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*ON ARCHITECTURE
— PHILOSOPHY OF
ARCHITECTURE*



PROCEEDINGS

strand

Sustainable Urban Society Association

ON ARCHITECTURE
PHILOSOPHY OF ARCHITECTURE
PROCEEDINGS

Belgrade, Serbia
2022

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PHILOSOPHY OF ARCHITECTURE
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IMPRESSUM

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PREFACE

Summarizing ten years of dealing with the topic On Architecture with numerous sub-topics, such as Reworking the City, Scale of Design, Innovation in Digital Era, Challenges in Architecture, Learning Architecture, Facing the Future - New Challenges, the Conference will re-examine the Philosophy of Architecture within numerous sub-topics formulated in thematic blocks.

The Conference will discuss complexity and various meanings of architecture. Interdisciplinary approach is a milestone in defining thematic blocks: Phenomenology of Architecture, Architecture and/or vs. Art, Technology and Architecture, Architecture and New Media approach.

These themes will consider substance of architecture through all its dimensions always thinking of it as an art. The substance will be discussed regarding various points, processes and trends that contribute to new aesthetic and functionalism as globalization, new approaches to design, innovative technologies, projects, and materials.

Editor



INTRODUCTION

DIAGRAMS: PHILOSOPHY BEYOND THEORY
THEORY THROUGH PHILOSOPHY: ARCHITECTURE, ART, POLITICS AND TECHNOLOGY

Miško Šuvaković

Faculty for Media and Communications, Belgrade, Serbia

The characteristic of most new philosophical approaches or tactical aesthetic positioning within the architecture and visual arts is guided by a critique of the conditions and circumstances of individual and collective subjectivization achieved within productive and receptive practices of architecture. Various authors choose the term "philosophy" to indicate a deliberate turn from conceptual and semiological to phenomenological, on the other hand, to indicate the complex relationships between objects, situations and events in relation to the dispositives of art and life. In this lecture, I will present an analysis and discussion of the status of contemporary philosophy of architecture in relation to the important relations of architectural practice, artistic practice, political antagonisms and trans-technological impacts. Contemporary trans-technological (digital, post-digital, network and techno-ecological) aspects make the discussion of philosophical and aesthetic knowledge about architecture take place in the field of breaking the stable boundaries between art, architecture and politics. The discussion will point to the philosophical models of the New Materialism, Speculative Realism, Eco-Philosophy, De Re Media Criticism and Neo-Marxism.

RADICAL DESIGN: HUMAN ENHANCEMENT AND THE ICONISTIC POLIS

Theofanis Tasis

Lecturer of Contemporary Philosophy, Alpen-Adria University, Austria

Transhumanism developed as a philosophy that became a cultural movement and is now regarded as a growing field of study. It is a complex mix of philosophical anthropology and philosophy of technology that brings together diverse problems from various fields such as philosophy, social sciences, cultural studies, neuroscience, information science, biomedical science, molecular biology and artificial intelligence. Transhumanism aims at modifying and upgrading human beings through technology claiming that biological evolution is incomplete and without direction. Although it adopts elements of humanism such as rationality, self-knowledge, self-care, autonomy and self-creation it does so with reference to the ideal of the creation of a new human species. The aim of the paper is to understand transhumanism in the context of the iconistic polis.

PLASTICITY AFTER INDEXICALITY FOR ARCHITECTURAL THEORY TODAY

Thomas Mical

Professor of Architectural Theory, Himalayas

In the case of the theoretical matter of contemporary architecture, there exists a prevalent reliance upon the semiotic construct of indexicality to locate meanings and attributes of surfacing along relational lines. Following from the projection of Krauss' mobilization of Peircian indexicality in works of minimalist and post- minimalist art, it has been the case that material indexicality has been engaged as a core construct of material choice in speculative construction. This reliance on the intellectual indexing of textures has been accelerated with the spread of digital models and processes, noticeable in the rise of the discourse of the Deleuzian virtual/actual in the 1990's. These permutations of defining and describing the traits and signals of matter, and the mobility or transitive nature of matters of surface construction, are no longer aligned with the index, but something more chameleon-like and effusive.

Matter itself is now vibrant and increasingly engineered and designed at a micro level, often for high-performing laminar ultrathin surfaces, and often with performance criteria that increasingly include timelines or scripted manoeuvres over time. To this condition, we propose to return to the notion of plasticity in Malabou's works, and test them against architectural propositions, within historical, cognitive, and performative channels. In so doing, this paper will seek to define an extension of Malabou's works on plasticity, including a quick foray into recent works in ultrathin surfaces, to develop a more robust appraisal of the plasticity of surface matter optimized under of the dual meanings of sense in architectural theory today.

WHAT IS A CONJECT(URE)?

THE CITY AS A CONJECT(URE)

Petar Bojanić

Institute for Philosophy and Social Theory, University of Belgrade, Serbia
Center for Advanced Studies, University of Rijeka, Croatia

The second half of the twentieth century has seen dramatic changes in the training of architects: the appearance of myriad new concepts and conceptions and a sudden expansion of architectural curricula in schools of architecture. Architects and students of architecture are now expected to write, meticulously explain and justify what they do and are doing, publish academic texts about their activities, analyze the work of other architects, produce complicated and extensive doctoral theses. All this has created in architecture an overt need for theory or philosophy, which can be termed the turn to theory or philosophy in architecture. The task of the philosopher is threefold: to awaken the philosopher in the architect (or perhaps recognize the architect-philosopher), who will then be better capable to thematize their own or joint work with other architects; with other architects, to produce, construct, and deconstruct a system (a register, order, protocol) of concepts that will in the future be authentically architectonic, such as opening the possibility of an eminently architectural language or terminology; finally, to discipline or institutionalize architecture (“to be an architect is to be a social fact”), to assist in the essential project of autonomy of the architect and architecture.

The task of the architect is to always guard the distance, that is, the conjunction *AND* (& \cdot; ^) between architecture and philosophy as the interval of the third or third space that gives birth to novelty. Further, their task is to examine the geometry of connections and relations, which means to bind the two fields, to reprogram the *AND*, to be the coordinator between the two – to preserve the uncertainty of the coordinating conjunction.

SMART CITIES AND ARCHITECTURAL STRUCTURES: COMMUNICATIONAL AND INFORMATIONAL SPACE

Christiane Wagner

University of São Paulo (USP), Brazil

The expectations for shaping the urban landscape toward the ethical and aesthetic values of democracy are seen as the main challenge of an intelligent environment, made possible via information and communication technologies (ICTs). Consequently, architecture's tendency to embrace digital media strives to create innovative and sustainable infrastructure. This approach aims for an argumentative theoretical analysis of aesthetics and communication sciences. The focus is on the context that continuously evolves living traditions persuaded by innovation that modifies and facilitates the evolution of society. The approach is also supposed to be a constantly evolving practice that engenders interaction between past, present, and future, configuring a unique urban landscape. The goal is about the metropolis as a collective achievement, seeking innovation through technologies while preserving tradition. Therefore, the convergence between architecture, technology, and new media requires the consideration of two viewpoints in this analysis. The first is the adopted architectural spatial models. The second is the transformative structure through new media, creating realities, intelligent environments, and interactive communities. Under these two directions, the artificial environment and imagined configuration through digital media are discussed, considering that technology overcame natural boundaries: the leitmotif of human cultural development. Hence, the following questions guide this analysis: How is it possible to have public spatial architecture driving the collective and democratic intelligence of a city's ethical and aesthetic productions and experiences? Would the basis be in the interactive communicational structure; in the capacity of human communities to cooperate intellectually, ethically, and democratically; or in the capacity of artificial intelligence as a solution?

META-TYOLOGIES

Polyxeni Mantzou

Professor, Dept. of Architectural Engineering, Democritus University of Thrace, Greece

The post-era in which we are living is surprising and unpredictable; full of transformations, permutations and shifts. Modern rigid categories and strict architectural typologies are succumbing under the influence of an apparently more elusive, vague and open-ended world. The premodern world of the past, where control was limited and humanity was not definitely separated from its surroundings, led to the later modern world, where humanity objectified the world and established its sovereignty, by controlling, dissecting and organizing it in categories and typologies. Nowadays, in the post-era, hybrids, mixtures and crossings regenerate our conception and our positioning in the world.

This conversion comes as a result of the advances and proliferation of digital technologies, which reinvent our relation to the world and, consequently, create new opportunities for architecture, inasmuch as theory, research and practice. Embedded digital technologies can extend both our thinking and our realities and engender new forms of relating to our surroundings, which can now become interconnected, liquefied and entangled. Architectural design that integrates digital technologies can dissolve many of the limitations and constraints of the past and lead to looser and adaptable meta-typologies.

Urban space is a perfect testbed for the incorporation of digital technologies in architectural design. Three case-studies of emerging urban meta-typologies, one implemented and two projects, will be presented and analysed, from the perspective of the designer, in order to showcase how the use of digital technologies can enable the augmentation and intensification of the ways we relate to our urban environment.

AUGMENTED DESIGN EXPERIMENTS

Renate Weissenböck

Frankfurt University of Applied Sciences, Germany

FH Joanneum University of Applied Sciences, Austria

The advent of the use of digital technology in architecture has led to a disconnection between digital and physical matter (Mitchell and McCullough 1995). One way to bridge this gap is to implement Augmented Reality (AR). Unlike Virtual Reality (VR), which takes place in fully virtual environments, AR enables the superimposition of digital objects with our real world (Weissenböck, 2021). The easier accessibility of AR devices and software allows us to turn even our smartphones into AR devices by equipping them with specific apps (Wang, Ong, and Nee 2016; Abboud 2014). AR is a powerful tool for architects. The incorporation of AR technologies into architecture fosters the exploration of interactive design processes in an interplay between digital media and immersive spatiality.

The featured work provides insights into two pedagogical experiments using AR technologies in design courses to conceive bespoke architectural solutions for existing spaces and environments.

The seminars explore the application of AR on both domestic and urban scales, as well as indoors and outdoors. One course examines the design of customized structures for students' own living spaces, the other one the design of a new information center within an existing urban campus. These seminars were conducted between 2020 and 2022 at Frankfurt University of Applied Sciences (Germany) and Graz University of Technology (Austria). With the help of newly developed AR software (Fologram) a direct connection between 3D modeling (Rhinoceros3D), parametric design (Grasshopper) and holographic immersion can be established. This enabled students to design in real time and at 1:1 scale, in an overlay of real space and digital models. Rapid testing and adjustment of design options in response to changing circumstances and needs was encouraged, opening the students' mind to a new way of design workflow.

GAME-AS-A-SERVICE FOR URBAN DESIGN AND URBAN RESEARCH COMMUNICATION

Milena Ivkovic

Creative Director BLOK 74 Urban Simulations / Urban Communications, The Netherlands

How can designers, researchers, and urban policy makers leverage gaming and immersive experience to communicate their solutions in a more comprehensive, more inclusive way?

At our practice, we have frequently asked ourselves what will happen if we can transpose some of the urban gaming solutions (used to drive the dialogue in participatory urbanism process) to the scientific communication. The idea behind this new development was to use games and gamification as a method for better understanding and wider outreach of urban planning and design scientific research.

We started developing GAS! (games-as-service) approach in the middle of the Covid pandemic. The first prototypes combine elements of urban gaming, storytelling, and diverse urban planning tech tools with Web 3D technology.

Concrete project where we applied this approach that tackles increasingly complex challenges of presenting research data in a comprehensive and engaging way was structuring the outputs of the Urban Research Incubator (URI) program of ISTP / ETH Zurich.

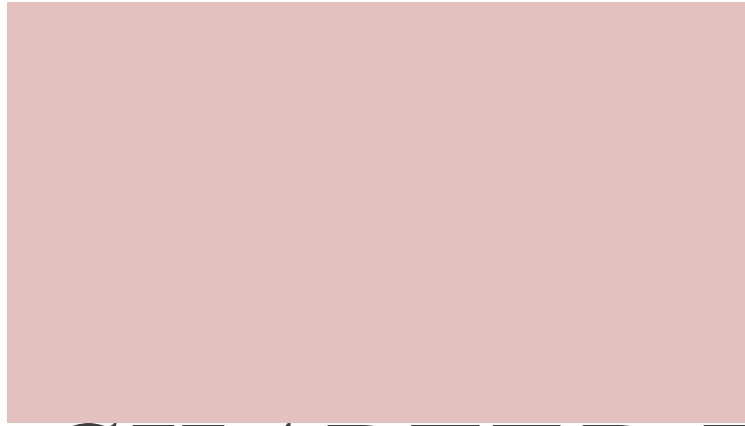
To respond to the URI main research question of “How can urban policy-makers leverage science and technology to create safer, more inclusive cities that serve the needs of all citizens?” we created an interactive “mini-world”, a 3D representation of the complex, interdisciplinary URI ecosystem. The 3D mini-world presents a radically flexible, interactive platform to playfully explore different stakeholder perspectives and understand key data for the future development of two research subject cities - Bogota, Colombia and Cape Town, South Africa.

AVANTGARDEN

Tanja Vujinovic

Founder, Ultramono, Serbia

AvantGarden Bios7 is an artwork-organism made of digital artifacts and human visitors. It is a living rave ecosystem, a biome made of live music and moving bodies. Moving away from polarizing daily politics by being all-inclusive and non-judgemental, raves teach us tolerance, rethinking reality, and re-inscribing new potential models of structuring society in coexistence, and liberation. The beat of the drum, like in some primordial trance state, connects us, and creates the pulsating space with repetitive trance-inducing and mind-lifting experience of the self in a multitude of vibration flows. Moments, one by one, crystalize in time, so we do remember these time units as significant on the time-space grids or our lives.



CHAPTER I

DIAGRAMS: PHILOSOPHY BEYOND THEORY
THEORY THROUGH PHILOSOPHY: ARCHITECTURE, ART, POLITICS AND TECHNOLOGY

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ABSTRACT

The characteristic of most new philosophical approaches or tactical aesthetic positioning within the architecture and visual arts is guided by a critique of the conditions and circumstances of individual and collective subjectivization achieved within productive and receptive practices of architecture. Various authors choose the term "philosophy" to indicate a deliberate turn from conceptual and semiological to phenomenological, on the other hand, to indicate the complex relationships between objects, situations and events in relation to the dispositives of art and life. In this lecture, I will present an analysis and discussion of the status of contemporary philosophy of architecture in relation to the important relations of architectural practice, artistic practice, political antagonisms and trans-technological impacts. Contemporary trans-technological (digital, post-digital, network and techno-ecological) aspects make the discussion of philosophical and aesthetic knowledge about architecture take place in the field of breaking the stable boundaries between art, architecture and politics.

Keywords:

architecture, concept, diagram, discourse, network, philosophy

It is time to rehabilitate the philosophy and aesthetics of architecture with all the transdisciplinary theoretical lateral, transverse, deep, surface and external branches and networking of the speech of architects, the external speech of users, the discourse of disciplinary determination of architecture, the discourse of architectural theories, the discourse of humanistic theories, aesthetics and philosophy, and transdisciplinary research on architecture and other architecture.

The concept or notion of architecture is the basic subject of the philosophy of architecture. The philosophy of architecture is, therefore, the art of forming, inventing, producing, analyzing or discussing concepts about architecture or derived from architectural practice. This is the regime of thinking about philosophy that Gilles Deleuze and Félix Guattari put forward:

Simply, the time has come for us to ask what philosophy is. We had never stopped asking this question previously, and we already had the answer, which has not changed: philosophy is the art of forming, inventing, and fabricating concepts.¹

The task of philosophy, then, is to derive concepts from the words and sentences of one language, which correspond to specific uses, events or functions of placing the concept in relation to other concepts, and then, in a complex way, to the non-conceptual complex world of objects and forms of life in space and time. There seems to be a complex movement between self-referentiality and actualized or projected referentiality. The goal of such a philosophical pursuit is to identify the complexity and multiplicity of the implementation and use of concepts about architecture. But concepts about architecture in a referential sense involve fundamental questions about space, space relations and space, object, human relations and processes.

This means: distinguishing between natural and geological space, geological and ecological space, natural and artificial space, local and geographical space, social and cultural space, building space and city space, interior and exterior space in relation to the building, in relation to the city and in relation to the planet and the cosmos as an external space to the dichotomy of human and natural.

In a narrower sense, philosophy of architecture deals with complex contextualized or decontextualized relational concepts of belief/knowledge about architecture and the meaning of declarative sentences of belief/knowledge about architecture in different disciplinary contexts of engineering, art, cultural studies, aesthetics, architectural history, art history, political theory etc.

Dealing with the concepts of architecture is not given in a unique way in the history of philosophy. Architecture and the concepts added to it interpretatively, that is, architecture as an appearance of the human world and the concepts derived from it have different identification possibilities: (1) architecture as an appearance of living space (phenomenology of architecture), (2) architecture as a means of communication (semiology of architecture), (3) architecture as a space of human everyday life (cultural studies on architecture), (4) architecture and urbanism as a technology of subjectivization and disciplining of the individual and society (biopolitical theory of architecture), etc.

I will discuss the complex and almost mysterious relationship between architecture and philosophy using diagrammatic models. A diagram is posited in line with the chosen construction of the appearance and legibility of an imagined or discovered reality by means of elements (graphs, words, signs, images, drawings, photographs) that do not imitate the form of that reality but are rather meant to develop it further away from that form, toward processings through, above, or beyond *form*. A diagram is not a project pertaining to form, but an indexation of a path toward form, a path toward transcending or abandoning form, or merely a testimony about thinking about form in process.

¹ Gilles Deleuze, Félix Guattari, "Introduction", in *What is Philosophy?*. Columbia University Press, New York, 1994, 2.

The first DIAGRAM

IDEALIZATION	APPLICATION	PROJECTION
the idea of architecture	project of the architecture	imagining architecture
talk about the concepts of architecture without considering the reference of the concepts	the subject matter is a way of giving reference to the concept of architecture	the subject of the study is the projection of the potentiality of architecture
starting question: What is the concept of architecture?	starting question: What is architecture ?	starting question: What should or can architecture be?

The second DIAGRAM

referentiality concept of architecture	
aesthetics	sensory modes or modes of distribution of sensibility during the production, inhabiting and seeing of architecture as a device in which a specific form of life takes place
poetics	reflected, i.e. conceptualized platforms, protocols and procedures for designing and building architectural objects or complex sets of objects, i.e. settlements or cities
auto-poetics	attitudes and concepts of self-referential and self-reflective concepts about the specific design/building practice of one architect or a group of collaborators within architectural practice
history/herstory	<p>the history of architecture as a "narrative" about the architecture of the immediate or distant past;</p> <p>the history of architecture in relation to the history of art and the history of society, that is, culture;</p> <p>the history or herstory of architecture in relation to the diachrony of individual and collective bodies the separation of the history of architecture as a discourse on "the return of the past", as a discourse of support for current architectural poetics, and as a discourse on "separation from the past" or "a turn towards the future";</p> <p>archeology of cultural structures or specific micro/macro forms of life in which architecture appears</p>
theory of architecture	<p>traditional notion of architectural theory: ordered or systematized knowledge of aesthetics, poetics and history of architecture;</p> <p>newer concept of architectural theory: organized and systematized knowledge about architecture naturalized by social and humanistic sciences (sociology, psychology, psychoanalysis, semiology, anthropology, history of culture, history of art);</p>

anthropology of architecture	<p>general anthropology: architecture as an expression or effect, that is, a product of humanity;</p> <p>anthropology as an ethnological science: architecture and its functions in the very specific human community of a time or a space;</p> <p>contemporary anthropology: architecture as an actant or agent of networking - possibilities of/for actor-network-theory</p>
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The third DIAGRAM

self-referentiality of the concept of architecture

ontology of architecture	the existence of architecture: what is architecture?	Martin Heidegger habitat/site/place
phenomenology of architecture	appearance of architecture: how is architecture seen? appearance of architecture: how to live through architecture?	Maurice Merleau-Ponty appears for the body: around, in front of, next to, above and below the body
psychoanalysis of architecture	unconscious of architecture, homelessness, fear/horror and repressed sexuality, drive and desire in architecture	Sigmund Freud the space of the unconscious. architectural uncanny
philosophy of the history of architecture	historical conditions and circumstances of architecture: what is the historical meaning and sense of architecture?	Ernest Bloch space of fulfillment : dream, project, hopes
critical theory of architecture	modern architecture and urban cultur questions about the functions of architecture	Theodor Adorno Walter Benjamin urban space as the nature of modern humans
situationist theories of space	urban geography and politics	Henri Lefebvre Guy Deboard activist strategies and tactics within urban society
epistemology of architecture	knowledge about/in architecture: how is architecture understood?	Ludwig Wittgenstein architectural concepts philosophical concepts translation of concepts
philosophy of language, semiotics/semiology and architecture	the meaning of architecture or the city as a symbolic order, that is, an architectural text within specific historical and geographical cultures	Umberto Eco Roland Barthes space character and code space-text and inter-text textual representation of space
deconstruction and architecture	the limits or borders or liminal zones of architecture: a) what is the relationship between center and margin in architecture? b) what is difference, disjunction in architecture?	Jacques Derrida a space where desire can live architectural forms of desire

biopolitics and architecture	discipline and control, that is, the articulation of the human individual and collective body in architecture 1) how does architecture shape life? 2) how does life shape architecture?	Michel Foucault Giorgio Agamben space of supervision, control, discipline the space of performing life forms
rhizome space/architecture	rhizome as a multiplicity of spatial, architectural and urban relationships and connections	Gilles Deleuze, Felix Guattari diagrammatic thinking
geoaesthetics through geopolitics	cognitive mapping as a metaphor for describing the phenomena of the urban environment and its meaning for human life; the relationship of the individual subject, the reality and the imaginary projecting of the subject of previous relationships to the later relationships of geographical locations, immediate surroundings, buildings or the city	Edward Soja David Harvey cultural space spatial turn
architecture in "speculative realism" new materialism	architecture as an object towards which the mind is oriented: how to think about architecture?	Karen Barad Giuliana Bruno Graham Harman Bruno Latour object oriented mind material agency reset thinking

But, there inevitably arises the question of trust in the proposed concept and distrust in the proposed concept, i.e., it is about the uncertainty suggested by the movement between the complex contexts of execution, placement, understanding and mastery of the concepts of architecture and the modalities of avoiding "conceptual traps" that appear in philosophical work. This is what Wittgenstein metaphorized with question and answer:

309. What is your aim in philosophy? – To show the fly the way out of the fly-bottle. ²

² Ludvig Vitgenštajn, #131, iz *Filozofska istraživanja*, Nolit, Beograd, 1980., 131.

The fourth DIAGRAM
Institution and discourse of spatiality in architecture

STRUCTURAL MODES	AFFECTIVE MODES
context	field
structure	relation
building	site/nonsite
network	virtual assemblage
symbolic order	representation
phantasm	self
human relationship	what it really is
ideology	intensity
practice praxis	event ereignis

building
city
network

CONCLUSION

Architecture as a dispositif, therefore, is a completely heterogeneous set consisting of discourse, institutions, spaces and architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions - in short, everything that is said and unsaid. These are the elements of the dispositif, i.e. architecture. The dispositif of architecture is a system of relationships that can be established between these elements. Second, what I am trying to identify in this dispositif of architecture is precisely the plastic connection that can exist between these heterogeneous elements. Thus, an individual dispositif of architecture can figure one time as a program of an institution, and another time it can function as a means of judging or masking a practice that itself remains silent, or as a secondary reinterpretation of this practice, open to a new field of rationality. In short, between these elements, whether discursive or non-discursive, there is a kind of interplay of moving positions and modifying functions that can vary a lot according to the registers of social activities. The dispositif is understood to be a type, let's say, of a formation that has the main function at a given historical moment to respond to an urgent need to realize concrete forms of life in space and time. The device has a dominant strategic function in realizing the plastic potentials of the human world - a space in which public, private and intimate life takes place with all the complexities and contradictions of race, nation, class, generation, gender, etc.

Architecture is a political social practice that undertakes to act with sovereignty, identity and legitimacy. It is based on the practical institutional implementation of the ideology of the real or ideal everyday life of a certain society through concrete, industrial, procedures and implementations of aesthetic order, utilitarian sense, material economy, instrumental technique, organizational rationality, administrative bureaucratic control and, of course, the structuring of power in historical and geographical society. The political character of architecture is not determined only by the relationship between architecture and macrosocial power, for example, the relationship between feudal production and the conception of the location of a Gothic cathedral or the character of late capitalist post-industrial production and the urban conception of a megalopolis. The political character of architecture is also determined by the political interpretation and determination of seemingly autonomous non-utilitarian architectural solutions as signifier anticipations of social (geographic, racial, gender, ethnic, class, everyday) identity.

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RADICAL DESIGN: HUMAN ENHANCEMENT AND THE ICONISTIC POLIS

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Abstract

Transhumanism developed as a philosophy that became a cultural movement and is now regarded as a growing field of study. It is a complex mix of philosophical anthropology and philosophy of technology that brings together diverse problems from various fields such as philosophy, social sciences, cultural studies, neuroscience, information science, biomedical science, molecular biology and artificial intelligence. Transhumanism aims at modifying and upgrading human beings through technology claiming that biological evolution is incomplete and without direction. Although it adopts elements of humanism such as rationality, self-knowledge, self-care, autonomy and self-creation it does so with reference to the ideal of the creation of a new human species. The aim of the paper is to understand transhumanism in the context of the iconistic polis.

The term iconistic polis describes a society based on a mode of production of images as icons. This mode tends towards the dematerialisation of goods and services, and the fusion of the private and the public sphere. Dematerialisation means that books, newspapers, magazines, records, movies, money, work, communication, education, and social relations become increasingly digital. This dematerialisation process through virtualization constitutes a sophisticated defence mechanism fashioned by iconistic modernity against the collapse of meaning in late industrial society. Iconistic polis requires this sophisticated defence mechanism due to its rejection of death.

The collapse of meaning is understood as the impossibility of conserving key values of the Western tradition such as those of humanism for example. This becomes apparent in the case of education, which has been instrumentalized in terms of its financial benefits. The economic criterion, not the production of democratic citizens, is the primary principle when it comes to designing educational policies and research programs. The collapse of meaning is also evident in the incapability of western societies to produce social significations adept at giving meaning to collective and individual life.

However, iconistic polis cannot manage to overcome the collapse of meaning, because of its inability to produce an anthropological type capable of reproducing its institutions. It cannot overcome the collapse of meaning precisely due to its intrinsic rejection of mortality. This rejection is brought about by the fact that the recognition of mortality reveals the contingency of iconistic society's own institutions, hence undermining its legitimization and its claims for their universal validity. But the increasing virtualization through digitalization in iconistic society is an a priori doomed project: to visualize what is impossible to be visualized. In short, the unrepresentability of death is the insurmountable limit of the virtualization process of iconistic society and the source of its inconsistencies and antinomies. At the same time, it constitutes its ultimate aspiration and conquest strategy, since achieving it would mean nothing less than accomplishing immortality.

But the rejection of mortality is not due to death's unrepresentability. It is a uniqueness of the societies of iconistic society that distinguishes them from all societies that came before them. Previous societies attempted to visualize the unrepresentable by self-instituting, explicitly or implicitly, with regard to mortality. In other words, the great civilizations of the past were built, more or less, in the face of death. Their creations, arts and letters included an awareness of and anguish about mortality, as well as the longing of the mortal subject for immortality. They would also provide the subject with ways and means for striving and claiming immortality. Gottfried Benn puts it vividly when he writes that "All the great spirits of white people [meaning: from the Renaissance onwards] - this is quite obvious - not only felt an inner mission to fulfill their creative nihilism. This fundamental feeling that permeated the most diverse currents of modernity - the religious feeling in Dürer, the morale in Tolstoy, the epistemic in Kant, the anthropological in Goethe, the capitalistic in Balzac - was the fundamental element of all of their work. With tremendous attention it reappears constantly. With ambiguous queries and phrasings they are closing in on it on every page, on every chapter within each line. Not a moment they are not mistaken about the essence of their creative inner being. It is the abysmal, the void, the without purpose, the cold, the inhuman." (Benn, 1989, p.145

In Western civilization, the encounter with the abyss and the striving for immortality took place simultaneously on the public sphere arena. This public sphere emerged for the first time in Athenian democracy, securing a space of visibility of all citizens by all citizens. This visibility was the condition for the pursuit of posterity, which was deemed to be achievable through extraordinary, hence memorable, actions.

The unique relationship between vision and democracy, through the establishment and functioning of a public sphere, is not found in other cultures. In the Jewish or Islamic cultures for example the dominating sense is hearing. Here in the epicentre of social institutions lies not the image, but the word of the Lord or his prophet. It is for this reason that these cultures produced neither theatre and painting, nor a democratic public sphere. In this context it is not accidental that the fertile assimilation of ancient Greek culture by the Arabs did not include tragedy. In the phonocentric Arab culture stories are narrated and heard; they are sound, so they require only a narrator. These stories have no need of actors or ηθοποιοί, meaning "creators of an ethos" in ancient Greek.

The concept of the viewer, as opposed to the concept of the listener, already contains a certain perception of the public based on a preference of vision over hearing, which occurs early in the idolatry of the ancient Greeks. Once Christianity became prevalent in the West, with its promise of an afterlife, the relationship between vision and hearing was disrupted. At the same time, the public sphere and the possibility of achieving immortality through it, which had served as an incentive for political action, both disappeared. Nonetheless, the public sphere does re-emerge several centuries later in the form of cities like Venice and Florence. The remaking of the public sphere in the West, following the discovery of Greek antiquity, is accompanied by a restoration of image and vision as important. Renaissance painting and Renaissance theatre are characteristic manifestations of this process of restoration. This time, however, the importance placed on image and vision is no longer accompanied by a similar corresponding function of the image towards mortality, by that I mean that our image as perceived by others in the public sphere was the condition for posterity. Others would remember us as an image not as a voice or scent, either in the political field or at the level of the subject.

Hereafter the peculiar feature of modern society will be the fact that it will institutionalize increasingly through virtualization in order to compensate for its intrinsic denial of death. The gravitational attraction of this repudiation is expressed as the growing inability to create social significations capable of allowing the subject to experience his life as the life of a citizen. Such an experience would entail the possibility of immortality and ensure a symbiosis (in the sense of living and experiencing together) through meaning, and not merely the coexistence through icons.

The aforementioned gravitational attraction transformed citizens to subjects by causing the collapse of social significations that emerged during modernity. This collapse caused the acceleration of the succession of historical events because of the contraction of social-historical time. This contraction refers to a denser and accelerated creation and destruction of political, social and economic events. In short, iconistic society is the most recent form taken by the hyper-sphere of modernity where death – as its unrepresentable core – shrinks, pressing and reshaping the public and the private sphere, economy, religion and culture.

In this context, the free market economic sphere's increased domination corresponds to its intense resistance to the gravitational attraction due to its material background. The economic sphere is founded primarily in *zoe* and secondarily in *bios* so the importance of icons was limited in its functioning until the rise of iconistic society and the transformation of the financial markets. The economic sphere does not expand colonizing the lifeworld (*die Lebenswelt*) as Habermas argues, but shrinks as well, like all the other spheres, although at a much slower pace.

This shrinking hyper-sphere displays the realm of free market colonizing the lifeworld because the latter is contracted at a much lower rate. However, as the economy is increasingly reliant on financial markets and the trade of finance products, and not on the production of goods, we can observe the deformation of the economic sphere in to a bubble. In other words the dematerialization of the economy creates a bubble economy. Such an economy cannot resist the gravitational pull of iconistic society and its rejection of death. The only sphere capable of expansion during the shrinking process of the hyper-sphere is technology science. The Internet is a characteristic expression of this expansion. As it expands, it also undermines the distinction between the private and the public sphere and creates a virtual space of public privacy.

This virtual space of public privacy diffuses increasingly in the real world first as a bubble, then by creating a hybrid sphere inhabited by bodyless subjects who interact only through sight and hearing. A fundamental feature common to these residents, either as spectators, readers or listeners, is their gradual transformation to an *atopos*, as the internet is literally a *utopia* (*non topos*).

The internet as a hybrid sphere tends to homogenise all previous spheres but primarily, which interests us here, the public and the private. In the private sphere, the internet homogenises by attempting to gradually exclude labor, but also by radically transforming many of the new activities which characterize the advent of modernity: reflection, either in the form of diary writing or by writing generally, the cultivation of a friendship and artistic creation by replacing them with messaging, status updates on social networking sites and posting video, photographs and music. In the public sphere, social media are eroding that sphere's political function, transforming icons into spectacles, and the public sphere into a space of public privacy and digital surveillance.

The trend towards virtualization is intensified through the Internet. It constitutes iconistic modernity's defense mechanism and it corresponds to the increasing dominance, in modernity, of vision over the other senses, as well as the gradual prevalence of the icon in the public sphere. In this context the icon prevails, not as an image of the active subject as citizen, but as a substitute for meaning.

A reaction to the virtualization process promoted by the Internet is the emphasis on zoe – life as the material dimension of mortality – versus bios – life as the poetic dimension of mortality, and the consequent emphasis on the body. The body is no longer perceived through the mere satisfaction of biological needs, as it was more or less in earlier historical periods, but as a source of pleasure achieved through the consumption of both material goods and services.

From tattoos to cosmetic and sex reassignment surgery, from health food, organic food and veganism to vitamins and other diet supplements, from the apparent democratization of haute cuisine to the advance of multinational fast food chains, from fashion and the use of new materials for textiles manufacture to the massive fitness and sport industry, from the saunas, spas and massages to hairdressing, bejeweling, not to mention the sex industry and the modern slave prostitutes, we are witnessing the return of the body. This return, if not celebration, questions the de facto sovereignty of vision and icon. In this context, consumption that addresses all the senses, confirms through the physicality of the body the fragile reality of the subject in iconistic society.

We can understand devices like the Ipad or Iphone, in short devices where vision meets with hearing and touch as an attempt to engage all the senses to experience the internet so that the residents of the hybrid sphere can reclaim their bodies. The overwhelming success of these devices is somehow reassuring in the sense that traditional practices of the subject's interaction with the material world, such as the reading as a process of vision, will never disappear. Handwriting on the other hand is likely to vanish, substituted by typing – an abstract undertaking when compared to handwriting, a process where the whole hand and not only the fingers is engaged. Handwriting with its fluidity of motion as a result of the constant contact between the body and the writing surface engages the body through touch in a more intimate way in the writing process. This is why typing as the iconisation in the form of immaterialization advances in iconistic society may as well be replaced by voice dictation in the continuing effort of iconistic society to generate novel and more attractive products. This is an effort in which consumption naively promises a sustained maximization of pleasure with each new product or service. This is of course impossible since such gradual mitigation leads to an inevitable saturation of the consumer and his senses. A direct consequence of this is the demand for increasingly stronger stimuli for a gradually weaker pleasure.

But the promise of pleasure offered by iconistic society through consumption fails for another reason. On the one hand, it fails to provide meaning, except scarcely and negatively. It is incapable of transforming life as zoe into meaningful life, life as bios, since it does not provide any prospect of immortality for the consuming subject. On the other hand, it offers only a transient palliative effect against the subject's mortality. Respectively, at the level of society as a whole, when we talk about the dominance of market economy over politics we describe nothing more than a problem of temporality, i.e. an unconditional sovereignty of the present over the future and the past as a consequence of the absence of a politics of mortality.

A symptom of this sovereignty in iconistic society is that the past and the future exist only as projections of the present. This means that the principle of short-term benefit or management of direct and everyday issues, in conjunction with the complexity of the different interests, but also the liquidity (i.e. rapid change in economic, geopolitical and internal power relations) of situations ultimately undermine the planning and implementation of any long-term policy. So, there is an absence of a politics of mortality, where the subjects as actors and society as a whole are aware of their own mortality. The existence of this recognition alone would enable the public sphere to take the past into consideration through history, to act in the present, and plan for the future while enhancing the democratic ethos of citizens through the cultivation of self-limitation. For this reason, politics worthy of their name always emphasizes mortality and therefore produces meaning and not mere icons.

Unable to offer the social significations necessary for the shaping of life into bios i.e. a possibility for immortality, iconistic society – despite the domination of icons and due to the merging and the homogenization of the public and the private sphere – is ultimately unable to reproduce itself in the hybrid

sphere of the internet. Hence it attempts to offer a material immortality, an immortality in the dimension of zoe that makes the body immortal. The next stage, in a desperate attempt to face the inability of producing social significations capable of giving meaning to mortality, is an evolutionary project of transforming the human species in order to quasi abolish mortality: Cyber organisms, robots and genetically engineered humans are three versions of the future of humanity in iconistic society aiming to claim immortality in the future hybrid sphere.

Transhumanism is a complex heterogeneous movement that combines philosophical anthropology, philosophy of mind and philosophy of technology. It advocates radical human enhancement by bringing together various problematics from disparate fields such as medicine, social sciences, physics, cognitive science, neurotechnology, computer science, molecular biology, robotics, nanotechnology and artificial intelligence. One of the most prominent transhumanists, Nick Bostrom, defines transhumanism as "the intellectual and spiritual movement that affirms the possibility and desirability of radically improving the human condition through applied reason, in particular by developing and making widely available technologies that eliminate aging and significantly enhance the intellectual, cognitive and physical capacities of man". (Bostrom, 2014, p.1) According to transhumanists Steve Fuller and Veronika Lipińska transhumanism is "the perpetual development of the capacities that historically distinguish humans from other beings, namely, the seemingly limitless capacity for self-transcendence, our godlike character if you will." (Fuller/Lipinski, 2014, p.1) Hava Tirosh-Samuelsan defines transhumanism as "an ideological movement that advocates the application of science and technology to improve the human condition through genetic engineering, robotics, informatics, and nanotechnology. The convergence of these technologies and advances in the life sciences, neuroscience, and medicine are being harnessed to facilitate the enhancement of human physical and cognitive characteristics, the elimination of disease, pain, and the radical extension of life expectancy." (Hava Tirosh-Samuelsan, 2014, p.49) Finally, for the transhumanist philosopher Max More, transhumanism "is both a rational philosophy and a cultural movement that affirms the possibility and desirability of a fundamental improvement of the human condition through science and technology. Transhumanists seek the continuation and acceleration of the evolution of intelligent life beyond its present human form and human limitations through science and technology guided by pro-life principles and values." (More, 2009) Although due to the variety of both theoretical and practical expressions of transhumanism it would perhaps be preferable to speak of transhumanisms we can describe it as a worldview centered on an inescapable destiny of transcending human nature through technical enhancement. It constitutes at the same time a cultural, political, artistic and spiritual movement with its ideas gaining ground both in a wider audience through the culture industry or marketable popularizations, as well as in the academic community, say especially in bioethics and legal science where the discussion focuses on the non-therapeutic use of biomedical technologies such as for example the use of psychotropic drugs by the healthy to improve cognitive or emotional abilities. As a hybrid movement embracing a grand narrative of man's technical redemption, a historical-philosophical narrative based on an eclectic mix of often pseudoscientific positions or currently unproven or highly controversial scientific theories, transhumanism, which aims to enhance existing human capacities as well as to create new ones, it is difficult to define as it also contains a strong religious dimension, but also practical, i.e. political, social and moral, vision.

Transhumanism aims to liberate man from biological limitations through physical, cognitive, emotional and moral enhancement via technology. It advocates that biological evolution is imperfect, without direction, and therefore we should control it ourselves. Adopting elements such as rationality, self-knowledge, self-care and autonomy from both humanism and the Enlightenment, transhumanism reinterprets them in a neo-Darwinian perspective with reference to the ideal of creating a new human species. Thus he "places himself as the next stage of humanism. Not only does man become the 'measure of all things', but our capacity for intelligent and rational thought is seen to lead to drastic changes for the future of humanity. Technology will one day allow us to transcend our non-intelligent design by transcending the limitations of human existence which for too long have made it ugly, brutish and short. The future of the species rests on the shoulders of humans. If nature is indeed immoral and cares only for its selfish perpetuation, then it is man's moral responsibility to transcend it and through his capacity for rational thought to put an end to the needless suffering it causes." (Carrigan, 2019, p.472) In short, for transhumanism, just as man overcame his animalistic nature, so he must enhance himself to a transhuman until he transcends human nature in its present biological form. To support their position, transhumanists use a variety of arguments such as "upgrading is inevitable because it constitutes the next stage in human evolution, that it is a moral duty because it will cure diseases, reduce inequalities, make us smarter and happier». (Franssen, 2014, p.78)

Or they emphasize, as Ludwig Feuerbach (1804-1872) believed, that "the history of mankind consists of nothing else than a continuous transcendence of the limits which in earlier times were always regarded as the limits of humanity and therefore as absolute, insurmountable limits." (Feuerbach, 1841, p. 201) Despite the fact that transhumanism does not have a coherent, universally accepted by its followers set of principles displaying instead a multitude of theoretical variations and associations with a common belief in the technical enhancement of man for the radical transformation of the human condition, a significant number of transhumanists belong to either the non-profit organization Humanity+ (H+) or the Russian transhumanist organization both of which, despite their theoretical differences, systematically promote transhumanist ideas both domestically and globally. These include the respect of all species, races, religious denominations, sexual orientations, ways of life and sentient beings, but also the strengthening of international cooperation for the purpose of world peace. It is worth noting here that the followers of transhumanism, which has developed into an international movement, include, in addition to scientists and philosophers, mainly from the analytical and utilitarian tradition, also politicians, economists, artists, futurists, businessmen and even writers work of science fiction or illustration.

On the other hand, the opponents of transhumanism are characterized as bioconservatives because they reject radical enhancement in order to protect human nature. Among them is Jürgen Habermas who describes transhumanists as a set of eccentric intellectuals who reject equality as a delusion by instrumentalizing biotechnology in the service of Nietzschean-inspired phantasies of omnipotence. Habermas believes that "regardless of whether their speculations are nonsense or predictions to be taken seriously, repressed eschatological needs or new variants of a Science-Fiction-Science they serve to me as examples of a technicalization of nature caused by a modified moral self-understanding of the human species that does not harmonize with the normative self-understanding of persons who live their lives self-determining and acting responsibly." (Habermas, 2001, p.43) More categorical Francis Fukuyama considers transhumanism as the most dangerous idea in the world: "No one knows what technological possibilities will arise for human enhancement. But we can already see the turbulence of Promethean desires in how we prescribe drugs to change our children's behavior and personalities. The environmental movement taught us humility and respect for the integrity of non-human nature. We need a similar humility about our human nature. If we don't develop it soon, we may unwittingly pave the way for the posthumans to deprave humanity with their genetic bulldozers and psychotic malls." (Fukuyama, 2004) More moderate in style, but equally critical, Michael Sandel believes that "the main problem with human upgrading and genetic engineering is that they undermine effort and erode human agency. The deeper danger is that they represent a kind of hyperactivity—a Promethean ambition to reshape nature, including human nature, to serve our purposes and satisfy our desires. The problem is not the slide toward reductionism, but the push toward dominance. And what the drive for dominance ignores and may even destroy is an appreciation of the giftedness of human powers and achievements." (Sandel, 2007) Regardless of whether or how much one agrees with transhumanists or endorses bioconservative positions on human enhancement it is difficult to deny that the rapid progress in enhancement technologies has brought to the surface ethical, legal, social and political issues which "touch the moral self-understanding of humanity as a whole" (Habermas, 2001) creating critical theoretical disagreements as to the utility and desirability her.

On the contrary, the discussion of human enhancement in this paper is not only aimed at elucidating its benefits for the individual or contributing to academic research, but at the same time hopes to contribute to the preparation of the public sphere so that citizens will be able to decide with an awareness of the opportunities, as well as the risks, as to whether resources should be devoted to human enhancement so as to design the appropriate institutions and necessary legislation to govern scientific research. But the seemingly premature critique of human enhancement is important not only because it determines the directions and funding of scientific research, but because it simultaneously equips democracy to deal with the looming social and political consequences of the exponential progress of technoscience. Regardless of whether and when the predictions of transhumanism or technical transhumanism come true, it is better to have principles to cover impossible situations than to have no principles for unexpected situations. Moreover, as Habermas advises, "as long as we take into account in time more dramatic limits that may be overcome the day after tomorrow, we can manage today's problems more calmly." (Habermas, 2001, p.40) Finally, if criticism of transhumanist positions is not developed in time, then perhaps when the first upgrades begin to be widely circulated, they will be willingly and unexamined accepted by citizens with a moral intuition that has been gradually dulled, resulting in society becoming gradually more and more bioliberal ending up transhumanist. After all, industrial modernity has an inherent inclination towards this direction in the sense that it promotes at a rapid pace the development of technoscience in order to improve the human condition, usually underestimating the risks to the natural environment, but also to ourselves.

If we consider that there is no limit to technoscientific progress, then do we not accept the transhumanist worldview while simultaneously neglecting the moral improvement of man?

I would like to propose the thesis that transhumanism accompanies the emergence of the iconistic polis whose hallmarks are uncertainty, complexity, fluidity, ambiguity, and acceleration along with the struggle for visibility. More specifically, transhumanism is considered here as: a) A set of pseudoscientific, sometimes antiscientific or often scientifically controversial theories that, centered on overcoming the human condition via technology, constitute an anti-humanist and utopian worldview with an ideological function in the iconistic society. b) A techno-religion, i.e. a potentially new kind of religion with soteriological elements that satisfies the symbolic subject's need for spirituality and evangelizes his deification. In particular, with regard to the ideological function of this techno-religion, it lies in the fact that despite the self-identification of transhumanists as rationalists and the persistent defense of the scientific nature of their positions, their pursuit of immortality, omnipotence, dominion over the universe and the deification of man refers more to ancient mythologies as well as to the purposes of magic and alchemy rather than to those of science thus contributing to a re-enchantment of the world. This conceals the competitive nature of the iconistic society which is expressed in the subject's perpetual pursuit of visibility for the purpose of recognition. In this context, continuous self-improvement is a necessary condition for highlighting one's uniqueness as a means of securing the attention of others. Transhumanism as an ideology legitimizes the competitive relations in the claim of visibility as well as the further individualization of society, alleviating, while offering meaning, the insecurity of the iconistic subject due to the endless digital representation of institutions and the self. It casually simplifies the complexity of the present and frees the iconistic subject from the burden of moral choices by imparting a sprinkling of spirituality to the empty immensity of technoscientific development where it proclaims the reconciliation of necessity with freedom. Moreover, it expands the social imperative for continuous self-improvement by including the body as the material background of the shaping of life as *zoe* into life as *bios* so that the genome becomes a field of self-creation of the iconistic subject who becomes simultaneously an artist and an entrepreneur of the self. In particular, the perception of the genome as private property and the transformation of the ethical issues arising from genetic interventions into aesthetic issues that concern personal preferences reifies the body by concealing its social dimension with the result of shrinking the state's ability to legislate regulatory towards it. Finally, as an ideology, transhumanism is adopted mainly by social classes with high, economic, social and cultural capital who feel familiar with new technologies, integrating them faster into everyday life compared to lower social classes who are often technologically illiterate or technophobic.

