the needs of a particular period.

The scenario of preserving the old building had the potential of renovation and/or adaptation with the same or new activity. This would preserve a relatively rare monument building and make it useful for a variety of modern programs. There could also be an intermediate solution, where the monument retains only the outside look, and inside a new spatial concept is implemented. However, this option was not realized either.

Examples of creative and quality modernization and renovation of architectural heritage from abroad (such as the renovation of the central market *Mercado de Santa Caterina* in Barcelona by the famous architect *Enrico Miralles*) show us, that we could make use of instruments, that would in close cooperation with the relevant institutions (The Institute for the Protection

of Cultural Heritage of Slovenia (ZVDKS), administrative units, Chamber for Architecture and Spatial Planning of Slovenia (ZAPS), etc.), enable a good architectural intervention and the modernization of the old Kolizej. In this way, essential spatial qualities could be preserved by monitoring the functional needs of modern times, and at the same time the project could be commercially interesting, so it would actually be profitable. Moreover, by negotiating within the instrument of an urban planning contract as known to ZUREP-1 or as it is known in Vienna (Städtebauliche Vertrag), the modernization of both the complex and its surroundings in the public interest could even be achieved. By this we mean the possible arrangement and opening of the city parterre on the ground floor, content hybridization with important programs for the city and increasing the accessibility of the previously fenced surroundings. The investor could perhaps be allowed to build up a denser and slightly higher part of the area outside the monument building parallel to the villa on Župančičeva Street.

In addition, the investor could additionally invest in public space outside the investment area, such as the modernization of the Slovenian Reformation Park, or in the sustainable mobility sector: multi-purpose (interchange) rearrangement of the nearby bilateral bus station Gosposvetska or slightly more distant Tivoli railway station.

By preserving the building, the more or less accordant memory of the activities that once took place in the complex could be preserved in various ways. On an urban scale, the density of construction for this area would remain reasonably high, and the city would retain one of the most coherent parts of the building fabric in this area.

3.2.1.2. 2nd phase: Novi Kolizej - The public interest in the 2004 architectural competition winning entry

However, a series of decisions has led to the intention to demolish the building and build a new one. This was partly a result of the opinion that a part of the construction profession had at a time. They believed that it was extremely difficult to rebuild the same building and meet the earthquake-resistant standards (according to MMC RTV SLO, 2008). The decision was also influenced by investor's expectation of large new areas (approx. 90,000 m² gross).

Since the decision to demolish the building has already been taken, the best way to deal with the development of the planned area is to have a clear urban planning base and then to launch competition as wide as possible. In 2004, an international competition, which was invite-only, was indeed launched, in which six renowned international architectural firms participated. However, due to the lack of consideration of boundary conditions and context for such an important area, and with that too loose initial constraints of the competition, most of the solutions obtained have rightly provoked disapproval from the professional and general public alike. This is the point at which the absence of proper use of the instruments essential for this step has made a key difference in reduction of the potential for realizing the public interest.

The winning solution by the Dutch firm Neutelings Riedijk stood out from its surroundings because the tallest part of the complex - the north-east tower - measured 96 m, which is much higher than the general anonymous fabric of the surroundings. Most notably it was higher than any of the nearby landmarks: the bell tower of the neighboring Evangelical Church, the tower of Hotel Lev, and the skyscraper Nebotičnik. However, the

proposal represented a rather diverse programming hybrid with a concert and performance hall for opera and classical music, which was called "new cultural heart of Ljubljana" (Kolizej d. o. o., 2004), retail space, commercial space, two multi-family villas for 32 flats and five underground floors (four garage floors) with underground access from Župančičeva Street and a connection for a later underground connection to the swimming pool Ilirija under Tivolska Street (Kolizej, d. o. o., 2004) (Kolizej, d. o. o., 2004). The total gross floor area of the competition proposal was expected to be 98,000 m² ("Novi Kolizej morda do leta 2012", 2007), which represents approximately 6.5 times the capacity of the old building. At the time, the investment was estimated at 120-150 million euros (Kladnik, 2004). The current smaller and different project being built in 2021 has been estimated at 90 million euros (Citylife, 2020).

This solution, selected through a competition, posed a strong challenge to the established spatial order, but at the same time it represented a proposal for a city-forming hybrid with diverse program that would be in service of the city, by providing additional capacities for the activities needed in the city.

At the same time, the design and scale of the proposal offered a relatively luxurious publicly accessible ground floor space on the site. In particular, we are referring to the plaza at the junction of the proposed complex and the existing former Workers' Home building.

The public interest potential of such a proposal can therefore be assessed as medium.

3.2.1.3. 3rd phase: The public interest in an adapted version of the winning solution in 2009

Negotiations followed, resulting in a series of amended proposals (e.g. in 2007, 2009 and 2010). Among these, the 2009 proposal stands out in terms of the detailed data and availability. Prior to that, in 2005, the investor requested the Municipality of Ljubljana to abolish of Kolizej's status of a monument of local importance (Mrevlje, 2019). Following the public response, in September 2005 the Ministry of Culture temporarily declared Kolizej a monument of national importance (MMC RTV SLO, 2005).

The solution from 2009 was characterized by a total gross floor area of approximately 96,000 m² (Neutelings Riedijk Architecten, 2009). The towers were lowered and levelled to 73.8 m, which is very close to the established maximum height of nearby exposed landmarks in the wider city centre. The central cube, the plinth, presented a concert and event complex with a "grand opera hotel". On the plinth, twin towers were envisaged with hotel suites and a glazed observation terrace (glass roof at 53 m). Space for the event setup with the auditorium was increased from 14,000 m² to 26,000 m², allowing different configurations depending on the type of concert (between 1,112 and 1,332 seats). The hotel service covered 20,500 m². The office and retail space was reduced to a total of 6,000 m². The previous setback of the complex from Gosposvetska Street, which created a small public plaza, is now fully occupied by the business and retail wing. The number of dwellings are both reduced: number of apartments has fallen from 32 to 11, or in terms of size from 8500 m² to 4500 m². Instead of two, there is a single correctly placed tower/vilablock (5 overground floors) with a common underground part of the "Opera Hotel".

Through the admittedly undefined instrument of direct negotiation which nonetheless ensured a better fit into the broader spatial context, the contemporary design and form of the envi-

saged building were preserved. More importantly, the diversity of the building's program has been preserved, including the enlarged music hall. We therefore consider that such a proposal has a relatively high public interest.

Nevertheless, it was still a complex that stood out from the general urban fabric in terms of volume and height. Despite the compromise, it remained so because of a series of earlier mistakes, which arose from the inappropriate use of existing instruments described above. But regardless of this, compensation instruments familiar from other contexts, such as the purchase or replacement of air rights (e.g. New York or Boston), could come in handy at this stage. Under this instrument, if there is already a permissible extreme increase in gross floor area or a deviation in terms of volume or height, this excess is charged or "neutralized" with an investment in the development of (not necessarily adjacent) public space or, for example, into a program of building non-profit housing. Such instruments also allow, and even encourage, compensation to take place in the treatment area itself, either in terms of additional publicly accessible space or in terms of a share of the space reserved for legal persons acting in the public interest.

But in line with our reality, an interesting sequence of steps has taken place on the official side. In 2008, the Municipality of Ljubljana abolished the status of a monument of local importance (Mrevlje, 2019). In August 2009, the Minister of Culture used the instrument of an agreement with the investor, which allowed the demolition of the monument under certain conditions and with compensatory measures (B., 2009). On 3 August 2009, the Ministry of Culture, by Decision No 3510-33/2008/25, allowed the investor to demolish the heritage building, but, according to the legislation in force at the time, orders it:

- to dedicate a central space to cultural activities in the new building to be constructed on the site of the removed heritage unit EŠD 379 Ljubljana - Palača Kolizej;
- to finance the preparation of project documentation for the monument ESD 5930 - Ljubljana - Cukrarna and finance the renovation of the roof of the same monument (Ministrstvo za kulturo, 2020, pp. 1-2).

On 10 August 2011, the demolition of the old building of Kolizej began (Sjol, 2011).

3. 2. 1. 4. 4th phase: project Schellenburg (2013–present)

In October 2012, a special commission of the Ministry of Education, Science, Culture and Sports decided that the project of the New Kolizej must respect the height restrictions that were in force in the spatial plans at that time, i.e. at 30 m. According to the opinion of the majority in the commission, a conservation plan should be a prerequisite for the preparation of the Municipal detailed spatial plan with the new permitted dimensions, as the project is located in the area of the Decree on the designation of monuments of natural and cultural heritage in the Ljubljana Centre area between Aškerčeva, Tivolska and Slovenska street (Jesenšek, 2012).

The Ministry justified the establishing of a special commission saying that: "The conservation plan for renovation is a relatively new instrument of urban planning in heritage areas, with which we do not yet have enough practical experience." They also remarked that: "the case of the Kolizej is certainly one of the most difficult and complex spatial challenges" (Jesenšek, 2012).

This was followed by a partial change of investor. City Coun-

cil of Municipality of Ljubljana adopts a different Municipal detailed spatial plan on 20 January 2014 (ODLOK o občinskem podrobnem prostorskem načrtu 106 – Kolizej, 2014), allowing a different type of development. Instead of a large, articulated volume and a tower, this time we are dealing with a lower, H-shaped courtyard city-block building with additional thickening of the lamella along Gosposvetska Street, and an inside atrium. On the south-western edge, the tower remains, but it is aligned with the villa along Župančičeva Street. Compared to the competition proposal of Phase 2, the new proposal offers much less public space at ground floor level, but more than in Phase 3 of 2009.

On 18 February 2020, the investor informed the Ministry of Culture that they will not be able to ensure the implementation of the compensatory measure – a central multi-purpose space (a concert hall) in the new facility. The Ministry of Culture therefore imposed an alternative compensatory measure on the investor of the new building, namely the payment of a sum of money equal to the value of the damage caused. The damage was imposed on the basis of the estimated value of the construction works and the associated costs for the fitting of multi-purpose hall and the ancillary spaces of 600 m² (Ministrstvo za kulturo, 2020, p. 2). The public hearing of the initiative for the amendment of the Municipal detailed spatial plan for area 106 (Kolizej) was held between 17 August and 1 September 2021 (MOL, 2021).

In our opinion, by using this instrument, the Ministry has decreased the realization of the public interest, since the real benefit in urban space (the multi-purpose hall) has been exchanged for a lump-sum penalty.

While the proposal for Phase 4 includes an appropriate densification of the urban block in the city centre, the project is dominated by luxury apartments with a small commercial and retail component. This has resulted the public interest being realized foremost in supporting the existing spatial order and the aforementioned densification of the area in question, which is located in the wider city centre, but with a much denser built-up area than at the time of the old building Kolizej: the difference in value of FSI before and after the intervention is almost three times. Nonetheless, filling the building gap left by the demolition of the old building is a positive development. The proposal is significantly depleted in terms of the program, as the measure eliminates one last amenity of interest to the general public – the multi-purpose hall, which has already been reduced in size compared to the first proposal.

From a spatial planning viewpoint the last phase of the redevelopment of the Kolizej area in comparison to other phases seems to have the least potential for public interest realization. At the same time, this is the version that will actually be materialized.

3.2.2. The Danube Flats case in Vienna

3.2.2.1. 1st phase: situation before the competition (1999–2012)

Until 2019, the site was home to a cinema complex with an indoor children's entertainment area Minopolis. In autumn 1999, a cinema complex was built according to the plans of architect Harry Seidler (Putschögl, 2019a). Prior to the subsequent amendment of the spatial plan, the zoning of the site was described as "mixed residential with commercial activity

with category V" (max. height up to 26 metres). The zoning documents prohibited the construction of housing on the site (Putschögl, 2015).

Before the demolition, the complex was comprised of approx. 12,000 m² net of above-ground usable floor area (Kammer der Architekten und Ingenieurkonsulenten, 2014), 28,000 m² of gross floor area, and 160,000 m³ of volume (Ostertag Architekten). Architecturally, the complex was average, but the potential for preserving the cinema complex was in the cluster of activities made possible by the multi-purpose halls and the associated facilities, which were primarily intended for the local community in the district of Kaisermühlen.

3.2.2.2. 2nd phase: Public interest in the winning competition entry in 2012

The competition was launched on 19 April 2012. The competition area covered approximately 1,24 ha. The competition brief called for the layout of the residential area, paying special attention to the design of the ground floor – the base of the building. Competition was organized by investors themselves in accordance with the rules of the City of Vienna. On 5 September 2012, it was announced that the winning solution is the design by Project A01 architects ZT GmbH. (Danube Flats, 2013).

The official Danube Flats website (2013) describes the winning project as "a tower block about 150 m high with 500 flats on 47 floors and three smaller apartment buildings" with a "a partial overlap of the motorway approach". The complex would include a "supermarket, a convenience store, a bakery, a medical centre, a café and a restaurant in the base of the tower" and a "Skybar in the upper third of the tower". The complex is characterized by "attractively designed public spaces integrated into the existing environment", "public pedestrian access to the New Danube", "garage parking spaces for electric cars", "amenities for car-sharing", "luxury bike storage for residents" and "proximity to a metro station". The tower base and the tower itself are intended to act as a noise barrier between Wagramer Strasse on the Emperor's Bridge and the quiet residential and pedestrian area (Danube Flats 2013).

The public interest issue lies mainly in the design of the housing program where it is not allowed, and in the huge expansion of the allowed built-up area. The amendment to the zoning plan would allow more than 45,000 m² of net floor area in two residential buildings (Kammer der Architekten und Ingenieurkonsulenten, 2014).

Based on the planning documents, more than 500 apartments would be built in this attractive location directly on the New Danube, with a new building typology VI (Bauklasse VI). Approximately 300 of them are in a 150-metre-high tower, the rest in a lower building (Putschögl, 2015).

Despite its serious shortcomings (high building efficiency, risk of gentrification of the area), the competition project promised a relatively varied set of functions, at least in the base of the building. Therefore, the achievement of the public interest at this stage can be assessed as medium.

3.2.2.3. 3rd phase: Urban planning contract and zoning plan amendment (2015)

The urban planning contract was signed in 2015 (Putschögl, 2015). On 1 July 2015, the City Council adopted amendments to

the spatial plan for the area (Plandokument 8079, 2015). In the contract, the investor commits to bridge the two road entrance ramps (Diebäcker, 2019 and Putschögl, 2015) with a unified pedestrian surface connecting the waterfront and the existing residential neighborhood, to transform the New Danube waterfront and the station forecourt of U-Bahn, to provide a windproof design for the building, to create a kindergarten in the base of the tower, to expand the nearby primary school and to offer 40 apartments for the socially disadvantaged. These contractual measures are worth €10 million (Putschögl, 2015). More in chapter 3.5 (Urban planning instruments used).

The competition phase envisaged a high-rise building next to three low-rise buildings. Since 2015, the spatial plan on this site (graphic and text part of Plandokument 8079) allows only two mixed-use buildings. In this phase, the number of lower buildings is reduced to one single building and limited in height to 26 m. The second may be a "special building", a high-rise, also with commercial activity. The complex must have a minimum of 2000 m² of total usable area above ground for cultural, artistic, social and educational use. The total residential floor area may not exceed 36,000 m² of usable floor area. The building must be a landmark. The tower may have a maximum height of 167 m above the "Viennese ground zero" (standard reference point of 156.68 m above sea level. No apartments can't be built below the height of 9.5 m above the ground. On ground floor, commercial space is expected. The allows for a maximum volume of the above-ground part of the building of approximately 196,000 m³ (167,000 m³ + 22,000 m³ + 7,000 m³) (Plandokument 8079, 2015).

As a key urban planning instrument, the Urban planning contract has brought substantial improvements in favor of the public interest in space, and the potential for realizing the latter has increased substantially.

3.2.2.4. 4th phase: The final project and the state of construction today (2019–present)

On 18 December 2018, the court confirmed the validity of the building permit for the Danube Flats project (Architektur aktuell, 2019). The A01 Architects website announced 550 apartments, a kindergarten, a medical centre, shops, restaurants. On a narrow site of 11,500 m² and a wider site of 23,737 m², will be built 54,500 m² of net and 67,500 m² of gross floor area, 183,500 m³ of volume, a 150 m tall tower (A01 Architects, n.d.). The complex would eventually include: private apartments, "investment apartments", "subsidised smart apartments", gastronomy and shops (Soravia GmbH, 2019). The complex would contain around 42,000 m² of above-ground usable space and the tower would have 49 storeys (Architektur aktuell, 2019).

In the investor's press release, the accompanying building next to the high-rise is described as a 160-apartment residential building with surrounding terraces overlooking the New Danube. It will have approx. 10,000 m² of usable floor area on 9 over-ground floors. From the start, it was conceived as an investor project intended for rental housing. Most of the apartments will be spacious 1- to 2-bedroom apartments with terraces and full-wall glazing. All residential floors will have small rental office units, "home offices". The commercial ground floor will have basic amenities for the residents and a medical centre (Soravia GmbH, 2021).

Unlike in the case of Ljubljana, the relationship between the city administration and the investor, as well as the project itself, did not change significantly through the implementation project,

as the agreement between the investor and the city was not changed during the process in any way. It has only become more concrete through the phases, especially in the context of the materialisation of the public interest in space. Therefore, the realisation of the public interest in space can thus be considered relatively high in this phase.

3.3. Changes in gross floor plan, BCR, value of FSI (before and after the development)

As the table below reveals, for both projects the gross floor plan and consequently the value of FSI increased significantly after the development intervention, although it was already decently high for the environments, in which the buildings were located before the demolition (LJ: 1.6; VIE: 1.15). The BCR has increased by only 3% in Ljubljana case, while in the Vienna case it even stayed the same. The difference in the projects is that the rest of the area in the case of Vienna is laid out as a varied urban plaza (mostly with roof over the garage area, the import and the motorway), dotted with green islands, with everything being publicly accessible. In the case of Ljubljana, however, most of the remaining part of the area is private and intended for future occupants (with possibility of complete fencing). What remains in the public use are the pavements, which have been rather lavishly extended into the arcades below the building at the junction with the public amenities, the road and the associated pavements with the driveway for the largest building and the tower at the southern end of the project. From this point of view, it can also be concluded that the two projects are different and that the Viennese one has the potential to fulfil more of the public interest in urban space.