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WHAT IS A CONJECT(URE)? THE CITY AS A CONJECT(URE)

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The second half of the twentieth century has seen dramatic changes in the training of architects: the appearance of myriad new concepts and conceptions and a sudden expansion of architectural curricula in schools of architecture. Architects and students of architecture are now expected to write, meticulously explain and justify what they do and are doing, publish academic texts about their activities, analyze the work of other architects, produce complicated and extensive doctoral theses. All this has created in architecture an overt need for theory or philosophy, which can be termed the turn to theory or philosophy in architecture. The task of the philosopher is threefold: to awaken the philosopher in the architect (or perhaps recognize the architect-philosopher), who will then be better capable to thematize their own or joint work with other architects; with other architects, to produce, construct, and deconstruct a system (a register, order, protocol) of concepts that will in the future be authentically architectonic, such as opening the possibility of an eminently architectural language or terminology; finally, to discipline or institutionalize architecture (“to be an architect is to be a social fact”), to assist in the essential project of autonomy of the architect and architecture.

The task of the architect is to always guard the distance, that is, the conjunction *AND* (& \cdot; ^) between architecture and philosophy as the interval of the third or third space that gives birth to novelty. Further, their task is to examine the geometry of connections and relations, which means to bind the two fields, to reprogram the *AND*, to be the coordinator between the two – to preserve the uncertainty of the coordinating conjunction.

All I have to do is show that “conject(ure)” from the title of my presentation is substantively tied to the city, that the sub-title is not meaningless paraphrasing of Pier Vittorio Aureli’s famous book,¹ and that this term (or concept) at once hides and reveals a very specific protocol characteristic for both architecture and philosophy. My intention, namely, is to translate or transpose an entirely realistic *phenomenon* we term or designate as ‘the city’ (when and under what conditions does the city appear? How is the city possible? These kinds of questions are my dilemma). I would like, as I said, to translate ‘the city’² into the concept of ‘conject’ (conjecture, conjunction are variants of this word). Finally, I would like to position this word, ‘conject’, as a very specific part of the architectural act. The task, then, is strictly epistemological in that I am attempting to defend or construct the existence of something called the “architectural act,” which contains numerous sub-acts or operations that could be distinguished: concept, conception, platform, diagram, plan, project, program, etc. Among them, I am seeking a place and time for still one more facet of the architectural act, adding it here and calling it ‘conject’.

I am making a few assumptions here: the first, that there is a plurality of various acts that together potentially comprise the architectural act, which then has an author or subject (the architect); second, that there is yet another operation that could be part of the “architectural chain of acts,” the ‘conject’; third, that ‘conject’ is complementary or epistemologically symmetric to the institution of what we designate as ‘city’ (which is to say with the encounters, opinions, or imaginations of ‘city’); and fourth, that it is possible to foresee the existence of a sort of regulative analogy that would harmonize the architectural act with the philosophical one (thus architecture and philosophy, with emphasis on the conjecture ‘and’ in between). The last point, implying proximity to what we can for now leave to the attributes ‘architectural’ and ‘philosophical’, seems to me could be one of the more convincing hypotheses I am formulating here. Namely, the appearance of the city, and the connection between the city and conject (“the city as a conject”), substantively grounds and harmoniously orders architecture and philosophy. How might we correctly reconstruct this connection and show its importance? Indeed, even more important and urgent, how might we differentiate the layers within this connection, which in entirely divergent ways determine the strength of this or these connections?

Allow me, before I attempt to execute my main task of fixing the protocol I call “conject(ure)” within the ‘real’ architectural act and show the unbreakable tie between ‘city’ and ‘conject’, to merely sketch a few problems that result from ‘city’, which continuously binds the fields of architecture and philosophy, making them overlap, causing confusion. If we leave entirely aside the production of concepts as one of the crucial characteristics of philosophy (from Aristotle, through Hegel, to Deleuze), and also leaving aside philosophy’s role in clearing up conceptual confusion across various genres while at once also re-institutionalizing those genres (for which reason, some 50 years ago, some philosophers and some architects grew closer together, considering it the task of architecture also to produce “architectural concepts” and its autonomy³) – ‘city’ is a concept (a figure or protocol) which draws attention through its

¹ *The City as a Project* was published in 2013; my reference is to the “Preface” and the “Introduction” (“Means to an End. The Rise and Fall of the Architectural Project of the City”). Pier Vittorio Aureli (London, Ruby Press, 2013, 10-38).

² The distinction made between *la ville* (town) and *la cité* (city) made by Jean-Jacques Rousseau and Jean Bodin ought to remain important for us: “Most people confuse the town with the City and a bourgeois with a citizen. They do not know that houses comprise towns, but citizens make up a city.” “La plupart prennent une ville pour une Cité et un bourgeois pour un citoyen. Ils ne savent pas que les maisons font la ville, mais que les citoyens font la cité.” J.-J. Rousseau, *Du Contrat social*, Livre 1, chap. 6, 57; “It might be the case that the town is well built and walled. What is more, it might be filled with people; yet it would still not a city make, if there are no laws and judges to establish the rule of law.” “Il se peut faire que la ville sera bien bâtie et murée. Et qui plus est, remplie de people, et néanmoins ce n’est point cité, s’il n’y a des lois et magistrats pour y établir un droit gouvernement”. J. Bodin, *Les Six livres de la République*, Livre 1, chap. 6, Paris, Livre de Poche, 1993, 97.

³ In the “Introduction” (“Means to an End. The Rise and Fall of the Architectural Project of the City”) of *The City as a Project*, Aureli often uses the word ‘project’ (which should always be backed up and grounded through documentation, as well as necessarily collective and social) and confuses it with ‘concept’. At the very end, he writes: “The city as a project is thus not only the possibility of radical change for the city, but also the possibility of maintaining the project as pure potential, as a way to keep the future of the city open-ended.” *The City as a Project*, 38. “The project as pure potential” is no longer project, but concept. My suggestion of ‘conject’ represents a bridge between concept and project. ‘Conject’ is more appropriate for the ‘city’ for several reasons: there is a shift from the concept, which is principally individual, towards the project, which is necessarily collective; the field of ‘conject’ produces the social, renders a multiplicity of concepts in the process of blending and separating, combining, and joint planning of the future. For this reason, ‘conject’ implies uncertainty, as it acts with others and generatively. Aureli writes at the beginning of his text something entirely murky: “While in ancient times there was not difference between concept and building, since the 15th century – (...) conception, the moment of design, became independent from building itself.” *Ibid*, 16.

incompleteness. All we can say about what city 'does' is that it draws attention and unease with its incompleteness and infinity. The first problem here, or the first comment, is that the word or phenomenon or term 'city' draws attention exclusively in the field of architecture and philosophy. Among citizens, only architects and philosophers "deal" with the city; the politician is really a failed or pseudo-philosopher or architect. The philosopher and architect (keep in mind that their acting is expert, as opposed to the politician's⁴) are brought closer, or they can be recognized exclusively if they deal with the city or have the capacity to deal with the city or announce and then thematize their own inability and incapacity to deal with the city. A philosopher or architect is by definition one attempting, wondering, and announcing their own task to do something with the city or with the presence (*présence*) of the city (to think it, perceive it, experience it), and then abandon the task admitting their own impotence; or even one who never gives up, all the while knowing that the task is impossible.

In "*Présence de Paris*, Paul Valéry explains this difficulty: "Thinking Paris. How can we encompass it in thought, reduce such a grandiose monstrosity to an intelligible form, this mess of connections and jumble of variety?" "*Penser Paris. Comment songer à vaincre, à réduire à quelque forme intelligible un tel monstre de grandeur, de rapports, de différences concentrées ?*"

Such impossibility to produce knowledge of the city, really, transforms into its total opposite: the city becomes subject or author of its own acting.⁵

Again Valéry: "It appears to me that Paris compares or is confused with thinking the mind itself (...) Thinking Paris? The more it is dwelt upon, the more it feels to the contrary, thinking by Paris."⁶ Not only can the city not be thought (brought closer in thought, encountered, blended with), but it is even impossible to construct a project of such approach or conceptualization. In a word, the city cannot be 'grasped' (conceptualized), formulated, or formed as a concept (the city is not a concept), and it is impossible to project the concept of a city. But then what can be done with the city, or why is it impossible to do anything with the city as such?

What can the city do in the first place with us, its own parts?

There are a few layers or forms of uncertainty that bring closer the protocols I have designated with the two abstract words 'city' and 'conject'.⁷ The first, and paradoxical, uncertainty, entirely complementary to this reversal talked about by Valéry and Derrida in which the city goes from object to subject, refers to two entirely different linguistic models of the city: the Greek (*politēs – polis*) and Latin (*civis – civitas*). For the Romans, the city is above all the collection of citizens, that is, the city is an abstract entity emergent from the relations of its citizens (*civis*). There can be no citizens outside their mutual dependence, that is, "one is a fellow citizen of another citizen before one is the citizen of a city" (*on est le civis d'un autre civis avant d'être civis d'une certaine ville*).⁸ In the beginning, thus, is another, a fellow citizen, whose existence and relation implies my own existence as citizen, and then the existence of the city as such. The Greek model, however, is the complete opposite: "it begins with the name of the institution or group in order to formulate the name of the member or participant."⁹ In the beginning is a single entity, the *polis*, entirely independent of its people and prior in importance to its citizens (*politēs*). A potential third model, the Judeo-Christian, regardless of imagining the possibility of a completely new city, a city counter-institution,

⁴ Even the politician or "political action," Aureli's favorite figures, are closer to the conject-protocol than project-protocol. "If the essence of political action is the attempt to project a form of coexistence among individuals (...)" *Ibid*, 10.

⁵ In Serbian and Croatian, the word for city, *grad*, as well as the word for building contain within them the word for work, *rad*. The city works (on) itself, produces itself by producing us.

⁶ P. Valéry, "Présence de Paris" (1937), *Oeuvres*, vol. 2, Paris, Gallimard, 1960, 1011-1015. In "Generations d'une ville," Jacques Derrida translates Valéry's thoughts thus: "Of Paris, Valéry said that it thinks us rather than we thinking it, even prior to our forming the project of thinking it." J. Derrida, *Les arts de l'espace*, Paris, Différence, 2015, 130.

⁷ *The Art of Conjecture or Ars Conjectandi* is a book by Nicolas Cusanus (books of a similar title are abundant in the fifteenth century) and refers to the study of what is uncertain in the future (the antonym of 'conjecture' is certainty), and then also to the theory of combinations and combinatorics used to foresee what is to come or what is supposed to occur. The multiplicity of elements and connections among them is not overcome through synthesis, but conjunction (addition, introduction of new elements). In that sense, disjunction does not necessarily mean the opposite method. Tschumi opposes his "disjunctive" architectural method to the notion of synthesis, "in favor of the idea of dissociation." B. Tschumi, *Architecture and Disjunction*, Cambridge, London, MIT Press, 1996, 212.

⁸ É. Benveniste, "Deux modèles linguistiques de la cité" (1970), *Problèmes de linguistique générale 2*, 276.

⁹ *Ibid*, 277.

as is the Tower of Babel, is nevertheless in the shadow of a certain relation with the first creator of all (the first city), who regulates and differentiates correct building practices from incorrect ones. All of these models indicate that the city comprises a plurality of elements, connections among elements (these connections, relations determine the appearance of a city), borders that close off the exterior, but also borders open to the exterior, protocols of the infinite and the latent possibility of destruction, present now and always.

Let me now attempt to translate this experience of encounter with the city and surpassing the city as such into an imaginary interval within the architectural act by placing connect between the concept (the architectural concept) and the project (always a social construction that brings novelty and change to a city). Connect(ure) is a transitional category, but temporally clearly determined, characterized by uncertainty in magnitude or monstrosity of an entity, the multiplicity of elements and dependence on others (which are all consequences of the seductiveness and resistance towards what we call 'city'). Three consequences might arise as the product of this difficulty: restructuring and the art of restructuring elements before us (which always concerns future time; restructuring is the aspect of the concept that leads to conception and the aspect of the project that concerns the future); the production of new elements and addition of the novel into the existing order of elements (restructuring produces excess, incorporating the external, the additional into the conceptual protocol); and finally, the preliminary production of bonds and ties ('conjunctur') with others, collective readiness to alter (and restructure) the city and affirm the future and a new joint action (to connect(us), past participle of conjicere, to throw together).

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PLATO'S ACCOUNT OF ARCHITECT'S EXPERTISE

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ABSTRACT

Although not his main topic, Plato's account of the kind of knowledge architects possess is lucidly put in his dialogue *Statesman*. Plato introduces the likeness between their expertise of the statesman and the architect to illustrate an important distinction within kinds of knowledge. Contrary to what a contemporary reader may expect, Plato assigns to both the architect and the statesman a theoretical kind of knowledge. This may come as a surprise today because both architects and statesmen are routinely taken to be expert practitioners and not theoreticians. We will be focusing on the passage in the dialogue (258b5 – 261b5), where distinctions in kinds of knowledge are discussed within the context of the knowledge of an architect (ἀρχιτέκτων). However, this particular part of the dialogue occupies one of the pivotal points in the interpretative and explanatory disputes amongst scholars. Authors critical of Plato do not approve of this initial distinction between theoretical and practical knowledge, because it is either genuinely flawed and abandoned in the end (Sayre, 2006), or because theoretical knowledge in this case should be understood as pure and without any capacity to produce (Roochnik, 2005). This opposition to Plato aligns well with most contemporary architectural design theorists (Cross, 2006; Frascari, 2011; Glanville, 2014), who advocate a dominant role for practical knowledge, but insist that architectural design is a form of inquiry. They all draw their positions from Schön (1987, 1984), who sought to establish “an epistemology of practice,” using the architectural profession as a key example, outlining thus the marginal role of theoretical knowledge in architectural design and in architectural education. In this article, I argue that if we understand the nature of architectural knowledge to be essentially theoretical, but with productive capacity in practice, as Plato suggests, it will then become possible to claim that architectural design is a form of inquiry.

Introduction

Apparently, it is difficult for scholars today to explain fully and agree on the kind of knowledge architects possess. On the one hand, an early, so-called “technical rationality” paradigm held that a designer, similar to an engineer or scientist, relies on pre-determined rules and pre-set goals in order to shift the current towards the desired state of affairs (Simon, 1996 [1969]). While almost completely marginalising the role of artistry and a skilful use of intuitive creativity in the process of designing, this paradigm highlighted a problem-solving approach, means-end analysis, and optimization methods in understanding the designer’s expertise.

On the other hand, the following (now-predominant) paradigm put forward the opposing approach in response. This paradigm emphasised the value of artistry and the practising aspect of architectural design, fluidity of performing spontaneous design moves. It underlined the dominant role of the “thinking hand” and the craftsman’s-like way of knowing through making. The resulting necessity with this way of understanding design expertise was that it did not fit neatly within the classical division of knowledge. Simply, with this new paradigm, it became necessary to suppose that this expertise is different from the scientific knowledge, representing specifically a kind of non-propositional knowledge exclusive to design. The scholars often refer to this special, non-scientific kind of knowledge as a form of “designerly” ways of knowing (Cross, 2001, 2006, 2011, 2018), “design thinking,” (Buchanan, 1992, 2019a, 2019b) or similar. These views of design expertise are mostly based on Schön’s “epistemology of practice,” a conception of knowing that either completely excludes, or only marginally includes theoretical reason in expertise involved in design inquiries (Schön, 1984, 1987). He famously used the architectural profession as a key example to outline the marginal role of theoretical knowledge in both architectural design and architectural education. This doctrine of “learning through doing,” and “knowing through making,” which stresses practicum, handicraft, and fluid artistry, uninterrupted by theoretical reasoning is rarely challenged today. Nevertheless, Parsons correctly notices (2016, p. 59) that the appeal to artistry and “the know-how does not resolve the epistemological problem in design” but instead collapses the distinction between the skilful repetition in crafts and design expertise. Another problematic consequence of this way of understanding design expertise is the separation of the design research discourse from other kinds of inquiries.

Therefore, the nature of the architectural design was so far understood either as closely attached to a scientific, purely rational form of inquiry or as an inquiry through making, more akin to crafts. It transpires that both views are jointly necessary, but incompatible, and yet, separately, neither of them appears sufficient to provide us with a comprehensive explanation of the nature of knowledge in architectural design. We are left with no satisfactory theory of architect’s knowledge. So be it. But why should we concern ourselves with Plato’s account of the architect’s knowledge? For, it could be argued that Plato’s account of the expertise is removed in time from the present scholarly disagreements about the topic and that, hence, our interest in his account of architect’s expertise is a bit eccentric, or even anachronistic. So why should we at all worry about his account about architect’s expertise?

We will see that the interesting discussion about kinds of knowledge architects possess in the *Statesman* directly connects with the contemporary debates about the nature of design knowledge and inquiry through design. On a superficial reading of the *Statesman*, it may appear that Plato himself is responsible for the rift between the practical and theoretical knowledge, between acting and thinking. For instance, scholars, who are critical of Plato, do not approve of his initial distinction between theoretical and practical knowledge because it is either genuinely flawed and abandoned in the end (Sayre, 2006) or because theoretical knowledge, in this case, should be understood as pure and without any capacity to produce (Roochnik, 2005). This contemporary opposition to Plato’s division of knowledge aligns well with most contemporary architectural design theorists (Cross, 2006; Frascari, 2011; Glanville, 2014, p. 15), who, in one way or the other, advocate a dominant role for practical knowledge and underline experiential component in architectural design’s expertise. They all draw their positions from Schön’s pragmatist project of “epistemology of practice.”

So, to secure a level of rigor to a comparable standard with the sciences, the central preoccupation of design theorists was with providing an account of the nature of architectural knowledge that is predominantly based on practical experience. But if one relies only on a claim that the contribution of architecture to a body of knowledge essentially depends on practical knowledge (or on some other kind or special knowledge, other than theoretical) it will remain impossible for architects to deliver accounts and explanations of what they do and why they do as they do, which are required in the world of scientific inquiry. If theoretical knowledge is understood as simply theoretical and not also productive, and, on the other hand, if the nature of knowledge in architectural design is understood as predominantly depending on some kind of practical knowledge, it will be impossible to maintain the claim that architectural knowledge is a form of inquiry; if, that is, inquiry is understood to rely on some theoretical knowledge.

In this article I defend a reading of *Statesman* in which architectural expertise is essentially theoretical but also productive. Consequently, I argue that if we understand the nature of architectural knowledge at its best to be essentially theoretical, but with productive capacity in practice, it will then become possible not only to claim that architectural design is a form of inquiry, but also to unify architect's thinking with action. This in turn, would inform the debate about the nature of this knowledge within the discourse, but also outside the field of design research and with the world of science, especially about the contribution of the field of design to the general body of knowledge.

The use of the word *architect* in Plato

The word architecture (αρχιτεκτονική) appears nowhere in Plato's work, but he does use the word that designates an architect (ἀρχιτέκτων). The word *architekton* (Liddell et al., 1889) with the prefix *archi* (ἀρχέ), means to lead, to command, to rule or to show the way, so *archos* (ἀρχός) is the one who leads. However, this Greek word is also etymologically connected with *arche* (ἀρχή), which means the origin, or the first cause, which could associate *architekton* with causing things or ideas of things to emerge in the world. The other part of the word, *tektion* (τέκτων) designates a person who is skilful in any art, a craftsman in general, but in this context, especially, a worker skilled in woodwork, a carpenter, metal-worker, and also a stone mason. One could argue that the word *arhitekton* (ἀρχιτέκτων) should be rendered here as master-craftsman rather than the more contemporary word architect, burdened with a thousand years of discipline development which may supersede Plato's originally intended meaning. Indeed, many scholars translate *architekton* as master-builder or master-craftsman.

The confusion in translating this word does not end here. Namely, some authors render *oikodomike* (οἰκοδομική) as architecture, but this word actually refers to house-building. Indeed, the word master-craftsman may be more suited to follow the ancient tradition of *techne*, when *archi-tektion* simply denoted a coordinator of other workers (*tektones*), one amongst many. However, Parcell (2012, p. 31) is correct in being careful when he notices that Plato radically breaks away from this tradition of *tektones* by raising *architekton* above everyone else. Architect in Plato is not one of many, but one above many. As we will see, Plato is explicit in his claim that the nature of the architect's knowledge is fundamentally different from all others who are involved in the process of building and especially from the skills of *tektones*, the craftsmen. Consequently, it is plausible to read the word *architekton* as architect today, provided we contain the interpretation within the context of the nature of knowledge in architectural design.

The word *architect* appears in three of Plato's dialogues.

In *Lovers*, a dialogue with disputed authenticity, Plato references architects in passing, making a remark on their wages (135c). In the dialogue *Gorgias* he assures us that if we wish to construct a city wall or create a harbour, we should seek advice only from an architect (455b). The most important of all three is the occurrences of *architekton* in the *Statesman*,¹ where the word is specifically mentioned three times, and in all instances with respect to the nature of the architect's knowledge.

In his dialogues *Sophist* and *Statesman*, Plato explores the respective expertise of the sophist and the statesman and what their expertise is about. According to some authors (Benardete, 1984), he is interested in comparing them with the expertise of a philosopher. It is in this context that Plato uses the word architect. Amongst many other examples in this dialogue, and in order to explore the expertise of a good statesman, Plato uses the nature of the knowledge of an architect to make momentous moves in his investigation. His investigation bears great significance for the present controversy about the nature of design knowledge.

Let us now look carefully at what Plato has to say about the nature of the architect's knowledge.

¹ I used two of C. J. Rowe's translations of Plato's *Statesman*. The first translation (1995) was published by Aris & Phillips together with original text in Greek, with Rowe's introduction and commentary. The subsequent translation was published in the Cooper's Editions of The Complete Works of Plato (1997 and later), and in annotated edition (1999). The translations differ in parts significant for this topic. In his first translation of *Statesman* (1995) C. J. Rowe translates at 259d1 τῆς δὴ γνωστικῆς μᾶλλον ἢ τῆς χειροτεχνικῆς καὶ ὄλως πρακτικῆς βούλει τὸν βασιλέα φῶμεν οἰκειότερον εἶναι; as "Then do you want us to assert that the king is more closely related to the theoretical kind of knowledge than to the manual or generally practical kind?" Rowe uses the word 'kind' here, while in the later, modified versions he switches to 'sort of knowledge' instead of 'kind of knowledge' to classify varieties of knowledge associated with each expertise in this passage. Of course, in addition to these translations, I also consulted Fowler and Lamb's translation (1925) and, on occasion, a translation into my native language by Veljko Gortan (2000). For all the other dialogues, mentioned here (*Lovers*, *Gorgias*, *Meno*, *Republic*, *Theaetetus*, *Sophist*, *Timaeus* and *Laws*), I used translations from the Cooper's Edition of The Complete Works of Plato (1997).

What exactly does Plato say about the architect's knowledge?

At the very beginning of the dialogue (258e5), the Stranger from Elea, the main character in the dialogue, divides knowledge into two branches (**Error! Reference source not found.**) commonly translated as practical (πρακτική) and theoretical (γνωστική) knowledge (ἐπιστήμη). Namely, those whose expertise is naturally bound up with practice of their handicraft (χειρουργία), such as those who are, as Plato tells us, skilled in building (τεκτονική) who cause things to emerge into being, possess practical knowledge (258e1); while the other, different kind of expertise belongs to a purely (μόνον) theoretical kind. In this first level distinction of knowledge kinds, Plato aligns the statesman's expertise to the theoretical branch. The expert's discriminative, critical capacity recognises (*gnostike*) essential differences in things studied. The example for this discriminating knowledge given in the text is calculation (arithmetic), an intellectual activity concerned with apprehending essential differences between things (259e1); this activity is fully exhausted in the judgements it produces.

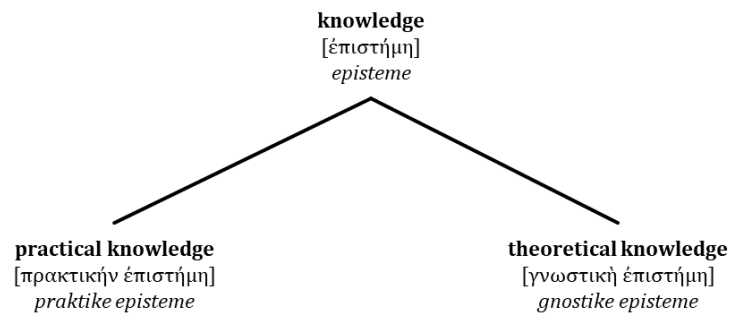


Figure 1. The first level distinction between forms of knowledge in Plato's *Statesman* (Diagram by the author, after Roochnik, 2005)

It is at this specific point that Plato mentions the architect for the first time in the dialogue. He does so in a way as to include the architect's expertise in the branch of theoretical knowledge, together with arithmeticians. The architect is a leader (ἄρχων) and does not act as a worker, but commands workers instead (259e8). Crucially, the architect discerns things and makes judgements, thus supplying understanding (γνώσιν). Plato is explicit here that the architect's understanding is not a result of manual labour or artistry derived from the practice of handicraft skills² (χειρουργία). Hence, the architect is to be placed together with the arithmetician, because "he has a share in the theoretical kind of knowledge" (260a1). Unlike an expert in calculation, however, who, once they make use of the force of the mind, can take their leave, the architect belongs to a different, emerging branch of theoretical knowledge. The architect, similar to the statesman, not only apprehends differences of things but, in addition to that, instead of taking a leave of absence like the arithmetician, assigns appropriate tasks and directs groups of workers until they complete what has been assigned to them (260a5). We now have two distinct kinds of knowledge within theoretical knowledge (**Error! Reference source not found.**).

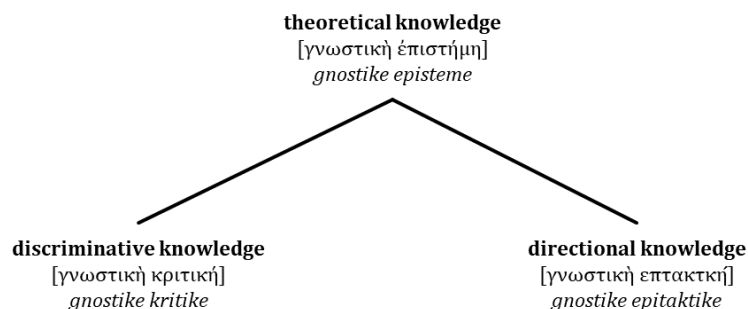


Figure 1. The second level distinction between forms of knowledge in Plato's *Statesman* (diagram by the author after Roochnik, 2005)

² Later in the dialogue Plato mentions once again (277c) the practice of handicraft skills (χειρουργία), and specifically "handicraft such as painting" to denote that these kinds of skills are superseded by "speech and discourse" which are appropriate for inquiry.

Plato specifically uses the example of the architect's expertise to describe this second branch of theoretical knowledge, which is principally the knowledge of directing (γνωστική επτακτική). As we have observed above, this does not mean that architect's expertise excludes the capacity to discern things and form judgments, but that in addition to it, includes the capacity to form and direct a line of action (Figure 3).

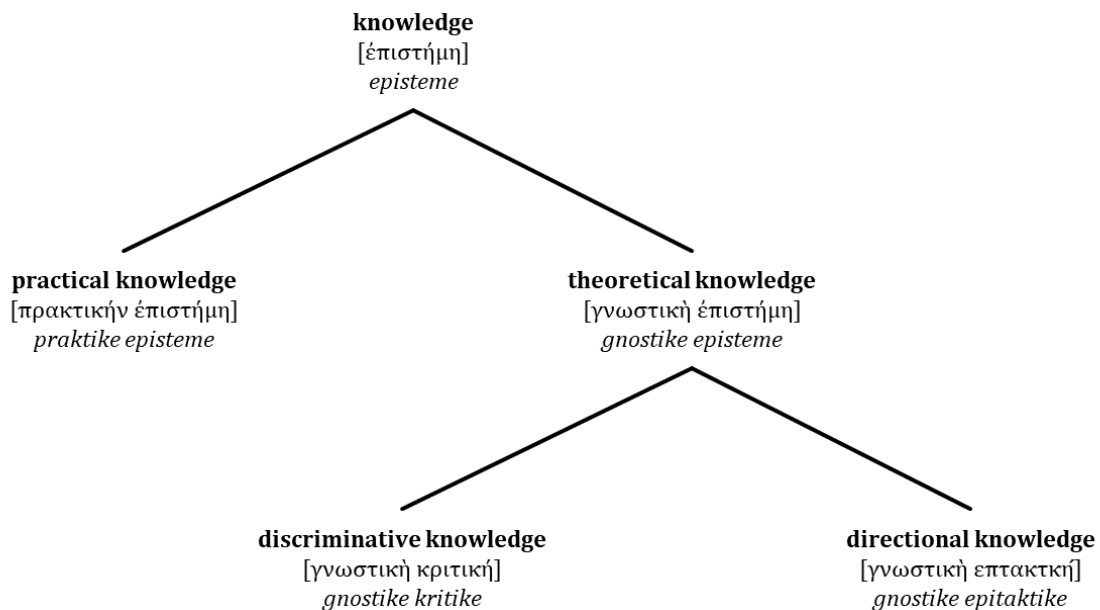


Figure 3. Both level distinctions between forms of knowledge in Plato's *Statesman* (diagram by the author, after Roochnik, 2005)

It would be wrong to conceive of this directional capacity of an architect as being exclusively exhausted in providing instructions to workers and as based on the architect's practical knowledge of giving instructions. I note that Benardete classifies this activity of issuing orders as a result of the knowledge of how to "induce obedience" (1984, p. 503). Benardete perhaps wishes to cast some light on the analogy between the statesman and the architect by making the architect's role somehow political, but I do not think this is an entirely satisfactory explanation.

The example Plato gives in *Laws* (720c-e) about the difference between a slave-doctor and a good doctor may be of some use here. A good doctor knows, while the bad doctor only observes from the experience. It is an interesting point that the doctors (like architects) also issue instructions; however, a bad doctor never gives an account about the diagnosis and only prescribes what he thinks is best from experience, "as if he had precise knowledge;" a bad doctor is described as a tyrant in the way these instructions are issued (720c5); while the good doctor first always learns about the patient's condition and about his illness and then issues instructions ensuring that patient will follow them. In that sense, we can imagine an architect who, as Bernadete suggests, indeed "induces obedience." But this architect would be a bad one, just like the bad doctor from the description in *Laws*. Otherwise, it would be absurd to suppose that the highest-level knowledge of an architect is exhausted in disciplining or persuading workers to build a wall here rather than there. In this particular sense, architecture is not political. Simply, it is the workers' responsibility to follow the architect's instructions; but it is not the architect's responsibility to produce the workers obedience, that is a job for a foreman. Quite the opposite, the highest level of knowing must be in that which leads the architect to decide to build a wall here rather than there. On this reading of Plato, the architect must also know why it is better to build a wall here rather than there; and then (not separately, but inclusively to this decision) it belongs to the architect to issue a set of instructions on how to build the wall where it needs to be built.

The architect, therefore, can transform knowing *why* something needs to be done in a certain way into knowing exactly *how* it needs to be done. Knowing why something is fitting for the building is what gives architects the initial access to the theoretical branch, while the capacity of transforming the knowledge into a set of concrete actions (for someone else to accomplish) together with a duty to supervise the execution of these actions, affords the architect the directional kind of knowledge within the theoretical branch.

It is widely recognized that Plato sets the bar for knowledge high. The first condition for knowing something in Plato is to have an object of knowledge; without something that knowledge is about, there can be no

knowledge. But also, in addition to that, to know that something is the case, one must also know why it is the case. This means that in order to know that something is true, we must also know why it is true. If we do not know why something is true, then, on Plato's account, we do not possess knowledge. These stringent conditions for knowledge claims are expounded in more than one dialogue (Meno, Theaetetus, Republic, Statesman, to name a few). Crucially then, a true knowledge in Plato must be connected with its specific object and explanatory power.

So how does Plato manage to include the architect's expertise in such a high level of knowing?

On his account, architects know something if they have their subject matter defined, if they know that at least something is the case and if they are able to explain why that is the case. This cannot be achieved through experientially skilful artistry, and the use of hands, but by the use of the mind, that is, through theoretical knowledge. We should bear in mind here that the use of intellect in Plato specifically includes mathematics and dialectic (in that particular order) as the main components of theoretical knowledge.

Nonetheless, one can criticise this account of architectural expertise because it is possible to imagine a special case where, for example, a building emerges purely as a result of the elaboration of a handicraft process which would principally exclude theoretical knowledge (in the sense of either critical or directional knowledge sort). Indeed, it is quite possible to envisage that those involved in carpentry, for example, make their own house. Following Plato's distinction of knowledge, we must conclude that the building that emerges solely from this sort of handicraft-based activity will be merely a crafted object, rather than a piece of architecture. This kind of house, even if we decide to call it a piece of architecture, and even if we grant this exceptionally gifted carpenter a title of an architect, does not fully exhaust the kind of knowledge that the architect possesses, and which Plato has in mind. The moment when an exceptionally gifted craftsman becomes an architect to the full extent that Plato has in mind, is a moment when his actions and decisions become crucially dependent on theoretical knowledge, rather than the use of his skills and experience with woodwork handicraft alone. That is a moment when his decisions surpass both the aims and necessity of practical experience and when judgments he makes become focused on grasping the essence of the emerging design of the building itself. Therefore, the moment when our carpenter transforms into an architect is crucially marked by his recognition *why* some thing or action is better than other thing or action, in addition to knowing *that* this thing or action is in fact better than some other thing or action.

Some authors (Sayre, 2006, p. 30) think that the initial division is problematic as it is in tension with Plato's claim that the statesman's knowledge is theoretical and the emphasis on the statesman's practical skills in the second part of the dialogue. Hence, Sayre concludes (2006, p. 133) that Plato abandoned the initial division and effectively reclassified the statesman's expertise as a practical art. However, there is no evidence in the text that Plato abandoned the initial distinction; and, on the contrary, there is a different, plausible explanation on why the statesman was grouped together with the architect into a theoretical branch. Indeed, architecture is a practical activity aimed at constructing buildings. This means, of course, that the architect must possess a form of knowledge inherently related to practical actions.

However, the architect's and statesman's expertise are neither exclusively theoretical nor exclusively practical. This is what makes Plato's position about the architect's knowledge so intriguing and important for the present controversy about architectural knowledge. The architect (just as the statesman in his own domain) indeed needs to be familiar with practical expertise; how a stone is cut, which specific tools are used, for what purpose, and in which specific cases is one tool better than the other and so on. However, the architect's action in these matters is not necessarily driven by practical knowledge alone. The decisions of the architect and the statesman are driven by goals, to which practical knowledge is only instrumental; and the expertise which allows architects to make decisions towards achieving those goals does not depend on practical knowledge.

Finally, what fully distinguishes the architect from the artisan is holding a higher stance of responsibility when, with a high-level awareness of a specific situation, architects (and statesmen) are able to formulate a direction for action grounded in theoretical, not practical knowledge. This is especially evident in uncertain and difficult situations which the architect never encountered before, and when practical knowledge derived from experience cannot play a significant role. Therefore, in the cases that matter for determining what kind of knowledge architects possess, that is, when they face novel problems that are yet to be defined, addressed, and overcome, it transpires that the knowledge they use is theoretical.

But these kinds of situations are not necessarily only situations that a specific architect did not previously face in their personal professional experience. In some cases, an architect can learn from their own or the experience of others about how a particular design situation is typically addressed and resolved. Here I have in mind different kinds of difficult design situations, specifically aporetic situations. These would be situations in which the problem at hand is formulated, for one justified reason or the other, in such a way,

so that it appears to the architect as if the problem presents (at least) two equally plausible design moves, both of which seem necessary, but such that they are mutually exclusive.³

In this kind of aporetic situation in design inquiry, the theoretical kind of knowledge Plato describes in the *Statesman* is necessary for an architect to even recognize that there is a certain problem. Namely, knowing what exactly constitutes a problem at hand also belongs to the theoretical kind of knowledge. Next, this necessarily leads the architect towards recognizing what precisely must be re-framed or modified in order for inquiry to proceed. Finally, resolving this kind of aporetic problem, for example, cannot take place unless the architect fully understands also why a particular frame will result in a genuine break-through. This condition of a full and critical understanding of what must be altered to propel the inquiry and remove the difficulty, is what provides architectural expertise with predictive powers, other than experience. In the case of a craftsman, a carpenter or a builder, the predictive power of their action originates in their experience, in many trial-and-error attempts in the past. While, architects, on this account, are distinguished from all *tecktones*, by their expertise in solving novel problems, never encountered before. This does not mean, however, that the architect cannot have the knowledge which includes their own experience of previously successfully solved problems. It means that it is the use of theoretical knowledge that distinguishes between craftsmen, who depend on experience, and architects who crucially depend on intellect.

For example, as Lawson notices in his examples of the use of building types (i.e. the use of the atrium, 2005, pp. 187–188), architects sometimes apply the tactic of deploying a hypothesis “that may work,” since it worked before. That would be the case of architects depending on their own experience. In many cases, applying atrium-like design conception tried and tested before, even in situations which are dissimilar, can show quick effects and their inquiry may continue in a fluid motion, and uninterrupted, just as Schön described it. However, to satisfy Plato’s condition of architect’s expertise, the architect must in their work also face problems and situations, in which they have no previous experience of their own to deploy in their overall strategy. These problems must be new. More often than not, architects look up to “case-studies,” examples that in important aspects of a design problem at hand resemble the difficulty they are facing themselves. But this can hardly be understood as an original contribution to knowledge. This could be more appropriately understood as falling back on tradition.

However, we can imagine situations in which, the architects simply have no previous experience of their own or the experience of the others (a tradition) to back up the investigation. These are the situations in which something genuinely new emerges in architectural design. The cases when emergence of something new is necessary, is a crucial instrument to evaluate any claim architects may at all have towards knowledge. If we follow Plato’s account of architect’s expertise, in these situations, to be successful (excluding any lucky coincidences), architects can only apply their intellect, and as the result of that, the knowledge they “have a share in” is theoretical.

In these kinds of design situations, (and we take these situations to be distinctly aporetic) practical experience of previously routinely applied artistry in an uninterrupted fluid sequence of reflection-in-action, simply cannot help in a successful resolution of a situation without also engaging the theoretical kind of knowledge.

Still, other authors, like Roochnik (2005) maintain that the example of the architect does not contribute to the explanation of the form of knowledge Plato attributes to statesmen. He proposes that practical knowledge in the first level distinction designates the knowledge that is aimed at production and that it should be rendered as productive (not practical), or as a form of knowledge that is essentially connected with making and is to be distinguished from purely theoretical knowledge. Therefore, Roochnik concludes that architecture, since it is essentially productive, cannot and should not be sided under the theoretical branch. If Roochnik’s reading is correct, then Plato’s example of an architect indeed cannot bring one closer to the understanding of the politician and, as he proposes, indeed creates a residual ambiguity.

However, in their reply to Roochnik, both Harvey (2005) and Marquez (2007) demonstrate that, quite to the contrary, what Plato has in mind here is that intellectual activity, which is theoretical in so far as it is intellective, can be at once productive. Furthermore, both the topic and the method applied to the investigation in the *Statesman* showcases that philosophy itself also has a productive dimension.

If not explicitly, Plato is at least clear that the basis for this distinction is not within the kinds of productive capacity like Roochnik says. Namely, the first level distinction between *praktike* and *gnostike* is not between purely productive and purely non-productive capacities as Roochnik would like us to understand. Instead, as we have seen, Plato specifically bases the distinction between *praktike* and *gnostike* on the

³ An example of this kind of situation is the corner conflict problem which I extensively investigated in the article *Aporia in Architectural Design* (Kostić, 2018).

difference between the use of manual labour and the force of the mind. The Stranger says that, even though a carpenter may bring into being something that did not exist before, he does so with the use of his hands, while “[the king’s] rule has little to do with the use of his hands or his body in general, in comparison with the understanding and the force of the mind”(259c5), and hence “the king is more closely related to the theoretical sort of knowledge than to the manual or generally practical sort” (259d1 both in Rowe’s translation).

If this distinction is not based on the capacity to produce, but is instead based on how something is produced, then it is perfectly reasonable to consider the possibility that theoretical knowledge may have some productive capacity (albeit a different capacity to the one that requires the use of hands). Alternatively, and in addition to possessing that productive capacity, it may also be the case that knowing how to act while bringing new things into being in some cases (such as the statesman and the architect) predominantly depends on theoretical knowledge.

Plato is rather determined and unambiguous about this. He mentions in three places that the first level distinction of expertise into practical and theoretical is dependent on whether the experts use their hands or their mind. As we have seen, he first explains that the carpenters and other people skilled with their hands are “naturally bound up with practical matters” (258e1). The second time Plato mentions the use of hands is to make clear that king’s rule has “little to do with the use of his hands or his body in general,” but instead he uses “understanding and force of his mind” (259c5). Finally, he concludes that the king is more closely related to the theoretical sort of knowledge than that of the manual (χειροτεχνικῆ) or “generally practical sort” (259d1). We can infer in our final reply to Roochnik that Plato bases his first level distinction on the way experts produce something, rather than that they in fact produce something.

Conclusion

Plato’s use of the example of an architect is far from innocent or accidental. Underneath this comparison may also be an awareness of the importance geometry has in architecture. At the time, the Greeks were not able to express irrational numbers with the use of the art of calculation, but only through geometry. Because of that, arithmetic was considered a lower form of mathematical knowledge than geometry. It has been argued (Márquez, 2007) that the connection between the statesman’s knowledge proper and the ability to make decisions in particular cases is in what Plato calls ‘the art of measure’ – the capacity to determine whether there is too little or too much of a particular thing to establish a political order. It is conceivable that Plato wants statesmen to be somewhat like architects who have a capacity for geometry and make use of it. The view is, it appears, that (good) statesmen are unlike pure mathematicians, but more like (good) architects, who are experts in the way they use geometry not only to make judgments but then again also to direct others and all for the sake of the building as a whole. Explicitly, geometry brings about order, maintains that order and preserves internal consistency of the work of architecture.

Perhaps statesmen are like architects for Plato also in the way they use the capacity of the mind in their attempt to judge, create, act, instruct and supervise the object of their attention; as with architects, statesmen must also maintain the integrity of their vision and preserve it from corruption in the process.

We may conclude (contra Roochnik and others) that, on a careful reading of the Statesman, Plato’s account of architectural knowledge connects theoretical with practical knowledge, rather than that by which they remain separated. Instead of the mere application of theoretical knowledge into practice, this provides us with an explanation how architects use both experience and intellect to produce a building design and a building itself. The use of intellect, in Plato, therefore, has a distinctly productive character.⁴

On our reading of Plato’s Statesman, the practical experience and calculative capacity are necessary, but not sufficient for the architect’s expertise. Only practical experience, discerning and productive capacity of theoretical knowledge together are necessary and sufficient for the architect’s expertise at its best.

⁴ It should also be noted that my reading of the *Statesman* is compatible with what Plato states elsewhere about the intellect, especially in *Timaeus*, where, thanks to the productive capacity of the Demiurge’s contemplation of Forms, the world itself emerges. Correspondingly, here, on this interpretation of *Statesman*, an architect’s intellection also produces a building design as something truly new. Nonetheless, this analogy does not immediately suggest that one must fully accept Plato’s cosmology or his Theory of Forms. Instead, the reader is only asked to imagine that the possibility that intellect has a productive capacity.

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THE PARADOX OF HOME IN HEIDEGGER'S PHILOSOPHY

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ABSTRACT

Heidegger's philosophy has influenced largely the humanities and arts and has also been a source of interest in architecture. One may argue that within architecture and architectural theory, Heidegger's work was among the influences of the theoretical approach of understanding key elements of architecture, known as architectural phenomenology.

Although Heidegger has devoted one of his most influential lectures to architecture (*Building, Dwelling, Thinking*, 1951), the paper will argue that one of the key topics in his philosophy, intertwined with architecture, is actually the concept of home (*das Heim*). In Heidegger's philosophy, the homely (*das Heimische*) was closely intertwined with its opposition, namely the uncanny (*das Unheimliche*). The paper discusses the different understandings of home, which were present in his seminal works.

In the conclusion, the paradoxical structure of the topic of home in Heidegger's philosophy is discussed. Home in Heidegger's philosophy is impossible for modern man with his horrifying nature, perpetuated by the uncanny. This utterly modern understanding of man's essence, but also of modern space, is manifold and remains paradoxical.

Keywords:

Martin Heidegger, phenomenology, *das Unheimliche*, uncanny, architecture

“... the enigma of this deimon marks all the texts we will have to encounter here.”

Jacques Derrida, *Of spirit: Heidegger and the question*

On Heidegger and architecture

Martin Heidegger has importantly reshaped and reformed the philosophy of the 20th century when he broke with Edmund Husserl and formed his own philosophical phenomenology. He remains a crucial persona in philosophy because he posed again the question of being in his seminal work *Being and Time* (Heidegger: 1927), moreover, his works range from existentialism, hermeneutics to deconstruction. Within his philosophy, the question of being and terms such as *Dasein* (Heidegger's word for »human being, literary meaning 'the place of meaning'« (Craig, 2005:354), which could also be defined as »*ek-sistence*, that is, as a standing out« (Stanford, 2022)), *being-in-the world*, *being-towards-death*, and similar are crucial for his early works. Nonetheless, Heidegger's philosophy was significantly influenced by art and works of art (Heidegger, 2009-3) throughout his writing, but this influence is more present in his later work. Within Heidegger's philosophy, a specific break happens around 1935, which is commonly usually defined as *the turn*, and marks a decisive rupture with his previous work, but also a more inclined focus towards space and spatiality, history, and art. Some scholars argue this is the period of his explicit turn toward topology (Malpas: 2008, 2015). On a general level, we can say Heidegger has been moving toward art and space after the turn. For Heidegger, art is crucial for disclosing the truth, as the disclosure that occurs in art can be understood as the Greek term for truth, *aletheia* (ἀλήθεια). Architecture has been in many aspects a decisive embodiment of art for Heidegger, as he has identified temples, bridges and houses as exemplary cases of art throughout his work.

Heidegger was also one of the most prominent philosophers of the 20th century, who has written about architecture: his essay *Building Dwelling Thinking* (Heidegger: 2009-2) from 1951 remains to date a significant contribution to the essential interpretation of the role of architecture in our contemporary society. As such, Heidegger has been a source of interest also in architectural theory and has contributed to a new theoretical approach to understand the meaning of contemporary architecture. Namely, his philosophy has influenced the theory called architectural phenomenology (Norberg-Schulz, 1979 and 1985, Frampton, 1983, Harries, 1997).

»Architectural phenomenology has drawn from Heidegger« (Sharr, 2007: 116) and maybe even more than that: within the philosophy of architecture, where architectural phenomenology had a decisive role in the 70's and 80's of the 20th century with works by Kenneth Frampton, Karsten Harris and Cristian Norberg-Schultz and many others, the work of Heidegger was in many ways important. Those authors were attracted by the figure of Heidegger, who stressed the central importance of dwelling for man in the essay *Building Dwelling Thinking*. Different theories appeared after the significant mark Heidegger's work left on the theory and philosophy of architecture: from attitudes as critical regionalism (coined by Frampton) to the importance of human experience for architecture as such (which started with authors such as Norberg-Schultz, and continued in the work of Alberto Gomez-Perez, Juhani Pallasmaa, and others).

This paper aims to argue that Heidegger's philosophy within architecture and architectural theory could be discussed and approached from a wider perspective. Namely, aside the seminal essay from 1951, his vast reflection on the topic of home (*das Heim*) and the uncanny (*das Unheimliche*) should also be taken into account when Heidegger's basic understanding of architecture is considered. The question of home has been the focal point many important recent studies about Heidegger (Vidler, 1992, McNeil, 1999, Wilthy, 2015). Those studies have shown the significance of an attentive reading of this multi-layered topic and an urge to rethink this field of his philosophy in a more hermeneutical manner, which includes the theme of the home from his early to his later works.

When we dwell on Heidegger and the topic of home, a remark about the utterly problematic political engagements of Heidegger is necessary. Heidegger has not only closely collaborated with the National Socialist regime in Germany: he did not only act as a member of the party, he also used his own philosophy to become one of the most effective propagandists of the regime (Safrański, 1981; Wolin, 1992). Nevertheless, Heidegger is one of the most prominent thinkers of the 20th century, who's short collaboration with the Nazi regime is often accounted as a terrible (temporary) slip and a mistake.

Precisely because Heidegger is regarded as a philosopher with an extreme rightwing political agenda, most interpretations of his work on the topic of architecture, home and the built environment in general highlight a rather traditional image of home. It is commonly taken for granted within architectural theory that Heidegger has proposed an ideal image of home with the old farmhouse in the Black Forrester. He described this traditional German farmhouse in the conclusive part of *Building Dwelling Thinking*. Heidegger is thus usually described as an intellectual, who is close to the rural (*Why do I Stay in the Provinces* 1934, 1981), to the unspoiled countryside, as he described in the lecture *Hölderlin's Hymn "The Ister"* (1942) and in the essay *Feldweg-Gespräche* (1944/45), and also as a persona, who struggles with understanding the pressing issues of contemporary industrialised world with its urban character. Without aiming at any political justification of the German philosopher – our aim is rather the opposite – our intention is to argue that although Heidegger has had an exceptionally problematic political agenda, his understanding of home still offers a powerful insight into the core of dwelling in modern times.

On home in Heidegger

The different understanding of home in Heidegger could be traced throughout his work. He discussed the topic of home in *Being and Time*, *The Introduction to Metaphysics* (1935), *Hölderlin's Hymn »The Ister«*, *The Letter on Humanism* (1946), *Building Dwelling Thinking* and also in *Sojourns, the journey to Greece* (1962), as we have presented in detail elsewhere (Kurir, 2018, 2022). The topic of home (*das Heim*) is discussed in those works from various standpoints: in *Being and Time* home is approached from the question of being, presenting man as the one who faces unhomeliness in the world. Home in his later works is defined as the destiny of complete homelessness and rootlessness of man (*The Letter on Humanism*). What is important to note, is that home (*das Heim*), the homeland (*the Heimat*) and the familiar (*heimisch*), are generally interpreted in close connection with the secret and hidden (*heimlich*), but also that which is unhomey and strange (*unheimlich*) and uncanny (*unheimlich*). We suggest hereafter that there might be a common denominator to the intertwined fields of Heidegger's understanding of the position of man in space and, specifically, in home as such, which exposes the complexity of this topic in his philosophy: the term of *das Unheimliche*, the uncanny.

In *Being and Time*, Heidegger assigned home and being-at-home »only« to the everyday world of the average, of *They* or *das Man*. Heidegger identifies the homely, the »being at home« (*Zuhause*) with the average, with the everyday openness of the public realm, as reflected within the majority. In his entire philosophy this might be the only point where the individual is originally awarded shelter within the meaning of *Haus* or of that which is intimate and familiar, of *heimisch*. Only a very distinct phenomenon, which could be seen as a radically modern interpretation of the significant mood of the first half of the 20th century, could move *Dasein* from this safe universality of man's comprehensive mediocrity, anonymity, to the other realm – to the haunting half of uncanniness (*Unheimlichkeit*): anxiety (*Angst*). Anxiety is a trigger lever, which pulls *Dasein* from *das Man*, it is the exact point where the transition of *Dasein's* average everydayness to its singularity occurs and where the transition from being-at-home (*Zuhause sein*) to not-being-at-home (*Un-zuhause*) takes place, as anxiety is the phenomenon that shakes *Dasein* and pulls it towards its individuality. Anxiety tosses *Dasein* from the alleged "home" into the non-familiar, into the not-at-home(ness). The individual, referred to as *Dasein*, does not – in its original and basic state – hold a home of any kind. In fact, *Dasein's* position in the world is radically uncanny. This is a state of an original kind of homelessness that lies in the core of *Dasein's* being and which is revealed with another kind of urge, of immanence for this being – with anxiety, which cuts *Dasein's* apparently safe and quotidian relationship with the average, with *They* (*das Man*).

Das Unheimliche is referred in *Being and Time* as a specific layer of anxiety. Is then *das Unheimliche* just one specific tone of anxiety? Heidegger's scholars have been puzzled with this question. For Hubert Dreyfus *unheimlich* reveals a »radical un-rootedness« or a human activity without proper foundation, which indicates that »people can never be at home in the world« (Dreyfus, 2000). William Richardson wrote *unheimlich*, which indicates that ontic dwellings are not the true home for *Dasein*: this is the reason why for human essence it is immanent to be permanently expelled; to be a man means to be in permanent exile. Richardson here refers to Heidegger's equation of not-at-home-ness (*Unheimlichkeit*) with not-being-at-home (*Un-zuhause*).¹ Farrell Krell points out that Heidegger made only one reference to the equation between *Unheimlichkeit* and *Un-zuhause* after *Being and Time* - in the lecture Prolegomena to the historical concept of time in Marburg in 1925, which is introduction to *Being and Time* (Farrell Krell, 2009).

¹ More on the topic in Wilty, 2011.

After *Being and Time* almost ten years passed without a noticeable mention of *das Unheimliche* in Heidegger's work²: but when it returned in the form of two different lectures, it was not used in a marginal way as it was in 1927. *Das Unheimliche* virtually became a key term in 1935: Heidegger used it to name the core of human existence, it defines man as such. *Das Unheimliche* is no longer just one shade of anxiety: it is almost a concept that has a decisive existential-ontological significance. It is no longer just a mood, because it moves within Heidegger's thought conceptually away from that fleeting feeling, as Sigmund Freud treated it in his seminal essay *Das Unheimliche* (1918), or of that affective state, which humans experience due to anxiety. In *Introduction to metaphysics* (1935) and *Hölderlin's Hymn »The Ister« das Unheimliche* (1942) it has become a permanent enigma, which defines the indefinable: the essence of human existence.

Freud had posed *das Unheimliche* at the heart of the Enlightenment project³, Heidegger, on the other hand, delves deeper into this concept; to establish the meaning of the homely and the unhomely, he goes as far back as Antiquity, to the first chorus song as it is written in *Antigone* in the 5th century B.C. The song, known also as »Ode to man«, occurs in the first scene of the tragedy, when at daybreak all decisive figures gather in front of the royal palace in Thebes. The song opens with the famous verses:

*Polla tà deinà koudèn
anthrópou deinóteron pélei,*

with its most common officially recognised English translation:

*Wonders are many on earth,
and the greatest of this is man, (Sophocles, 1947:148).*

which Heidegger in turn translated into German, his interpretation, however, carrying a rather more negative undertone:

*Manifold is the uncanny,
yet nothing More uncanny looms or stirs beyond the human being. (Heidegger, 1996:108).*

In Heidegger's extensive and controversial interpretation of those opening lines, he makes an analysis of the song's central term, *δεινόν* and defines it with three semantic levels: as that fearsome, powerful and extraordinary. He translated *δεινόν* with the *das Unheimliche*: man is the one that brings *das Unheimliche* to Earth and inhabits it in being.

Das Unheimliche is the power that pushes man from the homely as that which is close to home (*Heim*). In 1935, Heidegger put his concept of home in a specific location – in the *polis*. Man's journey into Being, with his knowledge as a violent activity, is what plunged him/her from the homely into the unhomely, writes Heidegger. This is the reason why for Heidegger Sophocles calls man a »*pantoporos aporos*«, as in the very core of human essence lies an unsolvable *aporia*: man is constantly on a powerful journey into being as a whole and tries to dominate the earth, the ocean, animals and everything else besides him/her, however, man holds at the same time no exit, when he/she is facing the nothingness of death, as that he/she is existential and primary thrown into the limit of life. Death constantly sets the limit to him/her, as man always "stands in the occurrence of death" and is »*the occurrence of un-homeliness [die geschehende Unheimlichkeit selbst]*.« (Heidegger, 1996, 108). In the *aporia* of death, man finds himself/herself for the first time before the unstoppable power of *δεινόν*, because only by comprehending death can man understand fully what it means to be only and just as *δεινόν*. Death as reflected in *Introduction to Metaphysics* should be seen through a Greek, pre-metaphysical and poetic definition of man: it is set as an extreme and immovable boundary, that outperforms all other boundaries and places man constantly in the unhomely.

When man intervenes in being with (the violence) of his knowledge, he becomes unhomely and at the same time he/she moves to open the *homely* as such. In Heidegger's understanding, when man becomes »aware« of this unhomeliness, the Being as a whole in an ontological sense unfolds before him/her. As

² Heidegger also stopped briefly on the topic in »*The history of the Concept of Time*« and in »*What is metaphysics*«.

³ More on this in Dolar, 1991.

Sophocles explains, at least Sophocles transmitted by Heidegger, with the uncanniness of the unhomely (*das Unheimlichkeit*) Being opens to man. The Greeks stepped into Being with a decisive force and this violence was the power of their knowledge. The entire Western civilization, and with it its metaphysics, derives from this violence of man against Being, which forms man in this unhomely. However, and this is extremely important for a philosopher on the quest to answer the question of Being, in the uncanny of the unhomely being unveils itself to man. The unhomely of this δεινόν, transferred to modern thinking by Heidegger with the term *das Unheimliche*, thus does not only have an »impact« on the definition of man and his essence, in the middle of which man is immanently settled: this unhomely is also an ontological project that allows the opening of Being. This statement is decisive also in light of Heidegger's late works, in which he points out that man can be at home in an ontological sense, that is, in Being. No other "mode" of dwelling would be considered for him as a possible (authentic) position of being-at-home.

Seven years later, in *Hölderlin's s hymn Ister*, Heidegger reflected on home within the proximity of the term of becoming homely (*Heimischwerden*). Becoming homely in this interpretation, namely coming out from Hölderlin's elegy on the river Danube, stems from the local. The local, the journey and the river are some of the key terms used in this lecture, forming a selected terminological triangle together with *becoming homely*. As the local is created in this interpretation by the river, becoming homely could act as a point of fusion between the local and the journey, added Heidegger. Further on, the river is the one that determines the essence of man's home, as it also dwells and forms man's historical path in his journey back home. The river, described by Heidegger, names the place of man's dwelling and at the same time defines man as a historical being; the river is present even more significantly as the one that forms man's way of being at home. In Heidegger's understanding, the river is the locality of the local in the home: the journey of the river is such that begins and creates a home. The process of *becoming homely* is particularly significant for man, as in it resides his/her true essence. Becoming homely is closely connected to the locality and to the journey of the river. More closely, becoming homely is exactly that which is mysterious and difficult to reach – this is the original, the authentic or, in Heidegger's language, one's own (*das Eigene*). One's own in Heidegger's perspective is something which is the most hidden and to which only great poets, such as Hölderlin, could add clearance into with their poetry. It is important to stress that precisely in this part, where Heidegger in his reading of Hölderlin's hymn introduces one's own as that authentic principle, so characteristic of home and the homely, is also the sequence where he came the closer to a specific Nazi rhetoric in the lecture and spoke of the fatherland.⁴

Heidegger has highlighted the basic position of *man as a being, that is not at home*, frequently in his later works. He has also described this position in a more negative and extreme way. One of the most notorious statements on the topic can be found in the *Letter on Humanism*: »Homelessness is coming to be the destiny of the world« (Heidegger, 2009-1, 243). In *Hölderlin Hymn Ister*, Heidegger is working extensively to build an argumentation of *a specific process*, during which a home of man is built upon. If we try to simplify the rather extend interpretation, Heidegger passed across the duality of one's own and the foreign and connected it to another pair of contrapositions, namely the homely and the unhomely, to conclude that becoming homely (*Heimischwerden*) stands at the centre of these two contrapositions. For Heidegger, the homely (*heimisch*) always stands on the point of difference between becoming homely and the foreign. »Coming to be at home is thus a passage through the foreign.« (Heidegger, 1996:49). This passage, this encounter with/through the foreign, which could lead to the homely, was also meant a point of discussion with the ancient Greeks. The Greeks are the foreign that could open the most authentic path to the core of the Germans. This (*only*) path to one's own (to the original, the authentic) and the homely could (*only*) be led by a poet.

Heidegger is mainly interested in Sophocles, in *Antigone*, because for him it as a poetical text, which opens the door to a world that stands outside metaphysics. He repeats the already known definition of man – proposed by Sophocles – as *das Unheimlichste*. In this lecture from 1942, in comparison with the interpretation of 1935, he stresses several times that he has chosen to translate *deinon* with *unheimlich* because this word also covers the meaning of *unheimisch* or of something unhomely and not proper to home. He also connected the definition of man as *das Unheimlichste* with the notion of the home, as man is always and immanently on the way to his hometown, but at the same time his home repeatedly rejects him/her. Therefore, man is substantially unhomely or »*human beings in their innermost essence are those*

⁴ Interpreting Hölderlin 's hymn, Heidegger writes: »What is one's own in this case is whatever belongs to the fatherland of the Germans. Whatever is of the fatherland is itself at home with mother earth.« (Heidegger, 1996: 49). In this sequence, Heidegger uses the term *das Vaterland* to refer to Germany as homeland, he does not use *Heimat*.

who are unhomely.« (Heidegger, 1996: 90). Because of this double game, in which man is constantly switching from between the homely and the unhomely, the highest level of *unheimlich* (the dreadfulness and uncanniness) is attributed to man. In this understanding of man as a terrible creature, as *das Unheimlichste*, Heidegger does not present man as a being that brings the worst terror and is the most frightening. What he was probably trying to do here is to define human essence in a fundamental way. This essence of man is best captured by the term *das Unheimlichste*, because this term shows and includes in a specific way also the unhomely, as the negation of home, as *Un-heimische*. One of the most significant conclusions Heidegger makes in *Ister*, is the equation between *das Unheimlich* and *das Unheimliche*: the frightening nature of man comes out of his inability to dwell, to have a home. In this cosmos, man always searches for his home, but his core is characterised by the becoming homely (*Heimischwerden*) or, in different words, in this constant *not-being-at-home*: »Dwelling itself, being homely, is the becoming homely of a being unhomely.« (Heidegger, 1996:137). This is one of the crucial point Heidegger is making in *Ister*: the notion that man is *becoming homely* in the unhomely, or, further or, that he is adjusting to his imperative homelessness.

Heidegger highlights this basic position of *man as a being, that is not at home*, frequently in his later works, where he also describes this position in a more negative and extreme way. One of his most notorious statements on the topic can be found a few years prior to *Building Dwelling Thinking*, in the *Letter on Humanism* (1947), where he states: »Homelessness is coming to be the destiny of the world.« (Heidegger, 2009 -1: 243). Homelessness (*Heimatlosigkeit*) is one of the central terms of his late philosophy: man is essentially seen as a being, that cannot be at home and has a distinctive destiny, he is doomed to homelessness.

Homelessness as the other side of dwelling is introduced by Heidegger in the very final part of *Building Dwelling Thinking*. He had proposed a completely different reading of home as he previously suggested in *Being and Time* with the concept of *Das Man*, which is an important shift. The urgency of homelessness appears when man is thinking about the real plight of dwelling. Homelessness is a specific symptom that points to the oblivion of Being inside the whole history (of metaphysics) and can be seen as the first warning, the first indication that Being is being ignored, excluded, removed. In this context, homelessness is something man cannot escape. Thus, Heidegger concluded this essay with an appeal to (re)think homelessness: »Yet as soon as man gives thought to his homelessness, it is a misery no longer. Rightly considered and kept well in mind, it is the sole summon that calls mortals into their dwelling.« (Heidegger, 2009-2: 363). Only when homelessness appears, dwelling in its full meaning can start.

The relevance of Heidegger's notion of home for architecture

The topic of the uncanny (*das Unheimliche*) is one of the key terms of Heidegger's philosophy; it seems more relevant and central in comparison to the question of home (*das Heim*). Almost every time Heidegger wrote of the homeland, the home and the homely, he added that man essentially can never be at home in the world. As the essence of man is defined by rootedness and by homelessness, his/her essential dwelling imminently distances him/her from the possibility to be at home in the world that surrounds him/her. Man is originally without a home, but home and the homely are of crucial importance for this creature, that stands in the midst of being. Heidegger dwelled on the other side of the homely: the unhomely, the uncanny. The biggest catastrophe of all for Heidegger is man who is set in the midst of being and who is always forgetting about being.

One of the most significant interpreters of Heidegger's work, the French philosopher Jacques Derrida stated in *Of spirit: Heidegger and the question* that a meaningful reading of Heidegger should always take into account – beside the text itself – also what this German philosopher had left out, what he did *not* include. Sometimes, in Heidegger, that which is apparently left out, which is avoided, is what is essential. It seems that this is the case in the question of home, proposed by Heidegger as a misconception, is continuously reiterated: that at first glance, home for Heidegger stands in the countryside and that he is a philosopher of the rural and the provincial. This paper aimed to argue that in Heidegger's philosophy one upholds a different position. His vision of modern man is utterly different and radical: when cast into the abyss of the uncanny man is forever banned from home.

On the other hand, Derrida's book can also point out, that there are some paradoxes in Heidegger's work that need to be considered. If we are to understand a paradox as that which is seemingly

absurd or contradictory, which may prove to be well-founded or true, we may state within Heidegger we have a variety of topics which seem paradoxical. For Derrida, to come to the core of what Heidegger was aiming at, we sometimes need to think about both sides of the subject simultaneously, we need to approach it from a paradoxical standpoint. This is also the case Derrida makes with Heidegger's involvement with Nazism: for him, the idea of Nazism stands in the core of Heidegger's work, as the idea of *Geist* is central to his philosophy and to Nazism itself. Nazism, in Derrida's terms, did not come from the desert or from an unknown location, but exactly out of the woods in central Europe. The woods that are the spring of the Danube, the river that presents the locality itself for Europe. Despite or because of that, Heidegger's philosophy is not less or more important – but to approach it, one needs to consider both sides of this paradox at the same time and think of them together.

This is precisely the argument of an important Heideggerian scholar, the American philosopher Farrel David Krell when discussing the topic of home in Heidegger. He stressed that Heidegger's thought on the topic of home (*das Heim*) revolves around a terrible irony: »*human being is being in the world and dwelling on the earth – and yet we are never at home in the world, never rooted in the earth.*« (Farrell Krell, 1995:94). The irony of a continuous openness and discontinuities on the earth and in the world for man as such is something Heidegger never succeeded to overcome.

A detailed reading of Heidegger's reflection on the subject of home (*das Heim*) has shown that the presumed image of an idyllic home, often ascribed to Heidegger on the basis of his later works and the image of the homestead in the Schwartzwald woods (Heidegger, 1951) has not been grounded in his work. The question of home is thrown into the abyss of the uncanny. Instead of the presumed familiarity and warmth of a home in the traditional environment of the past, home for modern man is in his horrifying nature, which is perpetuated by the uncanny (*das Unheimlich*). This utterly modern understanding of man's essence, but also of modern space, is particularly manifold and – in some sense – remains paradoxical. For Heidegger, the home becomes a vacant search, which is only filled with fleeting human activities. The destiny of modern man is not to have a home, and thus the question of architecture is not even posed: but when it is posed, it has to come exactly from this basic position, precisely from this situation of man attitude towards his homelessness. This is the intersection of architecture that primarily aims to build shelters of different kinds, and one of the key terms in Heidegger's philosophy. That poses a standpoint for the reflection of home and the core of architecture in the 21st-century.

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VITRUVIUS' CONCEPT OF EURYTHMY

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ABSTRACT

Eurythmy is the third principle of architecture listed by Vitruvius, but its content is quite controversial. Rhythm, and its derivative eurythmy, were terms initially associated with time, movement and change. Although the later was subsequently used to pass judgments on sculpture, Vitruvius was the first to refer to it in the context of architecture. The present paper argues that Vitruvius' eurythmy must be understood as a concept involving time in architecture, and therefore as referring to the process of perception of complex architectural entities. In other words, eurythmy must be understood as the optimal visual complexity of a given building as perceived by the beholder. This reading of eurythmy clearly differentiates it to symmetry, and implies its subjective character several scholars have pointed to.

Keywords:

Time in architecture, subjectivity, perception, optimal complexity

VITRUVIUS' CONCEPT OF EURYTHMY

Eurythmy is the third among the six principles of architecture listed by Vitruvius in *De Architectura* I, 2. Unlike the definitions of Order or Arrangement, that of Eurythmia is quite unambiguous in its wording. There is therefore more or less consensus on how the related passage should be translated into modern languages. Nevertheless, its exact meaning is quite elusive, with scholars offering varying interpretations since at latest the early 16th century CE. Vitruvius isn't very helpful in clarifying it, since he sparsely revisits the concept, contrary to that of symmetry, which is almost omnipresent in his treatise.

De architectura I, 2, 3 reads:

"Eurythmy is beauty and fitness in the compositions of the members. This is found when the members of a work are of a height suited to their breadth, of a breadth suited to their length, and, in a word, when they all correspond to its symmetry" (translation by M. H. Morgan with minor amendments. The Latin original: "Eurythmia est venusta species commodusque in conpositionibus membrorum aspectus. Haec efficitur, cum membra operis convenientia sunt altitudinis ad latitudinem, latitudinis ad longitudinem, et ad summam omnia respondent suae symmetriae.")

Based mainly on the second sentence of Vitruvius' definition, as well as on similar passages by other ancient authors, modern scholars tend to parallel Eurythmy to Symmetry (Granger 1933, Fleury 1990, Smith 2003, etc).

The trend was already set by Daniele Barbaro, Vitruvius' Renaissance editor and translator into Italian, who considered Eurythmia as "the temperament of proportions applied to matter" (Barbaro 1567, 162) which was meant to allow for buildings to be "correctly perceived" (Mitrovic 1996, 6).

Vitruvius accepts a few deviations from the symmetry system permeating any sound building, symmetry being the commensurability of its constituent members, and the inevitably resulting harmony. It is quite telling that the more representative a building is, the less such irregularities are deemed acceptable. In the case of private residences, deviations from strict symmetry are encouraged so that the building better adapts to site-specific constraints or better serves specific functional demands. On the contrary, in temples the only adjustments to the strict symmetry system allowed are dictated by the laws of nature: the corner columns must be made thicker because they are subjected to greater loss of their "emanations" due to their position; the most widespread theory of vision by Vitruvius' times postulated that objects are made visible as soon as "emanations" originating from it meet rays originating from the eye of the beholder. Therefore, Vitruvius also suggests that tall columns should have their proportions adjusted to counter the difficulty of rays "piercing" air when the eye focuses on distant objects.

It would be quite awkward for Vitruvius to suggest that the means to achieve eurythmy (if it denotes alterations of strict symmetry), is practically allowed only in buildings of minor importance such as private residences. On top of that, Vitruvius never tells us that we should adjust the symmetry system to achieve eurythmy. And in VI,2,5, he warns the architect not to jeopardize the work's eurythmy if and when they make such adjustments (The Latin original: "*uti non sit considerantibus aspectus eurythmiae dubius*" translated by M.H.Morgan as: "so that the beholder may feel no doubt of the eurythmy of its effect.")

This evidence suggests that eurythmy denotes something quite different than adjusted symmetry, a conclusion in line with the concept's prominent third place among the principles of architecture, especially if compared with symmetry's fourth.

What does then eurhythmy denote in the context of *De Architectura*?

Since the times of its first occurrences, the term eurythmy, good rhythm, was applied on objects involved in some kind of motion, and originally described the "changeable and impermanent form taken at a certain moment by something flowing" (Michon 2018) such as dance (Petersen 1916), speech, and music. Plato mentioned eurythmy alongside beauty and harmony in rhetoric, and he claimed that it echoed a quality of the human soul (*Republic* 400D-E); however the philosopher didn't feel obliged to clarify what exactly set eurythmy apart from the other qualities mentioned, although he made clear that he considered rhythm as "the order of motion" (*Laws*, 664a-665a: "*τῆ δὴ τῆς κινήσεως τάξει ῥυθμός ὄνομα εἶν'*", translated by R.G. Bury).

It was Aristotele's pupil Aristoxenus who made eurythmy central to his ground-breaking theory of music. Vitruvius admired Aristoxenus, and he mentioned him in multiple occasions in *De Architectura* (I,1,13; V,4,1; and V,5,6) however not hesitating to distinguish himself from him in some crucial instances.

Aristoxenus understood eurythmy as a kind of harmony developing in time. He considered rhythm as an ordered sequence of time-lengths (Michon 2018) applicable on text, on melody, and on bodily motion (*Elementa Rythmica* 2,10). He further claimed that it wasn't reducible to simple numerical ratios, but it was a matter of sense and perception (*αἰσθησις* - *aesthesis*), therefore highly subjective. He stressed the importance of accurate hearing and he discerned between the experiential and the intelligible understanding of music; as he used to say to highlight his view, while a geometer doesn't make use of the power of perception, and doesn't pass judgements on the beauty of straight or curved lines, the artisan does (*Elementa Harmonica* 2,32; 2,33).

Aristoxenus, then, distanced himself from the Pythagorean tradition which identified harmony with ratios of integers; he didn't include symmetry in the principles of music, and only distinguished between rhythm and meter, which admittedly could be understood as a kind of symmetry -in Poetics Aristoteles points out that "prose must be rhythmical, but not metrical, otherwise it will be a poem" (1408B). Vitruvius included both eurythmy and symmetry in his principles of architecture, giving each a distinct content, despite their obvious similarities.

Aristoxenus held that "rhythm arises whenever the distribution of time intervals takes on some definite arrangement, for not every arrangement of time intervals is included among rhythms." (*Elementa Harmonica* 2,7, translated by C. Marchetti). And he made the remarkable claim that ratios higher than 2:1 couldn't result into rhythm, and consequently produce eurythmy, probably since they were "too unequal to serve as rhythmic functions" (Marchetti 2009, 87) on the contrary, eurythmy could be based on irrational numbers as much as on rational. In that light, the aforementioned passage of *De Architectura's* I, 2, 3 ("...all members must be in accord with the work's *symmetria*") is probably not indicating a subordination of eurythmy to symmetry, but is meant as a negation of Aristoxenus' position that harmony can result from ratios of irregular numbers: an obvious attempt to reconcile unwavering observance of symmetry (according to the widespread view shared by Vitruvius, resulting from ratios of integers), with the need to adjust to circumstances normally faced in architectural practice.

Although eurythmy mainly involved change in time, as soon as the third century BCE, Philo Mechanicus claimed that the optical refinements of the Greek temples were made with a view on eurythmy: "[Members] of equal thickness and constructed perpendicular appeared to be of unequal thickness and not perpendicular... because the eyes deceive us... So, by a process of trial and error, adding to masses and again subtracting from them, and establishing tapers and trying out every possible means, architectural forms are produced which are suited to the vision and appear *eurythma*" (Philo *Mech.* IV, 51, translated by J.J. Pollitt up to "appear").

A passage, attributed to Geminus (or Damianus?), which appears in Heron's *Def.* 135, also makes a similar remark, by pointing out that architects, "when drawing buildings, must make the columns thicker in the middle, so as to create a work that is *eurythmon* with regard to the way in which we perceive it" (Schuhl 1933, 174).

And Aristides Quintilian noted in third century CE that "rhythm is ... said of static objects, as we say, 'a well-rhythmed statue'; of all moving things, as we say someone walks with good rhythm; and particularly of the voice" (*De Musica* 1,13).

How did it come to apply on static object a concept involving time and motion?

Statues usually depicted people or other living creatures. These are more or less in constant movement. Eurythmy may well have referred to statues convincingly representing people, by successfully depicting their anticipated movement, which gave them the sense of life. Two millennia on, a great of our times, Sergei Eisenstein praised *Laocoön*, a masterpiece of first century BCE sculpture, widely admired in Renaissance, for creating the sense of movement by depicting different bodily postures that could not possibly happen simultaneously. Time was thus imbued into highly inert objects such as pieces of marble.

How was the concept of eurythmy applicable in architecture as claimed in the aforementioned passages? The passage attributed to Geminus emphatically states that eurythmy is produced by what we today call optical refinements applied on columns normally used in representative buildings, and especially temples. Hero may be referring to optical refinements, too, although he might have understood eurythmy as adjusted symmetry, as modern scholars do.

Some optical refinements may be perceived as violating the symmetry system. The making of the corner columns thicker than the rest, clearly violates the set ratios of the magnitude of the members; as said Vitruvius, allowed for such deviations from symmetry because natural laws governing sight didn't leave much choice. We shouldn't fail to acknowledge, however, that Vitruvius defined symmetry as "...the correspondence of the separate parts *to the seen form* of the whole", not just the form of the whole, a point generally ignored by most modern scholars (Fleury 1990, Smith 2000, etc.; The Latin original: "...ad universae figurae speciem... responsus". Rowland 2003 is faithful to the original). This means that in some cases the fact that strict symmetry, permeating every part of the work, is not observed, is actually not a violation of symmetry, but an architectural gesture honouring symmetry in its truest sense, and the different thicknesses of the column's shafts could be one of those.

Some other optical refinements cannot even be suspected of violating the symmetry system permeating the building. These are not specified in any known treatise, nor can they be pinpointed with certainty; they may include the curvature of the stylobate or the *entasis*, the thickening of the column's shaft at approximately one third of its height, in comparison to what it would be if there was a steady diminution of its girth from base to capital. That's because the marks on the building serving as points of reference for the establishment of symmetry (such as the diameter of the column's base, the distance between metopes or the thickness of an abacus) were independent of most of the optical refinements (such as the aforementioned curvature of the stylobate or the *entasis* of the columns), as much as were the curves of the human body (i.e. the swollen muscles) not hindering the symmetry system on which the statues were structured: the latter was established with reference points such as the joints of the body's extremities, the height of the head, the length of the nose etc. (Vitruvius III,1).

If eurythmy is the result of optical refinements, as claimed in the passage attributed to Geminus, their goal is to make from a temple more than an accumulation of architectural elements: a body with inner tension and cohesion.

This would be consistent with the parallel of the buildings (and especially public buildings) and the human body that was common in classical Greek, Hellenistic, and Roman architecture. The idea that the Doric, the Ionic and the Corinthian orders correspond to the male, female and young girl bodies respectively as Vitruvius relates (Vitruvius III & IV); the use of human parts (digit, palm, foot etc.) as the basis of the measuring system, attest to this apparently widespread notion; it could well have been that it was Vitruvius who introduced the idea that "because men's bodies are commensurable, buildings should be so". (Kagis Mc Ewen 2003, 273).

Interaction with other people activates the psychological mechanism known as empathy. (Gallese 2005; Gallese 2017). The study of empathy, our ability to feel what other people likely feel – a notion developed in late 19th century- has gained momentum on the basis of current neuroscience research. Mirror neurons, discovered recently, seem to be crucial in this respect. Mirror neurons respond both to one's own actions as well as when others act (Rizzolatti & Fogassi 2014).

Today, the notion that architectural experience involves empathy -also developed in the late 19th century (Vischer 1873, Lipps 1903)- has also been recently put centerstage. The original idea was that beholders identify themselves with the building in front of them, and "feel" what it would feel was it a living creature. When we see a Greek temple, we "feel" the load carried by the columns; were they muscles, they would flex. The *entasis* of the columns is the equivalent of muscle flexing. Seeing the columns having *entasis* is deeply satisfactory.

However, Vitruvius didn't have to rely on the supposed affinity between buildings and human bodies to argue that eurythmy, a concept involving time and movement, is applicable in architecture.

In the concept's definition in I, 2, 3 eurythmy is realized in the *compositions* (Latin original: *compositionibus*) of the work's members. One should note the plural form of compositions. My understanding is that *compositions* denote the composition of the member of the work so as they are made belong to more than one entities at the same time: a column is a member of a pteron's colonnades, but it is part, too, of an entity that includes the architrave and the pediment. Eurythmy is realized when the of work constituent parts fit to each other in multiple ways. The members of the work must be smoothly integrated into more than one groups.

In order for the work to be eurythmon, its constituent members should possess the quality of being well-shaped, as postulated in the second sentence of Vitruvius' definition of Eurythmy. However, the first sentence of the definition means that the beauty and the adequateness of the members is judged neither for each one per se, nor by each one as part of an entity, or of the whole, but also as being part of various sets simultaneously.

To be able to tell whether the members of a building harmoniously fit into more than one entity, time is needed. When looking at a building, the eye scans it horizontally and vertically. Horizontally, it focuses on the column and the colonnade; vertically it focuses on the column and the load it carries, the architrave and the pediment. The column must have the right shape and the right proportions then in order to allow, and even to prompt the beholder consider the column as part of the colonnade and the column-architrave-pediment set.

Recent research has examined thoroughly the mechanisms underlying vision. In order for information to be gathered on an object spanning more than a few degrees in a beholder's field of view, and for its image to be built in the mind, the eyes move with fast saccades, followed by successive fixations onto specific points (Weber et al 2002). Only when we approach a target building from a distance can, we see it instantly as a whole. Close range viewing, as well as interiors require successive saccades and fixations.

One can suppose that this mechanism is even more at play if we move, which is what normally happens. Visual as well as kinaesthetic stimuli all accumulate to form the pool of information needed for perception to be formed.

The visual complexity of buildings weighs on heavily in this chain of saccades and fixations. However, the concept of visual complexity is quite elusive. Over the past decades several methods to quantify it have been proposed, but these normally address very specific aspects of the forms, mainly geometry, devoid of social, historical or other references. They include the fractal dimension and repetition of shapes, the number of elements comprising a form, the irregularity of shape, the amount of algorithmic information etc. (Berlyne 1971; Mandelbrot 1983, Boselie 1984, van der Helm et al 1992; Spehar et al 2015).

Complexity is thought to be closely linked to liking and interestingness. Increased complexity is associated with increased liking, but up to a point. From some level of complexity up, liking and interestingness start to decrease, so that the curve visualizing their relation takes an inverted U-shape (Delplanque et al 2019). Initially, increased complexity spurs the interest of the beholder. Their eye explores the target object, and satisfaction is generated (Yue et al 2007; Bar & Neta 2006; Rentschler 1999). Too much complexity, though, has the adverse effect. The object becomes unsettling (Berlyne 1963; Berlyne 1971). There is therefore an optimal level of complexity, at which maximum aesthetic pleasure is achieved. It is essential to note, though, that the "optimal" level is quite subjective, depending on personality traits, and prior experience. Research has shown that eye movement is not hinged with positive aesthetic judgements: the number of fixations and the duration of fixation are independent of the attractiveness of the target object (Ho 2020, Stratton 1906). But, one could assume that they increase with the increase in the target's visual complexity, at least up to one point.

However, what makes an edifice interesting is much more than quantifiable formal complexity. To speak only of aspects of buildings perceptible by the senses, and not taking into account memories, symbolisms, political and social significance, issues of use and appropriation, and a myriad other aspect, the perception of architectural elements as belonging to more than one entity, can render a building as much more interesting than any quantifiable formal complexity criterion.

But, as mentioned above, the integration of architectural elements into even one entity isn't an automatic process: buildings can be perceived as accumulations of building members, or even of building materials, not as wholes. The integration of architectural elements into more than one entity, is even less straightforward: in my understanding, if the building prompts the beholder to do so, then it has achieved the optimal visual complexity Vitruvius called Eurythmia.

While Vitruvius' Symmetry may refer to the rather "static" quality of harmony, Eurythmy may refer to the optimal visual complexity of the architectural form, which is perceived by a moving subject, and needs time to be appreciated. Vitruvian Eurythmy, therefore, might denote the "dynamic" complexity warranting the beholder's visual interest in the target building.

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BETWEEN REALITY AND NON-REALITY*

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ABSTRACT

Virtual reality is all too often considered as antithetical to reality, the former being an entity fully separated from the latter. Since there has been historically no consensus among philosophers as to what constitutes reality, this paper seeks to contribute to the debate on this crucial issue. It argues that reality should be considered as including non-tangible properties, and that, from the first person point of view, virtual reality is part of the reality of each and every one of us. Furthermore, grey zones between reality and virtual reality, that is to say environments in which reality blends with phantasy and highly personal perception of our surroundings are much more common than often assumed. The present paper claims that architecture is the most powerful foundation for virtual reality, and therefore creator of grey zones. Real spaces (such as cafés or streets, and moreover cities) offer experiences more intense than any typical virtual environment; and cause the blurring of awareness in which world we are. Virtual reality is an impoverished reality, and attempts to realize it, have led to disastrous outcomes. In the contrary, grey zones, partially anchored on the materiality, actually enrich reality with non-tangible qualities, without threatening its authority in our souls and minds

Keywords:

reality, virtual reality, fantasy, grey zones, cities, materiality

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What is reality? What is virtual reality?

At a time in which virtual reality seems to not only have a bold presence at the entertainment industry, but also claiming an increased role in the perception of reality through the introduction of several augmented reality applications (Tussyadiah et al., 2017, Van Kerrebroeck et al., 2017, Nagy and Koles, 2014, Milne 2003), we must revisit some fundamental issues: What is reality? What is virtual reality? Are there grey zones between them, and if yes, what is their impact on our world? How do they change our visual culture and our culture in general? How much virtual reality does really exist within reality and in which degree are cities the substratum and the generators of grey zones in individual as well as collective perceptions, memories, aspirations and dreams? And doesn't this make them part of reality in its literal sense?

A quite brief but substantial definition of reality is that it is the sum of all things existing or that existed in the past, as opposed to those that appear to, or could, be or have been -as The Cambridge Dictionary puts it reality is "the state of things as they are, rather than as they are imagined to be" (CD, 2020). Philosophers, though, are far from agreeing on a universally accepted definition, and hold widely divergent views. Immanuel Kant's famous remark that "it must still remain a scandal to philosophy and to the general human reason to be obliged to assume, as an article of mere belief, the existence of things external to ourselves (from which, yet, we derive the whole material of cognition for the internal sense), and not to be able to oppose a satisfactory proof to anyone who may call it in question" (Kant 1787, pr.) is telling of the difficulties to develop a common understanding on this basic question, the answer to which can be seen as essential for any further discussion of a myriad of subjects. In this context it is important that art, and theory of art, contribute to the debate on the essence, the features and the limits of reality, and it is in this spirit that this paper is written.

Plato is knowingly among the first thinkers who directly confronted the issue to its full extent. For Plato reality consists of immutably things, and these are the eternal Forms (Εἶδη) or Ideas which are accessible only by reason, and not by our senses: Forms do not exist in the perceptible world, but in the heavens (Ross 1951, Welton 2002). What human perceive through their senses are but unstable, blurred and distorted shadows of real things, or Forms. Plato's pupil, Aristoteles, argued that there are no Forms independent of the things perceived by our senses, and do not exist in themselves. Forms are the common features of things, abstractions of the constituents blocks of our world (Cornford 1957, Dancy 2004).

The Platonic theory of Forms has haunted art since it was formulated, two and a half millennia ago. For, it holds that artists such as painters are removed two steps from truth, in that they imitate the visible, "external" features of perceptible things, which in turn are false and incomplete copies of Forms, that is to say of reality. As is well known, though, Plato's view on art seems to have evolved over the years, allowing for the notion that the artist might help us see the true nature of the subjects depicted, most notably Gods-a view that was adopted by later followers of his thought, and especially the Neoplatonists, helping them pave the way for the complete revision of ancient art brought by the emerging Christian culture (Roochnik, 1996, Murdoch 1977).

There is a long tradition of groups and societies investing huge efforts and genuine creativity attempting to go far beyond the mimetic illusions criticized by Plato. In western tradition, illusionary spaces were the order of the day in baroque architecture, if not of Roman painting. The mastering of mimetic techniques gave artists the self-confidence to experiment with the construction of yet unseen new worlds.

Later on, panoramas and, subsequently, cinema drove illusionist techniques to new heights. However, virtual reality was always achieved also by technologically less sophisticated means: poetry and literature created since their emergence several thousand years ago parallel universes (Lefa 2014).

The creation of these outworlds is not exclusively the achievement of a handful of gifted professionals.

The newborn, abruptly separated from their mothers' bodies scream their despair for being in an unfamiliar world -a scream Francois Dolto attributed to the feeling of exasperating loneliness (Dolto 1994). But, the newborn soon develop the techniques that allow them transcend from reality to phantasy, as a surrogate for a wished-for reality that has been taken away: soon they "invent" the nipple in the form of their fingers, and later they personify dolls as buddies to help them survive in the unknown.

And we all experience, interpret and make sense of the one existing world in a highly personal manner, which usually has little in common with that of the people surrounding us.



Figure 1: Athens 2020. Amusement Park, during the coronavirus lockdown. Photography. Image © Nore Lefa

This broad understanding of virtual reality seems to be correlated to the first-person perception of reality, bordering the realm of phenomenology (Merleau-Ponty 2014, Sepp & Embree 2010). But in a quite mundane manner. We are normally well aware that this is reality, and that is the way we see it, which is a kind of virtual reality, not to be identified with reality itself. We are normally aware that the detailed images we have of some basement apartment is not real in the strict sense of the term, but a reality created in our mind and soul by the accuracy of Dostoevsky's descriptions.

Transition between reality and virtual reality

What is then reality? A functional (but -by nature- quite controversial) notion of reality, more-or-less dominating current popular thinking, is that reality is the total sum of tangible things surrounding us. This kind of simplified definition of reality has some merits. However, what "tangible" means in this context is of crucial importance. Tangible doesn't solely comprise of, and should not be understood as comprising of, physical things, the Cartesian *res extensae*. Reality is a much more complete set of things, and it is impoverished, and stripped of much of its content if its non-physical aspects are excluded.

Reality retains its full essence if its "non-tangible" aspects are considered (Ingold 2000). Reality is recognized by the full experience it offers of things and events, and in our case, of streets and cities (Augé 1992), Pallasmaa 2005). Thoughts and feelings are created within us, and traumas and sweet memories are recalled in all their vividness when strolling through complex or frugal environments, through familiar and unknown or even hostile territories. These thoughts and feelings do exist and do have a real impact on us. They are intangible, but more real than the stones and bricks the city we walk through is made of. They are the cornerstones of what can be called grey-zones between reality and non-reality; they are the produce of multiple interacting agents, a produce of multiplicity.

Dolls are prime examples of this kind of agents. Dolls are small-sized artefacts allowing for a wide range of relations to be developed between them and the kids playing with them. Dolls realize phantasies. They become the liaisons with other beings; they allow children experience their loneliness, or they enhance communication with their peers. Actually, architecture regularly does the same.

Architecture is a major contributor to the enrichment of reality with non-tangible features. Buildings and spaces create environments that spell their magic on us, absorb us in their constructed microcosms, far exceeding their primary function of providing us with a shelter or communicating the desired meaning. Architecture guides us to already configured stories which are nevertheless open to new interpretations, to new ways of experiencing it, to new narratives based on the initial one. By allowing, by its very nature, innumerable uses of its creations architecture creates myriads of new worlds -myriads of realities. For, each one of us uses the products of architecture in our own way, as objects with which, or on which, we can serve our most divergent needs and satisfy a wide scope of desires, ranging from the most practical to the darkest and well-hidden: as shelters to keep us safe from rain and people with nefarious intentions, we may use them as symbols of authority and power, we may use them as inspiration for daydreaming, we may also use them as objects on which, or through which, we can express our drive for aggression, domination, supremacy, and destruction (Lefa and Lefas 2019).

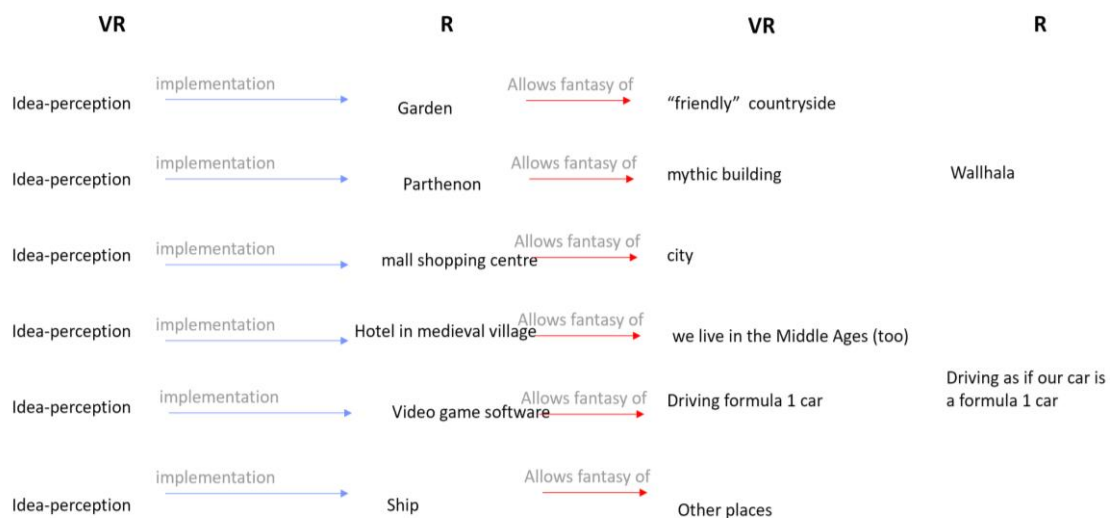


Figure 2: Transitions between reality and virtual reality. © Nore Lefa

Environments that help blur the limits between real and non-real, and the very condition of being in doubt over the world one is in, are in themselves grey zones between reality and virtual reality. In some sense we are always in a grey zone. Grey zones are omnipresent in contemporary culture, as much as they were in cultures of the past. They deserve par excellence be called what Michel Foucault regarded as heterotopies, a term he coined in the mid 1960's (Foucault 1984). "Different" environments are those offering the chance of "other places" to co-exist alongside more trivial ones. That is what Walter Benjamin and Charles Baudelaire celebrated in the aura and magic and poetry of the metropolis (Benjamin 1982, Benjamin 2003, Baudelaire 1853). The metropolis at the times of its naissance, exhibited all the features which transport us into the grey zone where reality, expectations and phantasy merge into a magnificent whole. But, this is not a quality inherent only in metropolises at that specific time. Cities, in general, are the venues of successive lives and multiple relations, of hopes and pain, of creation and destruction (Sandercock 2002), of which we actually know not much, but we imagine a lot -always based on their persisting physical features (Rossi 1984): even when these are gone, stories and narratives allow them to exist, vividly present among us. Borders, areas, limits, all linger in our minds. Cities are in some sense, grey zones by their nature.