The two tables also clearly show that the Ljubljana project varies in most parameters according to phases. The Vienna project is more stable, with the fulfilment of public interest in urban space constantly increasing. Fluctuations mean uncertainty for both the city and the investor. Although in the specific case of Ljubljana, the investor made a relatively large profit, the uncertainty could also have deterred the investor from the project. Nor is this the best incentive for potential reputable investors in the future who wish to invest in our environment. Stability and consistency of procedures are therefore in the interests of both sides.

3.4. Investment and the duration of the project development (from intention to construction)

Both projects have a private, corporate investor. In the case of the former Kolizej, now Schellenburg (Ljubljana) project, the redevelopment of the area started to be planned as early as the 1990s: e.g. with the programme studies of the company IZTR in 1991 and 1993. Since 2003, the most serious investor so far has invested €12 million into the purchase of the building, the land and the competition by the end of 2004 (STA, 2004), and a total of €30 million by 2012 (Petkovšek, 2012). These figures and other actions show a serious intention to invest and develop the area. The value of the project is estimated at 120-150 million euros in the second phase (Kladnik, 2004), in the third phase (adapted competition solution) the value of the project grew to 130 million euros (60 million euros would cost a non-profit concert-opera hall) (Petkovšek, 2012), while the total value of the project in the final phase is estimated at around 90 million euros (Citylife, 2020).

In the case of the Danube Flats project in Vienna, Der Standard mentions the current developer as the owner of the cinema

complex since 2005 (Putschögl, 2019a). Soravia GmbH and S+B GmbH are mentioned in 2012 as the main initiators of the Danube Flats project (Putschögl, 2012). In the second phase before the signing of the planning contract, the cost of the project is estimated at €140 million (Putschögl, 2019b). At the time of signing the planning contract, the City of Vienna proposed additional measures, valued at €10 million. In the final phase, the cost of the project is estimated at €253 million, or according to some sources €250 million respectively (ORF, 2018 / Putschögl, 2019b).

The development of the project in the Ljubljana case has thus lasted 17 years (2004–2021). The development of the Vienna project has so far lasted 9 years (2012–2021), despite significantly higher gross floor plan and higher investments in additional measures. Both areas are currently under construction. It is in the public interest to keep development and construction as short as possible, as both have an impact on the development and functioning of the whole surrounding area during both the development and construction. For the investor, predictability of duration also makes it easier to plan financially both for the project and for their own financial balance sheets.

3.5. Urban planning instruments used

In the Ljubljana project, the following urban planning instruments were used. The building of Kolizej has had the status of a local monument of immovable cultural heritage since 1993. In 2004, an international architectural competition was organised: participation was allowed via invite-only, and the competition was outside the domain of Slovene Chamber of Architecture and Spatial Planning. In 2005, the building of Kolizej was temporarily declared a monument of national importance for a period of one year. In 2009, an agreement was reached between the investor and the Ministry of Culture on compensation for the demolition of the monument: a construction of a cultural activity (a hall) on the site of the new building, the payment of the project documentation for the renovation of another monument (the building of Cukrarna), and the payment for the repair of the roof of the latter monument. A year after the demolition of the old building of Kolizej in 2012, a special commission at the Ministry of Culture decided that the urban planning instrument-conservation plan was a prerequisite for the preparation of a master plan within new permitted dimensions, as the project is located in a specific area of the ordinance that protects heritage in the Ljubljana Centre district.

After the demolition of the monument in 2011, an agreement for non-compliance with the agreement on the construction of a cultural hall as a compensation for the demolished monument was reached in 2020 (Ministrstvo za kulturo, 2020).

In the Vienna case, the following urban planning instruments were used. In 2012, an architectural competition was organised. In 2015, the investor and the city signed an urban planning contract (Städtebauliche Vertrag), whereby the investors committed themselves to additional investments in public interest worth €10 million on and off the investor's land (Putschögl, 2015). In the contract, the investor commits to bridge the two road entrance ramps (Diebäcker, 2019 and Putschögl, 2015) with a unified pedestrian surface connecting the waterfront and the existing residential neighbourhood, to reconfigure the New Danube waterfront and the waterfront vestibule of the U-Bahn station, to provide a wind-calming design for the building, to build a kindergarten in the base of the tower block, to contribute €3.86 million to the expansion of the nearby primary school in the district of Kaisermühlen, and to offer housing for the

socially disadvantaged (Putschögl, 2015). For the latter, the investor has to build 40 apartments (Smart Wohnungen) in terms of size of “1,200-1,400 m², each with approx. 30-40 m² of usable living space” with “the usual level of furnishment”. (Putschögl, 2015). In creating a new unified pedestrian surface, the investor (Danube Flats) must purchase the overlapping surface of one of the road entrances and maintain it at all times but leave it fully accessible to all members of the public. The second pedestrian overpass has to be built by the investor too, but ownership and maintenance will be taken over by the City of Vienna, which will also keep public access in place. The purpose of the pedestrian overpasses is to reduce noise emissions to the surrounding residential buildings and to improve building contact with the waterfront (Diebäcker, 2019, chapter 4).

The Vienna case has thus achieved extensive public interest acquisitions both on and off the site, while the Ljubljana case has relatively modest public interest acquisitions in its final stage. In the Vienna case, the final effect was mainly a result of the instrument of the planning contract, which ensured that negotiations were conducted in a relatively transparent and efficient manner and that the agreement was legally binding for both parties.

4. DISCUSSION

From the insight into the genesis of the projects, it can be concluded that compared to some other examples from nearby abroad, specifically the two Viennese examples described in Tarek Diebäcker's article, the process in Slovenia, especially for key development projects, is slower, the development and implementation of the projects take longer, and the public interest in the area is realized only to a small extent. A positive side of such processes is the absence of hasty solutions which can be detrimental to certain places. There is a lesser chance for gentrification and touristification.

In the development of the Ljubljana project on the site of the former Kolizej, urban planning instruments that were used are: protection (the status of a local monument of immovable cultural heritage, temporary protection for a monument of national importance for one year), international competition, compensation for the demolished monument (provision of the hall, payment for the project documentation for the project Cukurarna, payment for the repair of the roof on the same project), compensation for the non-compliance with the agreement on the construction of the hall, the conservation plan and a passing and amending of the Municipal detailed spatial plan.

However, some other key attempts at measures based on different instruments to achieve the public interest have been missed, as we know from the Vienna case, for example: the investor could have made part of the apartments available for non-profit rental. This would contribute to social diversity and housing affordability and make the area less likely to undergo the process of gentrification. A similar measure would be the commitment to invest further in more housing capacity in another location. At the same time, the investor could invest in the renovation or improvement of the public space both on and off the site. It could invest in sustainable transport infrastructure for the city. There are no appropriate urban planning instruments available to achieve the latter. We also lack urban planning instruments that would allow better professional coordination between the different levels of decision-makers in the public interest (e.g. city authorities, The Institute for the Protection of Cultural Heritage of Slovenia, Ministry of Culture).

The data we have collected show that the sophistication of the planning system can have an impact on the realisation of the public interest in space. It also allows projects to be developed more consistently. The Vienna case, despite the complications with the implementation of the new instrument (the urban planning contract), shows a greater degree of stability, less uncertainty and a better result. Although both systems are based on normative planning principles (typical of the wider Central European area), today they show some significant differences. In some key segments of spatial planning, the Viennese example, unlike ours, allows for more flexibility, especially in negotiations between the city and the investor. Thus, we can conclude that a rigid normativeness to a minimum is often not in the public interest, as the cases in which the normative is applied can vary considerably from one another. In practice, it often turns out that the minimum required by the law can also become the maximum that the city can demand from the investor. What is more, it can even happen, as in the case of the concert hall within Kolizej, that despite the minimum size, the latter does not materialise at all. Comparison with other instruments in other countries reveals that it is not enough to develop only one urban planning instrument, but that in practice often a combination of several instruments is needed. This will allow us to better respond to the particularities of individual cases, which we mentioned earlier, and to achieve a better result in both the private and the public interest.

Through an analysis of the publicly accessible space in both new projects, we can confirm Diebäcker's observation that there is a growing tendency to privatise space as much as possible. In the case of Ljubljana, the latter is more drastic, as typological diversity has been reducing with each successive phase of the project's development. Instead of the large plaza at the junction of the former Workers' Home and the new housing development along Gosposvetska cesta, which was envisaged in the competition solution, we will get just an arcaded oblong space with a pavement. Whether internal courtyards are publicly accessible space we do not know.

In summary, the two key reasons for the minimal gain of public interest in an urban space in the too long course of development of the renovation project of the area of the former Kolizej building are an inconsistent or even inadequate use of existing urban planning instruments to ensure the public interest in space

and a lack of greater flexibility within existing urban planning instruments for transparent, efficient, comprehensive and beneficial mutual negotiations between the investor and the public administration.

5. CONCLUSION

Unfortunately, in both cases, the finished products are hardly examples of highest quality architectural solutions. Yet, despite the similar starting points (demolition of existing buildings, construction of a multifunctional complex with a much higher utilisation rate, which is dominated by housing), the realisation of spatial public interest differs significantly.

The Ljubljana project, which is already under construction at the time of the survey, will end up as, in the terms of urbanism, appropriate development with mediocre architecture (although this has progressed in the proposals from neo-historicism to contemporary generic look). Once construction is complete, the painful gap in the city landscape will be gone, meaning the city life will go on. The problem of the realised solution that offers

absolutely too little to the public (i.e. to all stakeholders) despite the outstanding location and the sacrificed monument (an inconspicuous footprint and some retail and commercial services on the ground floor) will quickly disappear, at least in the eyes of the general public. This is also why it is a good idea to examine and evaluate the process and the situation objectively. An analysis of the bad decisions, which were essentially caused by the absence of appropriate negotiating levers – instruments for securing fulfilment of public interest in urban space – can help to promote the usage of the existing instruments more decisively and courageously. Above all, such analysis encourages changes in the legislative field to introduce and implement new instruments that would help both the city and the investor to achieve better spatial outcomes in the public interest.

In addition to the mentioned existing instruments (which were often not optimally used), we would like to have additional instruments for better results in the realization of the public interest in the urban space in this field. Noticeable is also a varying degree of coordination of different levels: city, ministry, The Institute for the Protection of Cultural Heritage of Slovenia.

For further research, we think it would be relevant to study similar examples in Ljubljana: the area of Šumi, the Central Stadium in Bežigrad, the area of the central railway and bus station. Some have already materialised, others have not. But they all share complications, long development times and fluctuations in fulfilment of public interest over time. To eliminate the root causes some serious changes in the optimization of the work of often inefficient and uncoordinated stakeholders in the planning system should also be addressed.

LITERATURE AND SOURCES

- A01 Architects. (n.d.). Danube Flats, 1st prize for the high rise building at the Danube. Retrieved August 28, 2021, from <https://www.a01architects.com/danube-flats>
- Architektur Aktuell. (2019, January 15). Danube Flats in Wien: Der öffentliche Mehrwert. *architektur.aktuell*. <https://www.architektur-aktuell.at/news/danube-flats-in-wien-der-oeffentliche-mehrwert>
- B., P. (2009, March 7). Odprta pot za novi Kolizej. MMC RTV SLO. <https://www.rtvsl.si/kultura/novice/odprta-pot-za-novi-kolizej/209363>
- Brkić, V. (2011, August 20). Kolizej v svoji zgodovini ni bil le simbol zanemarjanja in propadanja. *Dnevnik*. <https://www.dnevnik.si/1042466855/lokalno/ljubljana/1042466855>
- Citylife. (2020, July 27). KOMPLEKS SCHELLENBURG - 125 PRESTIŽNIH STANOVANJ. <https://www.citylife.si/arhitektura/kompleks-schellenburg-125-prestiznih-stanovanj>
- Danube Flats. (2013). Danube Flats - Leben am Wasser. Retrieved 29 August 2021, from <https://web.archive.org/web/20130601230344/http://www.danubeflats.at/wettbewerb.html>
- Danube Flats. (2021). Danube Flats. Retrieved 30 September 2021, from <https://www.danubeflats.at/>
- Diebäcker, T. (2019). Städtebauliche Verträge und öffentliche Räume. *The Public Sector*, 45(2), 7–20. <https://doi.org/10.34749/oes.2019.3212>
- DK. (2005, September 28). Anderlič: Pa naj Kolizej kupi država. *Dnevnik*. Edited 2006, July, 12. <https://www.dnevnik.si/143352/lokalno/ljubljana/143352>
- Dolničar, B. (2016, November 22). Mesto v času: Evangeličanska cerkev. Delo. <https://old.delo.si/novice/ljubljana/mesto-v-casu-evangelicanska-cerkev.html>
- Jesenšek, M. (2012, October 18). Novi Kolizej: Konservatorski načrt za hišo, ki je ni več. Delo. <https://old.delo.si/novice/ljubljana/novi-kolizej-konservatorski-nacr-za-hiso-ki-je-ni-vec.html>
- Retrieved 2021, September 8.
- Kammer der Architekten und Ingenieurkonsulenten. (2021, September 4). Stellungnahme zum Widmungsentwurf Pl Nr. 8079 Festsetzung des Flächenwidmungsplanes und des Bebauungsplanes für das Gebiet zwischen Schüttaustraße, Linienzug 1–2, Linienzug 2–4 (Rudolf Nurejew-Promenade), Linienzug 4–6, Linienzug 6–7 (Wagramer Straße) und Wagramer Straße im 22. Bezirk, Kat.G. Kaisermühlen [Press release]. https://wien.arching.at/fileadmin/user_upload/redakteure_wnb/A_Aktuelles/Stellungnahmen/141215_Stellungnahme_Plan_Nr__8079.pdf
- Retrieved 2021, September 4.
- Kladnik, D. (2004, November 23). Stari Kolizej so skoraj vsi 'podrli'. *Dnevnik*. <https://www.dnevnik.si/99091/lokalno/ljubljana/99091>
- Edited 2006, July 12. Retrieved 2021, September 5.
- Kolizej d.o.o. (2004, November 20). Kolizej novo kulturno srce Ljubljane. *Kolizej Novo Kulturno Srce Ljubljane*, 1–8.
- This Volume was an appendix to the newspaper Delo 2004 November 20. Retrieved 2021 August 23 in digital form at The INDOK Archive, Department of Urban Planning, Municipality of Ljubljana.
- Krajčinič, N. (2011, August 12). Kolizej - od največje hiše v mestu do zatočišča brezdomcev. *Delo*. <https://old.delo.si/druzba/panorama/kolizej-od-najvecje-hise-v-mestu-do-zatocisca-brezdomcev.html>
- Retrieved 2021, August 7.
- KROG d.o.o., Biro Japelj, LUZ d.d., MB biro, & ZAG. (2005). Občinski lokacijski načrt za del območja urejanja CO 2/16 Kolizej, funkcionalni enoti B-Kolizej in D-park. Faza Strokovne podlage. Št. projekta 31–05. *Kolizej, inženiring in investicije d.o.o.*
- Retrieved 2021 August 23 in paper form at The INDOK Archive, Department of Urban Planning, Municipality of Ljubljana.
- LUZ - Ljubljanski urbanistični zavod. (2014). OBČINSKI PODROBNI PROSTORSKI NAČRT 106 - KOLIZEJ. Mestna občina Ljubljana (MOL).
- Retrieved 2021, August 23 in digital form in The INDOK Archive, The Department of Urban Planning, Municipality of Ljubljana
- MA 21 Stadtteilplanung und Flächennutzung. Magistrat der Stadt Wien. (2015, July 30). Plandokument 8079. Festsetzung des Flächenwidmungsplanes und des Bebauungsplanes. Retrieved 27 September 2021, from <https://www.wien.gv.at/flaechenwidmung/public/>
- Mestna občina Ljubljana (MOL). (2021, August 13). Javna razgrnitev pobude in elaborata Lokacijske preveritve za del Občinskega podrobnega prostorskega načrta 106 – Kolizej [Press release]. Retrieved 2021, September 8. from <https://www.ljubljana.si/sl/mestna-obcina/mestna-uprava-mu-mol/oddelki/oddelek-za-urejanje-prostora/javne-razgrnitve/javna-razgrnitev-pobude-in-elaborata-lokacijske-preveritve-za-del-obcinskega-podrobnega-prostorskega-nacrta-106-kolizej-2/>
- Ministrstvo za kulturo Republike Slovenije. (2009, August 3). Decision Nr. 3510–33/2008/25, kulturnovarstveno soglasje za raziskavo in odstranitev dediščine. Ministrstvo Za Kulturo Republike Slovenije. Retrieved 2021 September 16 as a pdf via personal communication with Ministry of Culture of Republic of Slovenia
- Ministrstvo za kulturo Republike Slovenije. (2020, March 19). Decision Nr. 3510–23/2020/4. <https://www.ljubljana.si/assets/Uploads/LPKolizej-dvorana-Odlomba-MK-nadomestni-ukrep2.pdf>
- MMC RTV SLO. (2005, September 24). Zaščita stadiona in Kolizeja. <https://www.rtvsl.si/kultura/drugo/zascita-stadiona-in-kolizeja/139400>
- MMC RTV SLO. (2008, July 16). Kolizej naj ostane spomenik. <https://www.rtvsl.si/kultura/drugo/kolizej-naj-ostane-spomenik/155887>