Just as gardens do, though in a quite different way: To speak just for the western tradition, landscaping and garden design since renaissance times aspired at creating versions of reality that seemed to refute the most essential natural laws governing reality -while romanticism made the illusion of unplanned and "natural" its central goal, thus creating unnatural natural settings. Gardens connect fairytales with reality. Nature becomes a part of us. Our garden is unique. We plant it, we take care of it; it is firmly under our control, or at least we have this impression. We manipulate nature as much as she manipulates us (Virilio 1998).

Gaston Bachelard saw the kind of features that are trademarks of grey zones in even more basic - furthermore, primordial- environments, never calling them such, but describing the deep-reaching experience they offer and reviving their captivating atmosphere (Bachelard 1958); here again the connection between the extended notion of virtual reality, grey zones, and phenomenology. Because this is what makes architecture such a seductive force: its ability to let the beholder linger in the grey zone when

experiencing the spaces and forms and sensual stimuli it creates. Such spaces and forms and visual stimuli are not defined by a strict space- and timeframe, and are inherently rich, speaking several of architecture's languages. It is no coincidence that Bachelard calls upon architects to shape their work so as to offer rich experiences to its users, and not according to some guidelines of technical or aesthetic nature abstractly formulated and distanced from tangible reality and meant for some supposedly existing, median user.

It is of utmost importance that grey zones actually enrich reality with non-tangible qualities, without threatening its authority in our souls and minds-while virtual reality does exactly that.



Figure 3: *With the tramway through Sarajevo: Performance/ installation by Nora Lefa, 2015. Image © Nora Lefa*

Gray zones function like metaphors. Communicating with others involves heavy use of metaphors. As George Lakoff showed, we do not simply use metaphors in speech in order to make our message more intelligible (Lakoff 1994, Lakoff & Johnson 2003). We think metaphorically -it is convenient to simplify reality, which is always highly complex. We use a metaphor to describe the "shortcomings" or the "impasse" of a relationship, and this helps us grasp what is really happening in our live with the other part. A complicated reality is reduced to manageable dimensions.

And, *mutatis mutandis*, this is what virtual reality makes. It exaggerates some features of reality, and sidelines others, so that its easily comprehensible and designed to cause predictable emotional reactions. Virtual reality is an impoverished reality, but usually a forceful one.

Encouraged by the persuasive force of simplified realities, there have been historically several attempts to establish it in the place of the really complex reality. The view that politics is but a chess-play transcribed into reality by Goebbel's info-wars that rendered all groups not exactly-fitting-to-the-Nazi-ideology enemies of the state.

Less dramatically, the geometry of Modernist paintings was not only transcribed into van Doesburg's famous house, but also in the working-class housing projects of the 1950's and 1960' around the world - with devastating results. We may, therefore, conclude that history has proven Deleuze's view that virtual reality is a reality in waiting not corresponding to facts (Deleuze, 1994, 208).

Transported into reality, virtual reality is but a fragment, out of context. We do not have the tools to perceive -or project- meaning on it; virtual reality becomes a void signifier, unable to move us. All features that immersed us into the reality of virtual reality are not present anymore, and we are faced with a tough, spiritless reality completely void of multiplicity.

The myth is an attempt to complement and add aura to reality (Levi-Strauss 1964-71) but cannot retain its complexity and its attractiveness independent of reality.

Enriched reality

Materiality is key to not allowing virtual reality substitute for reality -for the beholder be totally transplanted into the world virtual reality carefully constructs, and therefore materiality is key to the creation of grey zones (Lefa & Parmenidis 2016). In the Greco-Roman antiquity, statues were widely considered as being possessed by gods and spirits, and consequently, as epiphanies thereof (Corso 2001). In the western cultural environment phantasy (immaterial as it is) doesn't suffice for people to contact their Gods. Physical objects, material artefacts, were called upon to bridge the gap. Statues, temples and holy sites were devised to allow for people to approach the intangible. And when we do this, we immerse in both worlds, the real one made of marble and bronze and stones and mortar, and the imagined one.

So, we are made aware that the real space we inhabit is but a grey zone, that real space carries the features of both reality and virtual reality. We are made aware that what makes space really real is its enrichment with qualities that run deep into the very essence of human nature: our need to overcome the boundaries of our physical surroundings, our finite existence and venture, even momentarily, into the infinite, while not losing the sense of ourselves, fatally bound to the real world.

Jean Lacan claimed that materiality is an inherent quality of things able to (and threatening to) undermine the most well-structured symbolical systems created by humans (Lacan 1999, Lacan 2004). Lacan wrote extensively on the nature of art, which he held as one of the most fundamental human activities; therefore, he considered making of art an essential human trait. We may behold of the artwork, but simultaneously, the artwork behold of us, thus opening new horizons to the beholder, allowing them inspect the invisible aspects of self (Lacan 1977). In order for something to behold of its beholder, it must be physically there. We may believe that we have control over what we see. However, the sense of authority we claim to have over the object in front of us is constantly undermined by its tangible, material -physical- presence (that bestows the object with the quality of reality) which tends to overcome the meaning originating from the symbolic order it helps establish (Felluga 2015).

It is worth reflecting on such a famous monument like Parthenon. This outstanding building served as a temple for Athena, the patron Goddess of Athens, and probably as a tribute to the sacrifice of the three daughters of the semi-mythical king of the city, Erectheus. From the 4th to the 6th c. CE it was left to decay, unused. However, almost two centuries after the establishment of Christianity as the state religion of the Roman Empire, the Parthenon was converted to a church, our Lady of Athens. Following the Ottoman conquest, it was made a mosque, until a large explosion during the siege of the city by the Venetians brought down large parts of it, and the roof which had replace, before 1400 years the original one. From the mid-18th century, the great marble edifice on the Athenian Acropolis, acquired a new identity: this of a glorious ruin, the culmination of architecture, the absolute masterpiece -in the minds of the "cultivated" western elite (Tournikiotis 1994, Kaldellis 2009).

Its quasi mythical status is unchallenged, even today. Therefore, it is inscribed in our consciousness, and in our subconscious as something far exceeding its physical features. By being iconic it becomes virtual. But, still, it is there, in its full materiality. A tangible object, an architectural composition, a real space becomes the medium transporting us to the grey zone between reality and non-reality.

Grey zone are able to inspire us, and make our world richer, greatly contributing to our well-being. They are essential parts of our reality.



Figure 4: Sarajevo. Photography. 2019. Image © Nore Lefa

The city is a solid foundation for the virtual reality, as well as reality itself. It is in the city that we experience simultaneously both these realities, it is where these two concepts -reality and virtual reality coexist harmonically next to each other. The experience of such a totally rich reality is a truly complete experience, whose impact on us can be incorporated in new works of architecture. Being expressions of such a conscious and candid reception of reality, these eventual new designs, based on a set of conceptual tools which promote multiplicity, will become prime paradigms of a new approach, not interrupting the city's ceaseless "becoming", so that environments would be produced in which architecture's narrative would persist.

We tend to experience our world rather superficially. The world "out there" is but a mirror of ourselves. Being unable to grasp the multiplicity of our complex emotional world multiplicity (the pain, the love, the joy...) we end up perceiving even the reality-out-of-us abstractly, dismembering it into fragments and pigeonhole them. Without having a complete perception of the real, that is to say without the bold determination to face reality we are unable to create rich and true things.

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INFORMATION IN ARCHITECTURE IN THE DIGITAL AGE

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ABSTRACT

Information technologies are so ubiquitous these days that we rarely question ourselves about what information is. Historically, the architecture became a profession when medieval master builders stopped the practice of designing and constructing the facility directly on the construction site and instead began to make plans for the future building, leaving the job of construction to other professions. Those drawings, plans, sections, elevations, details, represented information about future building.

Today, like many other professions, architecture is facing a digital transformation. All information that has been traditionally used is now converted to digital form, and information technologies are becoming the basic tool for their creation, modification, maintenance and updating. The whole process takes place on the assumption that there is a general agreement on what information represents.

The paper analyzes the concept of information and shows that there is no single definition that all professions accept. A review of different definitions is given with the main focus on the architectural information and its current use in digital technology. A detailed overview of the use of information in BIM technology and the efforts to unify it through the development of numerous standards is given.

As the transition of architectural practice to the use of digital technologies becomes a necessity, it is useful to create a better understanding of the nature of information and information technologies. New ways of creating, transmitting and using information need to be mastered in order to achieve a successful digital transformation of architectural practice.

INTRODUCTION

Today, when we use information technologies in almost all areas of life, we rarely ask what information is. However, if the question is asked, it is revealed that a single and generally accepted definition of the concept of information does not exist, and the definition differs significantly from discipline to discipline (Bates 2010). Today, like many other professions, architecture is facing a digital transformation. All information that has been traditionally used is now converted to digital form, and information technologies are becoming the basic tool for their creation, modification, maintenance, and use. In light of that, this paper analyzes the concept of information and ways the digital information is structured and used in the AECO (architecture, engineering, construction and operation) sector.

NATURE OF INFORMATION

The interest in information started in the first decades of the 20th century. The rapid development of communication technologies at that time led to the practical problem of comparing the transmission capacity of certain technologies. To achieve this, it was necessary to develop a theory that would base the quantification of information on purely physical properties without any psychological aspects. The first steps towards a mathematical theory of information were made by Harry Nyquist (1924) in a paper that studied the best shape of signals and the choice of codes to achieve higher communication speed without the influence of interference. The work laid down the basic mathematical principles without going into the issues of the very nature of information.

The first paper that explicitly dealt with the concept of information was written by Ralph W. R. Hartley (1928). The paper connects definition of information with communication. In order to communicate, participants use symbols, abstract patterns that, based on previous agreement, convey a meaning to communicating parties. When the sending party selects one symbol and sends it over the communication channel it does not only designates particular entity, but also excludes all other available symbols that can be chosen. As more symbols are added, more and more possible symbol combinations are excluded and information becomes more precise. Since the number of available symbols in ordinary communication depends on whether the participants speak the same language, on their level of knowledge and various other factors, for mathematical theory it is necessary to free symbols from any psychological aspects. Treating all possible combinations of symbols a mathematical equation is devised that relates amount of information with the time and frequency of the transmission.

The work of Claude Shannon (1948) gave the final form to the theory by extending available theories to include effects of noise, statistical structure of message, and the nature of the final information destination. The paper introduced the term "bit" as the information content of the single binary symbol, which is later accepted as the basic unit of information in digital computing and communication.

While for the purposes of defining a mathematical theory it was necessary to deprive information of any meaning, for everyday use it is necessary to add meaning to the strings of 1's and 0's that make up digitally encoded information. Just as in natural languages there is an established agreement that certain letters represent certain sounds and that certain words refer to corresponding objects or phenomena in the world, so in digital technologies agreements are established that certain strings of 1's and 0's refer to certain elements of the world. One of the oldest such conventions was the ASCII standard, which defined how a string of seven 1s and 0s determined numbers, letters of the Latin alphabet, and special characters. It was later enhanced by the UNICODE standard which defines the binary encoding of any character of any alphabet and any special character. Standards are also developed for images, sound, video, and various other representations. In this way, most phenomena in the world received their standardized digital representation.

But merely assigning digital symbols to entities still does not constitute information, but merely defining the digital representation of the data that describes the world. A concept that is often used to explain relationship between data and information is DIKW (data, information, knowledge, wisdom) pyramid (Ackoff 1989). The data consist of raw, unorganized symbols that only denote some items in the real world. Information assumes organization of data in structure that gives additional meaning that goes beyond basic references to objects or concepts.

No matter how precise the theories and computer structures that model information are, in the end, information only serves humans. Douglas Hofstadter (1979) distinguishes three levels of information: the frame message, the outer message, and the inner message. The frame message is defined by the very structure of the message and provides the basic instructions on how to decode the message. In modern computer data structures, for example, at the very beginning, it is explicitly declared which scheme was

used. The outer message is conveyed by the content of the symbols contained in the message and the way they are structured. The inner message is the meaning intended by the sender. While the frame and outer message are dependent on the technology, the inner message is completely dependent on humans.

Often mentioned as "the founder of modern management", Peter F. Drucker (1970) emphasizes that information and communication are inseparable and that the increasing formalization and impersonalization of information will require better communication. The formal and impersonal information processes will separate people and will require much greater efforts to restore the human relationship reflected in communication. He also notes that the person receiving information is the one who communicates. Without receiver there is no communication, no information, but only physical manifestation of sending signals. And ability of receiver to communicate depends on his/her perception, experience, expectations and involvement. The conclusion is that the communication is on the receiver's side, that it is reaction rather than action. Since information is encoded there must exist some prior agreement on the code that is used to establish communication. Second, it must take into account motivation (values, beliefs, aspirations) of the intended recipient. Information should be relevant to the receiver; otherwise it is treated as noise.

In the field of rhetoric, the principle of "Seven Elements of Circumstance" dates back to classical antiquity and originates from the works of Aristotle (Sloan 2010). It states the need to answer to seven questions: Why, Where, When, What, With Whom, By Whom, and How in order to provide valuable argument. The same concept is present in the Five Ws principle in journalism which determines the questions who, what, when, where, and why as essential in information gathering.

INFORMATION IN ARCHITECTURE

Along with letters and words that represent the generally accepted traditional representation of information, architectural practice is characterized by the use of drawings as a medium for the representation of information. The oldest preserved examples of sketches of architectural plans engraved in stone or clay date from the Sumerian period and are more than 4000 years old. The ancient Romans used full-size plans engraved on the ground of construction site as representations of parts of architectural buildings (Haselberger 1995). The oldest surviving architectural plan that is drawn on paper and in relative scale to the depicted object dates from the early 9th century. It is considered that the first architectural plans in the modern sense were preserved in the "sketchbook" of Villard de Honnecourt (Philipp 2020). However, it was only with the development of precise geometric projection techniques at the beginning of the Renaissance period that modern architectural documents were created, which enabled the development of architecture as a discipline separated from the building process.

Over time, detailed conventions have been developed that determine views (floor plan, section, elevation etc.), scales, types of lines and hatching, annotations, and many other components of documentation which enabled architectural drawings to become a medium through which all necessary information is transmitted. The drawing enables both the creation and development of the idea, explaining the concept to the investor, creating documentation for obtaining construction approval, managing the construction process and finally documenting the built state. Also, the drawing has become a basic element of the architectural language through which ideas are transmitted among professionals, registered for theoretical review and preserved as a basis for learning.

In accordance with the importance that drawing has acquired in the architectural profession, the first commercial applications of computers in architecture were aimed at simulating the process of drawing with computers. Also, the programs that today represent the basis of the BIM process, such as ARCHICAD and Revit, were originally developed with the aim of obtaining consistent drawing based project documentation from the 3D model of the building. Originally, information contained in parametric objects used to create a 3D model was aimed at automating the connection of objects into a consistent whole in order to obtain high-quality drawings (e.g. erasing lines between parts of different objects that are of the same material).

Today, the most common level of understanding of BIM in architectural circles is that it is a 3D model with information. However, such a way of thinking is related to the time when the term BIM was associated with a single application. In the meantime, a great effort has been made in networking the various participants in the entire AECO process. The initial steps were aimed at creating standard data structures that would organize information in a unique way during building's life cycle. Over time, it was realized that it is not enough to standardize the structuring of information, but also the ways of its use. Today, BIM applications are only part of the whole BIM process in which standard ways of presenting information and using it are a key element.

STRUCTURING DIGITAL AECO INFORMATION

The first step towards linking together the computer applications used in the AECO sector was the creation of the IFC data format (ISO 2018). The intention was to create standard format for the exchange of information between AECO applications that will cover whole building life cycle. The project started in 1994 with the formation of an industrial consortium that first included US companies and then grew into an international effort - International Alliance for Interoperability, later renamed to buildingSMART. The first version of IFC standard appeared in 1997 and has subsequently undergone many revisions until today's current version 4.

Although it was developed primarily as an interoperability format the IFC can be seen both a conceptual data schema and an exchange file format. As the conceptual data schema IFC defines classes that represent all concepts related to the built assets during their lifecycle, their parameters and relationships. Concepts include objects (both space objects like site, building, and storey, and construction objects like walls, columns, and windows), processes (event, procedure, task), actors (designer, supplier, owner), and controls (cost, performance, action request). Since the development of IFC is an industrial project aimed at practical application, when determining the parameters that IFC includes, those that are supported by all stakeholders and all software manufacturers were chosen. Other parameters that are specific to certain types of projects or geographic regions can be added using a mechanism of the `IfcPropertySet` class. As the exchange file format the IFC uses plain text file format based on STEP standard, Extensible Markup Language (XML) file format, RDF/OWL formats (Turtle and RDF/XML), and JSON JavaScript Object Notation.

At the beginning, it was thought that only the development of a standardized data structure would be sufficient to achieve interoperability between applications. But the experiences with the first implementations of the IFC format quickly showed that it is necessary to predefine the ways of its use. Although the number of parameters included was limited, the IFC included a large number of domains and it was not clearly demarcated where certain data should be recorded. It was also pointless to require applications to support import and export of data that will never be used. The solution was to create a Model View Definition (MVD), a subset of the entire IFC format that would support a specific AECO process (buildingSMART 2021). In order to determine what information needs to be supported by the appropriate MVD, the Information Delivery Manual (IDM) was developed. The IDM is a formally structured document that describes particular AECO workflow through the definition of the process and the required data (ISO 2016). The IDM format consists of an interaction map, a process map and one or more information exchange requirements. The process map is used to set boundaries of information contained in processes and to establish activities and their order. The interaction map lists all roles and mutual transactions that are characteristic of a specific AECO process. Exchange requirement is a document written in understandable language that describes particular information exchange. Until recently, information requirements in IDM were formatted as a plain text document, but a specification based on the XML format (`idmXSD`) was recently developed, which enables creation of a structured computer interpretable document format (ISO 2022c). According to new format IDM consist of use case, business context map (process map, interaction map), and information requirements. The use case contains unified overviews that were previously part of each individual IDM component. The attributes in IDM focuses on many aspects of information like 'why' (`aimAndScope`), 'how' (`use`), 'by who, for whom' (`actor`), 'when, for what' (`ProjectPhase`), and covers other aspects like limitations, required resources and competencies. The scheme gives an extensive description of information requirements, but it is directed toward implementation of MVD and the final realization of the information requirements depends on the MVD implementation.

The IDM is targeted toward definition of information requirements for the development of software solutions that support particular MVD. However, in daily work of creating information to meet requirements, it is useful to have a computer interpretable representation that would enable automatic verification. With this aim, the Information Delivery Specifications (IDS) is being developed as a buildingSMART standard (buildingSMART 2022) for the specification and verification of simple information requirements based on the IFC model covering particular information exchange as defined in the ISO 19650 series of standards. The IDS is XML formatted file that contains metadata part and list of specifications. The metadata contains title, copyright, version, author, date, description, purpose, and milestone fields. The description is plain text that details who will possibly use the IDS, why it is created, for what projects, etc. A purpose is a sentence that explains what the IDS will achieve. Each specification describes single entity (wall, window, etc.) in the model and contains metadata, applicability and requirements sections. The specification metadata contains fields for name, description that explains why the requirement is important to the project, and instructions that defines who is responsible to provide

information and how. Applicability defines what information an entity needs to have in order for the specification to be applicable to the entity. The requirements section describes information that an entity needs to have in order to conform to the specification.

The ways of structuring information presented so far relate to an individual construction project. A data dictionary was developed for the purpose of structuring general information in the AECO sector. The structure of data dictionary is defined in ISO 12006 Part 3 standard (ISO 2022a). The standard specifies information model which can be used to create a computer based dictionary of terms in the AECO sector. The structure of the information model enables the definition of other relations between concepts so that it can be used for development of ontology, taxonomy, meronymy, lexicon and thesaurus. The information model enables concepts to be defined using subjects and properties, to describe subject by properties, and provides means to define relationships between concepts. The set of properties defines the subject and its behaviour. Properties can have values and associated units. The model is intended for development of multiple dictionaries. Each concept belongs to one dictionary and can be linked to concepts in other data dictionaries. The model enables different information resources like standards, classifications, data templates, object and process models to be cross-referenced in a common framework.

In order to enable the structuring of information about construction products, an ISO 23387 (ISO 2020c) standard was developed that defines the structure of the data template. The data template allows interlinking of separate information relevant for a specific building product such as standards, classifications and manufacturer specifications in a way that suits specific information needs and local requirements. Data templates are implemented within a data dictionary based on ISO 12006-3 standard and the process of creation and maintenance is driven by domain experts. Data templates are just generic objects without any actual data on construction objects. Manufacturers can populate them with actual parameter values to create data sheets that provide concrete description of specific products. Using a verified data template stored centrally in some data dictionary the users can get data about construction products that suits actual information need and can format them according to standards and classification used on actual project. Having data sheets with required data and in right units enables comparison of products and informed decision making.

USING DIGITAL AECO INFORMATION

At the beginning of the development of BIM technologies, it was assumed that only the development of information structures would solve the problem of interoperability in the AECO sector. But already the first experiences with the IFC format and the need to introduce MVD have shown that it is necessary to define the conditions for using BIM technologies. During the past years, various approaches were developed, and in the end, the most successful solutions were summarized in the set of ISO 19650 standards.

An important fact is that the standards recognize the need for information to be structured according to the needs of the recipient. The whole process is initiated by the party that will use the created information. In order to determine their needs, the so-called appointing parties create documents that describe their organizational (related to the general company's information policy), asset (defining the company's needs for asset information management), project (defining information requirements for specific project), and exchange information requirements (defining the precise scope and level of information for each decision point in the project or asset operation). These documents are foundation used throughout the stages of procurement, planning, production, and approval of information. Based on the information requirement, the qualified participants in the project are selected, the level and amount of information that should be created are determined, and they represent the basis for the verification of the delivered information. The basic terms and principles of the process are defined in the ISO 19650-1 standard (ISO 2018b), while the processes in the design and operation phases of the asset are elaborated in the ISO 19650-2 (ISO 2018c) and 19650-3 standards (ISO 2020a). The process of creating information is divided into stages that are determined by milestones, and in each stage a specific exchange information requirement (EIR) is created that defines what the appointing party expects from information in specific stage. The EIR is the basis for creating and verifying information in each phase and that process is called information exchange. The ISO 19650-4 (ISO 2022b) standard defines process and provides quality assurance and quality control criteria for each information exchange event. All parts of the standard treat information as "reinterpretable representation of data in a formalized manner" (ISO 2018b) regardless of whether it is digitized classic documents or information structured in a computer interpretable scheme (Svetel 2020).

The ISO 19650 series of standards require that information should be consistent with the level of information need. Until now, numerous methods have been developed to determine level of information need, but they mostly inherited the practice from traditional drawings of defining the level based on the degree of detail of the geometry so they were focused on the characteristics of the object. Such an approach required that the elements must contain all the data that a certain level requires, regardless of the application, which in some cases led to an excessive amount of information. The EN 17412-1 standard (CEN 2020) aims to provide a framework that is more sensitive to particular use of information. The standard specifies four prerequisites that shall be considered: purpose of information (why), milestones (when), actors (who), and objects in breakdown structures (how, what). These topics represent only the areas that should be taken into consideration when determining the level of information need, while the standard itself does not specify the purposes, milestones, actors or objects. Those prerequisites are used to specify granularity of information, while the level of information need should be defined using geometrical information, alphanumeric information and documentation. The level of information need provides framework for verification and validation of information content. The verification process ensures the completeness of information, checking that all requirements are satisfied, while validation ensures that the ways of using information are met. Part 3 of the standard that will provide the XML schema is under preparation.

Another area for which the need to define the creation and maintenance process is recognized is the development of data dictionaries. The information structure itself was first formally published in 2001 as ISO/PAS and then as a full ISO standard in 2007. But the actual implementations of the technology did not take off. Only with the development of the methodology for describing, authoring and maintaining properties in interconnected data dictionaries, that is described in the ISO 23386 standard (ISO 2020b), conditions were created in which there were both concrete implementations of the dictionary and the emergence of interest in the development of technology support in applications by software developers. The standard ensures compatibility of terms defined in interconnected data dictionaries through a precise list of attributes to be used to describe properties and groups of properties. The standard defines rules for authoring and maintaining properties and groups of properties that are expressed as BPMN diagrams, as well as list of attributes that define each management request. The standard also describes how the governance of data dictionary and networks of data dictionaries should be organized.

CONCLUSION

In recent years, the development of BIM technology has been marked by the development of new and improvement of existing standards. The development is so intensive that often after short time new standards become uncoordinated with other standards because they cause changes that were not counted on when they were created. Although this leads to confusion, the progress that has been made overcomes such shortcomings. The development has made it possible that the techniques of connecting different BIM technologies are no longer just experiments, but potentially permanent solutions based on standards (Son et al. 2022). Also, it is now possible to make valid comparisons of different approaches in the use of BIM technologies (Tomczak et al. 2022).

However, there are still remnants of old beliefs that slow down technology adoption. One of the most prominent outdated beliefs is that BIM is a 3D model plus information. The fact is that the first BIM applications were not developed with the aim of manipulating information structures, but to create consistent project documentation based on 3D building models. Related to this is the view that BIM is one application. However, the development of BIM technologies has advanced so much that even a group of applications that seamlessly exchange information about a construction project can no longer be treated as BIM.

BIM is increasingly becoming a set of techniques and tools for creating, exchanging, modifying and using digital information about construction objects. Recent study (Tomczak et al. 2022) shows that there are seven standardized techniques to define information requirements. However, no single technique meets all the criteria that the authors of the study established. One of the reasons is that orientation toward information is a topic that has only recently emerged.

Among BIM practitioners, there is still an orientation towards characteristics of the building objects, elements, properties and attributes. Most current efforts on information management in BIM are orientated toward checking content of models coded using different information structures. The focus of the BIM community is on “shared digital representation of a built asset” (ISO 2018b) or “model of the facility in virtual space” (BIM Dictionary 2022). Computer systems, on the other hand, enable the structuring of huge amounts of data, which exceed the human ability to understand them. Although this

negative trend has long been observed (Drucker 1970), computers are still used to justify spending time on control, instead of freeing people from control by providing them with information. A new view is needed that will allow information to be relevant instead of complete. In order to perform actual tasks on the construction site or during maintenance, it is necessary to provide information about what, where and who should do it, while information about the structure of elements are less important. Still, the existing mindset that is preoccupied with the object itself, its elements, quantities, prices and checking whether all parameters are present in the model is aimed at control instead of using information.

However, the situation is gradually changing. In order for BIM technologies to become the basic way of working in the AECO sector, it is necessary for all participants to understand why they use them. Currently, the basis of digital expression in the AECO sector is defined by standardized information schemes. Only with an understanding of those schemes can one start comparing them and deciding when and for what they will be used. Based on that, a set of applications that support a workflow can be determined. This process will take time. As we can see from the development so far, it was only the use of certain technologies that led to an understanding of the advantages and disadvantages and caused the development of new solutions, which in turn led to a new perception of the entire field. Psychological experiments on the topic of category formation (Vygotsky 1962) showed that this process is possible only in the presence of some interruption in thinking or communication. Philosophers who belong to the hermeneutic school of thought insist that objects and their properties exist only in the context of the breakdown of our everyday activities related to those objects (Heidegger 1962). As long as we use an entity without trouble, we do not pay attention to it. Only when there is some deadlock in daily use we become aware of that entity. At the same time, our understanding of that entity does not focus on the essence and study of what that entity really is and what it consists of, but it is entirely determined by the ways in which that entity can be used.

There are other areas where there is an opportunity to improve BIM technologies. In his work, Professor Yehuda Kalay (2013) proposes the extension of information model to include form, function, and use. The current practice of modelling information structures is inspired by models in other disciplines that focus on consumer products. Unlike such products that function independently of the culture or context in which they are used, architectural objects are inseparable from the context, habits and expectations of those who use them.

However, there is an increasingly noticeable shift in orientation to the ways in which information is used. Today's standards that define information structures and ways of using them, as well as those that will be developed, describe a new way of structuring and using information in the AECO sector. It is a new way in which all concepts are expressed, exchanged, explored, developed and used. An architect in the modern digital environment is as much an architect as he is able to express his ideas through digital information structures.

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ELEMENTAL SPACE: EXISTING | DWELLING

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ABSTRACT

The essay revolves around the concept of limit and investigates the dialectics of the “inside” and the “outside” as the result of an existential bond between man and place. The notion of “dwelling” is posited here in regard to the notion of “being”. The fundamental elements of architecture are explored in parallel to an elemental approach towards human existence, thus contributing to a critical analysis of the relationship between the architectural and the existential space. The essay advocates for an architecture which is at its core an existential act; drawing from a primitive human understanding of place it goes on to explore its architectural manifestation, the compositions that form both in an intellectual and in a pragmatic way human dwelling. The exploration takes the form of a juxtaposition between the organisational “schemata” of existence (as described by Piaget in his book “Existence, Space and Architecture”) and the organisational schemata of architecture (as the means by which architecture is thought and designed). In particular, the essay explores three key “schemata” of each side- i.e proximity/continuity/enclosure and man/wall/openings- which are linked in pairs -i.e proximity-man, continuity-wall, enclosure-openings- so as to provide the dialectical ground of the “inside” and the “outside” upon which the notion of limit is identified and explored. Through the network of correspondences between the two sides, limit emerges as a variable entity: it is the body, the place, the situation, the multifarious in-between. Its ubiquitous appearance poses, however, a critical question: can we truly talk about limit, or is it a common ground after all?

Keywords:

dwelling; existence; architecture; elemental space; embodiment

INTRODUCTION

Building upon the notions of existence and dwelling this study revolves around the fundamental understanding of architecture as an existential act- architecture as a primitive, instinctive and creative need that goes hand in hand with the way we identify ourselves and the places we inhabit. The title I have chosen for my presentation is 'ELEMENTAL SPACE: existing | dwelling' and it essentially refers to an exploration of the relationship between the architectural and the existential space, the degree of resonance between the concept of "being" -what it means to be-in-the-world- and the concept of "dwelling" – what it means to dwell in the world. To investigate this relationship we will be juxtaposing the organisational schemata of existence as coined by Jean Piaget and described by Christian Norberg-Schulz -namely proximity/ continuity/ and enclosure- to three of the main elements that form both intellectually and pragmatically human dwelling – the man himself/ the wall/ and the openings-. And through this process we will set the dialectical ground for the inside and the outside to emerge as variable entities whose limit needs to be identified and explored.

PROXIMITY- CENTRE- MAN

We begin now with the first pair of juxtaposition which is PROXIMITY and MAN and which we approach here through the pivotal notion of the centre.

In his book "Existence Space and Architecture" Schulz claims that " in terms of spontaneous perception, man's space is "subjectively centred". This means that man measures the world and, on a primitive existential level, positions himself in the centre of it, as the point from which he embarks and to which he always returns. He is in-the-world as an inherently delimited presence. He exists as an "I" in opposition to a "non-I". His body is charged with unique centrality, it becomes the medium for his orientation and it further obtains symbolic value. The centre symbolises for man what is known as opposed to the unknown and, in a way, scary world around him.

Piaget's "schema of proximity" expresses the idea that the notion of centre is not only established as a means of general organisation but that certain centres can also be externalised as points of reference in the environment.

I propose here that man is such an externalised centre and that as a point of reference he encloses his own entity. The limit of his presence creates space- his body becomes the condition for this production and the concept of place emerges as the "spatiality of situation" -in the words of Merleau Ponty.

This means that man's space is here conceived as the field defined by his body. It is a "territoriality" through which he is able to apprehend and grasp the lived experience, a communication framework which takes the form of "I- here-now" and which establishes the subject's relationship to the world.

On this level, limit emerges as the manifestation of the antitheses ("I-non I" , "Here-there", "inside-outside") which are always measured by and compared to the primitive point of reference, man.

Now, the need for man to conquer these antitheses, to define notions, situations, phenomena and facts is transferred to the act of dwelling as an effort to make the outside as inhabitable and familiar as the inside. This implies that man as an elemental centre, as a place, becomes himself the first limit, the condition that sets in action the notion of dwelling.

As a representation of the self "dwelling" encloses the symbolisation of the "I" into a refuge, an inside fort, a vital centre for the person and the evolution of his consciousness. Dwelling becomes the self's boundary, or better it becomes what man has managed to insert into his own limit.

CONTINUITY- DIRECTION- WALL

So we understand then that the concept of place – either this is an existential or an architectural place- implies an inside and an outside and, in this sense, cannot be imagined without directions. In "Existence Space and Architecture" Schulz recognises this as a fact and particularly examines the vertical direction as the path towards reality and man's earthly existence. Following the concept of the "subjectively centred"

space, Schulz claims that the simplest model of man's existential space is a horizontal plane pierced by a vertical axis. This move from the delimited and static point towards the directional and dynamic line introduces, then, Piaget's "schema of continuity". Similarly, and in connection with the notion of dwelling, it introduces a move from the embodied limit of man towards the structural limit of the wall.

Thus, drawing from the concept of direction, we identify a new pair of juxtaposition between the elements of existence and the elements of architecture: CONTINUITY and WALL.

The wall is identified here as the first expression, the most basic and vestigial manifestation of the verticality of man's dwelling. It is the simplest limit possible- the line that separates one part from another, something from something different, an inside from an outside.

Next to man, the wall stands as a firm limit- a measure for his existence.

It is perceived as the dwelling's vertical limit- the spatial structure that makes perceptually visible its continuity or discontinuity.

As a linear succession, the wall appears in man's primitive space, it encloses and defines him. The dynamic structure of the wall involves intentions- it wants to describe, to inscribe and to register the given space. We could even say that the wall moves in an inherently encircling way. For containing is not, thus, just a property; the wall extends so as to contain. The wall becomes the structural element that organises the relationships and functions around it and, in doing so, it becomes the material manifestation of the act of dwelling.

As a trace, wall marks two areas: a wide outside -the world- and a narrow inside – the dwelling-. However, we cannot argue that the wall just divides; on the contrary its two sides interact dialectically so that "the inside is always an outside". The limit is, then, formulated as the space in-between, the condition through which the relationship between the two sides can be enacted and performed.

ENCLOSURE- inside/outside-OPENINGS

On this note we move towards the third pair of juxtaposition: ENCLOSURE and OPENINGS, which completes the process of integration between the inside and the outside. Piaget's "schema of enclosure" expresses the intellectual and somatic transposition that enables man to give a coherent form to his intentions and to be-in-the-world in some kind of consistency. In a similar way, I argue here that the openings express in the context of dwelling this unifying function. That the openings, and in particular the door and the window, take the form of a threshold that welcomes the in-between space produced by the wall and serves as the transition between "a before and an after".

The door is the outer limit of the dwelling; it is the manifestation of its material being and, in this sense, it embodies the whole spectrum of man's possibilities. The transition at the limit of the door has, then, an added dimension; as a place it becomes a long pause and man can rest there while entering or exiting the new world.

The door, with its capacity to open, ceases then to be a boundary. It is rather conceived as "an entire cosmos of the half-open", in the words of Gaston Bachelard- a daydream that accumulates the temptation to open up the ultimate depths of being and the desire to conquer all reticent beings.

Man himself becomes, then, in relation to the door a half-open being. His body is the means to express his actions, so that this very relationship becomes a personalised condition- a limit that he, freely, puts on himself.

Now, in comparison to the door- which requires man's somatic expression to fulfil the lived experience-, the window is expressed only through the contemplation of the gaze. The window is the permeable limit of the dwelling for which the eye becomes a unifying mechanism. The eye connects the two worlds and their union is always characterised with the teleological feeling "from the inside towards the outside".

This means that man as a viewer takes a supervisory position towards the outside and, in doing so, he translates its frightening image into the familiar image of the inside so that the dwelling becomes a refuge

charged with the subject's spiritual act. In this sense, the inside and the outside do not, just, stand next to one another; rather they mutually reflect one another while making concrete the relationship of the two sides, the degree of "openness", the continuity or discontinuity, the antitheses of void and solid. The openings become, then, an expressive tool in the hands of man during the production of his place as well as a symbol of his union with it.

CONCLUSION

To conclude, in this presentation I argued that architecture is above all an existential act; that it is a common ground -in the Aristotelian sense- that holds a general value, enables and orders the "situations" of life and further embodies the "Being" of both man and place.

Architecture's cognitive purpose is, then, the natural and total spatial encounter of the two. As an inseparable entity, man and place are led together towards the truth of dwelling, towards the general meaning that lies behind not just a particular dwelling as an example, but behind all possible ones.

Dwelling, as a condition, is what Grassi calls "the inevitable transition to the lived experience", and as such its architecture manifests the multitude of life's expressions- from the very simplest, to the most complex and to the most intimate ones.

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INTERPOLATION OF THE EPHEMERAL SEGMENTS SCENERY IN THE DESIGN OF CONTEMPORARY ARCHITECTURE

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ABSTRACT

Text refers to variations of the intangible as an inevitable constituent of architecture, which Peter Eisenman described as *blurred zones* in sense of changing main courses in design process. It is a type of change that should produce architectural effect that will displace traditional, by gasping metaphysic of presence.

The aim of the text is to form a spatial pattern based on understanding, reading and pairing of terms set by interpolation of the ephemeral segment's scenery in the design of contemporary architecture-as impedance to the integration of the today's reality.

The paradigm of the given situation is reflected in the highest degree of unification of the elements that constitute modern life, until the moment when the new aesthetics of the space - by character utilitarian is created in a functional and ethical sense. This type of Michael Foucault subversive act in architectural sphere is applied in course of getting different understanding of contemporary aspects and applying them in practice.

The text deals with the use of design process that, according to the changed element of motivation, contributes to the very appearance of the object. With perceiving and applying the objectivity of the site to the presumed object / light, materials, orientation /.

Keywords:

Interpolation, scenic, ephemeral, subversion, blurred zones, utilitarian, intangible.

DEFINING THE PRESENT

Architecture exists in the present moment and refers to it in both practice and theory. Each object aims to fulfill its purpose formed as a series of objectivity, needs and wishes of the time in which it was realized. Objectivities are seen through the prism of state organization, economy and technological development. Thus, the concept of time is one of the basic factors that define architecture.

Chronologically, the historical determinant relevant to today's functioning begins in the 80's of the XX century. Since that time, concentrated and dispersive, that is, capitalist and socialist arrangements have been united into one reality. One of the basic characteristics of that merger is the absence of territorial centralization, that is - space. The center of gravity of the economy shifts to media space and high-tech communication networks.

Michael Foucault describes time in mediated world that we live in and presents it as a problematic situation of the hermeneutic relation. The perception of an image, or any other object that is in some kind of interaction with the observer - consumer of the space, is in mutual connection with the way information is received and distributed. The question of influence and consequences arises, as well as their mutual relationship. Seen through decrease of time intervals perceived relations and the object of perception are left without meaning, "the visual becomes more and more a question of image rather than substance".¹

Both elements of time carry with them achievements that, historically speaking, have brought a hegemonic repressive attitude towards the participant who agrees to the newly created conditions of information marketing. That order and way of functioning at the present moment provides content whose presentation should contain meaning.

CONSTITUENTS OF ARCHITECTURE

Approach towards defining basic constituents of architecture as the underlying assumption of this paper comes in dual aspects: tangible and intangible. Both terms have significance in architectural articulation of their application to the principle of the object formation. Depending on the scientific and artistic fields of research of these aspects in architecture, there are similar terms with similar or the same meaning: Michael Foucault is naming them "everything in between", Walter Benjamin is defining its relationship as a distraction, and Peter Eisenman brings them in to blurring.

Michael Foucault claims that everything exists between visible and articulate². In mediated world - as he argues, these two poles are not in stable relationship considering described time spans. There is excess of articulation: when articulation is compressed in short time spans, question of visible lacks substance and it's left only with image. Lack of substance is a way that perception of some visual aspect is observed. Also, second consequence of mediated world is lost connection between visible (tactile) and the body (affective). "Architecture can provide affect - a form of articulation that appeals to both the somatic and articulate.... this is something that other media cannot do."³

Given approach could be seen through Walter Benjamin's *distraction*⁴. Theory relies on subconscious aspect combined with proprioceptive assimilation. Based on somatic expectancy, as Benjamin says it is a matter of habit⁵, human reactions are rooted in known paths. This secure zone is what usual aspect of desire is: to be placed in secure environment. "Most architecture is the concretization of a habit"⁶

Initiator of any motivation is desire, which is base for habit. Habits and motivation are what usually gives architecture meaning. In this case movement of expected is similar and small.

"The ways in which buildings and spaces influence us are largely along avenues subliminal. This foregrounds that their aesthetic force is often received principally when we are distracted from its action. This phenomenon is not, of course, reserved for architecture alone. Historically, architecture was simply the most prominent in availing itself of habituation to instantiate the transformations sought."⁷

¹ Peter Eisenmann, *Blurred Zones*, Monicelli Press, NY, 2002, 6.

² Ibid

³ Ibid.

⁴ Walter Benjamin. "The Work of Art in the Age of Mechanical Reproduction", New York: Stocken Books, 1969, pg.15

⁵ Peter Eisenmann, *Blurred Zones*, Monicelli Press, NY 2002, 7.

⁶ Ibid

⁷ Art as Focus or Distraction? Recalling Walter Benjamin in Our Age of Digital Reproduction
<https://medium.com/@Quixotictom/art-as-focus-or-distraction-ee535bd1896a>, accessed 20.09.2022.

Entities like the subconscious, non-tactile, yet essential content of some visual and mental experience, which architecture provides by the nature of things, are the elements that inspired Eisenman to elaborate and apply that topic through a newly created term. Relation between affect and effect Peter Eisenman sees thought self-invented term *blurring*⁸. It is a strategy of presenting different body-mind formula in architecture in order to gain new perspective in architecture primary with design process and then final product. In this sense, he sets the terms of cause and effect, and naturally the process starts from the cause. In order to obtain a clear and new expression in architecture that is not preoccupied with the desires of the mediative age or the given consumerism, or to avoid all aspects of the seen and repetition, he gives a pattern that implies the purification of the subconscious and the separation from the known and certain. There is a need to dislocate motivation, then can be anticipated that desire which manifests in habit or somatic experience can be reoriented.

Blurring implies three conditions:

- become unmotivated by the presence
- become unmotivated by the sign
- become unmotivated by the subject

Unmotivating is concerned only for desires such as presence, ground and meaning, not to the desire itself. Presence also is not possible entirely to distinct. Architecture demands that specific amount of presence still remain in order for project, or any architectural planning to become possible. In other cases, separation or unmotivating from sign or subject is entirely suggested.

By separation from usual approach toward architectural design, Peter Eisenman brings basic concept of blurring which is becoming⁹. In his book "Blurred zones" he points out that this process is conceptual, therefore you can't blur something material (column, wall, floor). Aspects of blurring are imbedded in creator itself and should be revealed in the process that he has described.

" A blurring action begins to displace categories such as visible and the articulate by detaching form from a one-to-one relationship with function and meaning. Blurring seeks to undermine the conceptual as well as the physical clarity of elements such as figure and ground¹⁰.

For example, figure-ground is an effect that concentrates on the aesthetic materiality of form; shape produces a clarity of affect. Blurring reduces the effect of these effect. It is important for understanding that blurring isn't visible and not literal."¹¹

PROCESS OF BLURRING

Conscious or not, one of basic wishes of mankind is to create *objects that exists* - real, tangible, secure and comfortable. Architecture is rudiment for those desires, presence is active and fundamental. Since the presence cannot be denied, how does blur arise?

Lack of motivation does not eliminate the issue of comfort and safety. Rather problematize their use as legitimate factors in architecture. Blur doesn't suggest movement from symbolic environment where symbolism doesn't exist. It suggests state where architecture isn't contingent from its formal narratives, nor divides it from meaning. It simple keeps it between those two terms, where other meanings and situations can occur.

At the same time architecture can't be without meaning. Taking façade as dominant element of architecture as example, it can be called "motivation condition". Façade have iconic and symbolic meaning. It represents a physical division between outside and inside, private and public. Blurring tries to erase that hierarchy and formal terms without enclosure of vertical plan.

" This concerns the attempt to move from motivated, desiring subject to one who is less motivated, that is to a situation of more pure desire. The human subject will always be a desiring one. But in architecture that desire can be expanded beyond the unusual motivation of shelter, enclosure, stability, ground, etc." ¹²

Tendencies in architecture are going forward by transforming itself into connection with time, but at the same time forming instability in normative situation. Blurring replaces idea about its own time, instead of

⁸ Peter Eisenmann, *Blurred Zones*, Monicelli Press, NY, 2002, 7.

⁹ Ibid

¹⁰ <https://www.sciencedirect.com/science/article/pii/S0042698914000327>

¹¹ Peter Eisenmann, *Blurred Zones*, Monicelli Press, NY, 2002, 7.

¹² Ibid, 8.

adjusting present time. Main assumption is that past leads toward future. In that frame of certainty nothing new cannot emerge. But, if the present is replaced by assumed uncertain future, then it is possible to change desires and expectations of a subject.

In that course process of blurring introduces a third party in architectural design process:

-First phase implies location, program and function. Each of these elements represents the base of each design.

-Second phase comes from interiority and anteriority.¹³

Context these two phases defines traditional design approach. Third phase represents arbitrary component added into relationship which blurs formal connection between function and meaning. Still there are cases where traditional component is sufficient and where blurring is impossible. The assumption is that they were selected to form an architectural effect that will replace the existing-traditional.

“It is difficult to tell if the resultant forms come about through functional requirements or from a desire to produce meaning; neither seems to explain them. This produces what will be called a diagram, a blurred condition between form and content, between site and program, where signs are no longer read as fully motivated. The interference pattern of diagram prevents recourse to the former relationship of form and function, form and content.”¹⁴

Purpose of blurring is to give a new perspective in the design process and its outcome that differs from established postulates of the present. In its informality and deliberation, it displaces familiar or expected experience of the space. Deals with questions about the fundamental nature of reality, including the relationship between possibility and reality accepting the metaphysics of presence. The approach to this topic does not contain historicity, although it rests on the rich legacy of the previous defined period in the architecture of postmodernism.

The idea of postmodernism in architecture brought, in every previous direction in architecture and related fields of activity in art, an open plan with a multitude of sub-options that are mostly not clearly defined. Questions like: finding out what makes something good today? What is a quality that can be called interesting? They encounter individual responses from supporters of their own expression. Seen through the multitude of active contemporaries in the artistic field of activity, who want to generalize the rule and way of acting in the changed conditions that define the environment that surrounds them, various definitions are obtained that all lead to a similar conclusion. A holistic approach to humanism, functionality, social practicality as Eisenmann states - that led to anything radical¹⁵.

INTERPOLATION OF BLURRING

Applying the approach of demotivation and inventing one's own concept of desires related to the topic of the project creates blurring. The idea of its application is not one direction or creation of new artistic movement, but in a diverse approach which, if properly implemented, represents with each application a new direction and a refined expression of the individual who creates it. Approach exposes the idea down to its meaningful and conceptual beginnings. Taking a typology of an object that is well known and exists in architecture from its very beginning - monument, for example implies the presentation of the framework in which it was created. It represents an object of public purpose, which with its symbolism usually contains the influences of social order and life-affirming power of architecture¹⁶.

Formally idea of commemorating life by solely object ended with Holocaust and Hiroshima.