- Mrevljn, N. (2019, February 22). Porušena palača, ki jo je Prešeren označil za hudičevo hišo. *Siol*. Retrieved 27 September 2021, from <https://siol.net/trendi/kultura/porusena-palaca-ki-jo-je-preseren-oznacil-za-hudicevo-hiso-491070>
- Neutelings & Riedijk. (2004, November 3). Novi Kolizej v Ljubljani. *Trajekt*. <http://trajekt.org/arhiv/akcije/?rid=12&id=30>
- Neutelings Riedijk Architecten. (2009). Kolizej Ljubljana. *Entwurf 31*. März 2009. Neutelings Riedijk Architecten.
- Retrieved 2021 August 23 from The INDOK Archive, Department of Urban Planning, Municipality of Ljubljana
- Novi Kolizej morda do leta 2012. (2007, October 24). Delo. <https://old.delo.si/kultura/novi-kolizej-morda-do-leta-2012.html>
- ODLOK o občinskem podrobnem prostorskem načrtu 106 – Kolizej. (2014, February 14). Uradni list Republike Slovenije. Retrieved 9 September 2021, from <https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/116340>
- ORF. (2018, November 16). Baubescheid für „Danube Flats“. <https://wien.orf.at/v2/news/stories/2947872/>
- OstertagARCHITECTS. (n.d.). Cineplex Palace. Retrieved 27 September 2021, from <https://www.ostertagarchitekten.at/de/projekte/kultur-und-bildung/cineplex-palace.html>
- Petek, A. (2019, September 11). Javna korist in javni interes v slovenskem pravu. *Zagovorniki okolja | varstvo okolja, varstvo prostora*. <http://zagovorniki-okolja.si/2019/09/11/javna-korist-in-javni-interes-v-slovenskem-pravu/>
- Putschögl, M. (2012, December 2). Cineplex Reichsbrücke wird zu 'Danube Flats'. *DER STANDARD*. <https://www.derstandard.at/content/tcf/story/1348284706171/aus-cineplex-reichsbruecke-werden-danube-flats/>
- Putschögl, M. (2015, July 1). 'Danube Flats': Sozialwohnungen nur für zehn Jahre. *DER STANDARD*. <https://www.derstandard.at/content/tcf/story/2000018327079/danube-flats-sozialwohnungen-nur-fuer-zehn-jahre>
- Putschögl, M. (2019a, January 15). Bau der 'Danube Flats' startet sieben Jahre nach Planungsbeginn. *DER STANDARD*. <https://www.derstandard.at/content/tcf/story/2000096258173/sieben-jahre-nach-planungsbeginn-bau-der-danube-flats-startet>
- Putschögl, M. (2019b, February 4). Abriss: Cineplex Reichsbrücke weicht den 'Danube Flats'. *DER STANDARD*. <https://www.derstandard.at/content/tcf/story/2000097513556/abris-cineplex-reichsbruecke-weicht-den-danube-flats>
- S+B group. (2021). Danube Flats. Retrieved 5 September 2021, from <https://www.sb-gruppe.at/aktuelle-projekte/wien/danube-flats>
- Simm, K. (2011). The Concepts of Common Good and Public Interest: From Plato to Biobanking. *Cambridge Quarterly of Healthcare Ethics*, 20(4), 554–562. doi:10.1017/S0963180111000296
- Siol. (2011, August 10). Rušenje ljubljanskega Kolizeja se je začelo (foto). Retrieved 9 September 2021, from https://web.archive.org/web/20110820101927/https://siol.net/kultura/novice/2011/08/kolizej_bo_padel.aspx
- Soravia GmBH. (2019, January 15). Danube Flats: Baubeginn für Österreichs höchsten Wohnturm bestätigt [Press release]. https://www.soravia.at/wp_content/uploads/190115_SORAVIA_PA_Danube_Flats.pdf
- Soravia GmBH. (2021, March 30). Danube Flats: Baubeginn für Österreichs höchsten Wohnturm bestätigt [Press release]. https://www.soravia.at/wp_content/uploads/PM-DANUBEFLATS-Verkauf-Bauteil-2.pdf
- STA. (2004, October 28). Prevent Invest porabil že 12 milijonov evrov za pripravo projekta Novi Kolizej.
- Računovodja.com. Retrieved 7 September 2021, from <https://www.racunovodja.com/sta/>
- Novica.aspx?id=75884
- Vugrin, M. (2005). Definiranje pojma javno dobro. *Geodetski Vestnik*, 49(3), 416–423.
- Wettbewerbe aktuell. (2005). Kolizej Areal, SI-Ljubljana. *Wettbewerbe Aktuell*, 3, 43–45.
- Wirth, L. (1938). Urbanism As A Way of Life. *American Journal of Sociology*, 44, 1–24.
- Yin, R. K. (2003). *Case study research: Design in Methods*. Sage Publications, Inc. Thousand Oaks, USA.
- Zakon o graditvi objektov (ZGO-1). (2002 December 10). Uradni list Republike Slovenije, 110. Retrieved 9 September 2021 from <https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/2002-01-5387/zakon-o-graditvi-objektov-zgo-1?h=zakon%20o%20graditvi%20objektov#>

Interviews:

Reitenburg, d. o. o. (personal communication, 2021 from August 30 to 2021 October 8).

Ministrstvo za kulturo Republike Slovenije. (personal communication 7 September – 23 September 2021. E-mail correspondence with Ministry of Culture. 16 September 2021 the Ministry produces The Decision. 3510-33/2008/25, from 3 August 2009, Kulturnovarstveno soglasje za raziskavo in odstranitev dediščine)

Appendix:

Table 1: Urban planning instruments used - project Kolizej.

	Urban planning instruments:
PHASE 1: Potential for preserving heritage from demolition (1847–2011)	Kolizej obtains a status of a local monument of immovable cultural heritage in 1993. (Mrevlje, 2019)
PHASE 2: Novi Kolizej - The public interest in the 2004 architectural competition winning entry	1. International architecture competition (invite-only) (Kladnik, 2004)
PHASE 3: The public interest in an adapted version of the winning solution in 2009	1. 2005. A temporary government protection for a monument of national importance for one year (MMC RTV SLO, 2005). 2. 2009. An agreement between the Ministry of culture and the investor: compensatory measures for monument demolition <ul style="list-style-type: none"> ■ to dedicate a central space to cultural activities in the new building on the same site ■ to finance the preparation of renovation documentation for another monument building ■ and finance the renovation of the roof of another monument building (Ministry of culture, 2020)
PHASE 4: Project Schellenburg (2013–present)	1. Alternative compensatory measure (a sum of money) for the damage caused by demolishing the monument building and successively not build a multipurpose (Concert) hall. (Ministry of Culture, 2020, p. 2.) 2. Municipal detailed spatial plan (OPPN): implementation (ODLOK o občinskem podrobnem prostorskem načrtu 106 – Kolizej, 2014) and later amendment (MOL, 2021) 3. Conservation plan (Jesenšek, 2012)

Table author: Aleksander Vujović - according to several sources. 6.10.2021

Table 2: Urban planning instruments used - project Danube Flats.

		urban planning instruments:
PHASE 1: situation before the competition (1992–2012)	data	no data
	source	no data
PHASE 2: Public interest in the winning competition entry in 2012	data	1. architecture competition organized by investors
	source	Danube Flats. 2013
PHASE 3: Planning contract and zoning plan amendment (2015)	data	1) urban planning contract In 2015, an urban contract (Städtebauliche Vertrag) is signed by the investor and the city, committing the developer to fund additionally in public interest on site and its extended area, such as: <ul style="list-style-type: none"> ■ refurbishing acces to transit station U1 Donauiinsel, ■ partially covering the motorway entrance ramp and establish a pedestrian connection with the embankment and the existing residential neighborhood) ■ wind-calming design of the tower, ■ redeveloping the embankment of the New Danube, ■ set up a kindergarten for seven groups on the base of a high-rise building, ■ a financial contribution of EUR 3.86 million for the expansion of a nearby primary school in the Kaiser-muehlen neighborhood. ■ offering housing for the socially disadvantaged; (Putschögl, 2015)
	additional data	<ul style="list-style-type: none"> ■ bridging the entrance ramp to Copa Cagrana beach (Dibaecker, 2019) ■ building 40 apartments (Smart Wohnungen) in terms of size of „1,200-1,400 m², each with approx. 30-40 m² of usable living space“ with „the usual level of furnishment“ (Putschögl, 2015)
PHASE 4: The final project and the state of construction today (2019–present)	data	no data
	source	no data

Table author: Aleksander Vujović - according to several sources. 6.10.2021

Table 3: Criteria comparison - project Kolizej.

		Height (m)	Cultural programme (m2) GFA	GFA above terrain (m2) GFA subterrain (m2)	GFA sum (m2)	project area (m2)	Building coverage ratio Floor space index
PHASE 1: Potential for preserving heritage from demolition (1847–2011)	data	no data	no data	GFA above terrain 15751 the whole complex regarded as above terrain	15751	9954	FSI=15751/9954= 1,6 BCR=4046/9954= 41%
	source	no data	no data	(approximation in regard to other sources and presented data)	(Kolizej d.o.o., 2004)	Wettbewerbe aktuell 2005	Building coverage 4046m2 (Krog d.o.o., 2005)

		Height (m)	Cultural programme (m2) GFA	GFA above terrain (m2) GFA subterrain (m2)	GFA sum (m2)	project area (m2)	Building coverage ratio Floor space index
PHASE 2: Novi Kolizej - The public interest in the 2004 architectural competition winning entry	data	96m	14000	GFA above terrain 62000 GFA subterrain 36000	98000 m2 (probably GFA)	9954	FSI=62000/9954= 6,2 BCR=6300/9954= 63%
	source	(Novi Kolizej morda do leta 2012, 2007)	(Novi Kolizej morda do leta 2012, 2007)	(approximation in regard to other sources and presented data)	(Novi Kolizej morda do leta 2012, 2007)	(Wettbewerbe aktuell, 2005)	Building coverage 6300m2 deducted from plans (Neutelings & Riedijk, 2004)
	additional data	25 floors above ground	1392 seats	no data	87000 (probably UFA)	no data	no data
	source	(STA, 2004)	(Kolizej 2004)	no data	(Kladnik, 2004)	no data	no data

		Height (m)	Cultural programme (m2) GFA	GFA above terrain (m2) GFA subterrain (m2)	GFA sum (m2)	project area (m2)	Building coverage ratio Floor space index
PHASE 3: The public interest in an adapted version of the winning solution in 2009	data	max cornice height = 73,80m -tower = 73,80m -«base» = 25m -glass roof of base = 53m -office wing = 26m -vila blok = 24m	26000	GFA above terrain 57000 GFA subterrain 39000	96000	9954	FSI= 57000 / 9954= 5,7 BCR=7300/9954= 73%
	additional data	17 floors above ground	1112-1332 seats	no data	no data	no data	Building coverage 7300m2 approximately deducted from plans
	source	(Neutelings Riedijk Architecten, 2009)	(Neutelings Riedijk Architecten, 2009)	(approximation in regard to other sources and presented data)	(Neutelings Riedijk Architecten, 2009)	(Wettbewerbe aktuell, 2005)	(Neutelings Riedijk Architecten, 2009)

		Height (m)	Cultural programme (m2) GFA	GFA above terrain (m2) GFA subterrain (m2)	GFA sum (m2)	project area (m2)	Building coverage ratio Floor space index
PHASE 4: Project Schellenburg (2013–present)	data	30m	0	GFA above terrain 35100m2 GFA subterrain 20600m2	55700	9954	FSI=35100/9954= 3,5 BCR=4350/9954= 44%
	additional data	8 floors above ground	no data	no data	no data	no data	no data
	source	(Reitenburg d.o.o., 2021)	(Reitenburg d.o.o., 2021)	(Reitenburg d.o.o., 2021)	(Reitenburg d.o.o., 2021)	Wettbewerbe aktuell 2005	(Reitenburg d.o.o., 2021)

Table author: Aleksander Vujović - according to several sources. 6.10.2021

Table 4: Criteria comparison - project Danube Flats; PHASE 1: situation before the competition (1992–2012); PHASE 2: Public interest in the winning competition entry in 2012; PHASE 3: Urban planning contract and zoning plan amendment (2015); PHASE 4: The final project and the state of construction today (2019–present).

		height (m)	Cultural programme (m2)	Housing (m2) GFA	external ground floor area as public space (m2)	UFA above terrain (m2) netoo subterrain (m2)	GFA sum (m2)	Building coverage ratio Floor space index
PHASE 1	data	26	3.000	0	plaza in front of cinema 1955	UFA above terrain 12.000m ²	28.000 m2	BCR=4200/ 11500= 36,5% 12.000 UFA 13.000 GFA (approximation) FSI=13.000 / 11500= 1,15
	source	(Putschögl, 2015)	(Ostertag Architekten)	(Putschögl, 2015)	approximation in regard to Plandokument 8079 (MA 21, 2015) and Ostertag Architekten webpage	(Kammer der Architekten und Ingenieurkonsulenten, 2014)	(Ostertag Architekten)	(approximation in regard to other presented data)

	additional data	Baukategorie V	3300 seats, 14 cinema auditoriums, (since 2005 also children play-house)	no data	no data	no data	no data	building coverage: 4200m ² (measured from Plandokument 8079 graphic plans)
	source	(Putschögl, 2015)	(Ostertag Architekten)	no data	no data	no data	no data	(MA 21, 2015)

		height	Cultural programme (m ²)	Housing (m ²) GFA	external ground floor area as public space (m ²)	UFA above terrain (m ²) UFA subterrain (m ²)	GFA sum (m ²)	Building coverage ratio Floor space index
PHASE 2	data	cca 150m 47 floors above ground	0	36.000 UFA	new pedestrian area 7790 (investor's property)	above terrain: 42.000 (Architektur aktuell. 2019) subterrain: 12.500 (approximation in regard to other presented data) subterrain: 54.500 (A01 Architects, n.d.)	67.500m	BCR= 4200/11500= 36,5% FSI= 50000/11500= 4,3
	source	(Danube Flats, 2013)	(Danube Flats, 2013)	approximation in regard to (Plandokument 8079)	approximation in regard to Plandokument 8097	We use the same data for phases 2 to 4, since we believe they did not change dramatically	(A01 Architects, 2017)	(approximation in regard to other presented data)
	additional data	145m	no data	cca 550 flats in the tower and lower three buildings	no data	no data	no data	building coverage: 4200m ² (measured from Plandokument 8079 graphic plans)
	source	(Putschögl, 2012)	no data	(Danube Flats, 2013)	no data	no data	no data	(MA 21, 2015)

		height	Cultural programme (m ²)	Housing (m ²) GFA	external ground floor area as public space (m ²)	UFA above terrain (m ²) UFA subterrain (m ²)	GFA sum (m ²)	Building coverage ratio Floor space index
PHASE 3	data	max 167m above »Viennese ground zero reference point«. + additional 5m for technical installations	2.000 UFA for social and culture programme	max. 36.000 UFA	new pedestrian area 7790 (investor's property)	above terrain: 42.000 (Architektur aktuell. 2019) subterrain: 12.500 (approximation in regard to other presented data) subterrain: 54.500 (A01 Architects, n.d.)	67.500m	BCR= 4200/11500= 36,5% FSI= 50000/11500= 4,3
	source	(MA 21, 2015)	(MA 21, 2015)	approximation in regard to Plandokument 8079 (MA 21, 2015)	approximation in regard to Plandokument 8097 (MA 21, 2015)	We use the same data for phases 2 to 4, since we believe they did not change dramatically	(A01 Architects, n.d.)	(approximation in regard to other presented data)
	additional data	no data	no data	Appartments are allowed only 9,5m above finished external ground	no data	no data	no data	building coverage: 4200m ² (measured from Plandokument 8079 graphic plans)
	source	no data	no data	(MA 21, 2015)	no data	no data	no data	(MA 21, 2015)

		height	Cultural programme (m ²) (m ²)	Housing (m ²) GFA	external ground floor area as public space (m ²)	UFA above terrain (m ²) UFA subterrain (m ²)	GFA sum (m ²)	Building coverage ratio Floor space index
PHASE 4	data	175m, 49 floors (S+B group. 2021)	2.000 UFA for social and culture programme	36.000 UFA	new pedestrian area 7790 (investor's property)	above terrain: 42.000 (Architektur aktuell. 2019) subterrain: 12.500 (approximation in regard to other presented data) subterrain: 54.500 (A01 Architects, n.d.)	67.500m	BCR= 4200/11500= 36,5% FSI= 50000/11500= 4,3
	source	(S+B group. 2021.)	approximation in regard to (Plandokument 8079)	approximation in regard to (Plandokument 8079)	approximation in regard to Plandokument 8097	We use the same data for phases 2 to 4, since we believe they did not change dramatically	(A01 Architects, n.d.)	(approximation in regard to other presented data)
	additional data	150m , 47 floors	no data	building 1: approx. 400 apartments in a high-rise building building 2: 160 apartments. investment project for rental housing. (Soravia GmBH, 2021) cca. 600 apartments (S + B group. 2021.)	no data	1) building 1, the tower; 2) building 2: cca 10.000m ² UFA in 9 floors above ground. Thr buildings have a common subterrain floors and parking garage	no data	building coverage: 4200m ² (measured from Plandokument 8079 graphic plans)
	source	(A01 Architects, n.d.)	no data	(S+B group. 2021 and Soravia GmBH. 2021)	no data	(Soravia GmBH, 2021)	no data	(MA 21, 2015)

Table author: Aleksander Vujović - according to several sources.

Bardha Meka, Armir Ferati: ORIENTACIJA V BOLNIŠNICI: PROSTORSKA RAZPOREDITEV IN PROSTORSKA KOGNICIJA V KOSOVSKEM UNIVERZITETNEM KLINIČNEM CENTRU V PRIŠTINI HOSPITAL NAVIGATION: SPATIAL CONFIGURATION AND SPATIAL COGNITION IN UNIVERSITY CLINICAL CENTER OF KOSOVO IN PRISHTINA

DOI: <https://doi.org/10.15292/IU-CG.2021.09.048-057> ■ UDK: 725.5:612.881(497.115) ■ SUBMITTED: May 2021 / REVISED: June 2021 / PUBLISHED: December 2021



1.02. Pregledni znanstveni članek / Review Scientific Article

POVZETEK

Namen tega članka je analizirati enostavnost orientiranja oseb po kosovskem univerzitetnem kliničnem centru v Prištini (UCCK). V bolnišničnem okolju je cilj enostavna in samostojna orientacija uporabnika do cilja, da se zmanjšajo negativni vplivi na dobro počutje ljudi in operativne stroške. Orientacija je pomembna za zaposlene, ki poznajo okolje, in obiskovalce, ki ga ne poznajo. Članek se osredotoča samo na osebe, ki bolnišnično okolje poznajo, tj. na zaposlene. Raziskave so pokazale, da je orientiranje odvisno od jasnosti ureditve komponent stavbe ter da obstaja tesna povezanost med orientacijo in prostorsko razporeditvijo. Večina študij o orientaciji v bolnišnicah je osredotočena na stavbo, ta članek pa je osredotočen na bolnišnični kampus univerzitetnega kliničnega centra, ki spada v tipologijo paviljonov. Kot tak si z mesti deli številne podobnosti in ima veliko bolj zapleteno strukturo kot druge bolnišnične tipologije. Ta članek skuša odgovoriti na dve vprašanji: kako enostavno se je orientirati v kosovskem univerzitetnem kliničnem centru ter kakšna je povezava med prostorsko kognicijo in prostorsko razporeditvijo v bolnišničnem okolju. Raziskava se naslanja na kognitivni pristop, ki ga je zasnoval K. Lynch in temelji na zaznavnih kartah, ter na konfiguracijski pristop, ki temelji na teoriji in metodologiji sintakse prostora. Članek ugotavlja, da kosovski univerzitetni klinični center nima jasne podobe in ima nizko raven razumljivosti. Rezultati te raziskave bodo v pomoč pri oblikovanju prihodnjega splošnega načrta bolnišničnega kampusa.

KLJUČNE BESEDE

zaznavna karta, karta osi v prostoru, razumljivost, percepcija, obnašanje

ABSTRACT

The aim of this paper is to analyse the level of ease at which people navigate within the University Clinical Centre of Kosovo in Prishtina (UCCK). In a hospital setting, the objective for the user is to navigate easily and independently to the destination in order to reduce negative impacts on human wellbeing and operational costs. Navigation is important for employees, familiar with the environment and for visitors, unfamiliar with it. However, the paper is focused only on those familiar with the hospital setting – employees. Research has shown that navigation depends on the clarity of the built form's component arrangements; that there is a high correlation between navigation and spatial configuration. Most of the studies on navigation in hospitals are focused on building scale. This paper is focused on the hospital campus of (UCCK) which belongs to the pavilion typology. As such, it shares many similarities with cities and has far more complex structure than other hospital typologies. So, the questions this paper is trying to answer are: how easy is to navigate within UCCK; what is the relation between spatial cognition and spatial configuration in the hospital setting? To answer, the research is leaning on the cognitive approach designed by K. Lynch based on mental maps and on the configurational approach based on space syntax theory and methodology. The paper reveals that UCCK lacks a clear image and has a low level of intelligibility. The outcome of this research should impact the future master plan of the hospital campus.

KEY-WORDS

mental map, axial map, intelligibility, perception, behavior

UVODNIK
EDITORIAL
ČLANEK
ARTICLE

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

1. INTRODUCTION

The paradigm shift in healthcare came with an advanced approach regarding healthcare environments by promoting the concept of humanization in designing of hospitals. One of the intentions is to create welcoming places, where “the user should be able to perceive them as simple and cross it instinctively without being confused” (Pellitteri and Belvedere, 2014, p. 229). In this sense, when entering a hospital, the objective is to move independently to the destination. High demands on the design quality should avoid difficulties in finding the way, which for severely ill patients, may result in fatal consequences. Obviously, wayfinding has a lot to do with the path network. People’s ability to navigate in a certain environment is affected by the street network or the spatial configuration – the whole system of relations between streets. It affects both, people’s perceptions (K. Lynch, 1960) and people’s behaviour (Hillier, 1993; Hillier, 1996; Hillier, 2005). Various systems, have various levels of relationship complexity, be it a settlement or hospital. The complexity of relationships increases in the case of hospitals with pavilion typologies, which by itself shows some shortcomings in terms of orientation and circulation due to the distribution of health activities in different pavilions. On the other hand, these typologies are in accordance with general trends of hospital design with particular emphasis on the human dimension (Torricelli, 2005).

The University Clinical Centre of Kosovo in Prishtina (UCCK), which is chosen as a case study, belongs to the pavilion typology. What is interesting to investigate, is not only the influence of the typology but the impact of the transformations it endured during its evolution on orientation and navigation (for the sake of efficiency). The transformations were mainly piecemeal additions and renovations, with no regard to user’s perception and behaviour, which resulted in a poorly organised path network, deteriorating the circulation system and obscuring the clarity of the hospital setting, particularly the ease of identifying main functional areas and their access points. Therefore, the paper is first trying to reveal the underlying structure of the spatial configuration of UCCK; second, how people navigate and behave within the hospital; and third, what is the relation between the spatial configuration and users perception, navigation or wayfinding in the hospital setting. The outcome of this research should have an impact on future development of the hospital complex.

In order to answer these questions, the research is based on two approaches. The first one is adopting K. Lynch’s cognitive approach. It is focused on information obtained from individual perception of the environment through mental or cognitive maps. The second approach is the configurational approach based on space syntax theory and methodology. Both approaches are interrelated and it is suggested that both must be taken into account for a more holistic approach. A detailed explanation of the approaches and their respective methodologies is given in the following sections of the paper.

Navigation through a hospital setting is important for both, employees, familiar with the environment and for visitors, unfamiliar with it. However, this research is focused only on those familiar with the hospital setting – employees and their ease of orientation and navigation, implying also further investigation taking visitors into account.

After the theoretical background and literature review, the second part of the study gives a brief overview of the University Clinical Centre of Kosovo in Prishtina and its evolution in terms of spatial organization. Further on, the paper continues to explain the approaches and methods adopted in the exploration of the hospital setting. The analysis and a discussion on the results is presented in the fourth part of the paper. This section is focused on the mental maps drawn by subjects and on the configurational analysis of the UCCK. Again, K. Lynch’s approach is adopted in order to obtain information from the mental maps, while space syntax is the core theory and methodology for the configurational analysis.

2. THEORETICAL FRAMEWORK

Reaching the destination from an entrance as easily as possible in a hospital setting is of fundamental importance. It’s important for both, the patients and the medical staff. Beside the most important fact that efficiency can save lives, it also can save a lot of irritations and operational costs. In this sense hospital settings share many similarities with cities due to their complexity. In order to reach the destination from a certain point in the setting the environment usually or is supposed to give clear cues. Clear and well organised elements of built form (streets, squares and urban blocks) enable people to read, understand and interpret the environment. And “the ease with which its parts can be recognised and can be organised into a coherent pattern” (Lynch, 1960, p. 2) determines the level of legibility of the environment. The concept of legibility as a quality of the environment was introduced by K. Lynch (1960) in his book *The Image of the City*. According to Lynch people represent the environment – the city through mental maps of spatial relations between the components of built form. Those components (explained in more detail in the following parts of the paper) are paths, landmarks, nodes, edges and districts. When moving through and around a settlement people use these elements for navigation and orientation. These findings are obviously applicable in hospital settings. The similarities between cities and hospitals, or between urban planning and hospital design were noted by Sadek (2015), Wagenaar (2018) and Mens (2018). “Hospitals that contain stable, distinctive and highly recognizable paths, nodes, landmarks, edges and districts are inherently more legible and easier to navigate than those that do not” (Mens, 2018, p. 65-66). One of the main objectives of this paper is to explore the legibility of UCCK by utilising K. Lynch’s empirical approach.

Martinez (2010) claims that “the aim is that the building, with a clear and simple layout, must be the main device for orienting people to their chosen destinations”. Michael J. O’Neill (1991) considers signage as elements to enhance

Figure 1: Hospital center within the city of Prishtina, 1956 (a). Planned facilities in the Hospital Center in Prishtina, 1956 (b): 01. Future main entrance, 02. Main entrance, later – supply entry; 1. Surgical block, 2. Internal medicine unit, 3. Children's hospital, 4. Infectious disease unit, 5. Supply and maintenance part. (source: Archive of the Municipality of Prishtina, Fund 71, no. 1367).



wayfinding efficiency but he claims that “as floor plan complexity increases, wayfinding performance decreases”. To compensate this insufficiency, adding more signs is not the right response (Carattin, 2011). Although the role of signs is not disclaimed, most researchers consider it as complementary, emphasising the role of configuration. In the designing process, it is important to consider that “all branches from a main path, all angles, all variations of the path that deviate from right angles in the plan, constitute obstacles for the visitor or for the patient who wants to orientate in the hospital” (Rossi Prodi and Stocchetti, 1990, p. 250).

The importance of the path network or the spatial configuration and its effect on behaviour is further emphasised by Hillier and colleagues through space syntax theory (Hillier, 1993; Hillier, 1996; Hillier, 1999; Hillier, 2005). According to this theory there is a high correlation between the level of accessibility (centrality) and movement flows. More people move on more central (integrated) spaces and less people on segregated spaces – streets (Hillier, 1993; Hillier, 1999). Peponis and collaborators (1990) utilised space syntax theory and methodology to study hospital layouts. Just as Hillier’s theories state, they observed that more people move on more central spaces and that when people face spatial dilemmas, they usually turn to these central locations in order to decide their further movement. The importance of configuration – the topological relations between all streets of the network on navigation and orientation in hospitals is confirmed by Haq and Zimring (2003) and Haq and Giroto (2003). Haq and Giroto (2003) proved that intelligibility, which is a measure defined by the correlation between connectivity and global accessibility (integration) is a good wayfinding predictor. However, most of these studies were performed on a building scale. This paper is focused on a relatively larger scale on a hospital setting - UCCK that belongs to the pavilion typology.

2. SPATIAL EVOLUTION OF UNIVERSITY CLINICAL CENTER OF KOSOVO

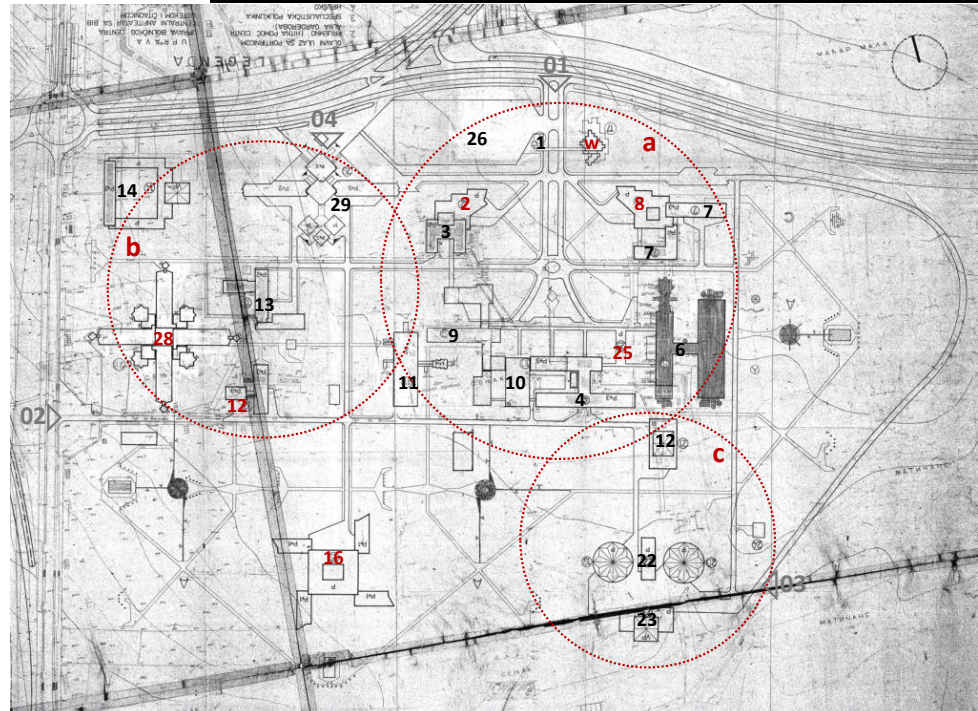
The General Hospital in Prishtina was established in 1958, while the Faculty of Medicine was founded in 1969. Later, in 1973, they were merged into an integrated organization as Faculty of Medicine with constituent clinics. On 2003, it was renamed the University Clinical Centre of Kosovo (Krasniqi, 2018). University Clinical Center of Kosovo is the only tertiary health care facility in Kosovo, constituted of 37 clinics, institutes and services, with a total number of 1908 of beds (SHSKUK, 2018). It is a referent medical institution and its catchment includes the whole country. In the absence of a regional hospital in Prishtina, it also performs secondary level services for the citizens of Prishtina.

The location of the Prishtina Hospital Center was approved in 1956, in an area of 10 ha, on the outskirts of the city of Prishtina, in close proximity to the road Prishtina – Skopje (Figure 1a), with four facilities planned as follows (Figure 1b): Surgical block, Internal Medicine Unit, Children’s Hospital and Infectious Diseases Department (Vujic, 1956). The surgical block still retains the same position and function. Main entrance to the hospital centre was on the west of the location (02) and continued to the surgical block. According to this plan, the future main entrance is relocated to the north (01).

A detailed urban plan for the hospital complex was adopted in 1967 (Figure 2), which is an update of the urban plan of Prishtina Hospital Centre of 1956, in the same location. The plan was based on modernist ideologies, freestanding buildings – pavilions arranged across the site, linked but detached from the path network. According to the plan, some of the main parts of the pavilions were supposed to be linked by internal connections (Janković, 1980), which up to date, never happened. This plan clearly suggests the

Figure 2: Detailed urban plan of Prishtina Hospital Center, 1967; Health care activities (a), training, teaching and research activities (b), and supply and maintenance (c); Numbers in red represent unbuilt facilities; 14 and 29 are partially built (Source: Archive of the Municipality of Prishtina, Fund 71, no. 1392).

1. Entrance gate
 2. Reception (first aid, central cloakroom)
 3. Specialist outpatient clinic
 4. Surgical clinic
 5. Gynecological Clinic
 6. Obstetric clinic
 7. Pediatric clinic (internal medicine and chest)
 8. Pediatric polyclinic
 9. Internal medicine and Dermatovenerology Clinic
 10. Intermediate (ORL, Oncology, Radiology)
 11. Infectious disease clinic
 12. Pulmology clinic
 13. Institute of Hygiene
 14. Medical High School
 15. Medical high school dormitory
 16. Neuropsychiatry
 17. Management of the hospital center
 18. Central amphitheater with library and reading room
 19. Supplier
 20. Garages and stores
 21. Kitchen
 22. Laundry
 23. Heating plant
 24. Morgue
 25. Shop
 26. Central parking lot
 27. Prosecutor
 28. Biological institute
 29. Institutes of the Faculty of Medicine with deanery and amphitheatres
01. North/Main entry
 02. West entry
 03. East entry
 04. Pedestrian access to institutes and Faculty of Medicine



separation of three principle movement streams: a) health care activities, b) training, teaching and research activities, and c) supply and maintenance. As figure 1 shows, health care activities (circle a) were supposed to be reached through radial road network, enabling simple and rational spatial distribution through a hierarchy of routes, thus contributing to the legibility of the environment for patients and visitors. Access to the other activities was provided from separate entries (circle b and c).

As the city grew and evolved, the hospital became part of the urban area of Prishtina, located in the northern part of “new Prishtina - west area” (Figure 3). The topography of the UCCK location is mainly flat, at an average altitude of 600m (Plani rregullues “Prishtina e Re - Zona perëndim”, 2013). The location is now bounded on the north by high standard urban roads, through which it is connected to the regional road network (Figure 4).

The main entry of the hospital (01), designated on the north since 1956, as such was designed in the 1967 plan (Figure 2), which still serves the same purpose (Figure 4). West entry (02), which is accessed from the urban road Shkupi, designated as a supply and maintenance entrance since 1956, actually serves as a secondary entrance to the complex. According to the 1967 plan, the east entrance (03) is presented as a supply entry, while currently, accessed through intersections of local roads is open to the surrounding

neighbourhood. The 1967 plan provided another pedestrian entrance from the north (04), which would serve as an access to the Institutes and the Faculty of Medicine. This entrance was not built and as a consequence informal roads emerged.

Until 1999 the site was developed mainly respecting the plan of 1967. But, the observation by Martinez (2010) that “hospital buildings and hospital campus grow, often without a long-term vision and design is largely driven by clinical briefs and not user’s environments” happens to be true in the case of UCCK as well. Continuous transformations of the hospital complex, with-



Figure 3: UCCK in relation to the central ring of the city of Prishtina (source: Urban Development Plan »Prishtina 2012-2022«).

Central ring

UCCK

New Prishtina – western area

Figure 4: The layout of the University Clinical Centre of Kosovo, 2019 (Source: authors).

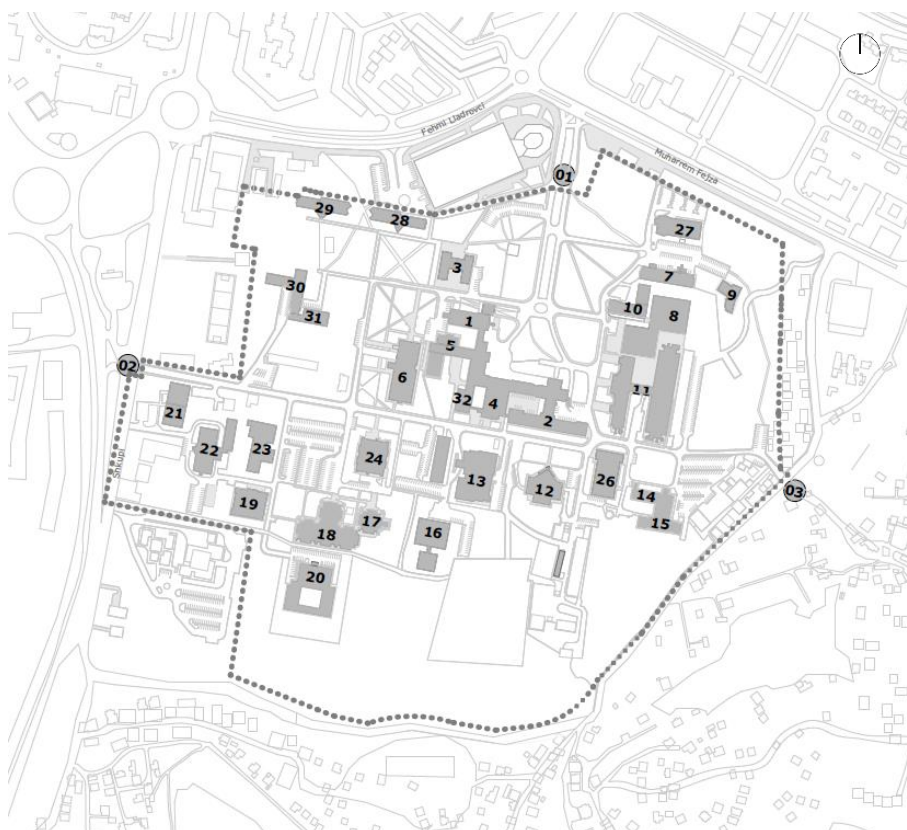
1. Emergency care center
2. Surgical clinic
3. University Dentistry Clinical Center
4. ORL clinic
5. Internal medicine clinic
6. Infectious disease clinic
7. Pediatric clinic
8. Pediatric surgery
9. Child and adolescent psychiatry
10. The National Center of Blood Transfusion
11. Obstetric Gynecological Clinic
12. Institute of Oncology
13. New Emergency care center
14. Dermatovenereology Clinic
15. Pulmology clinic
16. Orthopedics and Traumatology Clinic
17. Neurology Clinic
18. Psychiatry Clinic
19. Intensive psychiatry
20. Institute of Forensic Psychiatry
21. Ortoprotetics
22. Institute of Forensic Medicine
23. New building of the Management of the Faculty of Medicine
24. UCCK administrative building and outpatient clinics
25. Laundry
26. Kitchen, technical services
27. Kosova Medicines Agency
28. Preclinical institutes A
29. Preclinical institutes B
30. National Institute of Public Health of Kosovo
31. Management of the Faculty of Medicine
32. Library

01. North/Main entry

02. West entry

03. East entry

--- Location boundary



out necessary criteria, have shaped its spatial configuration. As stated above, these transformations were reflected in orientation and circulation system of the complex. Insufficient to fulfil current needs, the original urban plan is compromised.