“The markers that were formally symbols of individual life and death must be changed, and this has a profound effect on the idea of both memory and the monument.”¹⁷

In Peter Eisenman's *Berlin Memorial to the murdered Jews of Europe*, idea of monument was to bring a feeling of an interviewed woman who survived Holocaust in to a project. By using the same pattern in the formation of the aforementioned typology of the object, the concept of its work finds itself in a general place whose task is to represent feeling and movement. Design of site begins with narrow grid, positive of remaining

¹³ Ibid, 9.

¹⁴ Ibid, 7.

¹⁵ Peter Eisenman. TIME SPACE EXISTENCE, <https://www.youtube.com/watch?v=ZNgv2hD4FWI>, accessed 20.08.2022.

¹⁶ <https://www.architectsjournal.co.uk/buildings/the-architecture-of-death>, accessed 10.08.2022

¹⁷ Peter Eisenmann, *Blurred Zones*, Monicelli Press, NY, 2002, 314.

space are big blocks of natural stone, all in one planar dimension which differ in height creating new topology of site. Although the difference between the ground plane and the top plane of pillars may appear to be random and arbitrary, a matter of pure expression, this is not the case. Each plane is determined by intersections of the voids of the grid of pillars and the grid lines of the larger site context of Berlin. (Eisenman 2022) Layers of meaning are left to visitor to conclude. Opened and simple elements make great impact which is read by consumer of the space and depends of its ability and knowledge, atmosphere, mood and time how can be accepted and understood. This openness of design toward wide range of people and intersecting that basic idea is blurred zone that invites to a new interpretation. Luis Fernández-Galiano¹⁸ in his essay¹⁹ talks about Eisenman's blurred monument. He argues that created art, greater than creator: "Landscape and landmark, the haphazard perfection of memorial defies authorship." (Eisenman 2002) As an example, he cites the relationship between two artists and their work - whereby one represents the erasure of the other's works: Robert Rauschenberg erases Willem de Kooning²⁰. Final clarification, or the highest degree of blurring- explained by the fact that with this project Eisenman erases himself, that is, his identity in course for site to open to visitors and become theirs to use and define.

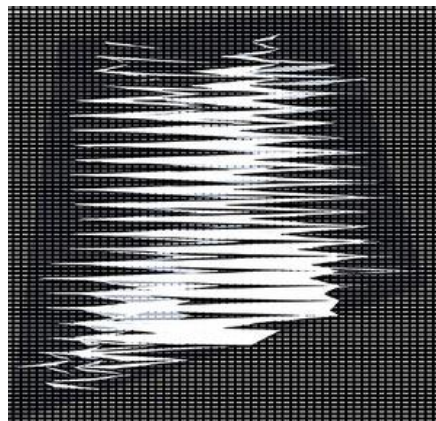
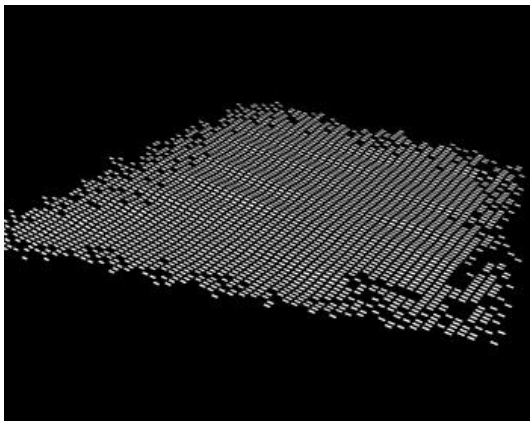


Photo 1. and 2. Peter Eisenman. BERLIN MEMORIAL TO THE MURDERED JEWS OF EUROPE, Concept
 Location: Berlin, Germany, Year: 1997 (competition), 1998-2003 (design), 2003-2005 (construction).
 Source: <https://eisenmanarchitects.com/Berlin-Memorial-to-the-Murdered-Jews-of-Europe-2005>
 Accessed:29.08.2022.

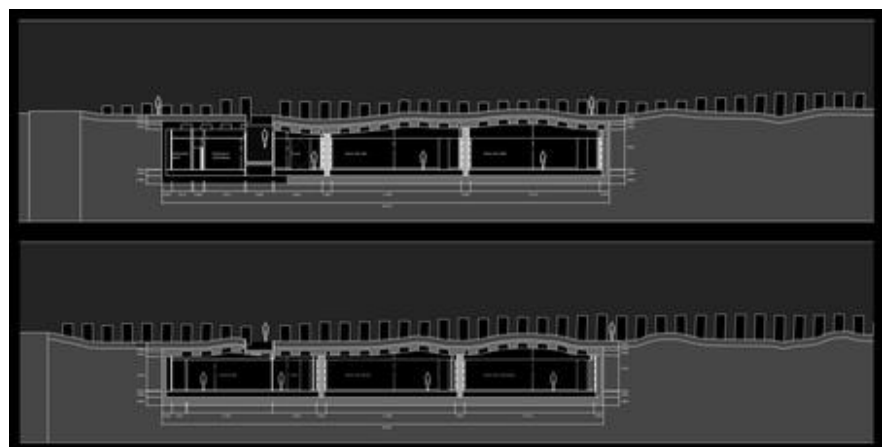


Photo 3. Peter Eisenman. BERLIN MEMORIAL TO THE MURDERED JEWS OF EUROPE, Sections
 Location: Berlin, Germany, Year: 1997 (competition), 1998-2003 (design), 2003-2005 (construction).
 Source: <https://eisenmanarchitects.com/Berlin-Memorial-to-the-Murdered-Jews-of-Europe-2005>
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¹⁸Architect, professor at the School of Architecture of Universidad Politécnica of Madrid and director of the "AV/Arquitectura Viva" magazine.

¹⁹ Peter Eisenmann, "Germania remember: Berlin's Memorial or Eienman's Danteum", in: *Blurred Zones*, Monicelli Press, NY, 2002, 332.

²⁰ Erased de Kooning Drawing, 1953, <https://www.sfmoma.org/artwork/98.298/Accessed>, accessed 25.08.2022.

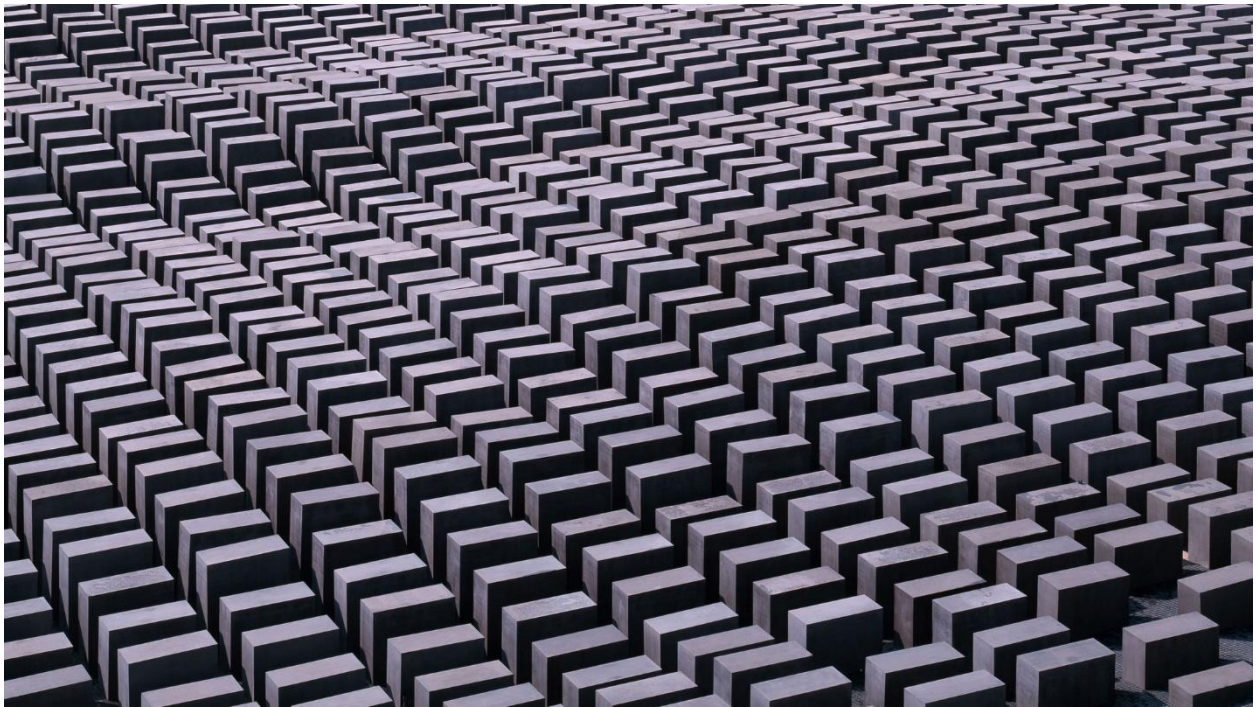


Photo 4. Peter Eisenman. BERLIN MEMORIAL TO THE MURDERED JEWS OF EUROPE, Perspective
 Location: Berlin, Germany, Year: 1997 (competition), 1998-2003 (design), 2003-2005 (construction).
 Source: <https://eisenmanarchitects.com/Berlin-Memorial-to-the-Murdered-Jews-of-Europe-2005>
 Accessed:29.08.2022.

There is one more comparison by Galiano that explains situation created by memorial: resemblance between *heavy materiality* of Richard Serra²¹ and *geometric complexities* of Peter Eisenman. Both of them have strong and intensive dominant form in space. Scale is large and expands through whole site until it overcomes basic idea, with which is created and turns in something other that represents blurring.

“The more evident it became, the more blurred its authors, who were bound to abandon autonomous offspring.”²²

By the demotivation desires of political and religious influences, collective feeling toward momentum, and personal ambitions toward its own work, project opens up to specified feeling which Peter Eisenman built into a constructible element. Gradually blurring, he isolated, as he calls it *feel of otherness*²³ specific feeling of being the **other**: Jew in Germany of that time, **other** in space and time, feel of dislocated being. Created pattern of that feeling formed space identity and urban landscape that became landmark.

Interpolation of blurring have broader meaning to architecture of present: it advocates individual capability to contribute impact that has not general meaning because it can be attitude not movement. Demotivation of formed desires and creating unmotivated path toward can be extension of John Fiske²⁴ action toward mediated world.

“The ways in which people use, abuse, and subvert these products to create their own meanings and messages. Rather than focusing on mass culture’s attempts to dominate and homogenize, he prefers to look at (and revel in) popular culture’s evasions and manipulations of these attempts. homogenize, he prefers to look at (and revel in) popular culture’s evasions and manipulations of these attempts.”²⁵

²¹ American sculptor <https://www.britannica.com/biography/Richard-Serra>

²² Peter Eisenmann, *Blurred Zones*, Monicelli Press, NY, 2002, 332.

²³ Peter Eisenman Interview: Field of Otherness
<https://www.youtube.com/watch?v=Uggl6a1FLng>
 Accessed 15.08.2022.

²⁴ John Fiske, *Understanding Popular Culture*, Published September 30, 2010, by Routledge

²⁵ Peter Eisenman Interview: Field of Otherness
<https://www.youtube.com/watch?v=Uggl6a1FLng> Accessed 15.08.2022.

The work recognized the current moment as repressive for the profession in the sense of complete integration of all spheres of life, as a result of which it is being lost. The circumstances that make up the present and the way society functions are based on the acceptance of known things, adopted elements-regularities. Thus, subversion is assumed as the framework of the solution - in this case, within the architectural action. It is reflected in the recognition of those elements and their use in a different context and for a different purpose. Architecture today already acts subversively by creating objects that speak in favor of the humanization of architecture. The basis of that process is an uncompromising attitude towards artistic expression as the carrier of the process of designing and architectural thinking.



Photo 5. Peter Eisenman. BERLIN MEMORIAL TO THE MURDERED JEWS OF EUROPE, Perspective
Location: Berlin, Germany, Year: 1997 (competition), 1998-2003 (design), 2003-2005 (construction).
Source: <https://eisenmanarchitects.com/Berlin-Memorial-to-the-Murdered-Jews-of-Europe-2005>
Accessed:29.08.2022.

CONCLUSION

Aspect of personal interpretation represents a higher scope of the profession. The creation of interdisciplinarity provides a path to the intercultural and international - which is liberation from frameworks that are presented as limiting instances in the sense of inadequate psychological framework that inhibit the creative process.

Achieving the above through the segmentation of existing examples and personal introspection is the work methodology required in active action that follows the trend of the general in the sense of the present-ephemeral and the personal-ethereal. This analogy leads to an architectural entity that is immaterial, but legible in transcription with the environment. By anticipating the use or simply looking at the object, one comes to the creation of everything that today's generality entails: constant changes, unification, rhythm of repetition, mimetic relationship, *auraticity*.

The aim of the conclusion is the introduction of those impulses in the visual and experiential part until the moment of installation and recognition of the basic aspects of architecture - humanization and total freedom.

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THE INDEX AS THE PRESENCE OF THE ABSENT IN THE ARCHITECTURAL OBJECT. TOWARDS A THEORY OF ARCHITECTURAL SEMIOLOGY

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ABSTRACT

The manifestation of an overall effectiveness of the architectural object could be explained with two categories: the category of the present and the category of the absent. Paradoxically, the absent, to be what it is, must be defined by a certain presence; it reinforces the presence, perserving itself in it. In the current atmosphere of architectural theory, saturated with interpretations, there is a need to specify the constituents that make the architectural object, moving through time, last in space. In the act of duration, the architectural object communicates. The entire process of architectural design can be described as semiological - *sending coded information from the sender to the receiver and its decoding and interpretation*. Looking back at Nietzsche's claim that reading a text as a text to which no interpretation is inserted is the last form of inner experience, we can say that reading an architectural object, like a text as an object to which no meaning is inserted is the ultimate form of the effectiveness of architecture. By constituting a methodology that unites architectural and semiological theory, defining the concepts of architectural sign, index, code and codex becomes possible. Starting from the assumption that the architectural index, carrying with it the essence of the context, is not a sign of generality, but on the contrary, of difference, its specificity becomes an instrument by which the absent in the architectural object is located.

INTRODUCTION

When it comes to the communication of ideas, architecture can be seen as a certain language of its own. In that sense it could be said that the specificity of architectural communication is based on the system of (architectural) signs, on which basis the architectural object is being interpreted. While interpreting, the architectural code is being translated through the projection of signs that make up the spatial formation, thus uniting what is present and absent in the architectural object. The term *absent* is not to be understood as a "lack" - on the contrary, what is characterized as *absent* forms the *present* as much as it is contained only in the present. Absence and presence, understood through the architectural paradigm, are not to be understood as opposite poles but inseparable constructs that constitute each other. The present makes us think of the absent. The materialized thing is a representation of everything that preceded it and shaped it, so the object of architecture itself is a shaped projection of meanings and interpretations united in space and time.

About the relation between interpretation and meaning, in his work *Matter and Memory*, Bergson (Henri Bergson) discusses the existence of pure memory, which, according to him, is the representation of an object. Pure memory would imply that the representation of an object depicts the object as it essentially is, without added meaning. Due to numerous interpretations of an architectural object, the question arises as to how they can be overcome, so that the object reaches its purest expression. Furthermore, on the same topic, and in the context of the contemporary moment, Jörg Gleiter points out that overcoming the presence of the object is not, as is often considered, the goal of the philosophy of architecture, but rather its prerequisite. Therefore, in order to think about the architectural object and its existence, its presence has to be overcome. The perception of architecture is always mediated by interpretation, we perceive objects through interpretation, and therefore, in the context of the subject-object relationship, a discussion is opened on whether an architectural object can be deprived of interpretation at all.

To understand architecture as a specific language, two theories about signs can be singled out as significant - Peirce's and Saussure's theory (Charles Sanders Peirce and Ferdinand de Saussure). According to Peirce's theory, signs are mediators between the world of objects - described as external and the world of ideas - described as internal, and apropos they are based on a process dependent on interpretation. Saussure's theory, on the other hand, lies opposite to Peirce's. According to him, a sign is an element that refers the subject to something and represents it, it is an element accessible to the senses. Peirce defined the sign in a more flexible way, thereby providing the possibility to understand the sign outside the strictly linguistic framework. In this regard, semiological analysis enabled the emergence of a general theory of meaning research within various scientific disciplines and thereby opened up special types of semiology - including the semiology of architecture. Looking back at the aforementioned interpretations, in the context of the relationship between the present and the absent, the thesis being formed stresses that absence in an architectural object can be defined by semiological devices, meaning by realizing the connection between linguistic and architectural theory. The architectural index is being introduced as precisely something which can define the presence of the absent within the framework of the architectural object.

It is important to mention the difference between semiotics and semiology for the same reason as Šuvaković states¹ - these two terms are often used as synonyms in scientific and theoretical literature. While semiotics is defined as a formal science of signs and meaning, the field of action of semiology receives the epithet of extension as semiology can be characterized as a science of creation, transmission, functioning and transformation of signs and meanings. It is these dynamic properties, considered through the paradigm of architecture, that participate in the complex process of communication of architectural ideas, using linguistic theories as mechanisms.

¹ Šuvaković, M. (2005). *Pojmovnik suvremene umjetnosti*. Horetzky, Zagreb.

THE NOTION OF INDEX IN THE INTERDISCURSIVE CONTEXT

Meaning of the term index:

index, from latin, late 14c., "the forefinger," from Latin index (genitive indicis) "one who points out, discloser, discoverer, informer; forefinger (because used in pointing); pointer, sign; title, inscription, list," literally "anything which points out," from indicare "to point out," from in- "into, in, on, upon" (from PIE root *en "in") + dicare "proclaim" (from PIE root *deik- "to show," also "pronounce solemnly," and see diction). Related: Indexical.²

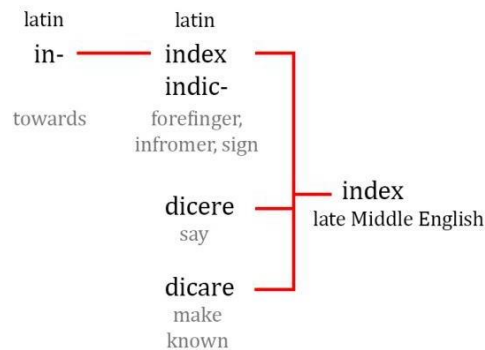


Photo 1. index, word origin

Definition of index:³

1: a list (as of bibliographical information or citations to a body of literature) arranged usually in alphabetical order of some specified datum (such as author, subject, or keyword): such as

a : a list of items (such as topics or names) treated in a printed work that gives for each item the page number where it may be found

b : a list of publicly traded companies and their stock prices

c : a bibliographical analysis of groups of publications that is usually published periodically

d : thumb index


2 a: a number (such as a ratio) derived from a series of observations and used as an indicator or measure specifically : index number

b : the ratio of one dimension of a thing (such as an anatomical structure) to another dimension

3 a : a device (such as the pointer on a scale or the gnomon of a sundial) that serves to indicate a value or quantity

b : something (such as a physical feature or a mode of expression) that leads one to a particular fact or conclusion : indication

4 plural usually indices : a number or symbol or expression (such as an exponent) associated with another to indicate a mathematical operation to be performed or to indicate use or position in an arrangement 3 is the index of the expression $5-\sqrt{3}$ to indicate the cube root of 5

5 : a character  used to direct attention to a note or paragraph — called also fist

² <https://www.etymonline.com/word/index>

³ Definition of index in Merriam-Webster dictionary, <https://www.merriam-webster.com/dictionary/index>

6 : a list of restricted or prohibited material

- *index (economics)*, a unique number calculated on the basis of a set of prices or values
- *index (accounting)*
- *index (publishing)*, a detailed list of terms, for example at the end of the book
- *index (mathematics)*, where it can have many meanings
- *index (database)*, which allows quick access to the database, a serial number
- *index* - student card

- **architectural index?**

What all the interpretations of the term index have in common is that it is an indicator. In architecture as well, the literally understood term, index of a built-up area - an indicator of the ratio of the gross floor area of a built or planned building and the total area of the construction plot - is an indicator of one relation. What is raised as a question, in the broadened field of architectural theory is: what kind of relations the index can be an indicator of.

According to Peirce, the index refers physically or temporally to its referent; it is the thing that indicates, an indicator, and the capacity of a sign to refer to something that is spatially, temporally or physically connected to it is defined as indexicality. He treats index as a type of sign, a sign that designates an object based on the actual relationship. Nevertheless, in order to maintain a spatial, temporal or physical relation to its referent, the index does not have to be a type of sign, rather it could be said that it retains certain characteristics of the sign, but is not a sign itself. If we understand the code of an architectural object as that which is absent in the object, but spatialized in the narrative, which forms the fundament for interpretations, and is formed by architectural signs, while the spatial projection of those signs is understood as that which is present in the architectural object, spatialized in the context, also providing a basis for interpretations, the architectural index can then be defined precisely as an indicator of the relation between present and absent in an architectural object. Index itself does not participate in that relationship per se, but explains that relation. The dynamism it maintains by its movement among opposite poles allows the index to mediate and report on the object of architecture, always carrying within itself the temporal and spatial characteristics of the context. The architectural index testifies to the fact that the question of architecture is never a question of extremes, but on the contrary, the question of transgression, where one thing, in order to be separated from the other, must always arise from that other.

In architecture, the signs are dyadic, they form an architectural code, and their projection on the real context, when materialized, constitutes an architectural object that is physically present. As the object is not only what is visible to us, but materialized always has its own referential *elsewhere*, architectural signs form such a relation that codifies that invisible object in the absent; like two parallel worlds, one of a reality and other of a dream. And on the border, partly in one and partly in the other world, as a transmitter, resides the index, which therefore possesses the characteristics of both, it reconciles them and makes interpretation possible. Because it survives in the field of the border, the index is constantly being transformed, it is, by its nature, dynamic.

In order to mark what can be defined as an absence in an architectural object, we turn to theories that link the object and desire, as Lacan (Jacques Lacan) did in the psychoanalytic discourse. According to Lacan, an architectural object would be a spatial construct which architectural desire is being projected on. As desire persists with the absence of the desired, what constitutes it is precisely the architectural object as a projection of that desire. This means that the architectural object, as a desire, is being preserved within itself. If we were to claim that an architectural object begins its existence with the very appearance of a desire, then its spatial manifestation would be the confirmation and realization of that desire. However, the French philosopher Jean-Francois Lyotard observes the relationship between object and desire from a different point of view. In his interdisciplinary engagement, dealing with epistemology, communication, critical theory and concepts of time and space, he also touches on the exposed issue close to architects. In his work *Discourse-Figure*, he talks about the object of desire, yet the interpretation can easily be translated into the field of architectural discipline where we talk about the architectural object directly. In

the chapter *Desire's Complicity with the Figural*, he argues that the *wish-fulfilment holds in itself the absence of the object*⁴. With a focus on the processes of creation, while in architecture it is expected that it results with the materialization of the product, that is an architectural object, we forget about the losses during creation, of that what was discarded during the design process and everything that preceded the act of creation. The question arises, whether complete absence is possible or whether it can be seen as a presence in some other place. The use of Lyotard's thesis to the architectural discipline directly means that the absence of an architectural object can be interpreted as the realization of an architectural desire. However, in order for the desire to survive, it must remain unfulfilled, meaning the object of desire must persist in time. If we understand architectural desire as the highest stage of the idea of an architectural object, it would, paradoxically, mean that the object can be realized and materialized by its own absence. Considering the semiological tools used to define the relation between absence and desire in architecture, when architectural index acts through absence, it acts through desire.

Further research on the subject of desire, within the architectural discourse, and therefore the argument of architectural object as an object of desire, is largely based on the philosophical views of Jacques Derrida. As a philosopher and linguist, Derrida is the creator of deconstructivism in the linguistic sense - a theory that deals with the relationship between text and meaning. To read Derrida's texts is to see the connections between ontology, language and meaning. For him, architecture is like a written work that defines a certain way of life. Architecture, in order to preserve the existence of the architectural object, have to produce *places where desire can recognize itself, where it can live*⁵, as speaks Derrida in his essay, *Architecture where desire may live*. According to the aforementioned point of view that follows Lyotard's theory, those places would be places where the object is absent. In order to mark places such as those, an architectural index, as instrument which holds in itself characteristics of context, would be helpful tool in discourse of architecture.

MODIFICATIONS OF THE NOTION WITHIN ARCHITECTURAL PRACTICE

One of the greatest influences on the consideration of architectural discourse through the prism of linguistics in the last century was achieved by Umberto Eco with his theory of communication. Referring to both Peirce's and Saussure's theories, Eco focuses on architectural processes directly, understanding architecture as communication. He argues that architecture is a system of signs and codes that require decoding. In his models of deliberation, the idea that architecture must be read outside of its function is identified. In relation to the issues raised, the possibility of modifying this term in the domain of architectural practice is being investigated, and in order to contribute to the understanding of the very act of creating an architectural object, the possibility of exchange between the discourses of architecture, philosophy and semiology is investigated. With the awareness that the question of the origin of the architectural idea and desire will remain unexplained until the end, in this attempt to explain what eludes the interpretations, what it is that is approached and never reached, the notion of index will be used. The multiplicity of interpretations of an architectural object shows that it is never identical to its own projection. One of the many determinants that define the interpretation of an architectural object is the relationship between presence and absence, which triggers numerous discussions within architecture, both, in the domain of theoretical research and in the domain of architectural design practice.

"Architecture, before any other qualifications, is identical to the space of representation; it always represents something other than itself from the moment that it becomes distinguished from mere building."⁶

Interpretability, understood as a characteristic of an architectural object, calls into question the originality of that object. An architectural object resides between interpretations, it emerges from them, yet being the basis for their creation. The architectural index as an indicator, as a designation of difference, would indicate precisely the difference between the original and its referent contained in the representation. The architectural index operates in spaces of representation where sense and meaning are dislocated in space and time. In the contemporary context, within the field of linguistics theory, Ranko Bugarski talks about

⁴ Lyotard, Jean-Francois (2011, p. 270). *Discours, figure*. Univeristy of Minnesota Press.

⁵ Derrida, Jacques. *Architecture where desire may live*, in Leich, Neil (2005, p. 305). *Rethinking Architecture, A Reader in Cultural Theory*. Routledge, London.

⁶ Hollier, Dennis (1992, p. 31-32). *Against Architecture: The Writings of Georges Bataille*. The MIT Press, Cambridge, Massachusetts.

the capacity of dislocation as an important characteristic of language. "Language has an extremely important capacity of dislocation, or "displacement" in space and time. It is not related to the immediate context of the communication act, of for what is happening "now" and "here", so it can be used to talk not only about things that are present at a given moment, but also about things distant in space and time or even non-existent. With language, one can talk about distant continents and constellations, about what once was or, perhaps, will be, or else will not and cannot be; one can invent and lie. In this way, language allowed man to step into time and space. This possibility of displacement, with all its far-reaching consequences, is guaranteed by the already mentioned fundamental principle of symbolization, without which there can be no language"⁷.

Further, on the subject of dislocation, how Peter Eisenman scrutinize it, the subject-object relationship and the ability to renounce one and the other in order not to be deprived of interpretations can be analyzed. In his work *On the Ideal Object of Architecture*, he argues that *absences are interruptions between a continuity that has ended and one that has not yet begun*.⁸ He discusses about the paradox of architecture, which is *very resistant to dislocation and decentralization*⁹, while at the same time dislocation is inevitable in architecture, because *presence in architecture is an undeniable imperative, and precisely dislocation is made possible by the game of absence against presence, in working with the contradictions of discourse and within them*¹⁰.

Speaking about the capacity of dislocation in architecture, Peter Eisenman deals with the problem of presence and absence, through the understanding of architecture as a text. In order to discover the essence of the paradox of the phenomenon of presence in absence, Eisenman turns to language and in the etymological roots of words he finds meanings that connect into one concept.

"In language, signs are not objects, but indicate the absence of an object. Unlike language, architecture is as much an object, to be said presence, as a sign, to be said absence"¹¹

A fundamental characteristic of language is signification. The specificity of architectural language lies in the fact that architectural objects do not signify, but mean. *What is the meaning* is one of the questions that occupies a central position in contemporary philosophical discussions. Derrida says: *Meaning must await being said or written in order to inhabit itself, and in order to become, by differing from itself, what it is: meaning*.¹² Where the word is missing, the potential remains for the architectural object to be realized in its full expression, without additional connotations that threaten its purity, originality and authenticity. Looking back on Peter Eisenman's claim where he underlies Rosalind Kraus's invocation of index in order *to problematize the metaphysics of presence by moving the object toward a condition of pure presence*¹³, it could be said that in the scenario freed from interpretations, between the present and absent, architectural index operates. As a term used in architectural discourse, index allows representation of that lies on a border between absent and present. Used as an instrument in theory of architectural semiology, it could help defining exactly the presence of the absent in the architectural object.

Placed in the context of contemporary architectural practice, elements of structuralist and poststructuralist theory will create a platform for the interpretation and execution of plural architectural strategies within (post)conceptual and contemporary art, and vice versa - the execution of artistic strategies within contemporary architecture. If the goal is to deprive the object of architecture of meaning, then it is necessary to observe cases where architecture does not have to have the present object as its goal. In that case, it is possible to say that the architectural index is then both the object and the index that defines it.

⁷ Bugarski, Ranko(2003, p. 17). *Uvod u opštu lingvistiku*. Beograd: Čigoja. translation: author

⁸ Ajzenman, P. (2013, p. 53). *O idealnom objektu arhitekture*. Izabrani tekstovi. Univerzitet u Beogradu, Arhitektonski fakultet, ur. V. Đokić, P. Bojanić, Beograd. translation: author

⁹ Ibid., 41, translation: author

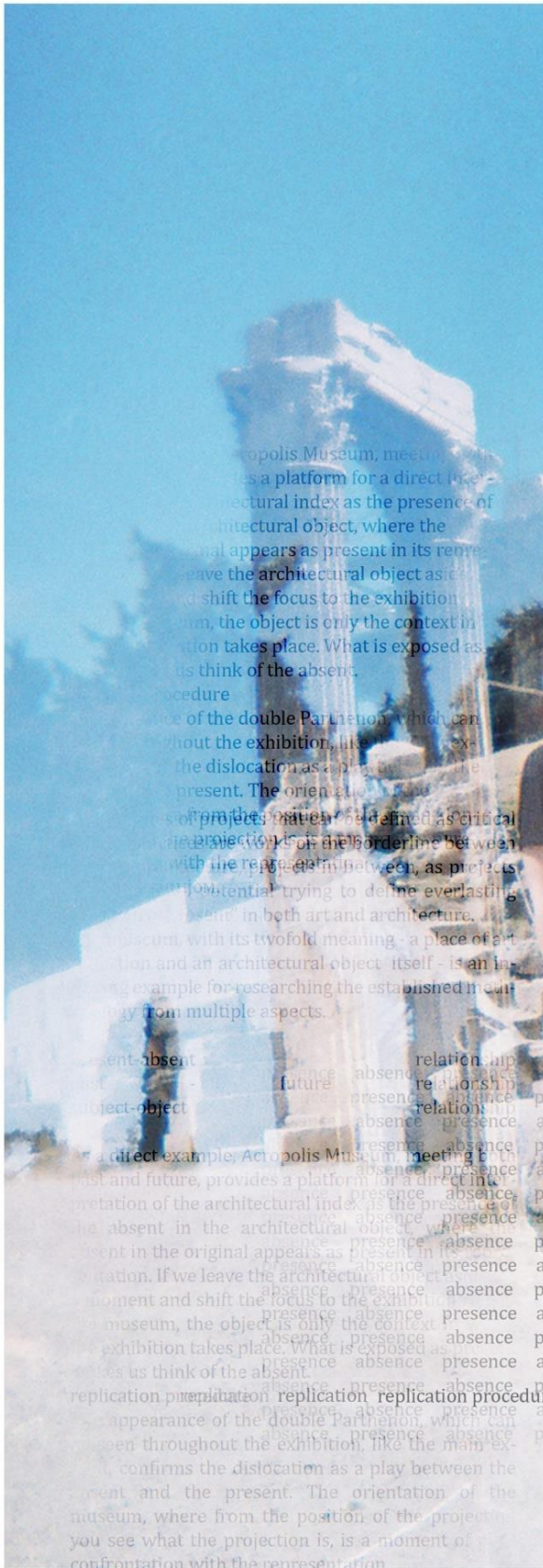
¹⁰ Ibid., 41, translation: author

¹¹ Ibid., 41, translation: author

¹² Derrida, J. (2005, p. 11). *Writting and Difference*. Routledge, London.

¹³ Eisenman, P. (2004, p. 44-53). *Digital Scrambler: From Index to Codex*. Perspecta, Vol. 35, Building Codes.

APPLICATION OF THE METHODOLOGY ON EXAMPLES OF ARCHITECTURAL PRACTICE



Case studies of projects that can be defined as critical spatial practices are works on the borderline between art and architecture, projects in between, as projects with the most potential trying to define everlasting question of “absent” in both art and architecture. The museum, with its twofold meaning - a place of art collection and an architectural object itself - is an inspiring example for researching the established methodology from multiple aspects.

present-absent past future subject-object relationship relationship relationship

As a direct example, Acropolis Museum, meeting both past and future, provides a platform for a direct interpretation of the architectural index as the presence of the absent in the architectural object, where the absent in the original appears as present in its representation. If we leave the architectural object aside for a moment and shift the focus to the exhibition role of the museum, the object is only the context in which the exhibition takes place. What is exposed as present makes us think of the absent.

replication procedure replication procedure replication procedure
 The appearance of the double Parthenon, which can be seen throughout the exhibition, like the main exhibit, confirms the dislocation as a play between the absent and the present. The orientation of the museum, where from the position of the projection you see what the projection is, is a moment of pure confrontation with the representation.

Photo 2. Architectural sign and its projection

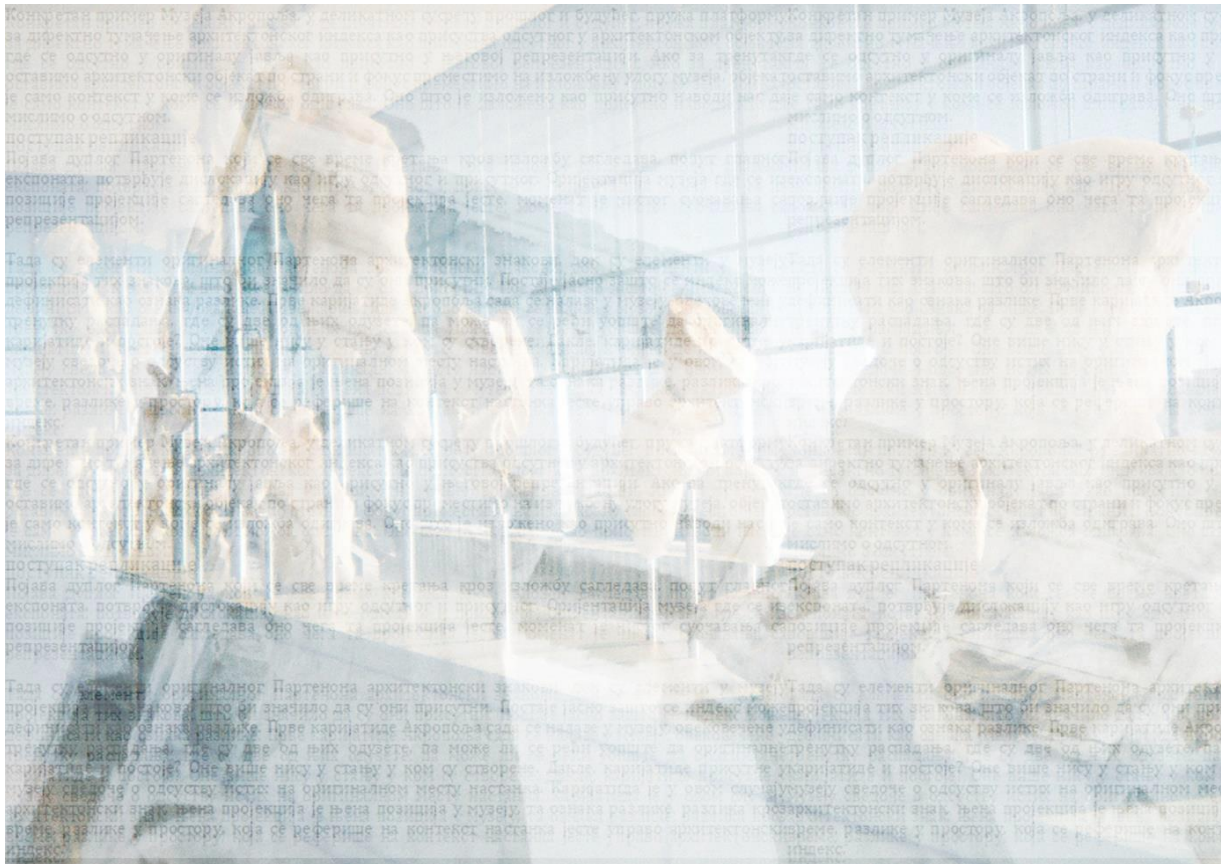


Photo 3. Dislocated Artefacts

In terms of inducing the context of the past, the position of the Acropolis slope, the Erechtheion terrace and the Parthenon gallery on the top floor of the museum is the most effective example of contextual representation that confirms the importance of the *object - object representation* relationship in the architectural discourse. This example of recreation of authentic heritage, with the simple application of modern materials, emphasizes the spatial organization, with the awareness that the projection of the original cannot be surpassed, so the museum as an architectural work does not even try to oppose the Acropolis, but only enhances its imposingness and monumentality by directing the view from the inside towards Acropolis hill. The materialization is such that it indicates that the pictorial form almost does not exist, everything is in the function of artifacts whose value stands out. Shadows and reflections are the main aesthetic formal tool that outlines the form of the object from within. The conceptual value of the form is emphasized, since the strength of the concept is felt. A completely simple process of replication gains importance when it is understood experientially.



Photo 4. Spaces of Representation and Representation of Spaces

CONCLUSION

Architecture, perceived through the field of semiology, could open up possibilities for new approaches to defining of that is eternally elusive and undefined. Precisely because no process or phenomenon in architecture can be finished, because just when the thought arises that it has reached its core, it changes and slips away, disappearing from the reach, that is exactly why architecture lasts and in other words, achieves what it is at its base. Therefore, by constantly questioning, bringing together new disciplines and discourse and overcoming existing frameworks, architecture develops. Raising questions offers a new way of looking at phenomena that have always been present. Many redefined interpretations about the existence and appearance of an architectural object lead to new approaches to the process of designing the architectural object itself. The factor of time, which presupposes permanence as evidence, represents one of the principles to which the architectural design practice should respond. The permanence of an object is one of the basic characteristics of architecture, therefore it is a framework that allows the transformations necessary for the life of an object. In its spatio-temporal connection, the continuity of architectural effectiveness looks back on the past as much as it strives for the future.

The question of absence and presence is actually a question of the relationship between the object of desire and the architectural object, which create each other while maintaining mutual evasion. What binds object and desire is their continuous dialectic. The gap that the object of desire tries to bridge by chasing its own referential in the architectural object produces an absence that encourages interpretations.

As Gaston Bachelard quotes, "each symbol flesh, every dream a reality".¹⁴ The body of the architectural symbol would be encompassed by the formation of the architectural object, while the reality of the architectural dream would encompass the modalities of time and space in which the object moves. In those modalities as the key to the explanation of permanence within the idea of temporality, a difference appears. The architectural index, as a mark of that difference, records the essentiality that the object retains through all phases of its own existence; what arises in the concept and remains bare in the materialized object.

Like any cultural product, architecture is a system of signs whose meaning derives from the common interpretations of the society within which it is produced. Turning up to setting up the theory of architectural semiology as a structural means for the methodological understanding of this process of meaning, for the interpretation of architecture, opportunities are opened for new approaches to current architectural topics, including the topic of the relationship between presence and absence. According to the phenomenon of elusiveness that defines architecture, a certainty which is shown through the prism of the theory of architectural semiology is that the architectural index, in order to succeed in defining the absence of presence, must have the ability to transform.

¹⁴ Bachelard, Gaston (2002, p.5). *Earth and Reveries of Will*, Dallas Institute of Humanities and Culture. quote: Miloszc, Oscar.
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AN EPOCH FROM A NEW PERSPECTIVE

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ABSTRACT

The paper considers an attitude towards historicism, its interpretations, and the modern era in the construction of residential buildings whose facades participate in the construction of the urban landscape. Objects often labeled "Parisian buildings" are most often criticized with the argument that they are inappropriate in relation to the current "zeitgeist". They have been in the focus of the professional and general public in recent years, since the construction of first such buildings in luxury locations of Belgrade and they have become an everyday occurrence in a number of cities. Starting from the assumption that a large number of them has been built in accordance with current building codes, that determine the method of construction at the present time, the question of the valorization system arises, i.e., whether and from which aspect it is possible to make a qualitative judgment about their value. The design and construction of residential buildings is regulated by the idea that they meet the requirements of modern city life, which makes the issue of harmonization with the "zeitgeist" on the example of these buildings particularly questionable and it also questions the understanding and materialization of this phrase. "Parisian buildings" are most often associated with classical architecture and that era, so their analysis is possible by considering the elements that most reference this type of design. The term *modern classical architecture* belongs to the domain of architectural theory and there are a number of authors who, on a theoretical level, lay the foundation for the design of new and potential valorization of existing buildings. The idea of the paper is to consider the qualities of selected objects from a phenomenological and perceptual point of view through the set of this theoretical base. The facade is at the same time an element of the building that most participates in the formation of the city's landscape, but also a part of the majority of criticism that is analyzed through the theoretical postulates of modern classical architecture. Direct conclusions should show whether it is possible to observe elements of modern classical architecture on selected examples, while indirect conclusions of the analysis should question the meaning of the zeitgeist, historicism and the position and importance of these buildings within wider architectural practice.

Keywords:

classicism, epoch, "Parisian buildings", classical elements, proportions, phenomenology

INTRODUCTION

The analysis of modern residential multi-family buildings reveals objects that take over elements of the formal treatment of facade characteristics from previous periods. The topic of this paper is the theoretical basis of the analysis, interpretation and valorisation of multi-family buildings, which are often called "Parisian buildings" (see Photo 1) with a negative connotation, as a consequence of their facade treatment. In Serbia, their development is particularly noticeable in the central city areas of Belgrade, such as Vračar, but it is not exclusively related to them, because additional examples can be found in other urban areas as well. The existence of elements of facade treatment, which by their visual appearance are associated with objects belonging to the architecture of earlier eras, is particularly significant. As existing criticism is related to the aspect of the need and suitability of such types of buildings, the aim of this paper is opening the debate on two aspects. The first is related to the explanation of the term *zeitgeist* (Mitrović, 2011) and its interpretation. The second aspect is related to the historical development of criticism and analysis of architectural objects, that is, to the development of the debate about the ontological nature of architectural objects, their aesthetic contemplation, and the nature of design principles that can explain the foundation of the relationship to these objects.



Photo 1. Example of a "Parisian building"

The most common answer to the question of how to build is in accordance with the *zeitgeist*. This answer implies the existence of guidelines for each type of architectural object at a given moment, which is specifically related to that unique historical moment and its "spirit". The question that should be asked before these a priori conclusions is related to the ontological nature of an entity like the *zeitgeist*, that is, what it represents in the process of architectural design. Understood colloquially, as a phrase that can be heard every day, it represents a group of characteristics that define the membrane that separates the acceptable from the unacceptable. Explanations that accompany architectural objects today very often contain some formulation similar in meaning to the *zeitgeist*, whether they are based on the valorisation of functional usability, facade treatment, urban setting, etc.

Objects, which by their appearance pretend to use certain classical principles, should be analysed in the context of their interpretation. That is why the explanation of the term contemporary classical architecture was used and it was taken from the work of Renata Jadrešin-Milić and her doctoral dissertation (Jadrešin-Milić, 2012). The dissertation follows and explains the work on the expansion of the theoretical principles of classical architecture in the contemporary moment, following the theoretical work of authors who postulate the possibilities for the existence and design of such architecture.

The approach of observing aesthetics is a formalist approach, which denies the existence of *zeitgeist*, that is, a term rejected by a group of authors of contemporary classical architecture (Jadrešin-Milić, 2012). Their idea of the value of architecture relies on the tradition that began in the Renaissance, the duration and

evolution of the classical language of architecture. Awareness of tradition and the possibilities of theoretical analysis of such objects in the modern moment is significant because it allows a wider understanding and potential of objects that follow (or would follow) such a tradition. The backbone of the formalist principle in this work is the aesthetic contemplation postulated by the philosopher Graham Harman, through his theory of triple O, object oriented ontology (Graham, 2018). It is important to find a common line of thinking that adequately explains taste, which is often interpreted as a current trend or fashion with an aesthetic contemplation of an individual object.

Defining the way of architectural design, i.e. defining the nature of an architectural object, as its inseparable consequence, changed over time through the influences of tangential disciplines. The relationship between form and function is viewed in a realistic way (Mitrović, 2020) that introduces a rich historical debate on the relationship between architecture and philosophy through the ways in which philosophical thinking has influenced changes in approaches to designing and understanding architecture. It is important to mention that rejecting the zeitgeist as a design criterion does not imply that newly designed buildings should ignore the contemporary needs and function of the architectural object. Moreover, the progress of ideas created in the Renaissance is assumed, similar to the progress of Renaissance ideas in relation to the classics, through the modifications of classical principles, and not imitation and copying of already existing objects (Jadrešin-Milić, 2012).

The basic assumption of the work is that there is a certain number of objects that, assuming that they meet modern regulations related to their construction, can be classified as objects of contemporary classical architecture. In this case, the individual criteria are not given, nor the analysis of specific built examples, but the basic idea is to achieve a debate about the importance of the way of aesthetic judgement of contemporary buildings. This paper provides an overview of potential theories for analysing contemporary buildings.

UNDERSTANDING THE EPOCH

The term *contemporary classical architecture* implies objects created in the contemporary moment, but which, according to their design principles, can be connected with the tradition that began in the Renaissance (Jadrešin-Milić, 2012). Renaissance ideas imply individual authors, who develop a style through a large number of iterations, but rely on direct experiences of the past. The references used are mostly clearly visible, that is, the connection with historical models is directly visible, while the possibility of responding to the demands of modern life and the problems of modern society is postulated.

Turbulent changes in the first half of the twentieth century, especially after the Second World War and the subsequent major social changes, demanded above all construction speed. Architectural design and the development of the architectural profession are in their essence slow and within the framework of the European tradition inclined to permanence followed by detailed thinking through the historical development of elements. Prefabrication and industrial production have brought with them speed that should be applied to architectural objects, and therefore also to architectural design.

The term zeitgeist is often used imprecisely to denote and cover a wide range of phenomena, which in their essence imply a collectivist (which can also be called a holistic approach) architecture (Jadrešin-Milić, 2012). A collectivist approach to architecture implies the existence of a collective spirit that governs the reasoning and actions of individual actors. Architecture, in relation to this understanding, is governed by a collective understanding, that is, there are no individual decisions that affect the design, it is conditioned by the collective spirit. Within this understanding, it is clear that the zeitgeist cannot be understood to mean that this architecture was created at a certain historical moment, but that there are some undeniable collectivist laws (connections between everything created) of that moment, which valorize the works in relation to these laws. This attitude is rejected when adopting the principles of contemporary classical architecture in relation to which the design traditions created in the Renaissance are developed and adapted to the contemporary moment.