University hospitals are complex building types “since, apart from its functional, technological and management complexity, typical for hospitals in general, it presents a further level of complexity as a result of the presence of healthcare, research and teaching on a single site” (Giovenale, 2009). University Clinical Center of Kosovo experiences same efforts of integration on specific type - that of pavilions, built in the 70s and the 80s. Buildings are multistorey, varying from one to six, with attributes of modern architecture style and apparently a mixture of linear “H”, “T”, “I” types, “random pavilions” and “centreed cluster”. Regarding the connection between wards and care unit, they mostly belong to the “horizontal type”.

3. METHODOLOGY

In order to reveal the level of legibility (Lynch, 1960) of UCCK, the research is based on a combination of K. Lynch’s empirical methodology and space syntax’s configurational approach. The former is focused on the physical attributes and perception effects of physical structures and the latter on the configurational properties of the spatial configuration. The model designed by Lynch is in fact a mental construct that people structure for spatial schemes and it is supposed to reveal the main navigation components for orientation while moving through spaces (Watson, Plattus and Shibley, 2003). Lynch, classifies the components in groups of five elements: paths – movement channels along which people navigate the city; nodes – strategic focal points in the city; landmarks – external reference points

defined by physical object; edges – linear elements along which regions are separated or joined together; and districts – two dimensional elements or areas with identifiable character (Lynch, 1960). Depending on the environment, one or more of these elements are more dominant and significant for the image that people have of a certain environment. To reveal which one of these elements is dominant and how they are related at the UCCK campus, fifty one (51) participants (UCCK employees) randomly selected from different locations – workplaces were asked to sketch mental maps of the built environment within the hospital on blank sheets of paper, based on their memory of the spatial structure of the campus. Different locations are chosen in order to reveal both, the local-immediate surrounding and global structure of the campus. The frequency of appearance of the elements and the clarity of their representations on the mental maps is supposed to be a good indicator of the level of legibility of UCCK campus.

On the other hand, relevant research has shown that mental maps and wayfinding behaviour correlates well with configurational properties of the spatial configuration, that topological relations are reliable indicator of wayfinding behaviour (Haq, Hill and Pramanik, 2005) and that the influence of geometrical and topological properties of the layout on movement is a cognitive effect (Hiller and Iida, 2005). Therefore, to reveal the topological properties of the layout space syntax is being utilized as the core theory and methodology for the analysis of the spatial configuration of UCCK. In order to process the analysis, the spatial structure of UCCK is decomposed into axial lines and represented as an axial map. “An axial map of the open space structure of the settlement will be the least set of

(axial) lines which pass through each convex space and makes all axial links" (Hillier and Hanson, 1984, p. 91-92). An axial line is the longest line of visual reach (Hillier and Hanson, 1984) and it corresponds to movement lines. So, the key criteria for drawing or generating axial maps, also used by authors of the paper for drawing the UCCK axial map, is to minimise the number of intersecting lines that pass further through each spatial entity (convex space) of a certain spatial layout. Further on, the axial map is a representation of a mathematical model of a graph. The graph is actually an abstract representation of a set of elements and their relations, in which each element is represented as a vertex, and each relation between a certain pair of elements as an edge. What this means is that the axial line is the basic element of the graph and it is represented by a vertex on the graph thus allowing mathematical analysis of the configurational properties of each spatial entity as well as the whole system (Ferati and Saidi, 2020). However, due to the complexity of the calculations, we must rely on computer based analysis. Therefore, the axial map is analysed through Depthmap - a software for spatial network analysis developed at UCL. Among many, integration - the relative accessibility of a space within a spatial system and choice - the relative location of a space between all possible pairs of spaces in the spatial system, are key mathematical-syntactic measures used in the paper. These measures can be calculated at different radii, ranging from local radius which takes into account the local network of public spaces, to global radius (RN) which takes into account the whole network of the system of public spaces. On the maps, red colour indicates higher configuration values, opposed to blue ones which indicate lower configurational values. Hillier and colleagues were able to find a high degree of correlation between accessibility values and movement flows (Hillier, 1993; Hillier, 1996; Hillier, 1999). Local scale movement is best reflected at a lower radius and larger scale movement is best reflected at a higher radius, usually taking into account the whole network (RN).

The paper is also focused on people's behaviour and how they utilise the spatial configuration of UCCK. In order to reveal movement patterns, on-site observations and

counting people moving within the hospital setting were carried out. The method is known as gate counting (Grajewski, 1992; Vaughan, 2001), and it serves to collect data on pedestrian movement, revealing which street or route has higher or lower movement flows. The data later can be compared to the syntactic values of the spatial configuration through correlation analysis. Gates are specific locations on the path network where the observant stands and collects the data – number of people moving through the gate in specific time frames over the course of the day. Thirty six (36) locations are chosen as gates in UCCK (Figure 8). Three different categories are counted: patients, visitors and medical staff - employees, but only the medical staff is taken into consideration for the purpose of this research since it is focused only on those familiar with the environment. Each gate is observed for five minutes at one hour interval throughout the day, starting at 7:00 a.m. and finishing at 19:00 p.m.

In addition to the syntactic properties, the research also focuses on the relationship between parts and wholes, as the relationship or the correlation between local (connectivity) and global accessibility (integration) values is a reliable indicator of the degree of ease at which people navigate through an environment, or how much information about the overall structure of the city people gain from their immediate local surrounding i.e. intelligibility of a system (Arruda Campos, 1997).

4. COGNITIVE MAPS AND SPATIAL CONFIGURATION ANALYSIS

The analysis of the UCCK employee sketches reveals the perception effects of the underlying physical structure of the hospital campus. Although not clearly enough, paths, as expected, appear relatively more frequently on the maps and represent the most dominant elements. The other elements of the image of the environment such as the nodes, landmarks, edges and districts are missing and can't be extracted from the mental maps drawn by the employees of UCCK, indicating that navigation and orientation is difficult on the campus. Figure 5 shows the appearance of

Figure 5: Path by frequency appearance on sketch maps. University Clinical Centre of Kosovo.

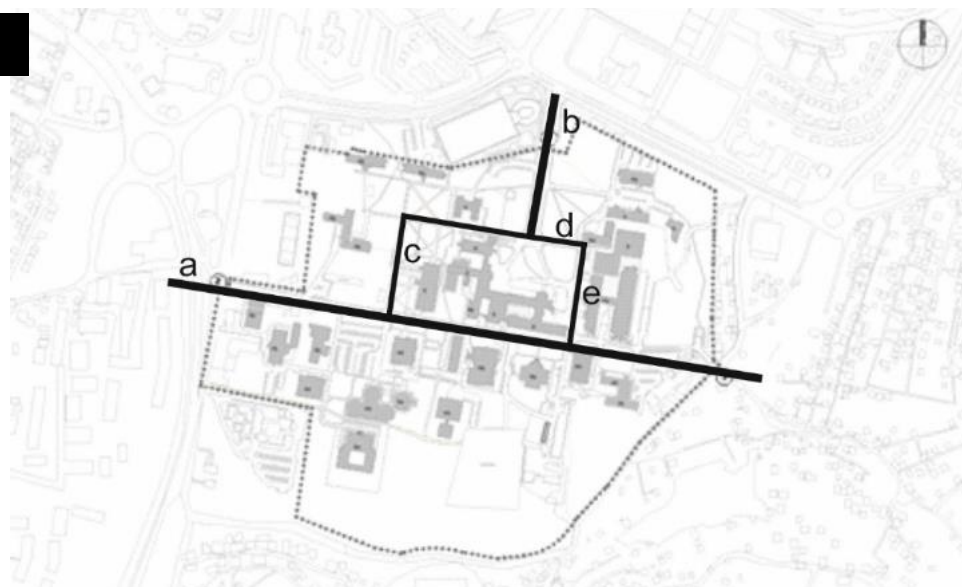


Figure 6: Global Integration RN. University Clinical Centre of Kosovo.



Figure 7: Local Integration R3. University Clinical Centre of Kosovo.



paths by frequency on the sketched maps. The thicker the line of the path on figure 5, the more frequent its appearance on the sketches. Employees pick path **a** and path **b** as the main routes in the spatial system of the campus for orientation. With no distinct landmark on the site, most of the facilities are sketched along these routes. However, while path **a** and **b** can be extracted from the sketches, their relation to one another is hardly evident. The sketches become more labyrinthine when participants connect routes between path **a** and **b**. Nevertheless, path **c**, **d** and **e** stand out from the rest of the routes that lead from **a** to **b**.

In order to understand the spatial configuration of UCCK the research is also focused on the syntactic properties and the relation between parts and wholes – intelligibility expressed as a correlation between local and global accessibility (integration) values.

The processed axial map on a global scale at RN – taking into account the whole spatial configuration (Figure 6),

reveals path **a** as the most integrated in the street network of UCCK. Next to path **a**, path **c**, **d** and **e** also belong to the most integrated set of spaces in UCCK. Similar results appear on a local scale R3 (Figure 7). The insignificant difference between local and global integration is due to the small topological size of the campus itself. Hillier and colleagues through his centrality as a process, natural movement and movement economy theories were able to find a high degree of correlation between accessibility values and movement flows (Hillier, 1993; Hillier, 1996; Hillier, 1999). The more integrated a space is, the more movement it has. So, it is to be expected that precisely these paths serve as the main movement distributors in the hospital campus.

Comparing the results from the configurational analysis and the mental maps the correlation becomes obvious. The most accessible (integrated) routes in UCCK are the main paths in the image of UCCK. However, path **b**, an important path on the mental images of the employees, is

Figure 8: Gate counts location. University Clinical Centre of Kosovo

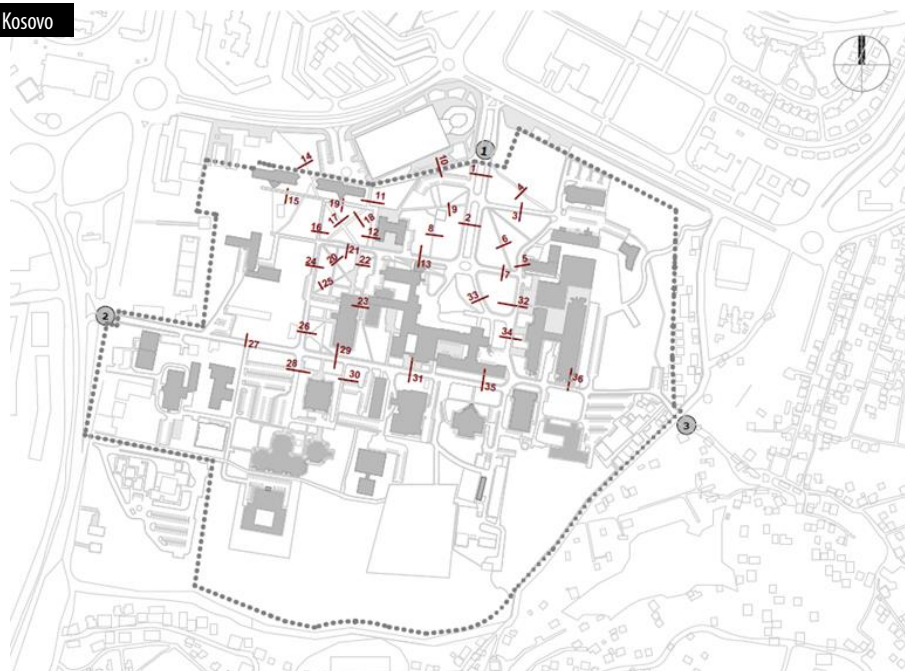


Table 1. Gate counts at University Clinical Centre of Kosovo.

Gates	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	Staff movement/07:00-19:00	Avg	Avg/h
1	2		1	1	2		3	2				1	12	3	36
2	3			1						1			5	3	30
3		2	1										3	2	24
4													0	0	0
5	2	3	4	5	1	14	1	1	1		1		33	6	72
6					1					1		1	3	2	18
7			8	4	1	1	4	3				2	23	6	69
8	6						2	7	3	1	5	2	26	7	78
9			1						1			1	3	2	18
10	4			3		1	1	2				2	13	4	45
11	8		7		1		1	7	4	4	9	1	42	8	101
12	6	6	4	4	4	2	2	5	2	4	1		40	7	80
13	2	6	9	2	5	1	4	2	2	7	4	2	46	7	85
14	5	2	0	0	2	1	0	1	1	5	0	0	17	3	31
15	5	5	8	5	0	6	1	1	0	2	0	0	33	5	61
16	0	5	1	2	9	3	2	1	0	1	1	1	26	4	48
17	0	0	2	0	2	0	0	0	0	0	0	0	4	1	7
18		3	1		2								6	3	36
19	2	9	5	8	11	2	3	3	2				45	9	108
20					1	1							2	1	16
21		1		1			2					1	5	2	24
22			1				1						2	1	16
23		3	8	5	2	6	5	3	2	3		2	39	7	85
24					3		1				1		5	3	30
25				1	2		3	1			1		8	3	32
26		3	1	3	6	9	16	2		1			41	9	109
27	1			1	6	2	16	3			7	5	41	9	109
28		2	2		2	3	2		2	3	2	1	19	4	46
29	3		3	3	5	4	9	1	3	1	4	6	42	7	84
30	1	2	3	4	5	9	9	2	3	1	3	2	44	7	81
31	3	7	8	13	11	8	12	6	0	5	3	5	81	12	150
32	0	0	6	1	1	4	5	2	1	0	2	0	22	3	41
33	0	1	2	1	1	3	4	0	1	0	0	1	14	2	26
34	5	2	5	2	10	0	2	1	1	3	1	1	33	5	61
35	1	13	15	1	4	18	13	3	0	0	5	2	75	12	138
36	2	8	7	4	9	9	14	3	1	0	2	3	62	10	114

less integrated than the other ones into the configuration of the hospital path network. This is probably due to the main entrance of the hospital on path **b**. The location of the main entrance seems to impact movement distribution and shifts path **b** into one of the main movement distributors, although its configurational properties do not suggest that. But that is so only when people enter and leave the hospital. Path **b** doesn't function as a link between the hospital facilities and activities. If we analyse the data form on site observations - gate counting (Table 1, Figure 8 and Figure 9) it becomes obvious that path **a** as the most

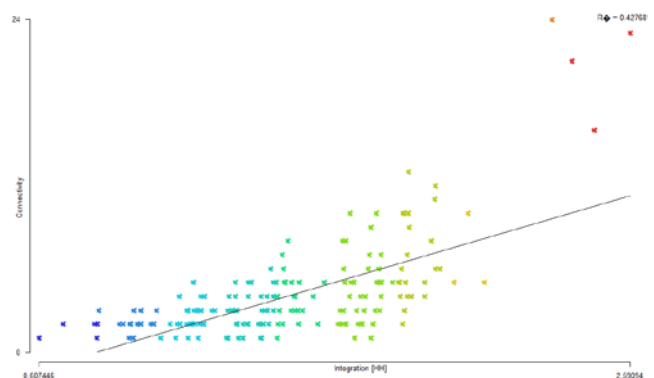
integrated serves as the main movement distributor in the hospital setting as far as the employees are concerned. On average, more employees move through path **a**, than any other route in the campus. Some moderate movement is observed on few gates (11 and 19) that, looking at the processed maps of integration, are not expected to be as active. The fact that gate 11 is close to the public parking and gate 19 close to the preclinical institutes, which serve for teaching and research, explains the movement pattern distortions.

Figure 9: Average number of people per gate plotted against Global Integration RN map. University Clinical Centre of Kosovo.



A good indicator of the legibility of a certain spatial setting is the relation between parts and wholes of a spatial configuration, expressed as intelligibility. Intelligibility is expressed as a correlation of local and global integration values (Figure 10). The regression analysis shows relatively low level of intelligibility in UCKK - R2=0.427. It means that relatively poor information can be gained from a certain location about the overall structure of UCKK. The difficulty

Figure 10: Intelligibility. University Clinical Centre of Kosovo.



employee face while navigating through the hospital expressed by intelligibility is also evident from the sketch maps drawn by the participants. The mental maps become more chaotic on locations where movements branch from path b to the surrounding areas of the spatial configuration.

The comparison between the analysis of the mental maps and the configurational analysis of the hospital campus reveals that there is a relevant correlation between the syntactic properties of a setting, behaviour and the perception effects caused by the settings physical arrangement. The research also indicates that in order to maximize the ease at which people navigate through an environment and in order to create a clearer image of the environment a holistic approach which takes into account individuals perceptions and behaviour is necessary.

5. CONCLUSION

Wayfinding is the process of navigation and orientation through the environment with a certain degree of ease. In hospital setting this process of spatial behaviour is supposed to be as efficient as possible, since a delicate matter like saving lives is concerned. Even more so on pavilion hospital campuses such as University Clinical Centre of Kosovo which prove to share many of the complexities with cities.

The paper shows that employees face difficulties grasping the image of UCCK. Their mental maps are fragmented and blurred. Although not clearly enough, the most integrated routes in the system of networks represent the main paths in the cognitive maps of people who navigate within UCCK. On site observations show that the staff is utilising these spaces to reach their destinations within the campus. On the other hand, the findings also show that UCCK's spatial configuration has relatively low level of intelligibility, which generally corresponds to the variety of paths drawn on the mental maps beside the main paths. While the main paths could be distinguished, the rest of the routes were more labyrinthian-like in the sketches drawn by the medical staff. Obviously, they are missing a clear image of UCCK as a whole. One of the reasons for such a blurry image must be the process of piecemeal development of the campus.

However, the hospital serves not only the employees and people familiar with the hospital environment, but also visitors who are unfamiliar with the hospital setting. In order to function effectively with minor consequences on people lives and to fully understand the dynamics of the spatial configuration of the University Clinical Centre of Kosovo in the context of spatial cognition, further research based on the perception of visitors and their behaviour in an unfamiliar setting is necessary. Also it would be interesting whether the configurational properties of the campus change when the whole spatial configuration of Prishtina is taken into account.

REFERENCES

- Arruda Campos M. B. (1997). Strategic Spaces: Patterns of Use in Public Squares of the City of London. *Proceedings of the First International Space Syntax Symposium*. London: University College London
- Carattin, E. (2011, October). Wayfinding architectural criteria for the design of complex environments in emergency scenarios. In J. A. Capote, D. Alvear (eds.), *Evacuation and Human Behaviour in Emergency Situations – Advanced Research Workshop Proceedings* (pp. 209–222). Santander, Universidad de Cantabria, Spain.

- Ferati, A., Saidi, A. (2020). Organic vs Planned: The Evolution of The Spatial Configuration of Tetovo. *Journal of Applied Sciences-SUT*, 6 (11–12), 9–29. ISSN 2671–3047
- Grajewski, T. (1992). *Space Syntax Observation Manual* (2001 unpublished revised edition: L. Vaughan). London: UCL Bartlett and Space Syntax Ltd.
- Giovenale, AM. (2009). University Hospitals: the innovation of organizational models for integration among care, research and teaching. In R. Del Nord (ed.), *The culture for the future of healthcare architecture. Proceedings of 28th International Public Health seminar, Seminar Program*. Florence: Alinea editrice
- Haq S., Zimring C. (2003). Just down the road a piece – The Development of Topological Knowledge of Building Layouts. *Environment and Behaviour*, 35(1), 132–160. <https://doi.org/10.1177/0013916502238868>
- Haq, S., Hill, G., Pramanik, A. (2005). Comparison of Configurational, Wayfinding and Cognitive Correlates in Real and Virtual Settings. In Akkelies van Nes (ed.), *5th International Space Syntax Symposium*, 2, 387–405. Delft University of Technology: Techne Press.
- Hillier, B., Hanson, J. (1984). *The Social Logic of Space*. Cambridge: Cambridge University Press
- Hillier, B., Penn, A., Hanson, J., Grajewski, T., & Xu, J. (1993). Natural Movement: Or, Configuration and Attraction in Urban Pedestrian Movement. *Environment and Planning B: Planning and Design*, 20(1), 29–66. <https://doi.org/10.1068/b200029>
- Hillier, B. (1996). Cities as movement economies. *Urban Design International* 1(1), 49–60. <https://doi.org/10.1057/udi.1996.5>
- Hillier, B. (1999). Centrality as a process: accounting for attraction inequalities in deformed grids. *Urban Design International*, 3(4), 107–127. <https://doi.org/10.1057/udi.1999.19>
- Hillier, B., Iida, S. (2005). Network effects and psychological effects: A theory of urban movement. *Proceedings of the 5th International Space Syntax Symposium*. Delft: TU delft, 553–564.
- Krasniqi A. (2018). Qendra Klinike Universitare e Kosovës. *Fjalori enciklopedik i Kosovës: II. L-ZH* (pp. 1356 - 1357). Prishtinë: Akademia e Shkencave dhe e Arteve e Kosovës
- Lynch, K. (1960). *The image of the city*. Cambridge: The MIT Press
- Martinez, M. (2011). The need for an evidence – based toolkit. The spatial DNA of hospitals: evidence based planning and design. In N. Setola (ed), *Research tools for design. Spatial layout and patterns of users' behaviour. Proceedings e report 76* (pp.11–21). Florence: Firenze University Press.
- Mens, N. (2018). The building type and its emergence. In C. Wagenaar, N. Mens (eds), *Hospitals: a design manual* (pp. 65–66). Basel: Birkhauser Architecture
- Pellitteri, G., Belvedere, F. (2011). Humanization and Architecture in Contemporary Hospital Building. In P. Plowright, B. Gamper (eds), *Proceeding of the ARCC Spring Research Conference. Architectural Research Conference: Considering Research: Reflecting upon current themes in Architecture Research* (pp. 225–233). Southfield, MI: Lawrence Technological University
- Peponis, J., Zimring, C., Choi, Y. K. (1990). Finding the Building in Wayfinding. *Environment and Behavior*, 22(5), 555–590. <https://doi.org/10.1177/0013916590225001>
- Plani rregullues “Prishtina e Re – Zona perëndim” (2013). Accessed on 15 May 2019: <https://kk.rks-gov.net/prishtine/planifikimi-strategjik-dhe-zhvillimit-te-qendrueshem/planet-rregullative/>

- Jankovič, N. (1980). *Enti për Urbanizëm e Projektim*. Prishtinë: NGBG "Rilindja"
- Rossi Prodi, F., Stocchetti, A. (1990). *L'architettura dell'ospedale*. Firenze: Alinea Editrice
- Sadek, AH. (2015). A comprehensive approach to facilitate wayfinding in healthcare facilities. In K. Christer (ed), *Proceedings of the Third European Conference on Design4Health*, Sheffield, 13 - 16 July 2015. <https://doi.org/10.13140/RG.2.1.4195.7605>
- SHSKUK (2018). *Raporti i punës. Shërbimi Spitalor Klinik Universitar i Kosovës*. Accessed on 10 May 2019: <https://shskuk.rks-gov.net/Navbar/Index/23>
- Vaughan, L. (2001). *Space syntax observation manual*. University College London.
- Vujic I. (20.04.1956). [Tehnički opis objekata uz situaciju bolničkog centra u Prištini]. Sekretarijat za urbanizam i komunalnu delatnost Priština (Fund 71, no. 1367). Archive of the Municipality of Prishtina
- Wagenaar C., Mens N. (2018). *Hospitals: a design manual*. Basel: Birkhauser Architecture
- Watson D., Plattus A., Shibley R. (2003). *Time-Saver Standards for Urban Design*. New York: Mc-Graw Hill Professional

Domen Kušar: ROZETE GOTSKIH KATEDRAL: KOMPOZICIJSKI IZZIV GRADITELJEV CERKVA

ROSE WINDOWS IN GOTHIC CATHEDRALS: A COMPOSITIONAL CHALLENGE FOR CHURCH BUILDERS

DOI: <https://doi.org/10.15292/IU-CG.2021.09.058-064> ■ UDK: 692.29:726:27-523.41 ■ SUBMITTED: May 2021 / REVISED: June 2021 / PUBLISHED: October 2021



1.01 Izvirni znanstveni članek / Original Scientific Article

UVODNIK

EDITORIAL

ČLANEK

ARTICLE

RAZPRAVA

DISCUSSION

RECENZIJA

REVIEW

PROJEKT

PROJECT

DELAVNICA

WORKSHOP

NATEČAJ

COMPETITION

PREDSTAVITEV

PRESENTATION

DIPLOMA

MASTER THESIS

POVZETEK

Rozete imajo posebno mesto v arhitekturi gotskih katedral. Gre za velika okrogla okna, ki so večinoma del čelne fasade. So odlično kamnoseško delo. Poseben izziv je predstavljala delitev kroga na manjše enake dele, ki so v praksi členjeni s kamnitimi elementi. Delitev kroga na enake segmente oziroma razmerje med premerom in obsegom je namreč star matematični problem, ki pa je imel posledice tudi v praksi. Delitev rozet na manjše dele je tako predstavljalo velik izziv za arhitekto in kamnoseke. Rešitve se gibajo od najbolj enostavnih do bolj zapletenih. Analiziranih je bilo preko 50 rozet gotskih katedral. Izkazalo se je, da je členitev rozet v zgodnjem obdobju bolj enostavna. Kasneje pride do bolj zahtevnejših delitev, ki imajo verjetno zaledje tudi v antropometričnem merskem sistemu. Morda sta najbolj zahtevni členitvi rozet cerkva sv. Frančiška in sv. Klare v Asiziju, ki sta še posebej predstavljeni.

KLJUČNE BESEDE

rozeta, kompozicija, delitev, arhitektura, Asizi

ABSTRACT

Rose windows are of special significance in gothic cathedrals. These are large circular windows. They are also exquisite works of masonry. In terms of their construction, the sectioning of the circle into smaller, equal segments presented a particular challenge. The division of a circle into equal segments or the ratio between the diameter and the circumference was an old mathematical problem, which had practical consequences for architects and masons. Their answers ranged from simple to more complex solutions. Analysis has shown that the segmentation of rosettes was simpler in the early period. It later evolved into more complex segmentation, which was probably also based on anthropometric measuring systems. Perhaps the most complex segmentation of the rosette can be found in the rose windows of the Basilica of Saint Clare and the Basilica of Saint Francis in Assisi, which are presented separately.

KEY-WORDS

rose window, composition, sectioning, architecture, Assisi

1. INTRODUCTION

The Gothic period left its most significant mark with the great cathedrals of its time. It was the successor of the Romanesque period, which was the first pan-European style of art (Lah, 2019). Despite the recognisable uniformity of its architectural style, the Gothic period began at different times in various parts of Europe and lasted different periods of time. Interestingly, Gothic art developed as a common style in an otherwise very divided society. At that time Europe was marked by the end of the unity of church and state. It was separated into numerous small states, riven by the ambitions of individual rulers and dynasties. This was also the time of the unification of France and its rise as a dominant political and cultural force. The period coincided with an increase in population and growing urbanisation, a rising significance of cities and trade, the formation of educational centres, and scientific development. The most important theological masters of the time were the two Scholastic philosophers, the Dominicans Thomas Aquinas and Albertus Magnus. The previous image of security centred around the figure of the emperor was beginning to wane. Francis of Assisi, for instance, foregrounds the significance of the human individual, your fellow brother or sister. This was also the time of the Crusades which, despite their intention and end result, still represented a form of inter-European cultural exchange.

Arguably the most important figure in the development of Gothic art is Suger, the Abbot of Saint-Denis (1122-51). His reforms of the abbey of Saint-Denis and his influence over the French King led to a new understanding of Architecture and the role of the cathedral (Koch, 1999, pp. 146).

We cannot fully understand the significance of the Gothic cathedral without understanding the religious spirit which inspired it. According to Pope Benedict XVI (2009), Gothic cathedrals represent a synthesis of faith and art, harmonically expressed in a universal, enchanting language of beauty, which still fascinates today. A new technique of arch construction enabled a significant increase in height, while at the same time liberating the building of its massive walls. Its vertical lines express the soul's longing for God and invite prayer. The "unencumbered" surface of the wall is transformed into a window and decorated with stained glass. Windows became marvellous illuminated images intended to educate people in faith. The messages incorporated into the stained glass enabled the dissemination of saints' lives, Biblical events and similar content. The mystical light flooding through the stained glass windows onto believers made them a part of the story of redemption. The cathedral churchgoers thus understood their history in the context of a common history of salvation. The deeper, comprehensive meaning of the Gothic cathedral is perhaps best encapsulated by the words engraved on the central portal of Saint-Denis in Paris, which exhorts the viewer extolling the beauty of the entrance not to be deceived by its outer glory – rather, they should keep in mind the painstaking labour needed to complete it. The resplendent image of the church is therefore a representation of illuminated truth guiding us towards true light, which is Christ (Samper and Herrera, 2015).

The unity of architectural expression over a vast geographical area is surprising in the context of social and political division. The architectural design of the Trondheim cathedral in Norway is thus similar to the design of cathedrals in Spain, Italy, Ireland, Austria ... During that time construction was given new impetus (Marinko, 1999). The Burgundian monk Rodulfus Glaber (1050) described the flurry of construction by saying that Europe was rejuvenated by donning "a white mantle of churches".

In terms of beauty and harmony, Gothic churches are particularly interesting for their circular windows – rose windows. These conveyed multifaceted meanings. As already mentioned, stained glass windows carry a strong theological and pastoral significance and contribute to the overall theological sense of the building. The masonry of a rose window is generally the result of excellent artisanship, while its segmentation depended on the knowledge of mathematical (Havemann and Fellner, 2004; Samper and Hererra, 2015) and compositional principles. Sanctuaries have always been spaces of transcendence. On the one hand, they reflect human longing for the transcendent, and on the other, they embody the power of religion. The function of sacral buildings is thus distinctly subservient to their beauty and composition. According to Crow (2000), sacral buildings occupy the third place in the list of structures in which form supersedes function, right after monuments and cemeteries. The evolution of rose windows is closely tied with the development of the architectural design of churches, which was based on contemporary theological guidelines, the zeitgeist, and technical capabilities of the age. Circular or so-called "wheel windows" were already present in the Romanesque period, but these were usually smaller and simpler architectural elements, such as for instance in the Saint Cyriacus cathedral in Ancona, which dates to the period between the 11th and 13th centuries. Rose windows flourished in Gothic art. Rose windows which favour exquisite masonry over stained glass elements, which is to say that the stained glass merely complements the stone elements, are generally more interesting in terms of composition.

Rose windows were usually quite large and therefore complex to execute. This is why the window opening was usually divided into smaller parts. The segments were sometimes separated with the aid of iron frames, but most often by stone tracery. Because of the symbolic, compositional, and visual significance of the windows, special attention was devoted to their composition and the execution of the tracery. This primarily involved segmentation into smaller, equal or compositionally complementing parts. With rose windows this often entailed the division of a window into one or more circular rings. These circular rings were then further divided into equal segments. The division of a circular ring into halves, quarters, eighths, thirds, sixths, etc., is generally not that complex. It can be done using a compass and a ruler. Because any circular arc may be halved with the use of a compass and ruler, this provides us with different combinations of circle segmentation. The most basic of these is the division of a circle into two equal parts. We can then continue halving the segments and thus divide the circle into 4, 8, 16, 32, 64, 128 ... parts. The other geometrical division involves segmenting the circle into 6 parts. With further addition and halving the circle can then be divided into 3, 6, 12, 24, 48, 96 ... equal segments. A circle can also be geometrically divided into 5 equal parts, which results in further segmentation into 10, 20, 40, 80... equal parts. Dürer's copperplate engravings (1525) also feature some other geometrical divisions of the circle, which shows that they were already known during that time.

A different and more complex segmentation of a circle or ring is based on the ratio between the circle's circumference and diameter. This involves working with approximations, which is only acceptable in practice, when the margin of error is acceptably small. It was well known since ancient history that the ratio between circumference and diameter was constant. Perhaps the oldest known description of this is in the Biblical Book of First Kings (1 Kings 7:23), which describes the Temple of Jerusalem. There the ratio between the diameter and circumference of the basin of water was 30:10. The error for this ratio is 4.5070%.

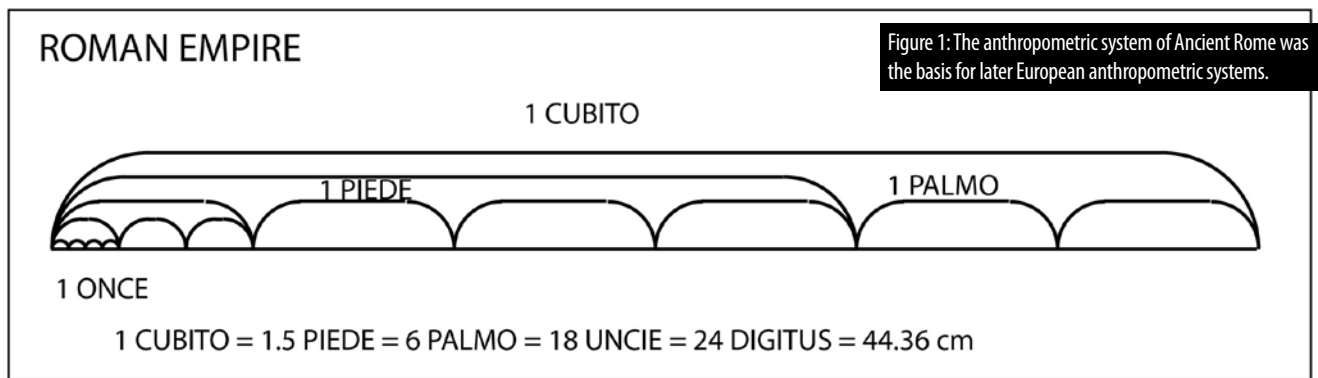


Figure 1: The anthropometric system of Ancient Rome was the basis for later European anthropometric systems.

A better approximation, 25:8, was known by the Babylonians, where the error is 0.5282%. A similarly small error was made by the ancient Egyptians, who used the ratio 256:81 to describe the ratio between the circumference and diameter (the error here is 0.6016%) (Kušar, 2008). Greater progress in rational approximation was achieved by the ancient Greeks. With the aid of inscribed and circumscribed polygons, Archimedes discovered that the true values of the ratio between the circumference and the diameter were between 223:71 and 22:7. Both values represent an error smaller than 0.0403%. The ratio was more accurately described by Ptolemy (cca. 150 BC) with the ratio 377:120, with an error of merely 0.0023% (Davide, 1984). Experience backed by mathematical knowledge showed that the best approximations of the ratio between circumference and diameter were 16:5, 19:6, 22:7, 25:8, 28:9 ... We know today that the ratio between circumference and diameter corresponds to the irrational number π .

In practice it is possible to connect this ratio and the applied measurement system with the use of an appropriate module or modular system. The modular system has to be compatible with the applied measurement system; until the introduction of the metric system, the latter was based on the so-called anthropometric system.