Another significant aspect is the question of historicism and architecture. The term historicism originates from philosophy, but in the theory of architecture it is most often used to explain situations in which architects look for inspiration directly in historical works (Jadrešin-Milić, 2012). Bearing in mind the previously mentioned need to harmonise with the zeitgeist, it is clear that this approach was initially evaluated negatively.

CHANGES IN THE ARCHITECTURAL DESIGN PROCEDURE

The upheaval that took place at the end of the nineteenth and the beginning of the twentieth century, the rush of industrialization, and significant social changes, was characterised by the need for explicit knowledge, and thus the natural sciences gained primacy over the social sciences. These changes have

similarly affected the field of architectural design. The adaptation of architectural design, in accordance with the current understanding of reality, has influenced the transition of architectural design into the domain of explicit sciences. The consequence is the easy reduction of architecture to disciplines that had the capacity to explicitly and unambiguously transfer collected knowledge. The paradox that accompanies this phenomenon is related to the different nature of architectural design in relation to the procedure of knowledge collection and codification. Design is by its very nature a synthetic operation, while traditional knowledge and its dissemination are analytical (Harman, 2022). In order to describe and valorize an architectural object, there was a need to reduce it to sets of properties or to relationships with other objects (Harman, 2022), which can be most significantly seen by analysing objects through form and function. The definitions of the categories of form and function, as well as their mutual relationship, remained throughout the twentieth century in a state of constant reinterpretation, but one can notice the duality, the opposition of form and function, which implies subordination to each other. Louis Sullivan's famous phrase that form follows function still dominates architectural education today.

Architectural objects are starting to be analysed through analogies and connections with other disciplines, mostly natural, that is, explanations of architectural objects are moving from the domain of experiencing architecture, which favours visual perception, to literary descriptions. Although during the twentieth and twenty-first centuries there were attempts to return the focus of the analysis of architectural objects to the domain of visual perception, classical architecture develops and uses a visual vocabulary, which is not rooted in verbal description but in the centuries-old tradition of developing certain visual expressions (Jadrešin-Milić, 2012). Architectural objects are inseparable from the possibility of their perception and analysis, but they are also irreducible to only certain aspects of it.

Starting with Vitruvius (Marcus Vitruvius Pollio), through the Renaissance treatises of Alberti (Leon Battista Alberti), Palladio (Andrea Palladio), Vignola (Giacomo Barozzi da Vignola) and Serlio (Sebastiano Serlio), there are still attempts to make the ideas of architectural design, which until then by its very nature implied tacit knowledge, they explicitly state. Today, the analysis of architectural objects is mainly approached with the two mentioned aspects of form or function analysis, while Renaissance authors described architecture through the interpretation or direct reference of Vitruvius' triad *firmitas*, *utilitas* and *venustas* (Vitruvije, 2009). The architectural triad, although richer by one category, has a similar antagonistic character, like the analysis of form and function. Consideration of the object through the relationships of these categories is, in the opinion of Scott (Geoffrey Scott), characteristic for analysis, but not for the process of architectural design, which is by its nature synthetic (Scott, 1914). In a similar way, the contemplation of an architectural object is synthetic in nature and implies the active engagement of the observer who forms his judgement through visual imagination, before entering into the analysis of individual aspects of the objects. Neglecting visual perception has made it impossible for the aesthetic contemplation of an architectural object to be independent from its individual aspects.

Harman claims that all the features of an architectural object necessary for its functioning are the preconditions for the existence of architecture, but that the difference between architecture and other types of construction can be seen through the possibility of aesthetic contemplation (Harman, 2022). Scott is of a similar opinion; he emphasises that architecture must have its static stability and that it must fulfil the function for which it is intended, but in his opinion aesthetic pleasure does not arise as a consequence of a stable construction or a well-resolved form, but is an unbound requirement, which could be related to function or construction, but may also completely contradict them (Scott, 1914). In his opinion, there are numerous criticisms in the field of architecture, which rely on different data, but there is no criticism that can understand and describe aesthetic enjoyment in detail and draw conclusions about the laws under which such aesthetic events occur.

THE IMPACT OF PHILOSOPHY ON ARCHITECTURE

In order to understand the relationship between architecture and other disciplines that influence its development, the debate on the relationship between architecture and philosophy is particularly important. Harman's analysis of the historical development of the relationship between architecture and philosophy illustratively describes the paradigmatic changes that condemned certain architectural structures as inappropriate for a certain era.

Architects, in Harman's opinion, readily agree to experiment and accept influences from other scientific disciplines (Harman, 2022). The connection with philosophy, that is, the influence that philosophical thought had on architectural design, ranged from an inspiring approach to the interpretation of philosophical ideas through an architectural object, to attempts at literal interpretations of philosophical ideas through architectural objects. Harman defines this relationship through the analysis of three important philosophers: Martin Heidegger, Jacques Derrida and Gilles Deleuze, that is, the pair Deleuze and

Pierre-Félix Guattari. Without denying the importance and influence of other philosophers on the development of architectural design, the presented triad, through its attitude towards the ontological nature of the architectural object, also explains some postulates that can also be observed on objects.

The search for the ontological nature of the object, and therefore the way of designing it, has become a joint venture of architects and philosophers. One of the most significant examples of that collaboration is the collaboration between Jacques Derrida and Peter Eisenman. Collaboration is well-known and long cited as a prime example of the advantages and disadvantages of a direct relationship between architecture and another scientific field. Architectural design and the inspiration taken from the field of philosophy have been in a constant intertwining since the end of the nineteenth and the beginning of the twentieth century. Every type of explanation of architectural objects through philosophy added narrative value to the objects. The narration served to negate or enhance the visual characteristics of the object. In the twentieth century, the visual characteristics of an object are generally called form, which is a definition adopted by Harman (Harman, 2022).

In order to avoid a narrative description of architectural objects, the influence of phenomenological thinking about them is considered. The accepted point of view is that the founder of the movement is Edmund Gustav Albrecht Husserl, but the originator of the phenomenological trend in the field of architectural interpretations, was shifted to his student Martin Heidegger (Harman, 2022). Deviating from the opinion of his teacher, Heidegger in his work talks about the *Being* which is always hidden and is revealed through building, i.e. housing. Objects with a strictly defined function, in his opinion, do not have the capacity to be understood as architecture (Harman, 2022). The importance of phenomenology to the observation of objects of contemporary classical architecture is in the domain of visual imagination. The idea that architecture has moved from its primary zone of visual discipline to the non-visual zone, that is, that the visual qualities of architecture are inferior, dominates the field of architectural design. The main characteristic of Heidegger's influence on architectural design is reflected in his description that the goal of architecture is to reveal Being (Sein), that is, to discover Being through housing. Engineering objects whose goal is pure function, according to Heidegger, cannot be considered architecture. The influence of such premises can be found in the architecture of a large number of contemporary architects. From the perspective of contemporary classical architecture, it should be emphasised that the visual aspects of the object cannot be ignored during phenomenological analysis, because they are one of the fundamental aspects of the relationship between the object and the observer.

FRAGMENTARY NATURE OF OBSERVATION OF ARCHITECTURAL OBJECTS

Form and function are two sets of separate properties of an object that must be defined by their subsets through codified methods of knowledge transfer and acquisition. The already mentioned debate on the relationship between form and function in an illustrative way shows the need to reduce the properties of architecture to the possibilities of interpretation that can be conveyed by verbal methods. Architectural objects represent complex entities that cannot be reduced to a set of their characteristics or to their social impact. Although one object can be viewed from several different aspects, such as the type of construction, different technical solutions or applied materials, the object itself is more than a set of these characteristics. In other words, if viewed from the aspect of social influence, its material nature is put into the background. Harman's idea of the indivisible nature of objects (architectural and other) enables aesthetic analysis through the understanding of objects as complex wholes that cannot be reduced to sets of properties or to the effects they have on other objects. These two procedures are considered key to acquiring knowledge in the traditional sense and they involve processes that Harman divides into two types: downmining and upmining. "Downward" reduction is the process by which objects are considered in relation to their properties, while "upward" reduction is the effect of an object on others or vice versa. The significance of the theory of triple O and its implications for the understanding of contemporary classical architecture lies in the reopening of the dialogue about visual imagination in architecture placed on a philosophical basis. The idea of the indivisible nature of an architectural object with the possibility of aesthetic contemplation not tied to different narrative explanations is necessary in order to understand the logic of designing objects of contemporary classical architecture. It is not postulated that there are no historical references or social implications that exist when designing such objects, but it is understood that they are secondary in relation to the aesthetic contemplation.

FORM AND FUNCTION

Buildings built in urban areas are regulated by regulations that harmonise the current minimum needs of modern life (Paragraf, 2022). Criticism of the regulation is not part of this paper, but for the purposes of this discussion, it can be considered that compliance with the current regulation is a sufficient prerequisite for

fulfilling all the previously mentioned minimum conditions of modern life, but also other broader issues, such as the relationship to the environment, the cityscape and the like.

To explain the function, Harman's definition was used, which covers the contents within an object, i.e. the ways in which it is possible to use that object (Harman, 2022). A question that is significant in the relationship between the zeitgeist and the spatial organisation of an apartment in a building is impossible to defend, viewed in the context of legal regulations. That is, if the apartments are in accordance with the current regulations, they must be in the zeitgeist. Hence observing them from this aspect is practically impossible. A different assumption would automatically entail legal repercussions, which have different consequences and are not the subject of this paper. Criticism of "Parisian buildings" most often refers to the criticism of facade elements and their role within the urban landscape, but without a detailed analysis of their functionality.

The relationship between form and the zeitgeist has already been partially explained, but it implies the existence of a collective force that would regulate an acceptable way of building. The counter thesis to such an attitude is the idea of a natural progression of certain architectural elements. However, it is necessary to mention the significant differences that can be observed among the visual identity profiles of these objects. As their formal appearance is related to the individual character of the architect, criticism about the uncritical repetition of certain elements can be considered completely valid (beforeafter, 2022). Collectivistic, as opposed to individualistic attitudes towards architectural design, aim to explain and understand the basic role of the architect only within the social order. Collectivist attitudes follow the line of social responsibility, which is certainly unquestionable even within the individualistic understanding of architecture, but they interpret it in a more radical way. Similarly, as the static stability requirement of an object is unquestionably accepted, so is their social role. The main difference is in the way of understanding the social role of architecture. Collectivist attitudes imply the primacy of the social role of architecture, and aesthetic contemplation is in some degree a consequence of the fulfilment of some social task.

Another line of criticism concerns the relationship of proportion within an object, which can also be understood as a partial interpretation of the principles of the Renaissance. It has already been mentioned that in the Renaissance, principles were developed and represent guidelines, not predefined rules that cannot be deviated from (Jadrešin-Milić, 2012). The buildings built today in Serbia today mostly base their proportions on the characteristics of the plot and the number of square metres of living space that can be achieved in accordance with urban planning conditions. Although the phenomenon of fitting into predefined locations is not a new phenomenon, it is assumed that the time required for experimentation in achieving a harmonious proportional relationship of the object is shorter by means of digital technologies. In a post-socialist country, such as Serbia, it is necessary to re-study and introduce the objects of contemporary classical architecture as design problems, so that all questions related to proportion can be adequately answered, rather than a direct comparison with Renaissance or ancient objects.

The idea identified by the design process of architects who link their work to the Renaissance period is that there is a natural progression of architecture that is also possible in the contemporary moment (Jadrešin Milić, 2012). In one hand, it is not necessary to radically deviate from the ideas of the Renaissance, by saying that they are not in the zeitgeist, especially if it is assumed that the zeitgeist is a category whose meaning is linked to a certain philosophical understanding of society, and therefore there is a counter thesis. On the other hand, the individualistic understanding of classical architecture implies the existence of a social role that can be understood as an additional value of the object. The primary aesthetic value of the building is in the visual experience, designed on the basis of centuries-old development of certain architectural elements. Use of materials is also regulated by legal provisions, mainly with the aim of reducing the negative impact on the environment and human health. If that aspect is ignored, the material treatment of the facade is an interesting field of criticism, because it goes beyond the visual qualities of the objects. When this aspect is joined by the question of the zeitgeist, one of the objections is the use of modern materials, such as expanded polystyrene, more popularly known as styrofoam. Bearing in mind the possibilities of its processing with contemporary methods, it is straightforward to postulate that this material is inherently contemporary and therefore in line with the zeitgeist. This thesis is presented by Branko Mitrović, arguing against the rejection of ornaments in contemporary architectural practice (Mitrović, 2022). If it is possible to achieve certain visual effects with the appropriate methods of processing modern materials, the ineligibility is based on the premise that ornament is a crime (Loos, 1908). This very premise is rejected by the theorists of contemporary classical architecture who advocate for the organic nature of ornaments that arise from the form of objects (Jadrešin Milić, 2012). The use of materials and their apparent transitory nature can be understood in the context of classical architecture, that is, the argument that the use of styrofoam is unacceptable is not in accordance with the idea of developing classical elements using present-day methods. Criticism of the durability of modern materials, which are most often of inorganic or of composite origin in the case of proper and adequate installation, is especially questionable.

An important aspect of the materiality of the object, which is sometimes analysed through the form of the object, is the relationship of composing the elements of the facade through the selected material. The assumption that there is a perfect proportional relationship can be problematic if one considers the different attitudes of Renaissance architects. Although all theoreticians assume that there are proportional relationships that are more aesthetically desirable than others, the design of new buildings is based on visual perception and evaluation of individual cases (Jadrešin-Milić, 2012).

TASTE

Speaking about the influence of architecture on the change in the focus of architectural design or the experience of architecture from the point of view of artistic experience (today it would be understood as an aesthetic experience) to the symbolic meaning, Scott puts forward a thesis that anticipates the changes that took place in modernism (Scott, 1914). In order to explain the artistic impression, we talk about the visual experience of architecture, as a primary experience, which has been relegated to the background since the twentieth century, in favour of other characteristics of the architectural object. The change indicatively shows the absence of a place for individual works of architecture and the taste, that is, the aesthetic preference of the architect or the user in favour of the architecture of meaning. However, it is not understood that the symbolic meaning is unimportant in Renaissance objects, but rather it could be understood as an added value to the design characteristics of the object. Taste, within the framework of this work, can be understood as an aesthetic contemplation of an architectural object.

The paradoxical phenomenon of visual oversaturation, which is reflected in the intensive use of social networks, acts in direct contrast with the denial of the visual nature of architectural objects, which are still often projected by emphasising the narrative values that can be attributed to architectural objects. This phenomenon seems contradictory in relation to the visual overload of people's everyday life. In addition, the criticism of architectural objects that hide their true nature through the romantic evocation of previous eras may have its foundation within architectural criticism, but it is necessary to consider Scott's description, which talks about a large number of criteria for the criticism of an architectural object, but not enough to define the relationship between taste and ideas. The idea of honest architecture still dominates, although its interpretation is in the domain of the speculative, for example Harman cites the Centre Georges Pompidou (Harman, 2022). Seen differently, Scott also writes about the renaissance architect's preoccupation with the visual experience of architecture, to the extent that it would even hide the nature of the construction (Scott, 1914). Although an explanation can be found for both architectural principles, a distinction must be made. Architecture needs to be socially useful and honest about itself in the same way that it needs to be statically stable. The question arises whether paradigmatic changes outside the field of architecture are significant enough to have the capacity to completely interrupt a tradition that has been developing for several centuries, without any possibility to continue that tradition in the contemporary moment.

CONCLUSION

The popularity of buildings called "Parisian buildings" has been increasing in recent years. The tendency for such objects to become the dominant type of architectural design within urban areas has influenced harsh criticism and in most cases condemnation (Gradnja, 2022). Criticism of these buildings, as well as any other form of architectural production, should aim for a comprehensive analysis, therefore, this paper points to a line of thinking that emphasises the formalist approach. Placing it within the framework of the theory of the existence of contemporary classical architecture expands the possibilities of analysis. The basic premise is the question of the zeitgeist and the consequences of its different interpretation in the field of architectural design. The continuity of the development of forms from the Renaissance to the contemporary moment was abruptly interrupted, especially in the period of modernity. The need to quantify architectural knowledge dominated the field of architectural production and influenced the development of the narrative nature of architectural design. The direct consequences of this process are the placement of the visual nature of the architectural form in the background in relation to the verbal descriptions of the architectural objects. Without the need to negate all the values of the architectural object, the idea of the primary narrative, ideological or similar nature of the architectural object led to an abrupt break with the centuries-old tradition of architectural design. Given that today there is a need to reinterpret historical visual elements, especially those belonging to classical architecture, it is necessary to understand those elements by themselves and the way they are designed, without the a priori need for narrative explanations. In order to achieve adequate results, questions should be asked about how these ideas could be continued, especially within the environment that developed during the twentieth century under the influence of different ideas.

The turn of architectural thought towards objects that, in addition to durability, also have speed of production has introduced a revolution in the field of architectural design. In order to adequately respond to the needs of modern, consumer society, it is necessary to react quickly to user requests. This introduced a paradigm shift within architectural design, where the speed of construction is directly followed by the speed of design. When designing, it is necessary to abide by the current regulations that follow the activity of architectural production. Considering that the majority of buildings built in prominent locations of larger cities have a building permit, it is understood that all the minimum conditions of modern, residential construction are met, including the fulfilment of all urban and functional parameters. Objects that used to be the result of many years of work by master craftsmen can now be produced in a significantly shorter time frame.

Given that the individualistic nature of architectural objects from the Renaissance to the present has been mentioned, the question of authors who build contemporary classical objects is significant. Their interpretation should influence the development of principles, through individual visual analyses. Significant opportunities for future research can use the potential of new buildings that aspire to the perception of contemporary classical buildings in the framework of a post-socialist country like Serbia. Especially, given that these are new buildings that are located mainly in important city locations. It is necessary to set criteria, which do not use the zeitgeist for their argumentation, in order to be able to analyse these objects. It is especially important to differentiate classical buildings from other types of construction in which classical principles cannot be recognized as an integral part of the design process, but are a kind of subsequent addition.

In order to be able to talk about an integrated process that respects the principles of classical architecture from beginning to end and perfects it, it is necessary to abandon ideas about the zeitgeist and the unsuitability of historicism and visually observe the objects individually and in the context of the city core. Such an analysis requires returning to the period of pre-modernist thinking, which can prove to be a particularly demanding task in a post-socialist country, whose housing stock (especially multi-family housing) was largely built in the period after the Second World War and under the great influence of modernist principle.

The aim of the work is not to deny the significance of the criticism of all the influences of these buildings in relation to the wider context of architectural production and the urban landscape, but to open a dialogue about the possibilities of design and the position of classical architecture in the contemporary context.

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ART AND ARCHITECTURE AS ENGINE FOR URBAN REGENERATION NEW MUSEUM QUARTER IN SARAJEVO

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ABSTRACT

Sarajevo, the capital of Bosnia and Herzegovina is facing phenomena by going through the process of transition. The diversity of the urban image of the city was created as a result of complex historical periods, but also the geographical location where they are often quickly changing socio-political organization, and thus the cultural influences, which we ourselves are witnesses. This process is in a constant race to threaten the continuity of the development of cultural and spatial identity, including valuable examples of modern cultural heritage (1945 - 1992)). One of the most valuable among them is the Historical Museum in Sarajevo, which can be an example of cultural building that creates cultural identity. The lot next to this building soon will host the Museum of contemporary art Ars Aevi . Ars Aevi collection is the most ambitious cultural and developmental project of contemporary art in Bosnia and Herzegovina. It was conceived as an international artistic response to the Siege of Sarajevo. The Collection awaits the construction of the museum building that will become a new space of social inclusion and knowledge-generating institution. The ARS AEVI Museum, with Renzo Piano's initial design and a collection, would favour the increase of cultural tourism in Sarajevo and throughout Bosnia and Herzegovina, representing an important competitive opportunity for Sarajevo, for Bosnia and Herzegovina, and for the region.

Once completed, the new ARS AEVI Museum will be able to carry out continuously, effectively, and efficiently its role as an agent of sustainable development in the fields of art, creativity, and dialogue between cultures. Furthermore, through the creation of the museum, the City of Sarajevo will gain greater institutional and professional resources, tools, and capacities for the protection and promotion of contemporary art and cultural diversity, strengthening its international presence in the artistic and cultural field and contributing to the socio-economic development of the country.

The space in between museum can become new urban public space.

Case study: New museum quarter in Sarajevo

Keywords:

Art, architecture, museum, urban development, social inclusion

SARAJEVO AS A CULTURAL POLYGON

Sarajevo, the capital of Bosnia and Herzegovina is facing phenomena by going through the process of transition. The diversity of the urban image of the city was created as a result of complex historical periods, but also the geographical location where they are often quickly changing socio-political organization, and thus the cultural influences, which we ourselves are witnesses. This process is in a constant race to threaten the continuity of the development of cultural and spatial identity, including valuable examples of modern cultural heritage (1945 - 1992).

The contemporary urban transformations we are witnessing show a considerable degree of diversity, conditioned, among other, by the perception and attitude towards the development of cultural identity and culture in general. Constant, turbulent global changes are accelerating the pace of life, often at odds with the man's ability to adopt and follow them. The pandemic is an additional global preoccupation, lasting for two years already, showing all the shortcomings of urban development without concrete, professionally based planning. The issue of the lack of public spaces within the urban environment, which is now even more at risk and profoundly changing, has also surfaced. (Ugljen-Ademović & Ibrišimbegović, 2022)

Today, we are obliged to evaluate previous approaches and think about the future of space from these new positions, not only considering technological challenges but also various unpredictable situations that are becoming a reality.

Sarajevo is an example of extreme complexity which, in addition to all of the above, arose from also complex socio-political circumstances, where transition processes lose the essential meaning (transition, transformation, temporary state). In such an atmosphere, political circumstances, unfortunately, play the most important role, the protagonists of which will determine the moment for a real and comprehensive, long-awaited, spiritual and material renewal.

At the same time, many cultural institutions are in a state of permanent uncertainty, hence there is a need to transform the attitude towards culture. In that respect, there is a need to transform the collective attitude towards the museum as an institution, a treasure trove of knowledge, as well as a place where architecture synchronizes its significance and influence in building/creating cultural identity.

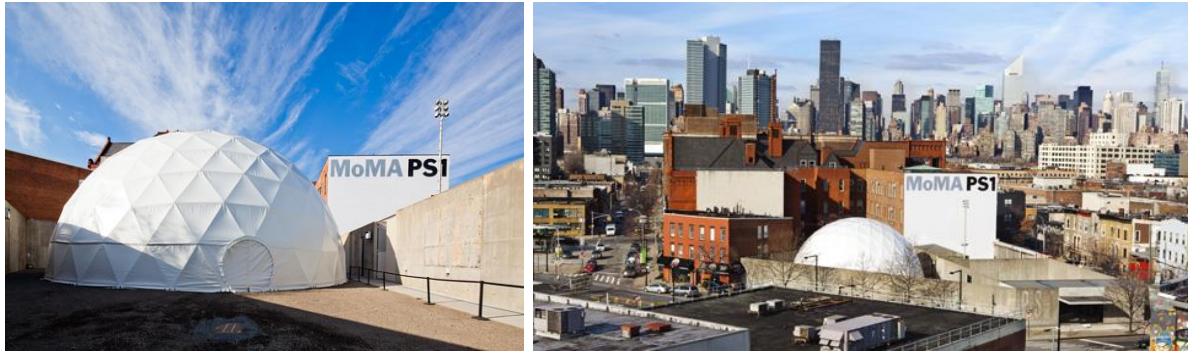
In this process, we will focus on urban spaces in between museums to try to propose new urban space for culture and art. This space should be also connecting existing museums and promote the construction of future Ars Aevi museum of contemporary art.¹ The intention is to create new attractive open space, new urban room that can be living, artistic. The need for urban space is new reality that is caused by Covid-19 pandemics. We will try to give solutions through complex relationship between man – culture – art – architecture – context. This process is in a constant race to threaten the continuity of the development of cultural and spatial identity.

ART, CULTURE AND ARCHITECTURE AS GENERATOR OF URBAN DEVELOPMENT

Art has had spiritual properties since the time of Romanticism. Along with the miraculous relic character of art comes social engagement. Like their medieval role models, they are happy to settle in poor neighborhoods. Art societies often have a regenerating effect in troubled urban areas. One such positive example is PS1 in Queens, east of Manhattan. He is on his way to New York's JFK airport. Previously, it was necessary to follow the advice to drive through that area only with the taxi doors locked, due to the danger of staying in that neighborhood, and today every tourist can walk around it carefree. The reason is the

¹ The ARS AEFI Museum, with Renzo Piano's initial design and a collection, would favour the increase of cultural tourism in Sarajevo and throughout Bosnia and Herzegovina, representing an important competitive opportunity for Sarajevo, for Bosnia and Herzegovina, and for the region. Once completed, the new ARS AEFI Museum will be able to carry out continuously, effectively, and efficiently its role as an agent of sustainable development in the fields of art, creativity, and dialogue between cultures. Furthermore, through the creation of the museum, the City of Sarajevo will gain greater institutional and professional resources, tools, and capacities for the protection and promotion of contemporary art and cultural diversity, strengthening its international presence in the artistic and cultural field and contributing to the socio-economic development of the country.

opening of one of the oldest art spaces in Queens, NYC, the PS1 museum, dedicated to contemporary art. Known for its avant-garde exhibitions, it is a leading alternative space that experiences temporal changes. Artists collaborate with administration, and some have studio space on site. PS1 is affiliated with MoMA, but is a little more experimental in art curation and programming, and through this has managed to become and maintain creativity, even gaining fame and becoming part of the established art world. In such a form, art acquires a mitigating, civilizing power, and socially engaged discourse also belongs to this mission. (Wyss, 2009, p. 157)



Picture1,2. PS1 – MOMA The inner courtyard as a function of cultural activities - animation of urban space, urban regeneration

Today, as Wyss claims, there is only politically engaged art, which offers the audience a "massage" of problem areas, wars and the like. (Wyss, 2009, p 158) It is impossible to study some values or works of art without taking into account the specific society in which they are created, but it is equally wrong to assume the decisiveness of the social explanation, that is, to turn values and works into mere side products. If, namely, art is part of society, then outside of it there is no solid entity to which we give priority. Art is a form of activity like trade, politics or raising a family. Studying relationships means temporarily studying them as active, observing all activities as special and contemporary forms of manifestation of human energy. Therefore, the question of the relationship between art and society can be defined as the study of all activities and their interrelationships, without giving priority to any of them that we want to single out. Art conveys feelings, ideals, quality of life. Art reflects society not through the concept of mimesis² but through the structure of feelings, because art creates components through new forms of perception that society, as such, cannot see.³

"Today we read/observe contemporary artistic and cultural production as a form of social action. The cultural system enters the field of society, education, economy, tourism, ecology. Social and urban regeneration of the city is impossible without artists. For artists today, more than ever, knowledge of sociology and marketing is important, and for everyone else, knowledge of art is a prerequisite for a better quality of life. Recession should be contrasted with Renaissance." ⁴ Janko Ljumović

"Architecture is the art of articulating the world through geometry." Tadao Ando

We recognize the special relationship and connection between architecture and art with the beginning of the work of the Bauhaus school, where the predominance of artists and artistic concepts based on expressionism is marked, while the Bauhaus program itself was synthetic, in the sense that it synthesized and balanced contemporary artistic contributions from the mid-19th century. until the beginning of the First World War. Art is a picture of the context and state of society in which it appears and exists, and it cannot even be analyzed without insight into all the influencing factors and changing paradigms that determine it. At the same time, architecture is understood as the materialization of philosophy, the outer framework of human life, while its inner framework – the core – is philosophy. (Ibrišimbegović, 2015)

² mimeza (mimezis; grč.), jedan od osnovnih pojmova ant. estetike, odn. teorije umjetnosti po kojem je stvaralačko oponašanje stvarnosti bit umjetničkog stvaranja. (www.hrleksikon.info)

³ (<http://www.slideshare.net/likovnaumjetnost/pristup-suvremenoj-umjetnosti>)

⁴Publikacija: „Projekt ARTefakt“, Cetinje CG, 2010.

The language of architecture is alive, changeable and always reacts to the events around it and society. This reaction also happens in time, the moment in which architecture is created and when it continues a tradition, as well as when it criticizes it. (Ugljen-Ademović, 2004, p. 14) Due to its expressiveness and striving for continuity, throughout history it has been directed towards the search for the new, the new that was, and was forgotten, as well as the new, which has yet to be discovered. The history of architecture shows that architectural works are created as a product of the creative relationship of individual talent towards the artistic achievements of previous periods. "Architecture thus becomes a branch of art characterized by the fact that it is guided by its own knowledge and rules, which it develops from already existing architectures with the necessary upgrading. Therefore, architecture was first and foremost an adaptation of the space to the existing socioeconomic structure". (Ugljen-Ademović, 2004, p. 16) It would serve the ruling forces and even in the cases of some, more socially oriented, political models, its programs would maintain the prevailing views of the existing political system. (Tschumi, 2004, p. 12) Tschumi emphasizes architecture as a matter of the mind, which is a dematerialized or conceptual discipline with its typological and morphological variations, on the other hand, architecture as an empirical event, which focuses on the senses, on the experience of space. Architecture is the ultimate meeting place. It thrives on its ambiguous position between cultural autonomy and commitment, between contemplation and dwelling. This phenomenon can be compared to the art market and its alienating effect, which was done by the early conceptual artists. The position of architects seems to be justified by the slight possibility they have to build anything other than "a mere reflection of the prevailing mode of production" (Tschumi, 2004, p. 70). Even in the time of Le Corbusier, architecture was defined and viewed as a phenomenon of emotions, so he, as a representative of the beginnings of the Modern Movement, says:

"Architecture is a matter of art, a phenomenon of emotions, being beyond the question of construction and above them. The purpose of construction is that certain building elements form a space, and the purpose of architecture is to stimulate emotions. Architectural emotion exists when the work "resonates" in us in harmony with the universe, whose laws we obey, acknowledge and respect. When certain harmonies have been achieved, the work takes hold of us. Architecture is a matter of "harmony", it is "the pure creation of the spirit." (Corbusier, 1960, p. 23)

Acceptance of a particular building results from the relationship established between the architecture and the way the social community perceives that architecture in a cultural, functional or emotional sense. This relationship between architecture and its experience is conditioned by heterogeneous ideas and expectations about "artistic" values, which architecture should represent, especially in situations that have a strong identity charge. "The building becomes part of the social landscape only when it absorbs the ideas of the social community. But if that absorption stops at the level of literalness, one cannot speak of an architectural discovery". (Mrduljaš, 2009, pp. 86-88) As Mrduljaš claims, the evolutionary contribution to civilization occurs only when architecture expands existing habits and expectations into new, open and imaginative forms of urban and social life. "In such unique occasions, architecture inscribes new meanings in the city, breaks down existing physical and mental boundaries and offers new ways of understanding and using space". (Mrduljaš, 2009, p. 86-88)

When successful, architecture takes into account participation in meaningful action by enabling the participant to understand their place in the world. In other words, it opens space for the experience of individual purpose through participation in cultural institutions. In this way, architecture offers societies a place for existential orientation, and its meaning is related to time. (Perez-Gomez, 2009, p. 143) It offers an understanding of its place in the universe and in the civil world; they change a person's life and provide the foundation for his own being. Indeed, despite the seductive capabilities of modern technology and the capacity of telecommunications to strengthen democratic processes, it is important to realize how local artistic and architectural practices are like precious endangered species. They should be preserved at all costs because, paradoxically, true human understanding depends on diversity, not homogeneity. (Perez-Gomez, 2009, p. 147) Proving that there is no architecture without events or programs, but that it is characterized by the juxtaposition of space and purpose and the inevitable disjunction of these two concepts points to the fact that architecture is constantly unstable, constantly on the verge of change. It can therefore be concluded that every architecture in a given environment assumes a creative relationship with the context, in all the forms in which it is displayed: spatial, natural, cultural, social, political, etc.

Each culture is symbolized by a different conception of space, because the acquired experience is different, and thus each culture is conditioned by a different sense of space. The functionality, technical, aesthetic and visual identity of the architecture is expressive, i.e. architectural language, they transform it into an

"architectural-artistic work" that has its own purpose and place in space. The message that architecture carries can be interpreted in various ways, as a result of our perception that changes under the influence of numerous factors, both physical (such as a change in the observer's position in space, lighting intensity, season,...), and psychological (mood of the observer, tendency towards certain emotions, etc.). The individual attitude of each observer emerges from such personal experiences, and the main feature is the subjectivity of experiencing the space that surrounds us. Therefore, it is possible, with an appropriate planning procedure, to influence perception, as well as the subjective image and experience that each individual creates for himself. Architecture is a means by which it is possible to express certain thoughts, ideas, attitudes, relationships, achievements of technology, power, wealth, status... As such, architecture is always intended for someone and encourages the relationship between architecture and man, that is, the dialogue that manifests itself communication, encouraging perception, experience and reaction in the observer, and thus activates the creation of a relationship with a feedback loop. In this sense, experiencing architecture differs from experiencing a work of art, which is rarely placed in a living environment. However, like any art, any architectural work that is part of an artistic creative oeuvre can be studied, read, interpreted or criticized.

"Architectural value, as a creative result of architectural art, is certainly not an independent category. Her addiction is bipolar. While on the one hand it is subject to the dictates of current social development and its technological reach, on the other hand there is a limit in the form of the achieved solutions of other arts." (Pađan, 2009: p. 149.)

THE MEANING OF "URBAN REGENERATION"

Urban renewal has many faces where urban regeneration is probably the least used term, but at the same time a very precise term: it is a structural and functional deep change of a certain part of the city powered by individual (corporate) or state initiatives or by the combined initiatives. The key word-concept is "to regenerate", which means to bring devastated situations (areas, neighborhoods, quarters, even buildings) again back to life. Regeneration is similar to the term "revitalization" that is even more closely connected with the idea of "bringing back to life" the forgotten, devastated and destroyed situations, buildings, milieus. (Čaldarović & Šarinić, 2008)

ARTICULATION AND USE OF URBAN PUBLIC SPACES

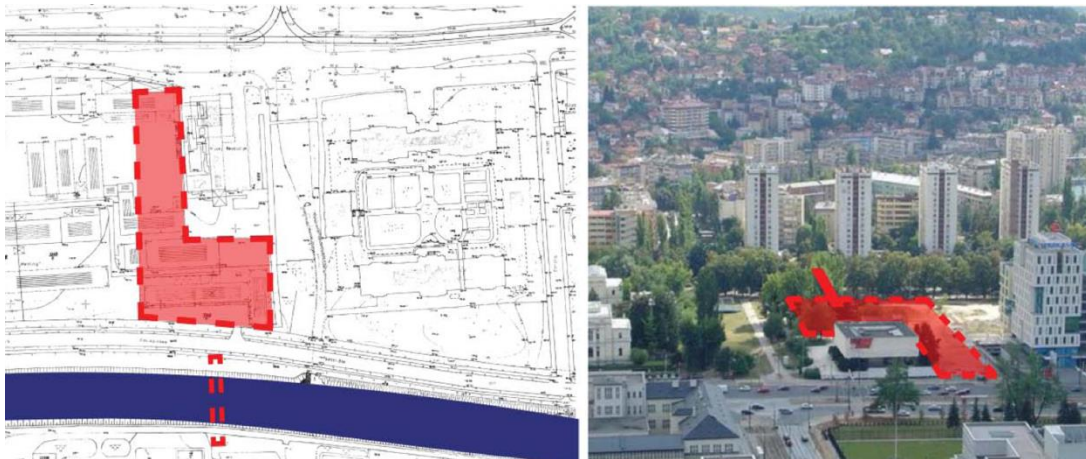
As written at the beginning of this paper, Sarajevo has been exposed to both Western and Oriental influences throughout its history. The socio-cultural identity and the identity of public space in Sarajevo can be associated with hybridity and the state of in-betweenness. Its multi-layered historical legacy makes the city architecturally and culturally idiosyncratic, but also determines its ambivalent relationship towards the notion of public spaces, and the appreciation of common, shared values. The contextual narrative of the coexistence of Eastern and Western traditions in Sarajevo is specific. (Zagora & Šamić, 2021) But the need for articulation and use of urban public spaces is so in urge in Sarajevo. Even more this need became reality during the pandemic period in last two years (2020-2022). Articulation of urban public spaces with art is well known and successful in many capitals over the world.



Picture 3: Anish Kapoor: Cloud gate in Millennium park in Chicago from 2006.

CASE STUDY: NEW MUSEUM QUARTER IN SARAJEVO

Together with fifteen students of 3rd year of Faculty of architecture, we worked for a semester on the topic of a semi void Urban room in the described location, in between Historical museum and future Museum of contemporary art Ars Aevi. Students had guided instruction to be creative and to propose optimum solution for new urban space in order to connect museums and to offer to public and artist as well as random citizens new urban space.



Picture 4, 5: Location of the future Museum of contemporary art Ars Aevi Sarajevo and the open urban public space to be a space between museums.



Picture 6: Location of the future Museum of contemporary art Ars Aevi Sarajevo and the open public space to be a space between museums with piece of art of Daniel Buren "Field of flags"

Students gave a name to their projects with their ideas 'dreams for the future, Urban room before Museum'. Here are their proposals.

Kawez

This idea is about making additional space between museums that is multipurpose. It can be used for basket playground, concerts, market - bazar, book promotion.

Exploded axonometry

Floor plan and sections

Multipurpose place

Emina Tsiligkros, Salih Krčalo

KAWEZ by Emina Tsiligkros and Salih Krčalo

This idea is about making additional space between museums that is multipurpose. It can be used for basket playground, concerts, market-bazar, book promotion.

PAVILLION 494 by Ajla Ahmetović

Making old, abandoned art usable by recycling steel tubes from Daniel Buren's work from 2001. And making a place for people all ages to meet up and give attention to the future museum of contemporary art that will be built near the pavilion and use real potential of the location. The current construction will stay the same, but it will be updated with platforms with height differences on which are planned areas for sitting and relaxing.

Pavilion 494

Making older abandoned art usable by recycling steel tubes from Daniel Buren's work from 2001 and making a place for people all ages to meet up and give attention to the future museum of contemporary art that will be built near the pavilion and use the real potential of the location. The current construction will stay the same but it will be updated with platforms with height differences on which are planned areas for sitting and relaxing.

Exploded axonometry

Floor plan and sections

Three-dimensional view

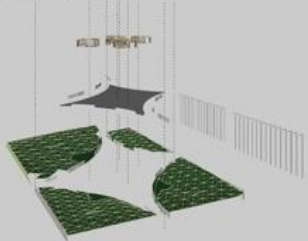
Ajla Ahmetović

Lightning pavilion

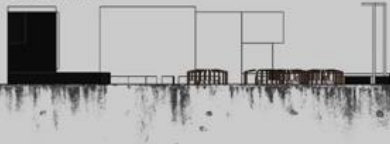
The concept is based on a promenade that connects 3 museums. In the central part, a park is being built with pavilions inside which there are benches for passers-by to rest. Along the perimeter of the location, the excavated earth is used during the construction of the museum, and we get small hills that are used for the purpose of the park, for children's activities.



Exploded axonometry



Section A-A



Three-dimensional view



Adelina Heldovac

LIGHTING PAVILION by Adelisa Heldovac

The concept is based on a promenade that connects 3 museums. In the central part, a park is being built with pavilions inside with benches for public users. Along the perimeter of the location, the excavated earth that is product of the construction site for the new museum, is used for creating small hills for children's activities.

URBAN GREEN by Amina Šabanović

The concept is based on the reuse of materials and materials found at a given location. The earth excavated during the construction of the new museum will serve as the main material of the Urban green project. From 4000 m³ of excavated earth, instead of its complete removal from the location, a park with various levels will be created. The levels will be separated and bounded by paved paths and benches. In this way, money would be saved, natural materials used and a new green area in the city formed. It can be used both as a playground and as promenade.

Urban Green

The concept is based on the reuse of materials and materials found at a given location. The earth excavated during the construction of the Museum of Contemporary Arts will serve as the main material of the Urban Green project. From 4000m³ of excavated earth, instead of its complete removal from the location, a park with various levels will be created. The levels will be separated and bounded by paved paths and benches, which will be used by citizens. In this way, money was saved, natural material was used, and a new green area in the city was plowed. It can be used both as a playground and as a promenade due to the different slopes.



Concept sketches



Exploded forms

Three-dimensional view



Top view



Amina Šabanović, Hanna Bečirović, Jasmina Kurić, Aja Idrizović, Ismihana Konjadžić

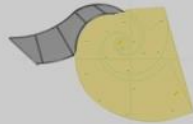
Pavilion Movimento

MOVIMENTO is an architectural expression of art that implies a pavilion structure through the eyes of everyone. The concept of the pavilion is to create different groups in a space that will attract the attention of every passer-by, even those who are not interested in art. The aim of the pavilion is to show that art belongs to everyone, to invite people to the world of symbolism, the poetic and deeper meaning of life.



Exploded axonometry

Floor plan



Synthesis of flags and soil



Three-dimensional views



Aiša Ejubović, Adelsa Polovina

PAVILION MOVIMENTO by Ajla Ejubović and Adelsa Polovina

MOVIMENTO is architectural expression of art that implies a pavilion structure through the eyes of everyone. The concept of the pavilion is to create different groups in a space that will attract the attention of every passer-by, even those who are not interested in art. The aim of the pavilion is to show that art belongs to everyone, to invite people to the world of symbolism, the poetic and deeper meaning of life.

KATODNA CIJEV by Bakir Brčkalija

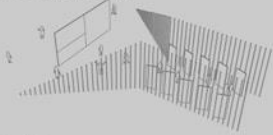
Making installation out of recycled steel tubes found on the site should attract visitors and should pay attention to the future museum of contemporary art that should be built on the site.

Katodna cijev

Making installation out of recycled steel tubes found on the site should attract visitors and should pay attention to the future museum of contemporary art that should be built on the site.

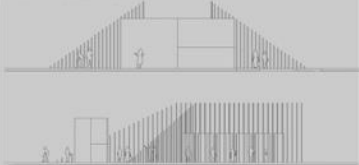


Axonometric perspective



Section A-A

Front and side view



Three-dimensional view



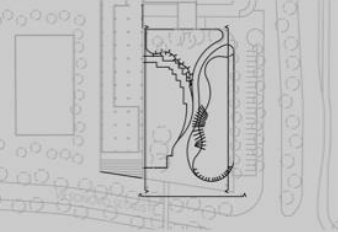
Bakir Brčkalija

Museums Audition I Addition I

Using the steel frames found on the site, this idea recycles them and makes a new installation with the purpose of keeping people on the site and to reflect about and upon visit to the museums.



Situation



Sections



Ishak Čolaković

MUSEUMS AUDITION I ADDITION I

by Ishak Čolaković

Using the steel frames found on the site, this idea recycles them and makes a new installation with the purpose of keeping people on the site and to reflect about and upon visit to the museums.

THE HANGING PAVILION

by Jan Prusina and Halid Frlijak

The Hanging Pavilion is a pavilion that is made of materials that were found on the site itself, iron rods and earth. The structure was made of iron bars on which green and white stripe flags were hanging. Hanging pots were made by excavating the earth which also serve as lighting, to be able to use this space also in the evening.

The Hanging Pavilion

The Hanging Pavilion is a pavilion that is made of materials that were found on the site itself, namely iron rods and earth. A structure was made of iron bars on which green and white flags were attached, modeled after the flags on the original installation of iron bars. Hanging pots are made by excavating the earth, which, in addition to being filled with earth, also serve as lighting, which allows users to spend time there even in the evening hours. There is also another type of lighting, which is modeled after a broken light bulb, so there are pieces of glass in different colors around it.



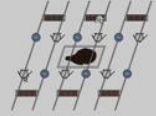
Section A-A



Details of installation



Axonomy of construction



Three-dimensional view



Jan Prusina, Halid Frlijak

CONCLUSION

Public spaces are inseparable from their context: the fluctuating cultural, economic, political, social, and technological factors that constitute their spatial and temporal reality. In the context of Sarajevo, we can conclude that there is huge potential in the status of transition and development that the whole city is still going through and also affected by recent global happenings: wars, pandemic. The art and architecture can be great tool to design new urban public spaces. Especially as we have a project for the Museum of contemporary art done by world famous architect Renzo Piano, which is promotion and attraction for itself and can attract more international projects and artist to the city of Sarajevo as well as visitors. This practice should be also promoted and supported by local authorities and that's why the architecture school is working on different projects of this kind to help in getting great ideas and solutions, as we already concluded within our research last year. (Ibrišimbegović & Mutevelić, 2021) The specific cultural identity of Sarajevo can just be used as inspiration for great projects and realisations and opportunity for future development.

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CHAPTER II

BIOMATERIAL FOR GROWING ARCHITECTURE

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ABSTRACT

The global crisis is manifesting itself in many areas of human action. One of the real problems is that natural resources are dwindling or being treated inefficiently. The building material is running low and the production of building material is environmentally demanding. The second aspect is that people want to live more and more in cities, which leads to more buildings, less greenery and a deterioration in the quality of a healthy urban environment. The work deals with interdisciplinary cooperation in the field of growing materials based on bacterial growth and the search for a form usable in architecture. The central investigated material is bacterial cellulose. This material is included in the research area, bio living architecture. Living organisms are able to adapt highly to changes in the environment and reproduce in a simple way. The process we are dealing with here is fermentation and it is one of the basic processes in nature. The cornerstones are water, carbohydrates, food bacteria. The process is based on a liquid basis. We try to use the natural production properties of living organisms and modify them so that we can create objects directly in the living process by gradually pulling the fungus out of the fermented solution. This process is energy-efficient and is used for an extended understanding of the ecological approach processes that can be used for architecture. We are inspired by 3D printing and with the help of bacterial growth we are looking for an architectural material and shape principle based on the principles of sustainable architecture and circular economy. Nature has evolved over many years to create complicated structures with simple elements. This man-made approach can create materials that may be irreplaceable in the future in terms of sustainability, production and aesthetics.

INTRODUCTION AND MOTIVATION

We are currently facing a crisis of depletion of building materials and an ecological crisis. Industry produces materials with high energetical consumption for applications that alternative biological materials can replace in architecture. Microorganisms and plants are natural, sustainable resources that we make with almost zero energy requirements. Plants and organisms are the least explored area from the point of view of architectural applications. To program plants or organisms into shapes or to use the growth of bacteria and modify their development to create objects already in the growth process. Using organic waste for architectural elements is the challenge of future architecture.