2.1 Anthropometric measurement system

The ratio between the length, width, and height of a building and between its architectural elements is one of the fundamental issues to challenge architecture since early times. Geometric analyses show that builders always kept to specific ratios or proportions throughout their constructions. They were based on smaller elements and the human body. The human body was used as a template for various dimensions (size of palm, feet, step,...), as a building "machine" (arm span, hauling strength,...), or as scale for the size of spaces, ceiling height, seats, etc. This was the basis for the development of a so-called anthropometric measurement system, where measurements were determined by the human body and were thus often also named after body parts. A measurement system is present in cases, where the relations between larger and smaller measures may be expressed with the ratios of small integers. Usually these ratios are 1:2, 1:3, 1:4, 1:5, 1:6, 1:10 and 1:20. Some systems also include more unusual ratios, such as 1:7 or 1:51. One cubit was 3/2 feet or 6 palms or 18 thumbs.

Apart from the use of a measurement system, more complex problems (in larger constructions) required the specification of new main measures, the so-called modules. Modules were based on a measurement system. Just like the measurement system, the modules also had to be composite, i.e. capable of

being joined into a whole. In principle, the number of modules in a composition has to be small and proportional to the composition. Consequently, the module of the whole is larger than the module of the element, which makes up the whole.

Most anthropometric systems in the Mediterranean and Europe were based on the Roman anthropometric system (Figure 1). The eventual demise of the Roman state and the founding of smaller states led to the establishment of different measurement systems. Because of their common basis, however, they are similar to a certain degree. They mainly differ in the length of their basic unit. Anthropometric systems were in use in Europe until the introduction of the metre in the second half of the 19th century. On the one hand, the introduction unified metrology; on the other hand, it resulted in the loss of certain advantages of the old systems. The most famous architect preoccupied with the question of how to bring together the advantages of the new and old systems was Le Corbusier. His efforts resulted in the Modulor (2004).

The goal of this research is the analysis of the rosettes found in cathedrals across Europe. We wished to determine both simpler and mathematically more complex forms of segmentation and identify a potential rational similarity between individual cases. This was complemented by the modular analysis of rosettes in the Basilica of Saint Clare and the Basilica of Saint Francis in Assisi. We tried to determine the connection between the ratio of the equal segments of the rim of the circle and its diameter. By placing relevant modules in the applied measurement system, we tested their usefulness for the segmentation of a circle into several equal parts.

2. METHOD

306 churches across Europe were examined. The buildings were chosen based on the list of important Gothic architecture (List of Gothic architecture, 2020). We determined the number of rings and the number of elements in each ring based on images and church presentations published online (Rose Window). Even though some windows seemed to be (or were) composed of multiple rings, we focused on the segmentation of rings into smaller, equal parts. If the multiple rings of a single window contained an equal number of smaller segments, we considered all of these rings as a single ring of the individual window.

The criterion for the inclusion of a building or a window into our analysis was the presence of a large circular window. These were found in 67 churches. We analysed the central rose window. This was usually the rose window above the entrance, on the main façade. Some of the rose windows were not placed on the front façade, but rather on the front façades of the main transept. In these cases we analysed the transept windows.

The detailed compositional analysis of the rosettes was based on the measurement and modular analysis of the two most interesting rosettes. These were the rosettes of the basilicas of Saint Francis and Saint Clare in Assisi (Italy), which contain multiple rings divided into different numbers of equal segments. The modular analysis was made with the use of the anthropometric measurement system used in the region during the time of construction. The measurement system allowed us to determine the compositional key of the window following the system devised by Prof. Kurent at the Faculty of Architecture, University of Ljubljana. The system enables the identification of the module, which served as the basis for work. The module must correspond to the applied measurement system (Kurent, 1970). We used archival material stored at the Faculty of Architecture, University of Ljubljana. Data on circular compositions have been collected by prof. Kurent. He used them also in his works *Arhitektov zvezek I, II and III.* (2002, 2005, 2006). Our research was conducted with the aid of Autocad software. Modules were determined on the basis of compositional and measurement analyses and the application of an anthropometric system. They were identified on the basis of the segmentation of a circle into equal parts. We looked at the dimensions of equal circular segments and their ratio to diameter. We then tried to place it into a relevant measurement system and discover whether it was based on corresponding principles or not.

3. RESULTS

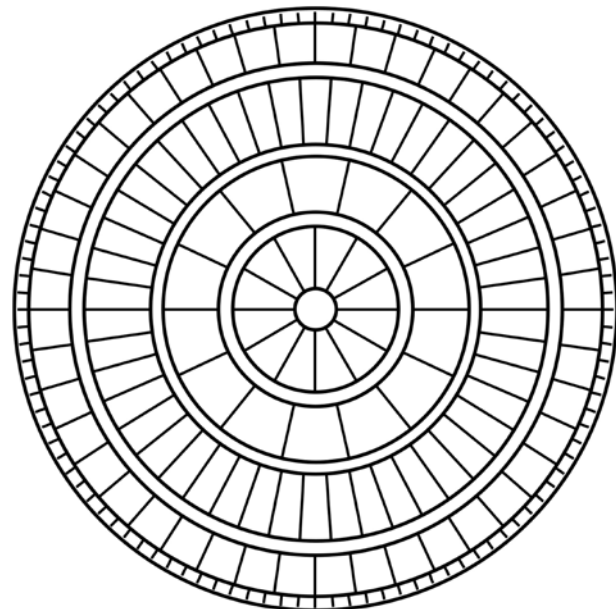
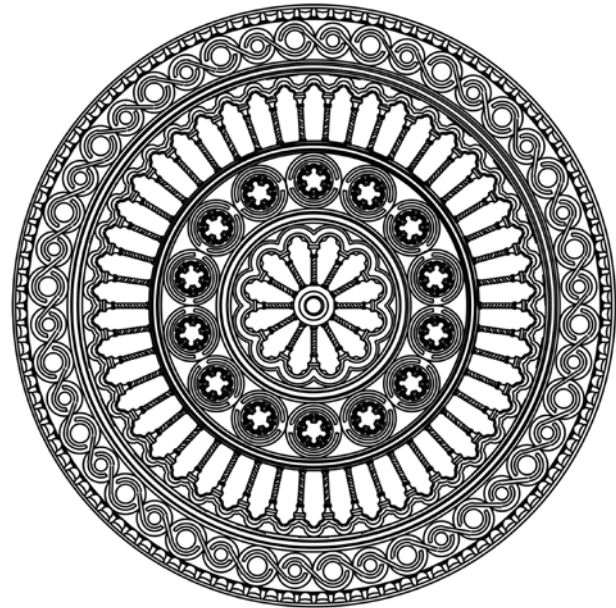
Our research encompassed 306 Gothic churches in 31 countries, mostly in France and Great Britain. 67 of these churches had rose windows. Instead of rose windows, the other churches featured tall or lancet windows. The majority of rose windows were found in France, Italy, and Portugal. Analysis has shown that there were fewer rose windows in particular in Germany, Spain, Belgium and other countries in Central and Eastern Europe.

The majority of the analysed rosettes had one (29 churches) or two (33 churches) rings divided into equal segments, even though these were sometimes seemingly different. Despite the fact that some rosettes give the impression of having multiple rings, detailed analysis shows that the segmentation of these "different" rings is in fact the same. A good example of this is the rosette in the Chartres Cathedral (France), where a cursory glance reveals three rings. However, all three rings are segmented into 12 equal parts. Three of the churches had differently segmented rings: the Basilica of Saint Clare in Assisi (Italy) has 5, and the Basilica of Saint Francis in Assisi (Italy) has 6 rings.

The analysis of the segmentation of the rings into equal parts reveals as many as 20 different approaches. The predominant method of segmentation included division into 1, 4, 6, 8, 12, 16, or 24 equal segments. This is unsurprising, since it involves the relatively simple segmentation of a circle or further division of segments (4-8-16 or 6-12-24). The rarer segmentations, into 3, 5, 7, 10, 14, 15, 20, 22, 30, 44, 46, 50 and 108 segments, are of greater interest in terms of composition. As already mentioned above, geometric segmentation can also result in the division of a circle into 5 equal segments, with further halving resulting in 10 and 20 equal segments.

Segmentation into 14, 22 and 44 parts results in a ratio between circumference and diameter, which approximates π . This can be achieved through modular composition, which will be presented below with the example of the basilicas of Francis and Clare in Assisi.

Figure 2: The rosette of Basilica of Saint Francis in Assisi and division of segments.



12, 14, 46, 44, 108

3.1 Rosette of the Basilica of Saint Francis in Assisi

The Basilica of Saint Francis in Assisi was under construction from 1228 to 1253 (Basilica of St. Francis of Assisi, 2019; Bonsanti, 1998). It actually includes two basilicas, upper and lower. The front façade is divided into three parts: the triangular tympanum with a circular opening in the centre, a central part with a richly decorated rose window, and a bottom part with a monumental portal and twin entrance doors. The rest of the front façade is relatively modest in comparison with other Gothic churches (of a later period). The rosette itself is very interesting, since it is composed of 5 circular rings, divided into 12, 14, 46, 44 and 108 equal segments. Two different measurements were available regarding the dimension of the rosette. Muhič (1987) mentions that the rosette is 31 Roman feet wide, which equals 9.17 m. The second dimension, based on the archival analysis conducted by Kurent (2020) mentions a diameter spanning 7.19 m. Photograph analysis seems to confirm the latter dimension.

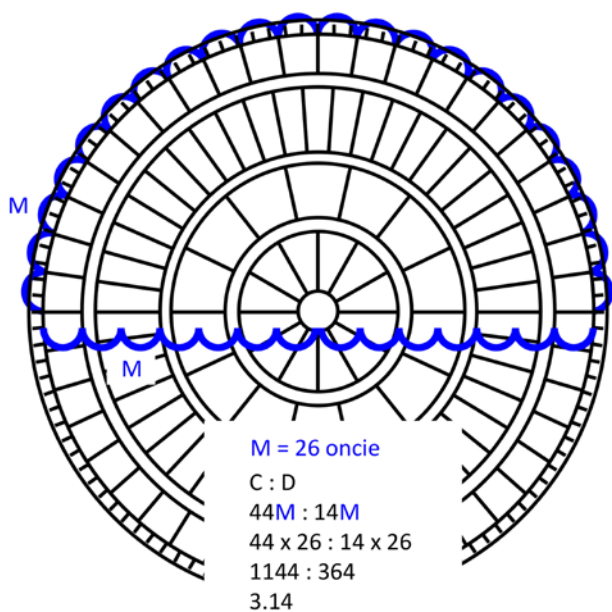
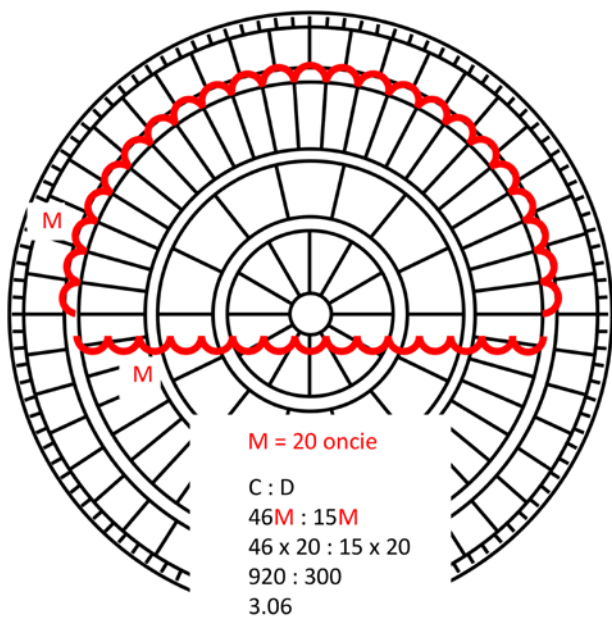


Figure 3: Rosette on the front façade of the Basilica of Saint Francis in Assisi and its compositional analysis.

The division of inner rings is of particular interest, since they are segmented into 12, 14, 44, 46 and 108 equal parts (Figure 3). The compositional analysis demonstrated the use of various modules, which were 12, 22, 26, 28 and 44 unciae (sing. uncia) long. During the construction the region was under the dominion of the Papal States, which had a unique measurement system that was included in the analysis. The use of these modules expressed a ratio between the circumference and diameter, an approximation of 22:7 (44:14) and 28:9. The rosette is specific because of the segmentation of a ring into 46 equal parts. We do not know the reasons for this segmentation, we can only guess. It is interesting that generally in windows of this type the number of segments in a ring increases with the distance from the centre. However, in the rosette of the Basilica of Saint Francis a ring is first segmented into 46 parts and only then into 44. The symbolic meaning of number 46 in the Christian tradition is not as commonly known as are the meanings of some other numbers. Even so, the Old Testament is composed of 46 books. It also took the Jews 46 years to build Temple of Jerusalem. Modular units 12, 12, 20, 22, 26, 28 and 44 unciae, which appear in the analysis, are relatively easy to translate into the anthropometric system (Figure 4).

3.2 Rosette in the Basilica of Saint Clare in Assisi

The Basilica of Saint Clare in Assisi (Italy) was built under the direction of Filippo Campello in the 13th century. It was supposedly completed in 1260, as that is when they moved the remains of Saint Clare from the Church of Saint George into the newly built basilica. It is a simple church with a Gothic interior and large flying buttresses on the outside (Basilica di Santa Chiara, 2019). The front façade is equally modest and decorated with a rose window.

The rose window of the Basilica of Saint Clare is similar in size and age to the one in the nearby Basilica of Saint Francis; unlike the rest of the façade, it is characterised by intricate masonry. The rosette measures 7.04 m in diameter, and the inner, segmented part 5.64 m. It consists of four rings segmented into different numbers of equal parts. The rings are thus divided into 6, 15, 30 and 50 parts (Figure 5).

The segmentation into 15 and 30 equal parts is of particular interest, since this division of the circle is more complex than segmentation into 6 or 50 elements. Namely, the division into 15 or 30 elements is the result of doubling the ratio 25:8 (50:16). The main compositional principle of the rosette is based on the measurement system in use in the Papal States. The diameter of the whole ornament is one catena, while the inner radius corresponds to one canna, as well as the diameter of the innermost

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

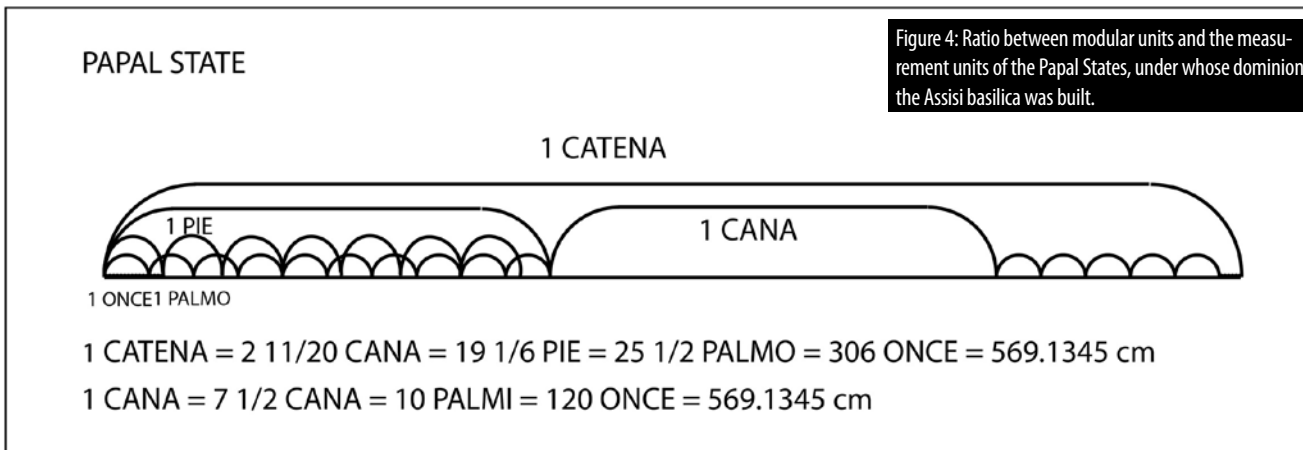


Figure 4: Ratio between modular units and the measurement units of the Papal States, under whose dominion the Assisi basilica was built.

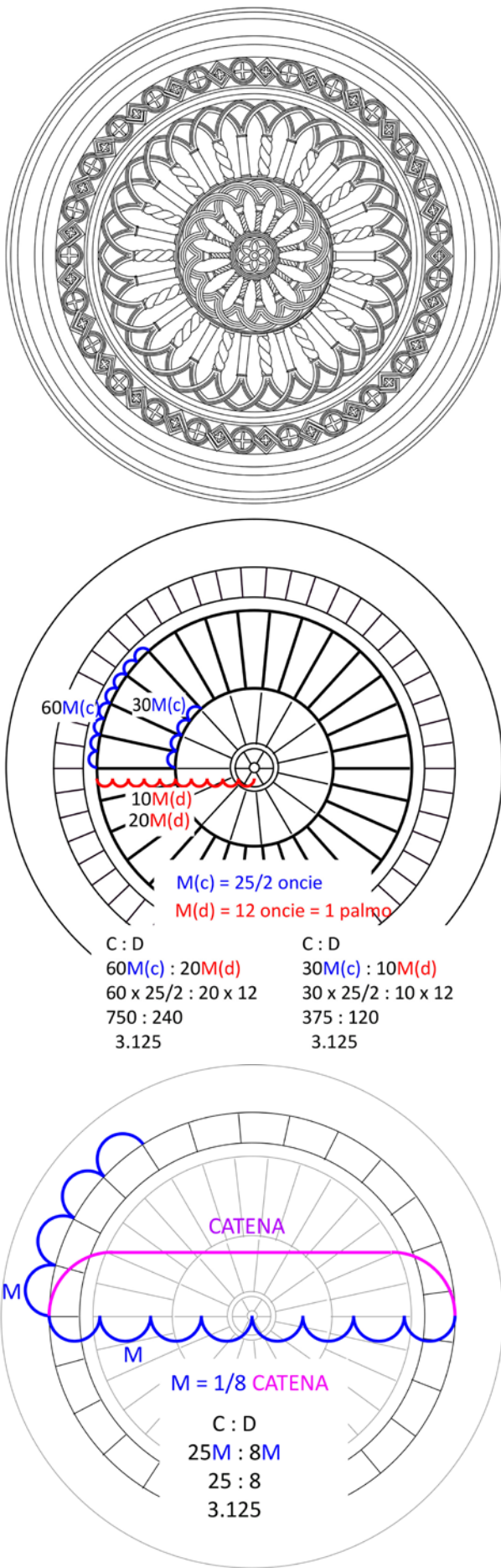


Figure 5: Rosette on the front façade of the Basilica of Saint Clare in Assisi and its compositional analysis.

circle. The segmentation of the rosette into 15 or 30 parts is more demanding than the more common segmentations. With the module $M (= 2 \text{ palmi} = 24 \text{ uncie})$ and the ratio between diameter and circumference of $10 : 30$, the error is relatively large (4.33% or 2.02 cm per segment). With module $M(c) (= 25/2 \text{ uncie})$ and $M(d) (= 12 \text{ uncie})$ the error is minimised (0.16 cm or 0.34%) to a degree where it no longer affects the inclusion of the rosette in a wall (Figure 5). The combination of different measures seen above is supported by the very measurement system of the Papal States, since this was not a decimal system, but rather a mixture of different systems, such as decimal, duodecimal, pentadecimal, and other systems. Catena is a particularly interesting measuring unit, comprising 25.5 palms. In this case, modular units are simple to convert into an anthropometric system (Figures 4 and 5).