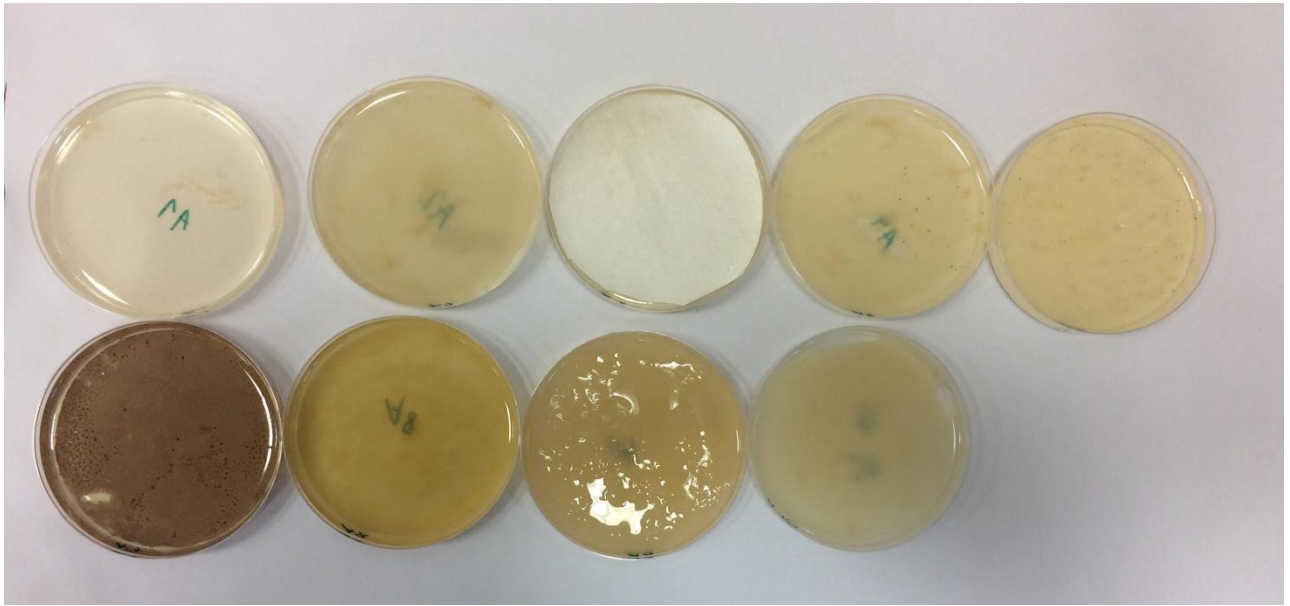
The MIT Nery Oxman laboratory is dealing with the current topic of the use of cellulose, bacterial cellulose, and natural compounds developed in MIT laboratory of Nery Oxman. In *Aguahoja* is focused on the development of a robotic platform for 3D printing biomaterials. It shows that shape and material composition can be directly informed by physical properties (stiffness and opacity), environmental conditions (load, temperature, and relative humidity), and fabrication constraints (degrees-of-freedom, arm speed, and nozzle pressure). Each structure in the collection contains a unique combination of organic materials whose allocation, texture and distribution within the final object are computationally driven and additively manufactured in high resolution. This enables control over specific physical properties and environmental adaptation to changing weather conditions. In contrast to most synthetic materials, structures included in this collection will react to their environment over their lifespan, adapting their geometry, mechanical behavior and color in response to fluctuations in heat, humidity, and sunlight. Such time-based 'temporal' behavior is utilized as a design feature, one that is able to sense, inform the user of, and adapt to changing environmental conditions. The robotic fabrication platform is engineered to convert cellulose, chitosan, pectin, and other abundant biopolymers, into high-performance sustainable hydrogels that can be 3D printed into objects for applications spanning scales from millimeters to meters. (1)

IAAC (Institute for advanced architecture in Catalonia) Bacterial cellulose for urban complex development. Microbial cellulose is Material Bio-ecological urban design research, which aim to propose a long-term urban waste cycle strategy and reorganise the urban landscape network. They use plant waste in the city to grow cellulose. They use Bacterial Cellulose to create the sponge and modify its shape before drying. This is a material survey of Reorganize urban (2)

Emeritus Professor Martyn Dade-Robertson at New Castle University (3) is developing a new field of Bioliving Architecture. Interdisciplinary projects focus on connecting design biotechnology and interior disciplines into a single goal, thus seeing architecture as a living, adaptable organism that is sustainable. One of the growing future materials is bacterial cellulose. Bacterial cellulose (BC) is a natural material found in nature for thousands of years. Bacterial cellulose bacteria are living fermentations and create a waste product called fungus, the research subject. This living organism has been studied experimentally for only a few years. Fungus shows good animal-like properties. Currently, this material is the subject of basic research in the production of medicine, electrical engineering, material engineering, and leader replacement. This material does not appear in practice in architecture. BC shows excellent tensile strength properties and therefore tries to create an ecological object serving in architecture or as an architectural object from this material. This material is also being investigated from the point of view of energy savings during production. The production of BC is by fermentation, which is a low electrical process compared to other materials in architecture. The material is ideal for finding solutions to the ecological challenges of the Green Deal in the current crisis state of our planet. Today there is no industrial production of this material.

Or it is not about its direct implementation into practice for the broader public in architecture. Bacterial cellulose is an organic compound polysaccharide (C₆H₁₀O₅). Bacterial cellulose creates a fungus on the surface of the culture liquid based on the bacterial growth of yeasts and bacteria called SCOBYs (this is the yeast from the genus *Acetobacter*, *Sarcina ventriculi*, *Agrobacterium*, they grow in symbiosis with bacteria, especially *Acetobacter Xulinum*, which stands out for the highest productivity of cellulose and also the bacteria *Azotobacter*, *Rhizobium*, *Pseudomonas*, *Salmonella*, *Alcaligenes*) using a fermentation process, most often from tea infusion. We have vegetable and bacterial cellulose. Bacterial cellulose (BC) has a higher mechanical resistance (around 10-15 GPa) than plant cellulose. This material has strong potential for future use within the circular economy. (4). A new possibility to use this material is from the view of adaptable function and future building parts of urban architecture.

Photo 1. Bacterial cellulose (BC) in Petri dishes. Basic research-experimental growth



METHODS

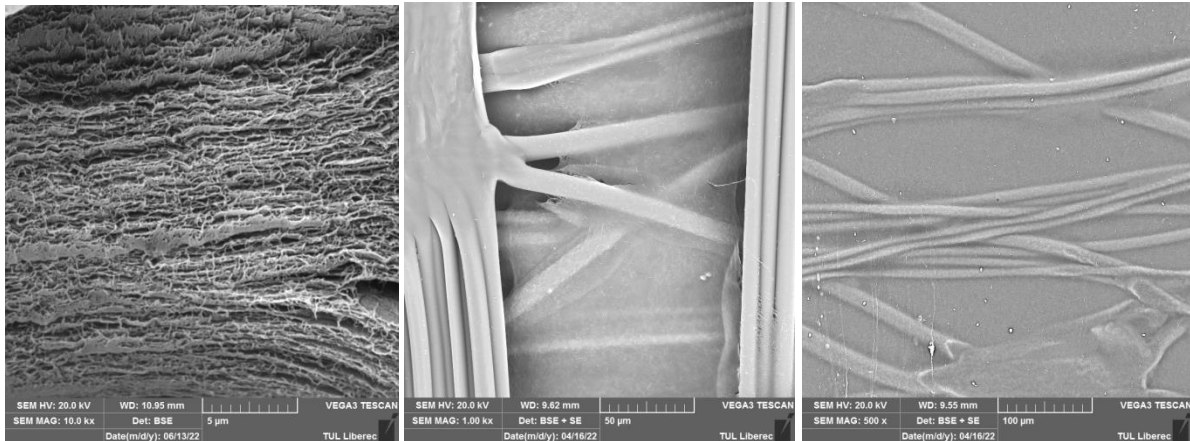
1. Microbial growing preparation

The preparation of the growing solution and the production phase is carried out in a bath prepared in sweet black tea. The ideal room temperature for tea is a maximum of 26°C. The fermentation process begins by pouring 1/10 of the volume of the *Acetobacter Xylium* bacteria bath into the prepared tea solution. The correct amount of bacteria is measured using a sludge-in-solution meter. Apparatus Densitometer McFarland type DEN for 16 ml tube. The device is intended for measuring turbidity in the range of 0.3 - 5.0 McFarland (100×10^6 - 150×10^7 cells/ml). The fermentation process takes place in a closed container, plastic or glass. Plastic tubs with a size of 15x30x15cm are used for laboratory tests. A plastic tub 50x40x15cm was used to realize the objects in this work. The fermentation process takes place most rapidly at air temperatures of 24-32 °C and above, and the growth efficiency doubles. The liquid level must be at least 5 cm high in the fermentation vessel. Or constant moisture on the carrier fabric if we use vertical growth. The quality and uniform growth of the fungus is most influenced by the air temperature and the quality of the bacteria, which creates a suitable environment between 3-5pH. After four days, a 3 mm thick fungus appeared. After seven days, the fungus was already hard and 5mm thick. The usual growth length at a temperature lower than 21 °C is the production of the same layer in 14 days. Growth is followed by the purification of bacterial cellulose. Cleaning is done by washing and boiling.

1.1 SEM microscopy

Bacterial cellulose, which adheres to non-woven fabric, was used for the experiment. It is a fiber carrier. In the pictures, you can see that in the section, the material is very porous, which causes a great affinity for water. It absorbs moisture well and evaporates relatively quickly. Other images show the adhesion of the bacterial layer to the fabric fibers. Here you can see that the structure of the bacterial cellulose is compact and delicate; it resembles a film. Images are taken on SEM (Scanning Electron Microscope) Up to 5nm, 150,000x.

Photo 2. Microscopic image from an electron microscope. Left section - high porosity. In BC law foils that attach to textile fibres



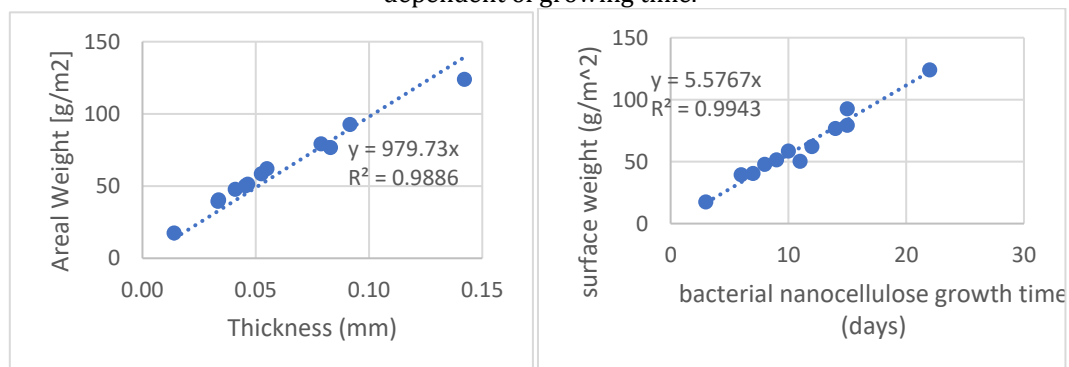
1.2 Thickness and Strength

To understand how to shape the material into an object, it was necessary to test some dependencies that can modify the material. One parameter changes the BC properties. The most important parameter is the thickness, which is related to the areal weight. Thickness, weight, and strength were measured for this experiment. The strength was measured on a Tira Test 2300 device with a range of 10kN, Standard for flat textiles, composites: EN ISO 6892-1, Sample size: 5x, 25x250 mm, Tensile speed: 10mm/min. The thickness depends on the time of growth and thus affects the appearance and functional properties of the material, such as thickness, strength, and transparency.

Table 1. The data shows 3 different BC thicknesses. Thickness is the main property that changes the character of all other properties. A thicker sample has a higher strength and weight than tin samples.

Samples number	Thickness (mm) composite	Thickness (mm) fabric	Weight (g/m ²) composite	Strength (N)
BC 1	1,97	0,42	720	400
BC 2	0,46	0,37	210	180
BC 3	1,3	0,34	363	350

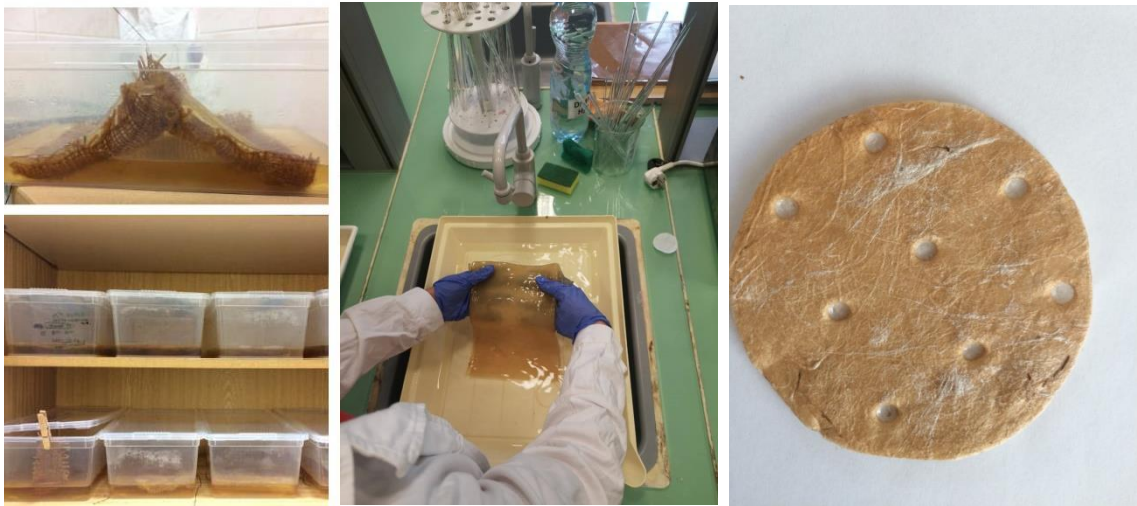
Graph 1. Right: Result of corelation between of areal weight and tickness. Left graph shows how weight is dependent of growing time.



2. Manufacturing 3D construction by bacterial growing process

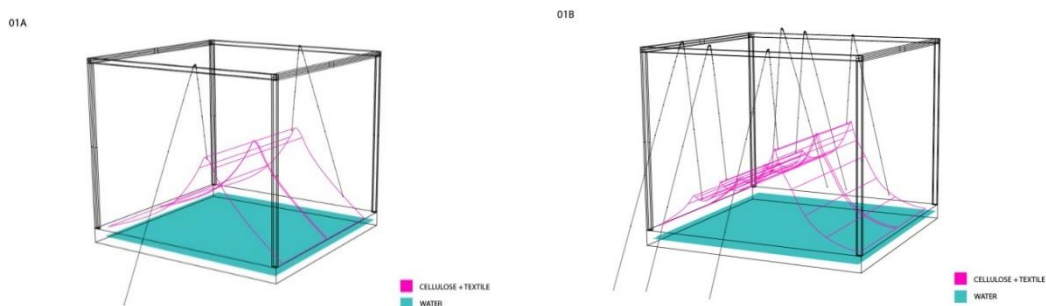
The first step is to prepare a small-scale model. For modeling 3D objects, textile samples of 15x30 cm were designed from non-woven milifé, viscose, and jute fabric, see Photo 3. These textile samples were placed in a container of the same size, 15x30 cm, with a total volume of 3 liters. A tea solution with BC is already prepared in the tub. See chapter 1. The non-woven fabric is placed on the surface. When a weak layer of BC fungus formed on the surface, the fabric was pushed above the surface. The ability of bacteria to attach to a fibrous textile structure was tested. The textile sample with the bacterial fungus on the surface was pulled using pre-fixed threads around the circumference of the container.

Photo 3. Bacterial growth in container on textile backing pad. Wet state of the bacterial layer on the fibre matrix.



After laboratory tests, the growing medium was methodically prepared to create a modeled shape in bacterial growth. This is a test of the hypothesis to produce a shaped bacterial structure directly in the process of bacterial growth. A 1:10 scale verification box was assembled. The model in the picture shows the production method. Fabric immersed in a solution with bacteria has a sag during production, observed during the work process. Bacteria that are above the surface begin to dry out and harden. The wooden box has dimensions of 50x30x90 cm. The solution was prepared in a flat container 50x30x15 cm. The rotok level is 10 cm. In the picture, you can see the thread attached to the textile matrix in one place. In the image on the left, the number of threads has been increased, and thus, the shape can be regulated by gradually pulling out the ropes.

Photo 4, 5. Model of fabrication of vertical growing bacterial cellulose



Sixteen threads with a length of 50 cm were prepared at equal intervals fixed on a textile matrix and pulled through a guide system in a wooden structure. The bag side length of the threads is fixed to a solid base. We control the bacterial growth rate thanks to the height protection of the wooden post on the vertical position of the box. The box is closed against rapid evaporation of the growing foil solution. Photo 6. shows the distribution of the numerical axis vertically and horizontally, which is used to extract the object from the bath. The number of pull-out threads is shown on the X-axis, and the vertical axis has a 1cm spacing indicating growth over time. The arrows indicate the direction of the cables.

Photo 6. Methods of demonstrating the production of a graphic 3D structure using bacterial growth from bacterial cellulose

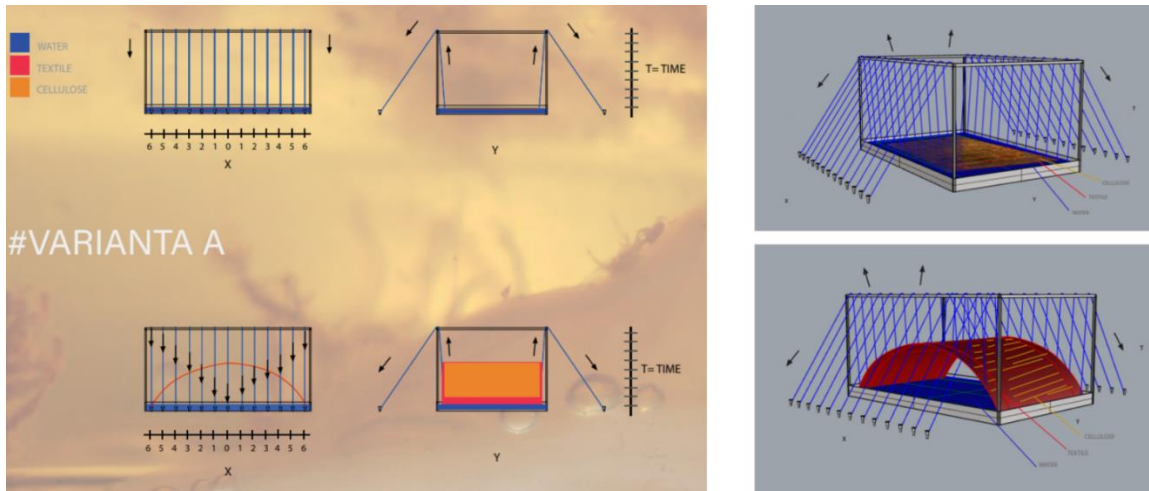
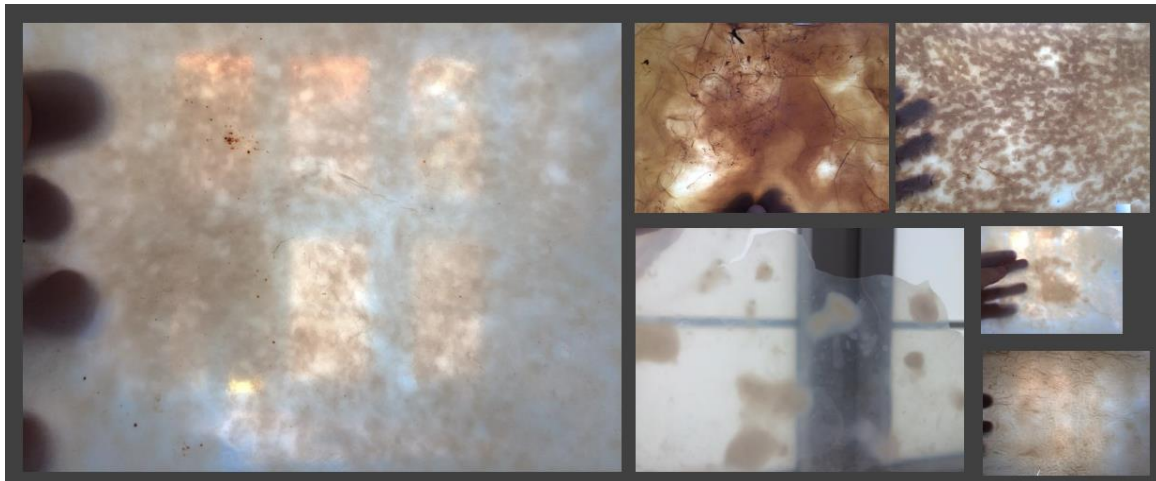


Photo 7. Photodocumentation of growing process



Photo 8. Transparent possibilities of bacterial cellulose self-growing material



3. Modeling 3D structure

The first step to modeling a design is to understand the material. The first modeling is done in paper models and models of wires and coated nanofibers because the structure of bacterial cellulose is similar to paper and grows by successive cross-linking of nanofibers. Electrospinning technology was used. Electrospinning is advanced nano-technology. The model on Photo 10 was done in Rhino and rendered in Blender. It is a theoretical view of future architecture made of biomaterials and uses a natural growth process to build it. From surface to space. Biological three-dimensional printing of bacteria.

Photo 9. Organic plastic sketch of architectural object PET nanomaterials on metal construction

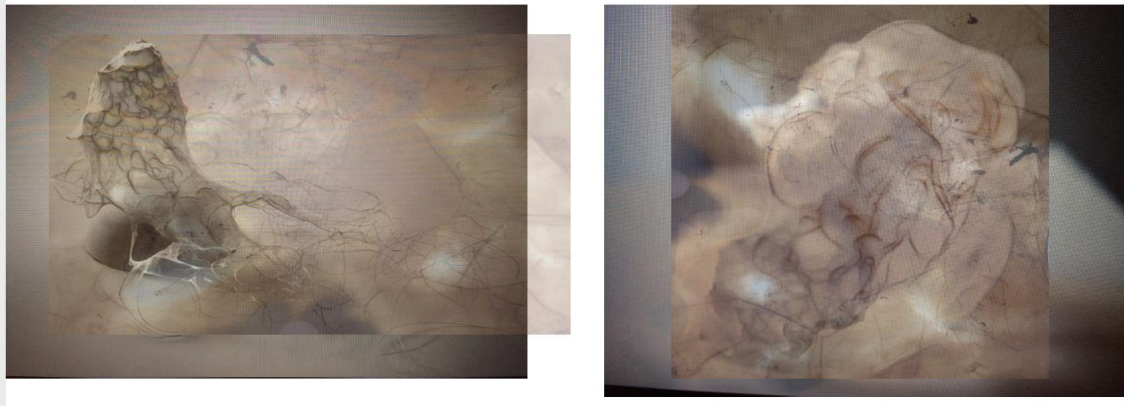


Photo 10. Model bacterial structure in exterior



RESULTS

Bacterial cellulose was successfully cured by vertical growth on a textile non-woven fabric. The basic parameters that were monitored were strength, transparency, and thickness. The thickness depends on the time of growth and formation and the material's appearance and functional properties. Here, count the thickness, the strength, and the less transparent and tougher the material. The material is not flowing. It is flexible like leather. The so-called origami procedure is created for modeling. It is formed from a surface by gradually folding or pulling out a flat textile with a BC object. The first modeling was done in paper models and models made of wires and coated nanofibers because the structure of bacterial cellulose is similar to paper and grows by successive cross-linking of nanofibers inside the system. The disadvantage of the material is the mushroom growth time of 1-2 weeks and the cost of cultivation nutrition (sugar). These "disadvantages" can be eliminated in the commercial field, where the fermented tea liquid will be sold, or plant waste will be used (8).

CONCLUSION

The basic parameters that can be developed, combined, and modified into future architecture are strength, transparency, and thickness, as well as the material's color.

This method of growing is an ecological principle for producing architectural structures applicable to urban areas. Pavilions of this type can be a good solution regarding a new environmental lifestyle or a source of material in times of resource crisis. The morphology of materials is based on the natural principle of growth. It describes ways to approach a new architectural principle found in the principles of adaptation and building in organic practices.

ACKNOWLEDGEMENT

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Thanks of used electrospinning technology for nanomaterials used for models Ms. Ing. Alena Šišková Opalkova PhD, Polymer Institute, Slovak Science Academy Bratislava.

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ARCHITECTURAL APPLICATION OF NANOFIBRE TEXTILE STRUCTURES WITH AN ADDED WATER RETENTION VALUE

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ABSTRACT

"Architectural application of nanofibre textile structures with an added water retention value" deals with new possibilities of application of textile and non-textile materials in architecture. The research focuses mainly on the specific properties of these materials, inspired by the natural structures of spider fibers. The paper describes which specific properties of the materials were of interest to our team and how we worked with the materials. In the article, we described the methodology of the material baseline, the practical challenge, and how we think about non-traditional materials in architecture and their immediate context with the environment. Furthermore, it describes the necessity of interdisciplinary collaboration over architectural topics that overlap with other technical disciplines, such as materials and mechanical engineering. Through the architectural prototype of the pavilion, one of the interim research results, we also look at the different ways of thinking about the issues described in the paper by individual specialists from the respective disciplines. This difference in thinking is of great help in research on architectural forms. As architects, we must emphasize the material, which has limitations in its eventual application and determines the final design of structures or architectural objects. Without the expertise and collaboration with other disciplines, we would be unable to contribute to architecture and construction research processes.

Theory and program philosophy

Introduction

This paper focuses on new architectural solutions for nanofibre and nonwoven textile structures, here mimicking the structures of spider webs in nature. Based on the project carried out between 2021 and 2022, the paper results look at the specific water retention properties from airborne moisture of a particular portfolio of materials. We selected the most suitable polymeric materials for architectural applications with team members through interdisciplinary collaboration with colleagues from textile faculties and departments at the Technical University of Liberec. As is already evident, the bulk of the paper is purely technical. In our opinion, this basic material research was necessary to understand the issue better and to put it in context. The material is the cornerstone of the whole project and, for our team, was closely linked to the spatial application. Based on the results proposed by the material research, a possible approach to applying new architectural construction. Such structures with the added property of water retention from airborne moisture could improve potable water availability in some locations worldwide. The process of water harvesting from atmospheric moisture inspired us, which we found for the first time under the known concept of fog harvesting (Olivier, 2014), which has been applied worldwide in different locations. However, according to our hypothesis, our nanofiber structure should be more efficient in water retention than conventional braided fog harvesting structures. Due to its structure and high specific surface area, similar to spider webs in nature, we could be able to water retained in the structure even under sunny and high-temperature conditions.

Furthermore, our research emphasized that the project relied on interdisciplinary cooperation with the TUL departments in all parts of the research. Thus, we can observe how the interconnection of the different disciplines results in a design according to reasonable design procedures. We described it as "classical" from a historical point of view, similarly to conventional building practices where building elements, their mechanical properties, and subsequent logic in terms of application in practice since time immemorial that humans investigate. This research describes how to proceed in such a process with new materials. It is, therefore, up to the architect as the primary coordinator of a team of experts to establish a form based not only on design but also on specific properties and applicability. Moreover, in the context of ongoing climate change, the architect must respond adequately, and his architecture must reflect these changes.

Inspiration

We took inspiration for our research at natural materials and essentially "architectural" spider web objects, especially the spatially voluminous spider webs created by spider colonies of various arachnid species. An example is the spider species *Agelena consociata*, which cooperates in certain climates to provide more efficiently for its life needs. These spiders can build web architecture together to obtain food, keep their eggs warm, or obtain water and then store it (Riechert et al., 1986). They do this with the help of a suitable, chemically specifically spider-formed filament with a different structural structure. Thus, there is a direct relationship between the material and its practical application (Finsterwalder, 2015). There is no fixed relationship between the classification of spiders and the type of webs they produce: species in the same genus can produce very similar or distinctly different webs. The same is true of the chemical composition of spider silk. Most spiders spin non-circular webs, with circular webs thought to be evolutionarily older. Like spider silk, we perceive the potential of chemically modifying a polymer solution that we could apply in a nanofiber layer for specific conditions (Fig. 1). Therefore, this means that given case, the architect could decide how its structure would be related to the surrounding environment and define the parameters according to the specific requirements of the individual properties of the structure. Like the same kinds of spiders worldwide, architects could programmatically change the design and purpose of such architecture and contribute to solving local challenges.

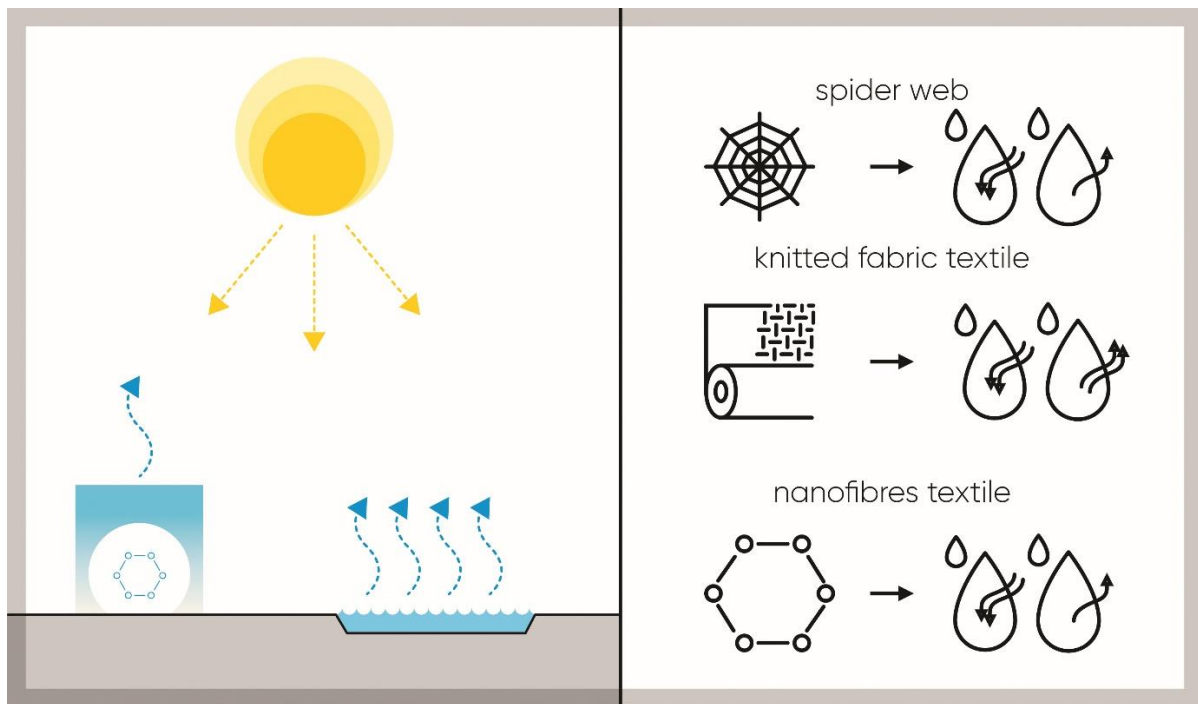


Figure 1. Conceptual diagram for nanofibrous structures to capture water from atmospheric moisture

Architecture, architect, and design

As already mentioned here, the fundamental parameter for the acceptable use of nanofibre structures is the knowledge of the material. The chemical composition of individual polymers from the subsequent nanofibre is applied and defines the resulting properties of such a structure. The material we must also effectively apply in a given space or environment. As we wrote, our inspiration can be seen in nature and the collaboration of certain spider species to create complex webs where each fiber has a specific meaning. Specific meaning can be as construct character, but other characteristic properties include water retention, efficient heat exchange for colony survival, and ultimately the preservation of prey. If we were to translate the whole process into the human world, then the architect is the leading design actor in the whole process. He is the one who will determine the issues suitable to be addressed by nanofibre structures and also the one who will respond by design to the environment to make the most efficient use of the structure to capture moisture from the air, as is the case here (Fig. 2). The design should also work for architecture to remember itself using the laws of physics. Therefore, its morphology is significant to the functionality of such structures, just as spider webs woven by spiders in the Mediterranean or the hidden habitat of rainforests could not function in a harsh environment (Knapczyk-Korczak and Stachewicz, 2021). Our team suggested a specific design process, but the architect's creative approach to construction and the search for new possible solutions are left to and required. Complete application process automation using robotic systems can replace spiders as workers (Gramazio and Kohler, 2014). The papers describe how to apply nanofibrous structures using centrifugal force. We used the nanofibre centrifuge device, which our team fabricated and modified accordingly. The nanofibre centrifuge provides an opportunity for rapid prototyping construction processes. For architects, this would mean additional possibilities in design processes.



Figure 2. Visualization of the possible form of fog collectors, using nanofibrous fabrics

Materials research and production of a functional pavilion prototype concerning the resulting water retention data of the individual materials

Brief introduction of the required material and design properties

The project looked at nonwoven and nanofibre(polymer) textiles for possible use in architecture to find new architectural concepts(forms) and the potential for capturing air moisture in our chosen materials and then using it as a potential water source. According to our hypothesis, the captured water could serve as a cooling element that could change the local climate in the structures of our proposed materials or as a source of utility or drinking water, depending on the technologies used. The fog harvesting concept works on the precipitation of air moisture on knitted or woven textiles of different types. These textiles then distribute the air moisture from precipitated droplets (water) into retention vessels for possible use (Klemm et al., 2012). We aimed to create similarly functioning architectural structures, potentially (unlike the classical concept of fog harvesting) capable of not only capturing water and moisture for immediate use. However, with the choice of appropriate materials, retaining the water in the structure despite adverse climatic conditions for this type of structure, such as extended dry periods, direct sunlight, Etc.

Methodology, search for specific materials suitable for use in architecture

The first step was to establish interdisciplinary cooperation. We then selected suitable materials to compile representative samples for the portfolio. Thus, the project involved the Department of Architecture (TUL), the Department of Nonwovens and Nanofibrous Materials (TUL), and the Department of Textiles and Single Purpose Machinery (TUL). Collaborating experts selected a portfolio of nonwovens and polymers with adequate hydrophilic properties.

The measurement methodology, we based on creating identical(standard) samples of the materials identified by the portfolio, which we subsequently exposed to air vapor in two different methods. The samples team members chose in the form of impregnated oak frames with dimensions of 15x15cm. As the wood itself is absorbent, the frames were impregnated before exposure to air vapor and weighed separately before and after exposure to air vapor for more accurate results. The test material was applied to the frames and tested according to the methodology.

Methods for measuring the specific water retention properties of individual material

For the first measurement method, we created an airtight box in which one sample at a time was placed together with an ultrasonic air vapor generator, which has the advantage of producing an air mist without heating the water itself. The fog produced by the ultrasonic fogger is very similar in size to fog particles and air vapor produced on land as a product of various physical phenomena. Our five-membrane nebulizer produces 1600 ml of air mist in 1 hour. The samples were placed in the box with the nebulizer for a certain period. Before insertion, the samples were weighed and their mass gain after removal from the box was compared. It also measured how much weight the sample lost over a specific period. This way, we can investigate each material's sorption and adsorption properties. The "box method" was time-consuming. To confirm our hypotheses of sorption and adsorption of mainly material samples, measurements were needed to speed up the whole process and obtain more conclusive results. Some materials activate their hydrophilic property after prolonged exposure to air vapor.

The second method responded to the need for more accurate sample measurements. A nebulizer we used was capable of injecting air vapor into the sample at high concentrations. Similar to the first method, we weighed the samples in the second method in the dry state. After exposure to the air vapor, we compared their mass gained over a while. We reduced the time required to activate the polymer samples' sorption properties by one-third by the second method. The resulting ratio of sorption and adsorption of each material shows us both methods in the graphs presented here, which we have developed for better clarity of the resulting data. In the second method, due to the high and fast concentration of air vapor, it was possible to measure the dripping of individual sample pieces. This attribute our team added to the measurements at the request of the Department of Textile and Single Purpose Machinery (TUL). Their interest was to validate a specific fiber called nanocomposite yarn (Valtera et al., 2019) for possible distribution properties of water converted from air vapor. It is a continuous yarn with an additional layer of nanofibers added. The subject of interest is the possible gravity-assisted water distribution property inside the nanocomposite yarn. According to our hypothesis, the nanofiber layer could retain water in the central filament even at higher temperatures. It could distribute water by gravity through a drip into retention reservoirs for more extended periods. This aspect of the nanocomposite yarn was not a fundamental element of the project, and we will further investigate it in future experiments. However, the project took this potential feature into account during the application phase of the project (Fig. 3).

Selection of materials for the pavilion

Material Properties are for architects closely linked to the final application and design in the design process. Therefore, the final part of the project also verified the possible principle of production of architectural objects based on the resulting data. Based on the results of the investigation of the different materials, we concluded that it is possible to use polymeric materials to create an architectural object(structure) for the possible capture of water from atmospheric moisture. We chose a nanofibrous composite yarn for the fabric. It will carry the nanofiber layer and then apply the polymer PLA (polylactic acid). Although the portfolio of materials investigated does not contain PLA, it was chosen based on properties similar to the polymers we investigated in hydrophilicity and structure (Gross and Kalra, 2002) (Fig. 4). However, PLA has better mechanical properties in flexibility and strength than the polymers studied. It is also more suitable for the application we have chosen to produce the final object. Another critical aspect of choosing PLA polymer is its biodegradability. The application we carried out used a modified nanofiber centrifuge, which uses centrifugal forces to convert the polymer into nanofibers. Team members modified the centrifuge to meet the required criteria for application to larger objects. The primary criteria are device ease and handling safety, ability to be applied over large areas, and efficiency. The machine uses centrifugal force to produce nanofibrous structures by combining microfibrils with nanofibrils. Thus, the final object we made up of just the nanofibrous structure. In our opinion and consultation with colleagues from the faculties above, for our purposes of capturing water from airborne moisture, a structure combining microfibrils and nanofibrils is sufficient to achieve the desired results and possibly improve the functional properties of existing fog catcher concepts (Jarimi, Powell and Riffat, 2020).

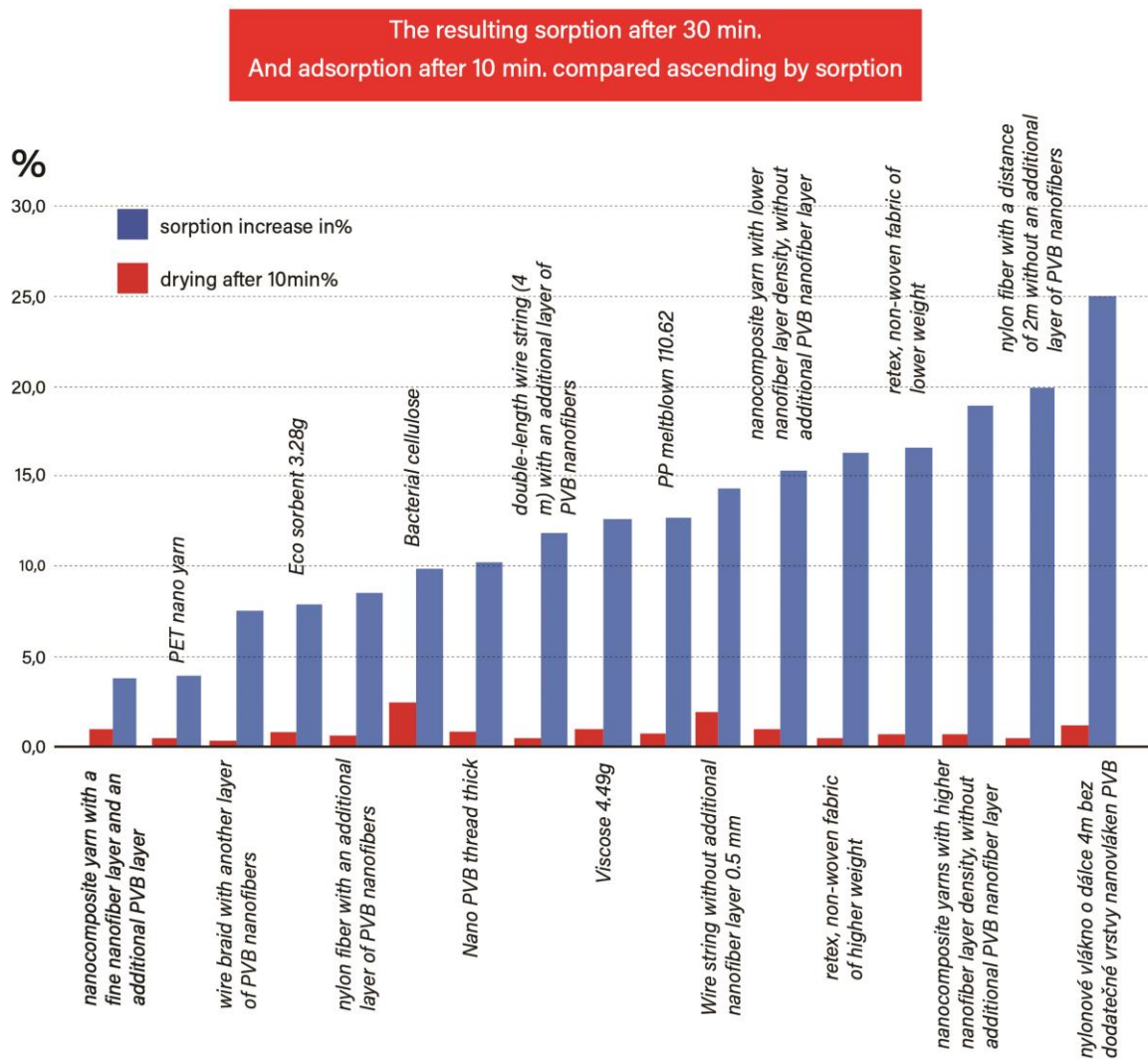


Figure 3. Data resulting from measuring the retention properties of a selected portfolio of materials

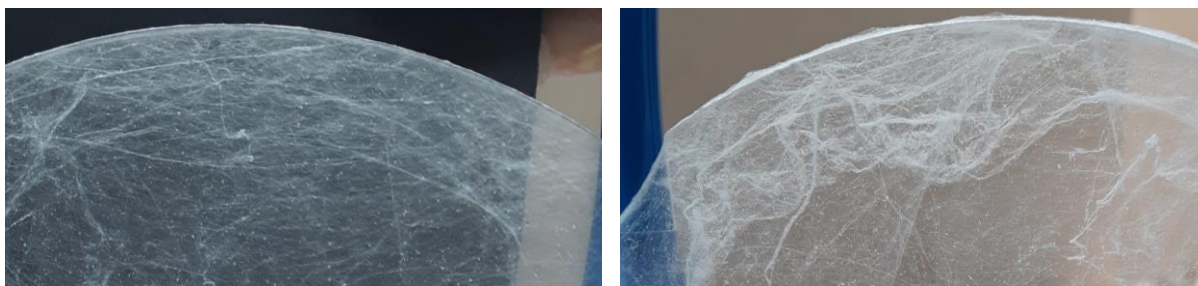


Figure 4. Nano-micro fibrous layers of PVB (left) and PVA (right) polymers made of the centrifugal spinneret(centrifuge); Micro-nano fibers were investigated on morphology and spinning performance as 10,12,14,16 and 18 % polymer solution.

Application of knowledge in the realization of an architectural object and evaluation

Construction of the resulting object

The resulting object we created within the framework of a student workshop. The design was proposed based on the research findings so that we could produce it within the available possibilities of the FUA TUL. It is a simple shape demonstrating the possibilities of the process of working with the materials studied. The shape consists of two solid circular structures of 1.5m and 1m (Fig. 5). The circular structures are plexiglass (Fig. 6), and the space between both parts is 2m in height. The circles are rotated 125 degrees toward each other. One hundred twenty-eight nanocomposite ground wires connect the circles. In the research, we will make measurements of the possible drip and drainage of water by gravity along the nanocomposite yarn in the following stages. The nanocomposite yarns we chose in three different nanofiber layer designs for the quality of the water drainage and distribution our team can verify in further experiments (Fig. 7). A layer of PLA polymer in microfibers and nanofibers was applied to the support structure using a nanofiber centrifuge (Fig. 8). Due to the chosen process and materials, the structure is mechanically robust, and manipulation is much easier. The final object and architectural applications are part of the dissertation of Ing. arch. Jan Koníček (Fig. 9,10). The doctoral student will subject the pavilion to further tests to verify its functionality and demonstrate the achievement of better-required water retention properties from air humidity.

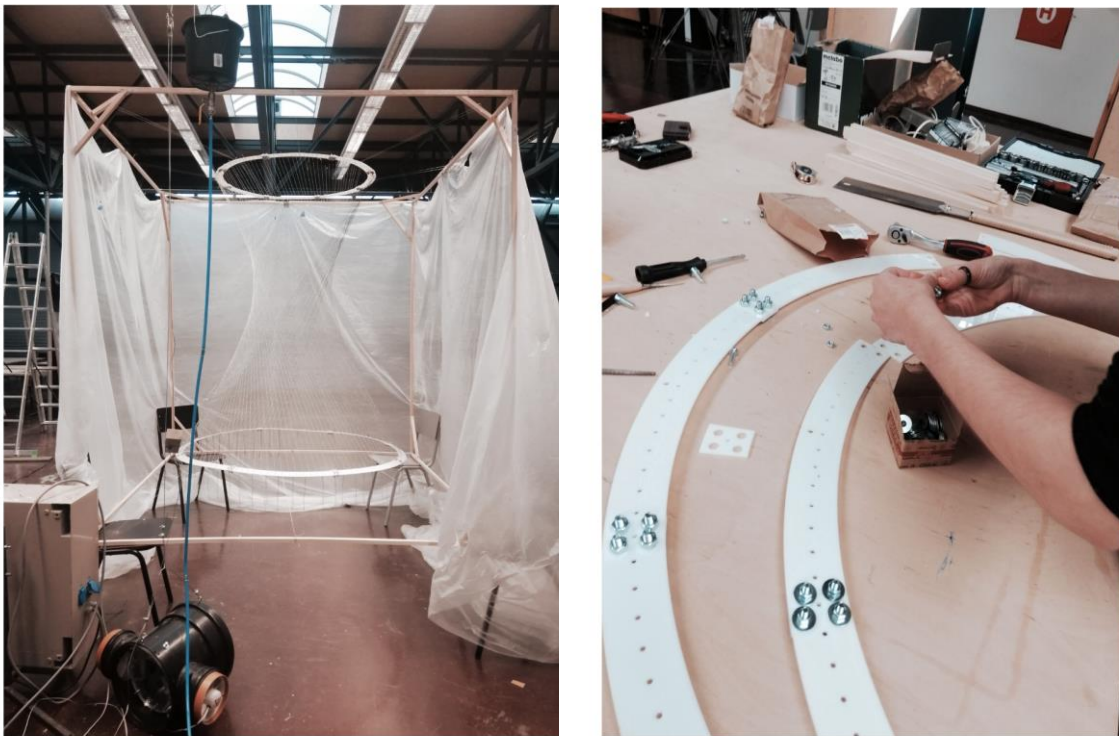


Figure 5. Solid circular structures of 1.5 m and 1 m (left)
Figure 6. Material and joints of the construction (right)



Figure 7. *The nanocomposite yarns, chosen for construction (left)*

Figure 8. *Application of nanofibre layer by centrifugal spinneret (nanofibre centrifuge) (right)*



Figure 9. *A final result of the student workshop (first conception of function pavilion from nanofibres) (left)*

Figure 10. *The detail of the pavilion construction layers (right)*

Potential benefits in the area of construction

Thanks to the primary research carried out within the project, methodologies and procedures for measuring and working with nonwovens and nanotextiles could establish for other researchers and architects. The results show the trend of nanotextiles and nonwovens and the ratio of their sorption and adsorption properties. The methodology used for the resulting project has proven to be functional for verifying the properties of materials with specific properties. The results and methodologies will be considered in subsequent additional measurements to support the seriousness and credibility of the research. The resulting data we used to select materials from the portfolio under investigation and subsequently confirm or refute our hypotheses for these samples. All findings can be further used and investigated empirically for selecting suitable materials and as a basis for the possible design of architectural structures. The research findings can apply to stand-alone buildings and pavilions and the design of possible façade elements. Such elements are suitable for water harvesting and its subsequent use for the building or to create a suitable climate and conditions for green facades and cooling.