4. DISCUSSION

Apart from the exceptional artisanship of the masonry, rose windows, which were a unique feature of Gothic churches, also display mathematical and compositional knowledge reflected in the segmentation of circular rings into equal parts. Even though most examples of rosettes are based on compositionally simple segmentations, some of them follow more complex principles.

These cases show a rational approximation of the ratio between the circumference and diameter, expressed as small integers. The ratio of 22:7 explains the segmentation of circular rings in the Basilica of Saint Francis in Assisi into 12, 14, and 44 parts.

With the aid of a module it was possible to divide a circle into 7 or 14 equal segments. In angular degrees this is an equivalent of 25.714° or 16.364° , which was probably unusable in practice. This shows that more complex segmentation of the circle was carried out based on the principles of modular composition. A simple transposition of modular measurements into anthropometric measurement systems proved their efficiency in the design and construction of rosettes. It is possible to segment a ring into 46 parts with the aid of a 20 uncie module and the ratio between circumference and diameter of 46:15. The segmentation of the rosette in the Basilica of Saint Clare is more interesting. It probably entailed the use of two modules, which differed by 1 uncia. This resulted in a minimal error for the segmentation of the ring into 15 or 30 parts. The segmentation into 50 parts displays the ratio of 50:16, which is an error of only 0.5%.

Complex segmentations are evidence of great geometric and mathematical knowledge, which remained a well-kept secret. On the one hand, this indicated the knowledge of individual masters; on the other hand, it was a well-guarded guild secret. In view of the harsh punishment for the betrayal of guild (artisan) secrets and the organisation and educational structure of guilds, it is not surprising that the secrets were eventually lost and are not a part of the written record. With today's knowledge of mathematics and geometry we can thus only speculate about the techniques that were in use.

Because rose windows were such demanding artisan elements, they were probably built on the ground. They

probably first transposed the design of the window in 1:1 scale on an adequately prepared surface, and then divided it into rings and segmented them based on knowledge of geometry and ensuing guidelines. A thus executed working “draft” also enabled them to control the precision of the stone carved elements and their conjoining. The completed “whole” was then taken apart and re-assembled at its location in the construction.

In today’s awareness, we think of Gothic art in terms of height, arches, silence, darkness, and mystical light. These spaces imbue us with the presence of the transcendent. However, these are also buildings whose manner of construction, stability, and resistance to the ravages of time and elements continue to astonish us today. Even more fascinating, however, is the extraordinary mathematical and compositional knowledge hidden in cathedral details, such as rosettes, which is oftentimes obscured from the cursory inspection of modern-day admirers.

REFERENCES

Basilica di Santa Chiara. (2019). Accessed on November 7, 2019: https://it.wikipedia.org/wiki/Basilica_di_Santa_Chiera

Basilica of St. Francis of Assisi. (2017). Accessed on November 7, 2019: http://www.franciscanfriarstor.com/archive/stfrancis/stf_basilica_st_francis.htm

Bonsanti, G. (1998). *The Basilica of St. Francis of Assisi*. New York: Abrams.

Crowe, T. (2000). *Crime prevention through environmental design*. Second edition. Boston: Butterworth-Heinemann.

Davide, V. (1984). *Matematika skozi kulture in epohe*. Ljubljana: Društvo matematikov, fizikov in astronomov SRS.

Dürer, A. (1525). *Underweysung der Messung, mit dem Zirckel und Richtscheit, in Linien, Ebenen unnd gantzen corporen*. Nüremberg: Hieronymus Andreae.

Havemann, S., Fellner, D., W. (2004). *Generative Parametric Design of Gothic Window Tracery*. The 5th International Symposium on Virtual Reality, Archaeology and Cultural Heritage. <https://doi.org/10.1109/SMI.2004.1314525>

Keen, M. (1993). *Srednjeveška Evropa* (Original: The Pelican History of medieval Europe). Ljubljana: Cankarjeva založba.

Koch, W. (1999). *Umetnost stavbarstva* (Original: Baustilkunde). Ljubljana: Mladinska knjiga.

Kurent, T. (1970). *Modularna evritmija šempetrskih edikul*. Ljubljana: FAGG.

Kurent, T. (2002). *Arhitektov zvezek*. Ljubljana: Nuit.

Kurent, T. (2005). *Arhitektov zvezek II*. Ljubljana: Nuit.

Kurent, T. (2006). *Arhitektov zvezek III*. Ljubljana: Nuit.

Kurent, T. (2020). Archival data, available in personal archive of prof. Kurent at University of Ljubljana, Faculty of Architecture.

Kušar, D. (2008). *Division of the wheel windows of churches of St. Sava in Dubrovnik and Sta. Maria's in Zadar and portals of church in Osor*. Abstracts of 13th Scientific-Professional Colloquium of Croatian Society of Geometry and Graphics. Poreč, Croatia, pp. 17.

Le Corbusier (2004). *The Modulor; Modulor 2*. Basel: Birkhäuser.

List of Gothic Architecture. Accessed on February 4, 2020: https://en.wikipedia.org/wiki/List_of_Gothic_architecture

Marinko, J. (1999). *Vloga izvajalcev v sodobni sakralni arhitekturi (Sakralna arhitektura v slovenskem prostoru)*. Ljubljana: Fakulteta za arhitekturo Univerze v Ljubljani in Kršćanska kulturna zveze Celovec.

Mušič, M. (1965). *Veliki arhitekti I*. Maribor: Založba Obzorja Maribor.

Muhič, A. (1987). *Krožne kompozicije v arhitekturi*. Ljubljana: Fakulteta za arhitekturo.

Lah, L. (2019). Romanska arhitektura v Burgundiji – odkrivanje, raziskovanje in dokumentiranje. *Bogoslovni vestnik*, 97(3), pp. 811–824.

Pope Benedict XVI: Benedict XVI's reflection on the theology behind Gothic cathedrals. General audience of November 18, 2009. Accessed on June 17, 2020: <https://aleteia.org/2019/04/18/benedict-xvis-reflection-on-the-theology-behind-gothic-cathedrals/>

Rose window. Accessed on July 20, 2020: <http://www.therosewindow.com/TheRoseWindow2/Type/Rose-Type-Frame.htm>

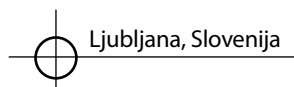
Samper, A., Herrera, B. (2015). A study of the roughness of gothic rose windows. *Nexus network journal 2016* (18), pp. 397–417. <https://doi.org/10.1007/s00004-015-0264-6>

Sveto pismo stare in nove zaveze. (1995). Ljubljana: Svetopisemska družba.

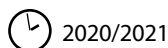
III.

DELAVNICE
WORKSHOPS

»A-PLA(Y)CE« – ŠTUDENTSKA DELAVNICA: »A-PLA(Y)CE« – A STUDENT WORKSHOP: USTVARJANJA PROSTORA SKOZI IGRO PLACEMAKING BY PLAYMAKING



Ljubljana, Slovenija



2020/2021

TIP DELAVNICE *TYPE OF WORKSHOP*

urbanistično-arhitekturna delavnica

MENTORJI *MENTORS*

UL FA: prof. dr. Tadeja Zupančič, doc. dr. Matevž Juvančič,
znan. sod. dr. Špela Verovšek
prostoRož: Maša Cvetko, Naja Kikelj

ŠTUDENTJE *STUDENTS*

Emirhan Alp, Lavinia Calinescu, Matija Cvikel, Aleksandra Čobeljić,
Milica Doderovič, Eva Dužnik, Tereza Fenykova, Gašper Grebenšek, Pia Groleger, Anja Konatar, Hana Kyzlinková, Tatjana Marjanovič, Yago Martin, Clara Melchert, Emilija Meserko, Jascha Moors, Jan Nebec, Petar Rakočević, Margerita Voulissa Stell Pičman, Leonie Straub, Jo Zornik.

ORGANIZATORJI *ORGANISED BY*

Fakulteta za Arhitekturo, Univerza v Ljubljani

DRUGI SODELUJOČI *OTHER PARTICIPANTS*

prof. dr. Matija Svetina [UL-FF], dr. Maja Simoneti [IPOP],
Slavko Rudolf [Modus]; Nejc Matjaž [FABRIKAID]

skupnost prebivalcev Bežigrajski dvor;
vzgojiteljice in otroci vrtca Mladi rod

NAROČNIK *CLIENT*

Delavnica je bil izvedena v okviru evropskega programa Creative Europe, v okviru projekta A-PLACE

DATUM IN KRAJ RAZSTAVE *DATE OF THE EXHIBITION*

PROSTOR V OBLAKU; virtualna razstava Fakultete za Arhitekturo
2019/2020

GRADIVO PRIPRAVILA *MATERIALS PREPARED BY*

znan. sod. dr. Špela Verovšek

PARTNERJI V PROJEKTU *PROJECT PARTNERS*

School of Architecture La Salle Barcelona (Spain), prostoRož (Slovenia), KU Leuven Brussels (Belgium), Alive Architecture Brussels (Belgium), City Space Architecture Bologna (Italy), LOOP Barcelona (Spain), Urban Gorillas Nicosia (Cyprus), New University of Lisbon Lisbon (Portugal)



Co-funded by the
Creative Europe Programme
of the European Union

UVODNIK

EDITORIAL

ČLANEK

ARTICLE

RAZPRAVA

DISCUSSION

RECENZIJA

REVIEW

PROJEKT

PROJECT

DELAVNICA

WORKSHOP

NATEČAJ

COMPETITION

PREDSTAVITEV

PRESENTATION

DIPLOMA

MASTER THESIS

Figure 1: Workshop poster.



Figure 2: Students' proposals were presented to the community representatives (Bežigranski dvor) and interested public to pick their favourites (photo credit: Naja Kikelj).



The student workshop A-Pla(y)ce was initiated and organised by the Faculty of Architecture (University of Ljubljana) and *prostoRož*, in frames of the A-PLACE project (Linking Places Through Networked Artistic Practices), co-funded by the European program Creative Europe. The workshop challenged the location of the pedestrian alleys in the residential area of Bežigranski dvor. Although the alleys reflect the transitional character, they also embody the most vibrant part of the neighbourhood. This is where people pass, meet, chat, where children play. In this aspect, the alleys offer great potential for placemaking practices and for further building the identity of the neighbourhood, by also engaging families in activities related to children play.

The activities of the workshop comprised of an exploratory and enactment phase with students of the Faculty of Architecture and The Academy of Fine Arts and Design Faculty (both University of Ljubljana). The first phases of the workshop were supported by a rich knowledge brought by the invited lecturers and consultants, creating a learning podium for discussion, and generation of professional and tacit knowledge, by also arranging the dialogue with invited representatives of the local community, residents and teachers from the local kindergarten. The workshop process encompassed an insight into a place morphology, its dynamics and its social context by also introducing observation, surveying and interviewing techniques.

After a series of lectures, debates, site visits, observation analyses and interviews with the potential users and stakeholders, students proposed temporal and semi-temporal interventions to attract the targeted public groups. Four final place interventions were proposed by students and presented to the community representatives. The event was followed by a lively



Figure 3: Teachers and children from kindergarten Mladi rod were invited to explore the alleys with students (photo credit: Maša Cvetko).

Figure 4: Interested public were invited to vote and select the favourites among the student's proposals. The winner intervention will be implemented in the neighbourhood in the next months.



discussion among the residents, students, and mentors, who deliberated the design solutions and discussed the possibilities and options for implementation. The ideas and proposals gained much attention and interest, raised questions, some doubts, as well as excitement.

The exhibition of the proposals was followed by the elective process taken by the interested public to select the most suitable intervention proposed for the implementation.

IZVLEČEK

Semestrna študentska delavnica A-Pla(y)ce, ki je bila organizirana na Fakulteti za arhitekturo Univerze v Ljubljani, je potekala v sklopu projekta A-Place (Program Kreativna Evropa) v sodelovanju s članicami iniciative *prostoRož*. Lokacijsko se je delavnica osredotočala na prehodne in intervencijske poti v skupnosti Bežigranski dvor, tematsko pa na ustvarjanje prostora skozi omogočanje igre in varnega druženja na danih prehodnih poteh. Študenti so skozi proces raziskovanja prostora, spoznavanja s potrebami potencialnih uporabnikov in poglobljenega opazovanja otrok in drugih obiskovalcev prostora razvili idejne projekte, ki iz prostorov prehajanja ustvarjajo prostor sobivanja, igre in druženja.

IV.

SEZNAM AVTORJEV

LIST OF CONTRIBUTORS

LIST OF CONTRIBUTORS

UVODNIK EDITORIAL

Assoc. Prof. Dr. **Alenka Fikfak**
University of Ljubljana, Faculty of Architecture,
Zoisova 12, 1000 Ljubljana, Slovenia
e-mail: alenka.fikfak@fa.uni-lj.si
phone: +386 (1) 2000 775

Prevod: Nuša Klinc

ČLANKI ARTICLES

Jernej Červek

Ulica Angelse Hlebce 1D, 4000 Kranj, Slovenia
e-mail: jernej.cervek@gmail.com

Martina Zbašnik-Senegačnik

Faculty of Architecture, University of Ljubljana, Slovenia
Zoisova 12, 1000 Ljubljana, Slovenia
e-mail: martina.zbasnik@fa.uni-lj.si

Ljudmila Koprivec

Faculty of Architecture, University of Ljubljana, Slovenia
Zoisova 12, 1000 Ljubljana, Slovenia
e-mail: ljudmila.koprivec@fa.uni-lj.si
phone: +386 1 2000 746

Živa Kristl

Evropska pravna fakulteta Nove univerze,
Delpinova ulica 18/b, 5000 Nova Gorica,
ziva.kristl@epf.nova-uni.si

Domen Kušar

Faculty of Architecture, University of Ljubljana, Slovenia
Zoisova 12, 1000 Ljubljana, Slovenia
e-mail: domen.kusar@fa.uni-lj.si
phone: +386 1 20 00 756

Kristijan Lavtizar

University of Ljubljana, Faculty of Architecture, Slovenia
Zoisova 12, 1000 Ljubljana, Slovenia
e-mail: kristijan.lavtizar@fa.uni-lj.si

Aleksander Vujović

University of Ljubljana, Faculty of Architecture, Slovenia
Zoisova 12, 1000 Ljubljana, Slovenia
e-mail: aleksander.vujovic@fa.uni-lj.si
phone: +38640274945

Author:

BARDHA MEKA

Affiliation:

Faculty Of Architecture, University Of Prishtina
ST. ARK. KARL GEGA, N.N., 10000 PRISHTINA,
KOSOVO

Contacts:

bardha.meka@gmail.com
00383(0)44157953

Second author:

ARMIR FERATI

Affiliation:

FACULTY OF CIVIL ENGINEERING AND
ARCHITECTURE, DEPARTMENT OF
ARCHITECTURE, UNIVERSITY OF MOTHER
TERESA, SKOPJE
MIRCE ACEV, Nr. 4 1000, SKOPJE, NORTH
MACEDONIA

Contacts:

armir.ferati@unt.edu.mk
00389(0)71224543

Znanstvena revija, št. 9 / leto 2021
Univerza v Ljubljani
Fakulteta za arhitekturo in
Fakulteta za gradbeništvo in geodezijo
Ljubljana, 2021

Scientific journal, No 9 / Year 2021
University of Ljubljana
Faculty of Architecture and
Faculty of Civil and Geodetic Engineering
Ljubljana, 2021

Naslov revije: Title of the Journal:

IGRA USTVARJALNOSTI THE CREATIVITY GAME
teorija in praksa urejanja prostora Theory and Practice of Spatial Planning

Urednici: Alenka Fikfak, Alma Zavodnik Lamovšek Editors: Alenka Fikfak, Alma Zavodnik Lamovšek

Oblikovanje in naslovnica: Gašper Mrak Design and Title page: Gašper Mrak

Klasifikacija: (UDK) Tina Musec, UL FA Classification: (UDK) Tina Musec, UL FA

Založila: Založba Univerze v Ljubljani Published by: University of Ljubljana Press
Za založbo: Gregor Majdič, rektor Univerze v Ljubljani For the publisher: Gregor Majdič, The Rector of the University of Ljubljana

Izdala: UL Fakulteta za arhitekturo in Issued by: UL Faculty of Architecture and
UL Fakulteta za gradbeništvo in geodezijo UL Faculty of Civil and Geodetic Engineering
Za izdajatelja: prof. dr. Matej Blenkuš, dekan UL FA, in For the issuer: Prof. Dr. Matej Blenkuš, Dean UL FA, and
prof. dr. Violeta Bokan Bosiljkov, dekanja UL FGG Prof. Dr. Violeta Bokan Bosiljkov, Dean UL FGG

Spletna stran revije: Journal's Web Page:
<https://www.iu-cg.org/> <https://www.iu-cg.org/en/>

Spletna stran številke Current Issue Link
<https://www.iu-cg.org/stevilka.php?vol=9&lang=en>

DOI ISSN
<https://doi.org/10.15292/IU-CG.2021.09> ISSN 2350-3637



This work is licensed under a Creative Commons Attribution – ShareAlike 4.0 International License.

Univerza v Ljubljani
Fakulteta *za arhitekturo*



Univerza v Ljubljani
Fakulteta *za gradbeništvo in geodezijo*



Revijo je sofinancirala
Javna agencija za
raziskovalno dejavnost RS.

The journal is financially
supported by the Slovenian
Research Agency