Conclusion and insights, societal relevance, economic impact

The research findings we can develop and the whole issue has the potential to be in more or less detail elaborated. However, the project has provided insights into using nonwovens and nanotextiles in architecture and their possible applications. It also brought closer the water retention properties (from air moisture sorption) of the nonwoven fabric materials and nanofibrous polymer structures presented in the portfolio. The project has shown how we could link specific materials, their properties, and their subsequent application to a specific process in creating natural architectural objects. Furthermore, the current project documentation can serve as an inspiration and a manual for creating new concepts and research projects in various fields of civil engineering. Furthermore, it opens a view on the use of non-traditional materials in architecture and poses a challenge to the architects themselves, which can bring new architectural and technical solutions.

Our methods and architectonic view could help to find other new materials and processes for creating efficient structures that capture water from air vapor for subsequent use. We have also shown that architectural quality, we determined by the materials' structure, their application, and the architect's creativity. The resulting object knowledge we derived from the resulting materials research data. The interdisciplinary collaboration points to the necessary connection of experts through specific issues. The final result is then the product of the expertise of individual team members with different disciplinary backgrounds. Evidence of interdisciplinary cooperation in the search for answers to particular questions in the field of architecture is that our project, led by the Faculty of Architecture (FUA TUL), was essentially empirical research in textile and, to some extent, mechanical engineering. Without the ideation of the team members with a focus on architecture, the project would not have come about. Thanks to such interdisciplinary collaboration, we could defend the form both in materials engineering and the field of architecture.

At the same time, however, functionality is not lost, and form can, in turn, support it with its effectiveness in a well-set design by the architect. The project was not inherently concerned with the same economic factors of production. However, the result is the finding of materials that improve the efficiency of design solutions by fog harvesting concepts. Yes, on the issue of financial cost, in direct comparison with fog catcher projects made of synthetic knitted fabric, we would get a higher purchase price. However, we believe that assuming further research on a similar topic. We would balance the financial factor with better functional properties, such as longer adsorption time and higher efficiency. A significant element supporting the research potential of such materials is their biodegradability. In our case, we achieved the object's 80-90% biodegradability by using PLA (polylactic acid) (Gross and Kalra, 2002). The structural design of nanofibre buildings also encourages architects to find new and creative ways to find structural solutions.

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BODIES WITHOUT ORGANS

Tactility, Internet of Bodies, APIs as Worldmaking Agents

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Abstract

Spaces and bodies are not what they used to be. They are no longer merely isolated and static in their physicality, but extended, plastic, virtual, augmented, mixed, and networked. When physical spaces lost their accessibility during recent critical times, spatial computing technologies and SocialVR platforms have not only entered and transformed our built environments into places of remote socialization with their ability to stimulate telepresence but also afforded new online modes of experiencing spatiality and spatial production strategies which build upon the notions of telepresence, and sociability. Consequently, the socio-spatial impacts of SocialVR platforms fundamentally redefine the spaces we inhabit.

Following this, the multi-user and fully-bodied mixed reality experience of *Bodies Without Organs* investigates online modes of spatial production that include objects of physical and digital materialities inside the physical/virtual overlap. The project examines the notion of embodied telepresence, tactility, avatars, and sociability through assembling a series of intelligent API (Application Programming Interface) such as Pose Estimation, Hand-Tracking, and Passthrough as building blocks that constitute a spatiotemporal and tactile mixed reality experience, allowing for a shared and embodied socio-spatial practice, rendering itself onto the dwelled physical space with the participation of users' telepresence from both local and remote places. Arguably, here, the built environment turns into a telecommunication medium where proprioceptive bodies and spaces are streamed across a spatial network. Thus, the project seeks to extend the disciplinary boundaries of architecture by assimilating new media practices that can open up seamless communication between physical and virtual architecture.

Keywords:

VR/AR Changing Physical Space, Assemblage Theory, Becoming, Proprioception, Social Distancing vs Physical Distancing, Embodied Telepresence, Here and There, Gaming as Design Tool, Avatars as Posthuman Bodies

Introduction

This paper contributes to generative-research and addresses a readership on the effects of new media, theory, and spatial telecommunication on architecture. In juxtaposing XR installations (e.g. IoT, API, VR, AR, Spatial Web, Motion Tracking) with spatial design, social media studies, and posthuman theory, the thesis seeks to extend the disciplinary boundaries of architecture by practising its assimilation of new media technologies.

The title of this paper *Bodies Without Organs*, refers to a philosophical concept by Deleuze and Guattari. The notion of 'body without organs', or 'BwO', is hereby adopted as a philosophical point of departure while trying to demonstrate how this could open up a reading for understanding our contemporary experience of embodiment with social media technologies, a condition in which the human subject is increasingly inhabiting new spatial productions that continuously entangle online and offline materialities.

As a result of the COVID-19 pandemic outbreak and the ensuing physical limitations, isolation, and lockdown measures, our interactions with one another and our real-world and virtual environments have been significantly impacted. The migration of our social lives online has been one of the most transformative aspects, compelling us to experiment with new modes of coexistence in the digital realm. Because of this, our premise of space has been profoundly altered in a world where physical distance is the norm. In response to this, a new form of social interaction has emerged in human subjects' communication and social constructs: SocialVR.

Social VR represents a fundamental shift in our perceptions of ourselves, our identities, and the architecture of our social lives. In other words, it has a significant impact on how we portray our social selves, our inhabited spaces, and how we interact with others in both physical and virtual spaces.

In this light, the paper investigates further into the outcomes of a social mixed reality project called *Bodies Without Organs*, which rigorously refers to its theoretical roots to experiment with methodologies exploring our present condition of embodied experiences in virtual space. Taking this into account, the project considers the expression 'becoming-with-avatar' as a generative mode for the social mixed reality experience, with the objective of expanding the deterritorialized human subjects' tactility, presence, and sociability caused by isolation and lockdown in a networked space through embodied telepresence with the applications of intelligent API agents.

Research Context

Theoretical Reading of BwO

Consider a blind man with a stick. Where does the blind man's self begin? At the tip of the stick? At the handle of the stick? Or at some point halfway up the stick? These questions are nonsense because the stick is a pathway along which differences are transmitted under transformation, so that to draw a delimiting line across this pathway is to cut off a part of the systemic circuit which determines the blind man's locomotion. (Bateson, 1972).

What is the relationship between the environment, the stick, and the blind man's perceptual apparatus? Gregory Bateson's famous thought experiment suggests that the blind man's cognitive and proprioceptive processes are not located in the brain. Instead, through the object of the stick, perceptual modes extend from the 'boundaries of self' to the environment, where the material properties of the stick, the surroundings, and the body combine in their affordances to build a new sense of corporeality.

The object of the stick, which is an extension of the human body, changes the way in which the body and the environment are connected. In this regard, the blind man conceptualizes the stick as an integral part of a larger network consisting of humans and objects. This instance of the interchangeability of human sensorium and technological objects blurs the boundaries of the human as an autonomous subject. Instead, it portrays it as a mix of human and non-human actors working together through a network.

In a similar vein, Deleuze believed that the traditional concept of the human body as a static and unified entity was no longer applicable in the contemporary era. He contends that our bodies are currently more akin to networks or machines, with interchangeable parts that can be rearranged or reconfigured according to our needs. Deleuze expresses the openness of the human subject assemblage by employing Antonin Artaud's philosophical concept of the body without organs, in which the subject moves from one assemblage to another via deterritorialization and reterritorialization¹. According to Deleuze and Guattari, the philosophical concept of the body without organs is defined as a body that is not determined by specific organs or organ functions but rather as a fluid entity that is constantly changing as a result of its environment and the forces acting on it. In Chapter 6: How Do You Make Yourself a Body Without Organs? of *A Thousand Plateaus*, Deleuze and Guattari provide a definition of the BwO:

A BwO is made in such a way that it can be occupied, populated only by intensities. Only intensities pass and circulate. Still, the BwO is not a scene, a place, or even a support upon which something comes to pass. It has nothing to do with phantasy; there is nothing to interpret. The BwO causes intensities to pass; it produces and distributes them in a spatium that is itself intensive, lacking extension. It is not space, nor is it in space; it is a matter that occupies space to a given degree—to the degree corresponding to the intensities produced.

It is non-stratified, unformed, intense matter, the matrix of intensity, intensity = 0; but there is nothing negative about that zero; there are no negative or opposite intensities. Matter equals energy. Production of the real as an intensive magnitude starting at zero. (Deleuze, Guattari, 1980)

The definitions suggest similarities between the characteristics of BwO and human plasticity as matter that can be occupied, populated by intensities, and subsequently moved into new assemblages through the ability to exchange its parts.

According to Deleuze and Guattari, each actual body besides its routines has also a virtual dimension that contains a vast repository of potentials of connections, effects, and movements. Deleuze refers to this set of potentials as the BwO. To intentionally experiment with oneself in order to discover and activate these virtual potentials is to 'make a body without organs'. These potentials are mainly actualized through encounters with other bodies, or BwO, or what he calls 'becoming'.

Furthermore, for Deleuze and Guattari, A process of transformation, flight, or movement within an assemblage is called 'becoming.' The process of 'becoming' serves to accommodate for relationships between the individual parts of the assemblage rather than considering it a whole, where the specific elements are kept in place by the organization of unity. In the process of 'becoming, one element of the assemblage is drawn into the territory of another element, altering its value as an element and creating a new unity where characteristics of the individual parts are replaced by the emerging properties of the whole. (DeLanda, 2016)

Discovering what a body can accomplish and what a body may become sensitive to is part of becoming a BwO. This process involves the development and organization of new senses, forces, and problems and through activating ones' virtual potentials. According to Rosi Braidotti, the contemporary philosopher and feminist theorist, (2011) the BwO is "a leap forward [...] toward a creative reinvention of life conditions, affectivity, and figurations for the new kinds of subjects that we have already become". The concept of BwO serves an account for the posthuman theory, which favors the perspective of drawing attention to nonhuman entities, decentralizing the human subject in a process of uncertain and open-ended becoming.

In a similar vein, Katherine N. Hayles refers to the widespread nature of the distributed subject of the human condition as 'cognitive assemblages', "in which cognitions are distributed between human and technical actors, with information, interpretations, and meanings circulating throughout the assemblage in all directions, from humans into machines, then outward from machines back to humans." (Hayles, 2018).

¹ In critical theory, deterritorialization is the process by which a social relation, called a territory, has its current organization and context altered, mutated or destroyed. The components then constitute a new territory, which is the process of reterritorialization. (Deterritorialization, 2022.)

According to Hayles, technology significantly contributes to the formation of human identity and experience. “When the individual is seen as part of a distributed system, rather than leaving the body behind, it is necessary to extend embodied consciousness in highly specific, local, and tangible ways that are unimaginable without electronic prosthetics” (Hayles, 1999). Hayles’ concept of the posthuman as an assemblage is the literal merger of material and information, in which boundaries get blurred between ‘material’ and ‘information’ consisting of assembled parts and sub-parts, which dynamically change.

This decentralized image of the human condition undermines conventional ideas of the body as a single, independent entity. Instead, it considers the body as a complex system of interconnected pieces that combine human and nonhuman elements in a way that benefits the whole. In other words, for Hayles, our subjects have transformed into “an amalgam, a collection of heterogeneous components, a material-informational entity whose boundaries undergo continuous construction and reconstruction.” (Hayles, 1997)

Similar to this, Colomina & Wigley (2016) emphasize the mode in which human-machine assemblage constantly shapes and brings new intelligence to this synthesis. In *Are We Human?*, they assert that the human subject is increasingly constructed as an assemblage of telecommunication networks, digital interfaces, clouds, and databases as the plastic character of human subjectivity extends into and through our prosthetic digital technologies to shape its plastic nature:

An array of constantly evolving algorithms—artificial neural networks and deep learning systems—monitor every gesture we make and continuously rebuild intricate statistical images of each of us. Each Internet search, post, transaction, and physical movement modifies this quantified human. The fact that you are reading this sentence may leave a trace. Self-design turns out to be an uncanny encounter between what we offer and the image of ourselves that we are offered on our little screens. The algorithm shows us what it thinks we want to see, as if in a strange kind of mirror that has become the new space of design. (Colomina, Wigley, 2016)

By emphasizing that we are the only species capable of design, Colomina and Wigley challenge the logic of our self-perception. They put forth the notion of the ‘plastic human’, who is continually designing itself through technology, whether through a shoe that alters the structure of our feet, a cell phone that modifies the wiring in our brains, or the stick of the blind man extending its sight through tactility. They claim that people live in a world of datascares, information, and viruses. Calculations and decisions are made by algorithms. The modern city is frightening, and possibly the real person is inside the databases rather than here.

Seeing oneself in a database and constructing oneself an online persona has become commonplace over the past decades with the increased use of digital media and social media platforms that have shown us that they can be closely integrated to mediate our subjects, allowing us to construct and distribute them. Attention, cognition, and haptic and proprioceptive interactions constantly feed into the realm of machines “in exchange for global infrastructural services that provide each of us a fixed and formal online identity and a license to use their services.” (Bratton, 2015). When we see social media and digital technologies as part of our synthetic embodiment, we see the body as a complex system of interconnected parts whose emerging qualities can’t be reduced to its components any longer.

We can see how this human-machine assemblage has exposed a new spatial dimension of design territory premised on identity politics, sociability, and community in today’s Internet and media technologies, which are converging on the idea of personalization and social networking.

With the vast amount of information and resources available online, individuals are able to create and curate their own persona or identity. Through social media platforms, blogs, and other online channels, people are able to share their thoughts, experiences, and perspectives with the world. This ability to share and connect with others has led to the development of strong online communities and networks. For many, the Internet and digital media culture have become an integral part of their lives as they provide a space for self-expression and connection with others. It is therefore necessary to investigate what the implications of these technologies are for human subjects and for the architecture of our spaces of coexistence.

Spatial Emergence

In this regard, the outbreak of the COVID-19 pandemic and the resulting physical restrictions, isolation, and lockdown measures have profoundly affected how we interact with each other and our physical and virtual surroundings. One of the most significant changes has been the way that social interactions have moved online, forcing us to seek alternative ways of being and living together in virtual spaces. This has had a profound effect on our understanding of spatiality, as we are now living in a time where physical distancing is the norm. In response to this, a new form of social interaction has emerged in human subjects' communication and social constructs: SocialVR.

Social Virtual Reality, or SocialVR (e.g., SecondLife, RecRoom, AltSpaceVR, High Fidelity, Sansar, VRChat, etc.), is an Internet-based social interaction paradigm mediated by immersive technologies and taking place in predesigned three-dimensional virtual worlds where individuals or collectives represented by an avatar, may engage in real-time interpersonal conversation and shared activities. (Dzardanova E., Kasapakis V., Gavalas D., 2018).



Figure 1 ./studio3 Master Your Disaster Student Exhibition at Sansar

This technology has been used for years in gaming and entertainment, but its potential for social interaction was largely untapped until recently. While SocialVR is simply another form of online communication, its implications for emerging architectural spaces are much broader. SocialVR technologies are transforming our spatiality by creating new ways of experiencing the space in which we communicate through the production of digital environments that can be experienced in embodied ways.

More specifically, SocialVR allows users to interact with each other in virtual reality (VR), creating a sense of presence, telepresence², and co-presence even when they are physically apart. (Oh, C. S., Bailenson, J. N., & Welch, G. F., 2017)

² One definition of telepresence is "one's sense of being present in the mediated environment rather than the local physical surroundings" (Steuer, 1992). The user's perception of the environment and space in the mediated world is closely related to this aspect of presence. A person's "virtual self is experienced as the actual self" to a greater or lesser degree when engaging in self-presence, as opposed to telepresence (Aymerich-Franch et al., 2012). This aspect of presence is distinct from telepresence because it has nothing to do with sensory realism but rather with the extent to which one may empathise with and feel like an extension of one's virtual body, emotions, or identity (Ratan and Hasler, 2009). Last but not least, 'social presence', also known as 'co-presence', is the "feeling of being with another" (Biocca et al., 2003) and is based on how easily one perceives to have "access to the intelligence, intentions, and sensory impressions of another" (Biocca, 1997).

In contrast to conventional means of telecommunication based on transmitting information over distances in the form of voice telephone calls, data, text, images or video, SocialVR is concerned with spatial and embodied telecommunication methods of the Internet that stream objects, bodies, and spaces across remote places. When compared to traditional screen-based telecommunication systems, VR-based telepresence systems applied for remote spatial socialization, allow users to more directly express their feelings and impressions through sharing their physical presence alongside voice information, spatially.

In the past years, transitioning from screen-based communication to wearable spatial computing technology such as VR and MR glasses, social VR has become an emerging way of gathering, socializing, and sharing from our homes.

The ability to provide an embodied sense of telepresence—an experiential state of being fully present in a live virtual space remote from one's physical location—is what makes these technologies and their application interesting as a medium of spatial production moving towards what has become a social space of telecommunication.

SocialVR, therefore, represents a fundamental shift in how we perceive ourselves, our identities, and the architecture of our social lives. In other words, it is profoundly affecting the way we think about our social selves, our inhabited spaces, and how we interact with others in both physical and virtual spaces. This also brings about a new emerging condition of corporeality, which leads human subjects to question how and through which sensoriums we inhabit this world.

Legacy Russell, in her *Glitch Feminism: A Manifesto*, insists on dissolving the gap between the digital world and the real world, to which we are always connected. Her Manifesto offers a new ecological reading of questions such as How do we find out who we are within this digital era? Where do we create the space to explore our identity? She proposes our relationship with our digital personas in a provocative and meaningful slogan: "Usurp the Body, Become Your Avatar!" (Russell, 2020). Becoming your avatar is then embracing your mediated online character. Becoming your avatar is not just a political act but also a mode in which the materiality of online culture crystallizes itself AFK and affords new subjects and ideas for worlding³ to emerge.

How then can we think of 'becoming' as a method for worlding? What kinds of spatialities can this hybrid human subject open up? How does SocialVR transform places? What would it mean to live in different dimensions at the same time, and what implications does this have for our private and public spheres?

³ Worlding is a particular blending of the material and the semiotic that removes the boundaries between subject and environment, or perhaps between persona and topos. Worlding affords the opportunity for the cessation of habitual temporalities and modes of being.



Figure 2 *Bodies Without Organs Social Mixed Reality: Local Multi User Experience*

Objective:

Bodies without Organs - A Social Mixed Reality Platform⁴

In order to address these questions, the following section of this paper will explore the creation of a SocialVR project called *Bodies Without Organs*, which was designed to investigate the contemporary condition of our embodiment and our spatial practices after adopting new social behaviors during COVID-19-related critical times, such as isolation, lockdown, and social distancing, that have forced us to seek alternative modes of being together. The project refers to the socio-spatial impacts of media, investigating how new media and communication technologies could shape and transform the spatiality of our everyday lives.

Considering this, the BwO multi-user mixed reality project explores online modes of spatial production strategies that incorporate objects with both physical and digital materialities into a physical/virtual overlap: it creates a multi-user and multi-location spatial platform that transforms the inhabited space into a public space of social interactions by projecting remotely shared spatial content and embodied avatars onto the physical environment.

This embodied spatial platform focuses on an extended architectural practice called 'socio-spatial' that investigates the notions of **embodied telepresence** and **sociability**. Here, spatial computing turns the built environment into a medium of spatial telecommunication where embodied telepresence and social interactions taking place in a virtual dimension are hosted and shared across a network.

The project considers the aforementioned 'assemblage thinking' as a methodological approach towards understanding how complex social, technical, and cultural spaces are established and maintained by multitude heterogeneous entities to constitute presently human subject. Thoroughly tied to notions of fluidity, complexity, and exchangeability, 'assemblage thinking' offers a practical and theoretical foundation which allows the project to investigate the mediated emerging spaces of human sociability.

This social mixed reality experience that interweaves bodies, the Internet, and new media technologies with architectural space requires a more detailed explanation.

⁴ The project BwO installation was developed at ./studio3 Institute for experimental architecture as a part of a Generative PhD supervised by Univ. Prof. DI Kathrin Aste. The ./studio3, a unit of the Faculty of Architecture at the University of Innsbruck, researches and teaches at the interface of experimental architecture, contemporary art and culture, investigating both the correlation between architectural design and the artistic process of creation and their significance for real and virtual space. In interaction with art, culture, media, and technology, a transdisciplinary approach is pursued that understands design as an experimental epistemic practice, as a process that both scientifically explores and artistically discovers architecture in order to creatively meet the complex challenges of our time. By combining assemblage as a compositional, articulated, and tectonic design principle with bricolage as a material, resource-saving, and even compromising implementation strategy, studio3 situates its practice and teaching of architecture that is both artistic and socially and environmentally aware.

Methodology:

Assembling Intelligent API agents or How to Make Yourself a Body Without Organs?⁵

How does the coupling of the virtual avatar with the human body extend the bodily and spatial affordances within the physical/virtual overlap?

As stated in the introduction, 'making oneself a body without organs' entails experimenting with the virtual potentials of the human body and is always already a process of becoming where one piece of the assemblage is drawn into the territory of another piece, exchanging its value as an element and bringing about a new unity. The project uses the notion of becoming as a methodological concept for creating interactive virtual avatars in which many nonhuman things participate as subjects, in reference to Haraway's (2008) statement that "to be one is always to become with many."

Considering this, the project takes into account the expression 'becoming-with-avatar' as a generative mode for the social mixed reality experience aiming to expand the deterritorialized human subjects' tactility, presence, and sociability caused by isolation and lockdown in a networked space through embodied telepresence.

The importance of embodying avatars to evoke the sense of telepresence in virtual environments has been widely discussed by Taylor (2012), for whom, presence is a key feature of immersive virtual worlds. It gets down to the core of what it means for an experience to have the 'genuine' quality that tells us, 'I am here' (ibid., 2012).

For Taylor, the primary aspect of presence in digital spaces is how it manifests as an embodied activity. One becomes rooted in the virtual environment through a performance of the body, in this case, through the avatar. (ibid., 2012). However, the key to evoking the sense of presence is the social interactions that situate it in a social scenario. Subsequently, its consideration of 'presence' is the sense of being with other people in a shared virtual environment or, equivalently, the sense of togetherness.

Therefore, the project is concerned with the creation of a virtual avatar for embodied telepresence that manifests its properties in human cognition, perception, tactility, and proprioception. In order to achieve this human-avatar synthesis the project assembles API agents in the Unity Game Engine.



Figure 3 Bodies Without Organs Social Mixed Reality: Spatial Telecommunication through Embodied Telepresence

⁵ In their book *A Thousand Plateaus* (1980), Gilles Deleuze and Félix Guattari pose a very specific query: "How Do You Make Yourself a Body Without Organs?" It may be important to notice that Deleuze himself does not provide a substantial answer to this issue. This puzzle is addressed in detail in the *Plateaus* article of the same name, in which the *Body without Organs* (BwO) is defined along with its role within Deleuze's apparatus of desire and several examples of bodies that appear to satisfy the BwO's stated criteria are provided.

API is the acronym for Application Programming Interface, a software intermediary that allows two or more applications to talk to each other. (Marathi, 2011). Today, most social media companies offer APIs so third-party developers can build new applications on top of their platforms. Different APIs have the ability to connect different pieces of software to create new and innovative applications. An API is often used to refer to web APIs, which allow communication between computers that are joined by the internet (API, 2022). As protocological⁶ objects, APIs allow interested parties to access the data and functionality of online services in a very controlled manner. (Bucher, 2013). Also, developers and researchers can access the API to retrieve, store, and manipulate digital traces left by the users for further empirical studies (Lomborg, Bechmann, 2014).

In the context of this project, the human body is perceived as BwO, an open and plastic territory—the place upon which discrete API agents' transmission of digital information can be inscribed and actualize their potential. When they implant themselves upon the BwO, the BwO assumes a form, and this form is conducive to the specifics of the API agents that have imposed themselves upon it. In other words, APIs as discrete agents need the BwO as a site of production that hosts and nourishes them. They “attach themselves to the body without organs as so many points of disjunction between which an entire network of new syntheses is now woven, marking the surface off into coordinates, like a grid” (Deleuze, 1972). This is what Deleuze conceives of the human body as a machine: an assemblage of parts of different organs with many connections.

When API agents are considered in terms of their sociomateriality, they are seen as constituent actors that play a big part in setting up the social and physical relationships between bodies. (Bucher, 2013).

The notion of sociomateriality proposed by Orlikowski (2007) and Orlikowski and Scott (2008) is founded on the agential realist philosophy developed by Barad (1998, 2003, 2007). It aims to comprehend the constitutive entanglement of the social and the material in everyday organizational life and is based on the intersection of technology, work, and organization (Orlikowski, 2007). It is the outcome of thinking about how language, interaction, and organizing practices are intertwined with human bodies, spatial configurations, physical objects, and technologies. Instead of assuming that entities, people, and technologies have inherently determinate boundaries and properties, they are seen as relational effects, continuously performed in a web of relations. Barad (2003) defines agency as the “enactment of iterative modifications to particular practices through the dynamics of intra-activity” as opposed to placing agency in humans or in technologies.

In that regard, the project promotes APIs (application programming interfaces) as discrete digital communication agents with their own agential meanings and conceives their interactions as constituting the whole of the socio-spatial experience of BwO. In this regard, the main application of APIs focuses on two features to produce a distinctive avatar—its presence in the real world and its social interactions.



Figure 3 Bodies Without Organs Social Mixed Reality: Spatial Telecommunication through Embodied Telepresence

⁶ For Galloway,(2004) “Protocol is that machine, that massive control apparatus that guides distributed networks, creates cultural objects, and engenders life forms”, “Protocol is a system of distributed management that facilitates peer-to-peer relationships between autonomous entities.”

To achieve an interactive digital avatar body, which can be embodied in realtime and extends the affordances of the physical body into virtual environments through embodied telepresence, the BwO project uses the Oculus Integration SDK⁷ in Unity Game Engine and applies third-party providers' proprioceptive APIs, such as Hand Tracking and Pose Estimation, to achieve real-time information for avatar interactivity about users' bodily presence in physical space.

Proprioceptive⁸ application programming interfaces (API) inform the digital avatar's body position and placement in the virtual worlds (hands, full-body avatars, physical location) with data about the user's bodily presence in space, including its current condition and whereabouts. Information on joint angles, muscle lengths, and force output may be included. All this collected data is aggregated onto the human body to create a sense of embodied telepresence that shows the real-world interactions of the physical body within the virtual world.

In order to create social interactions between users and the environment, the project actively investigates the physical body's presence in the virtual space of togetherness. To do so, it rigorously deploys various API models in an assembly consisting of a pose estimation API for inverse kinematics⁹, hand tracking API¹⁰ for extended tactile interactions, and networking architectures that evoke the sense of proprioception, thus the sense of an embodied telepresence. It turns the body into an assembly of ubiquitous media objects, distributed and situated in clouds for remote telecommunication, dissolving the hardware and software on the body: "The body as a frame becomes the 'coprocessor' of digital information" (Pompermaier, 2021).

Findings:

Arriving at Embodied Telepresence

When people enter the multi-user room-scale experience of the BwO platform, they are both 'here' in the physical space and 'there' in the virtual with the real-time representation of their proprioceptive selves 'acting-in-distance'. However, inside this experience, there is no distance between the 'here' body and the 'there' body.

The 'here' body, the physically grounded body, and the 'there' body, the virtual body, continuously entangle with one another through the proprioceptive mechanisms of the human body and the proprioceptive abilities of the virtual body. The user inhabits an avatar's body without ever losing connection with their own, sees the surrounding world through the gaze of the digital body, and recognizes its basic arrangement from the well-known physical space - avatar and user become one, actualizing the sense of embodied telepresence.

In addition to the possibility of communicating in the physical (physical-virtual) presence of another person, the ability to use hands to express oneself with gestures and interact with the surroundings significantly enhances the sense of presence within mixed reality (Durlach, Slater, 2000). The sense of touch plays a uniquely important role in human interaction: it is not only related to notions of closeness and intimacy, but, as our language shows, it is often used as a metaphor for emotional impact.

⁷ The project is developed for Oculus Quest2 Headsets in Unity with Oculus Integration Package in 2021

⁸ The term 'proprioception' describes a person's awareness of their body as a unified whole through their own efforts at movement. Inability to sense one's own body might lead to disorientation. One of the most convincing ways to externalize and (re)present proprioception's data is to reproduce its structure and artificially enhance it with technology. Spatial computing allows for the seamless translation of bodily motions into augmented virtual bodies that can heighten the sense of presence they provide. (Fedorova, 2013)

⁹Inverse kinematics is important to game programming and 3D animation, where it is used to connect game characters physically to the world, such as feet landing firmly on top of terrain. It is often easier for computer-based designers, artists, and animators to define the spatial configuration of an assembly or figure by moving parts, or arms and legs, rather than directly manipulating joint angles. (InverseKinematics, n.d.)

¹⁰The Oculus Quest headsets can take input from a user's hands thanks to hand tracking technology. With fully tracked hands and animated fingers, it provides a new sensation of presence, increases social engagement, and provides more natural interactions. (Oculus, n.d.)



Figure 4 Bodies Without Organs Social Mixed Reality: Embodied Telepresence

Moreover, the ability to use hands to grab, pick, and manipulate virtual objects' positions in the world creates a social and tangible environment in which the human subject is fully present in its bodily actions and interacts with both physical and digital worlds simultaneously in a 'natural' way.

In the age of the Internet and digital media, human subjectivity is widely distributed, embodied beyond the human frame and situated in networks and remote places. There is a certain tentacularity, an extended sensorium, in the act of touching and sensing distances through one's digital avatar, immersed in synthetic, embodied, and organic relationships simultaneously. This vast network gives rise to a complex form of distributed embodiment and to new senses of self, cognition, and proprioception through the body's digital mediation.

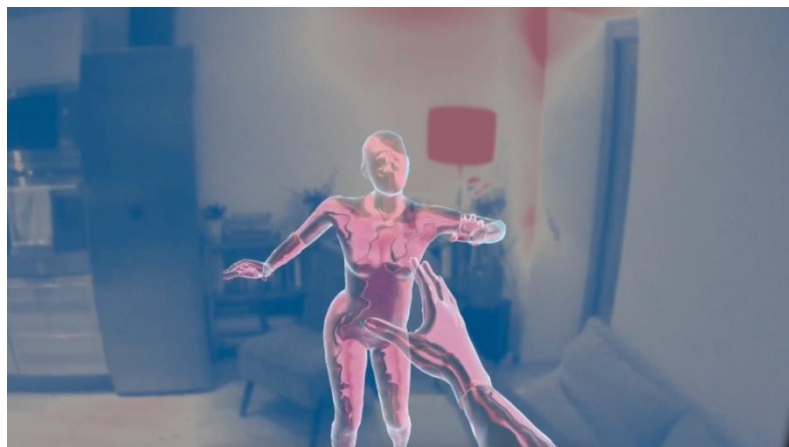


Figure 5 Bodies Without Organs Social Mixed Reality: Embodied Telepresence

A User Trajectory inside the Mixed Reality Experience

In this small chapter, the paper further elaborates on the mixed reality experience of the BwO, from users' trajectory. Firstly, it is important to notice that this multi-location and multi-user social mixed reality project was used by a small group of people located in different countries for a period of time during the lockdown and was used for long-distance communication, particularly to meet for work sessions, talk, and socialize.

Within the experience, we see full-body virtual avatars of remote participants, housed in the virtual dimension and seamlessly embedded in the physical room setup. This physical/virtual overlap space enables users to maintain their relationship with their physical room activities while expanding their social interactions inside the virtual space.

The physical room envelops the contents of the virtual space, thus allowing users to use the physical space as their main reference for navigation. Consequently, the ability of visitors to navigate within the virtual space is limited by the size of the physical room.

This does not mean that a remote visitor cannot suddenly emerge from your kitchen or that a pair of hands cannot mysteriously emerge from your closet. Because of the overlap of physical rooms in a shared virtual space, virtual avatars can be near or far, depending on the size and the obstacles present in their physical space.

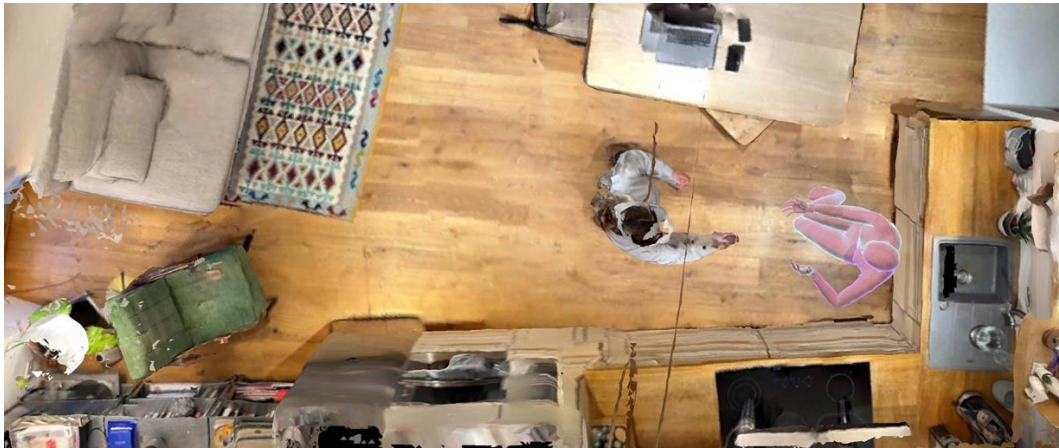


Figure 6 *Bodies Without Organs Social Mixed Reality: Entering Remote Spaces with Embodied Telepresence*

Discussion:

Privacy Concerns related to Personal and Spatial Data

The human body and its plastic matter have become an extreme territory of inexhaustible data extraction of behavioural patterns through social media platforms, haptic graphic user interfaces, wearable devices, and algorithmic intelligence, feeding their intangible information back to humans to construct a personalised reality in tangible ways. Especially with the advent of spatialization of the web, the media objects that populate the Internet are no longer 2D and tangible only through screen-based communication technologies, but rather 3D media objects that include the real-time movements of our bodies, objects, and architectural spaces. This means, there is an emerging online spatial dimension to our everyday practices through social media technologies.

However, this is not to congratulate the discourse of enterprise tech giants on establishing their market growth around the mediated identity of human subjects using their social media services; it is rather to emphasize and rigorously study the emerging spatiality around this assembled subject.

Therefore, in the context of this research, besides considering API agents' capacities to offer online modes of embodied spatial telecommunication, APIs are seen critically as protocological objects, allowing in these vast social networks communication and connectivity between peers, and between databases and users to take place. More and more, APIs become tools for accessing personal data related to biometric variables, spatial organization, spanning from physical characteristics and movements of a person to voice interactions, from room dimensions of a user to the visited contents which creates a doubtful environment around this platform regarding sharing personal data that is no longer peer-to-peer, but mediated through corporate companies' servers, collected, processed, stored, and governed. Additionally, it is important to mention, the social mixed reality project of *Bodies without Organs* has not collected or stored any personal data related to the participants to constitute the embodied telepresence and the spatial telecommunication.

Conclusion:

Socio-spatiality: A Physical-Virtual Overlap

Today, the internet, telecommunication technologies, and the architecture of how we live together are undergoing radical changes with the introduction of spatial computing and increased use of social media platforms.

The fact that networked virtual spaces (SocialVR) can be accessed from anywhere with embodied avatars has opened up new spatial design territories where social activities, online culture, and embodied practices merge on the cultural horizon of media technologies and become a locus for the growing culture of global connectivity & sociability. However, in contrast to conventional means of telecommunication based on transmitting information over distances in the form of voice telephone calls, data, text, images, or video, *Bodies without Organs* Social Mixed Reality Experience is concerned with spatial and embodied modes of online telecommunication that stream objects, bodies, and spaces across remote places.

BwO Installation investigates the emerging spatiality around the subject as machinic assembly, using a theoretical and practical approach exemplified in a social mixed reality project to demonstrate how the human body and its identity are pushed into the plastic territory of exchangeability, self-representation and spatial organization, tied to the Internet's materiality. As a result, in the context of this research, virtual avatars are considered in their sociomateriality and regarded as critical mediators between organic and inorganic, physical and virtual, for an online mode of embodiment and spatial production. Thus, their social, material, and spatial implications are discussed in a broader context.

Through the embodied with virtual avatars, the social mixed reality experience of BwO has made this post-human subject a ubiquitous being, blurring the boundaries between subject and object, local and global, human and nonhuman, and generating a human-becoming which has inevitably opened up an emerging condition of spatial design in and around this hybridized subject. Consequently, the augmentation of the spatial capacities of physical space through communication media channels produces temporal assemblages of spatial instances with new affordances that entangle online and offline materialities.

When the physical space hosts the virtual spatial content at its 1:1 scale and becomes the envelope for the online virtual content, they combine in their affordances to unite for a new intelligence of space where physically limited spaces expand with virtual materiality and construct a mixed-reality experience. This kind of spatiality in which physical and digital materialities constantly inform each other defines the 'mixed reality' experience and opens up a shared virtual spatiotemporal dimension allowing the users to 'act at a distance' through the medium of spatial and embodied data transmission occurring within the inhabited hybrid dimension.

This 1:1 overlapping physical and virtual space profoundly impacts our spatial perception. First and foremost, it provides a brand-new understanding of how expanding physical spaces with the capabilities of virtual overlay content can offer a variety of architectural programs, ranging from social gatherings to globally relevant data flowing into the virtual space that can be navigated with the practice of the body. Second, it allows us to consider how physical spaces are no longer static and isolated in their materiality but are instead hybridized, linked, and affected by online materials. All of this enables remote and temporal access to portions of users' private and non-private spatial content from anywhere enabling the remote integration of events and social activities into the places we inhabit every day.

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Figure 6 Bodies Without Organs Social Mixed Reality: Embodied Telepresence

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BEHAVIOUR ISSUES AND SAFETY ASPECTS IN THE REAL AND VIRTUAL SPACES

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ABSTRACT

The paper focuses on the similarities, differences and correlations between the real and the virtual environment, based on the issue of user safety and on establishing rules of behavior. The real environment is rapidly moving into the virtual world, becoming a parallel space for meeting and exchanging but without physical contact. Networks of streets and squares as gathering places are being replaced with social media networks. It's common that the public spaces are 'equipped' with Wi-Fi, 'digitally networked' and users are 'connected' to their mobile phone and 'disconnected' from a real-world environment. Attention is focused on the screen, but not on whoever's sitting on the bench next to us. The virtual world offers more interesting or dynamic content. Recent pandemic conditions and isolation have significantly accelerated the process of transition. Socializing, working and education from home, absence of people in public spaces, were the 'new reality' imposed quickly. Fear in the urban environment is not caused by physical space, but by personal sense of insecurity from others who can take advantage of certain characteristics of space for their intentions. Cybersecurity can be understood in the same way. It offers a range of possibilities, almost no restrictions, but at the same time it is suitable ground for abuse. It is a place where there is no delay and can be said whatever is desired, even if it is offensive, where information is manipulated, where personal data are often insufficiently protected. With all the advantages and benefits of performing everyday needs, we are not aware how dependent we are on this new 'world' and how much time we spend in it. Basic rules in the virtual online space should be similar to the accepted form of behavior in offline mode: anything that is unacceptable or prohibited offline should be avoided online too.

Keywords:

public space, virtual space, safety, behavior

ENVIRONMENTS AND SPACES

Our surroundings can be considered as natural, built, social, economic, political, cultural and technological environments in which we live. The technological environment is the most recent concept, and it defines all the cyber and virtual innovations. At the level of the urban environment, all of the mentioned types of environments overlap and are “condensed” within the same spatial units, and it is difficult to estimate which is more dominant. Open public space definition is fluid and depends on the context in which it is used, from philosophical, metaphorical, to very precise determinants that give their functional, proprietary, compositional and aesthetic characteristics. Public (city, urban) space refers to the space available to all citizens, regardless of their gender, race, ethnic origin, age or socio-economic status. It is a city’s most important and greatest resource, its identity, a place of gathering and exchange. Zukin (2004) believes that public spaces are important for creating a framework for the vision of a city’s social life, as well as for the impression of people living in that space, and for their interaction with each other. Citizens not only use public goods, they also directly or indirectly create them, decide on their character, and adapt them to their needs, through formal or informal procedures (Maguire et al., 2007).

(IM)PROPERLY USE OF PUBLIC SPACE

There are written and unwritten rules on how to use public space, actively or passively, correctly, without disturbing other individuals and without hesitation or fear, sharing the space with others while at the same time maintaining their privacy (Danilović Hristić & Stefanović, 2022). Spatial and social regulations contribute to the creation of a tolerant and harmonious environment (Brankov, et al, 2019, 2020). Sometimes, in order to achieve this ideal picture, measures of control are applied, and then the question arises as to where the limits to this control are and whether we all perceive it as a positive measure, or whether it hinders us in the creative use of what belongs to us as citizens. The feeling of security in a space is individual, and it can be created by various elements: position in the city network of public spaces, recognizability, number of users, events, accessibility, regular maintenance and cleaning, architectural elements that blur the border between private and public, lighting during the night, etc. Dark, deserted, unorganized or untidy spaces cause fear, equally as unknown and “unwanted” persons that can occupy them (Danilović Hristić, & Stefanović, 2020). It has been noticed that the spaces that cause fear are not necessarily the places where incidents take place, but where the chances of an incident happening are very high. Crucial to creating a personal sense of security is the level of fear of discomfort, experienced or created based on other people’s experiences and mostly the fear of unfamiliar or undesirable elements. The reaction can be a restriction in mobility, avoidance of certain spaces or a limitation in time spent outdoors. Retreating to a safe (private or guarded) space can go to extremes (Danilović Hristić, 2013). Apart from city residents, the target can also be visitors, i.e., tourists, especially in cases of pickpocketing or looting valuables, above all because tourists stand out and they are not familiar with the space they are in; they are distracted by the crowds and by new experiences (Hristov et al., 2021).

BEYOND REALITY

“*Cyberspace*” is a term introduced by Gibson (1987) in 1982, describing a widespread and well-interconnected digital world. It is a software, computer-generated simulation of three-dimensional images or environments with which interaction can be established (*virtual reality - VR*), in a seemingly real or physical sense, by a person using special electronic equipment (computer, television, artificial cybernetic organism – cyborg or robot). Also, as a closer definition of the term, the prefix “immersive” (*iVR*) is used, which refers to digital technology or an image that deeply involves one or more senses and can lead to a change in mental state (immersive media). The concept of a “*metaverse*”, i.e. a “meta-universe”, which is developing rapidly, refers to the vision of a world in which the physical and the virtual completely merge and become one. In a virtual world with a digital avatar that meets other people’s avatars, similar to real life but entered via the internet. Virtual reality (VR) and augmented reality (AR) technology is expected to be the driving force behind three-dimensional virtual worlds for users, where their experiences will further blur the boundaries between real and digital life. As it is described, these are “virtual environments” that can be entered instead of just being watched on screen. It is essentially a world of endless, connected virtual communities where people can meet, work and play using a variety of devices and aids, also including other aspects of online life such as shopping and social networking. The idea is for this to be a new level of evolution of human society, in a parallel universe in which virtual life takes place in the same way as physical life (Marrington, et al 2017).

Since all of this is still new, and in terms of civilization negligible in its duration in relation to the development of real public spaces, the process of creating rules of conduct and good manners, as well as understanding the real limitations and dangers, is still ongoing. What is already certain is that civilization is moving in this direction, and that future generations will be completely drawn into the virtual world, which will to some extent replace the real one. In the new technological world, time and space are summarized in current information and they go beyond biological human boundaries thanks to connection with the cybernetic system (Šuvaković, 2011). The Internet offers a number of possibilities, with almost no restrictions, but at the same time it is a suitable ground for abuse, false representation or hiding behind someone else's or an imaginary profile. It is a place where there is no hesitation, and you can say whatever you want, even if it is offensive to others, where information is manipulated, and where information about a person and his or her preferences is often insufficiently protected and easily accessible, so it can be used for aggressive advertising or to subconsciously influence the formation of attitudes in favor of a particular current issue.

MOVING FROM REAL TO VIRTUAL

The public space has changed, obtained an imitation, an embellished version of itself in real space and time (closed shopping malls, fenced communities or international airports). Therefore, it should not be surprising that our familiar and close environment passes into the virtual world and becomes a parallel space for meeting and exchange, without the need for any physical contact. Networks of city streets and squares with gathering places are being replaced by social networks. The Internet became the city square of the 21st century, a place of debate, where communities are built, products sold, and reputations created. Therefore, it is an increasingly common sight that people, even in public spaces, sitting in a cafe garden, on a park bench, riding public transport or walking, are "connected" to their mobile phone and "disconnected" from the real environment (Danilović Hristić, et al, 2022). These connections are becoming stronger, occupying our attention with the opportunity to communicate without limits, get information, work, have fun, play, follow the lives of others or expose our intimacy, unaware of the passage of time, or of events around us. Casual passers-by with whom we share real space are also entertained by their screens. Even in the past, we did not interact with them unless we had a need. And yet now we have the chance to communicate freely with people we do not know, because in the virtual world borders have been erased or reduced to a minimum, as well as distance; everyone is more or less accessible, and anyone can say anything, reach anyone, in fact, reach the other side world in a split second. What kind of behavior is expected when in the virtual world public and private are simultaneously intertwined, when we can directly access public events, debates and gatherings from our own home, without a clear transition from one sphere to another? This raises the question: what rules of conduct apply in this world, where should the limits be set, if there are any, and when should one's identity be revealed or hidden, and communication be free from restraint? To what extent can real life become digital, what is lost, and what are the consequences? Have we stepped into the world of the unknown too quickly and carelessly? And who benefits from it, the individual, the society, the state, multi-corporations?

In the virtual world of the internet for socializing and meeting others, which are far freer and more relaxed than in the real world, where there is limited time and space, as well as social and moral codes of conduct (Stephen & Marvin 1996). The milieu of a public environment is connected to a person's value system; it is essentially an unconscious selection of aspects that make the space known and acceptable, so that different people can be in the same spatial environment and still live in different milieus. The cyber world seems to have recognized these characteristics and skillfully taken them over and new connections and networks are being created that extend beyond the boundaries of our understanding and reality. The city still retains its physical elements, but also accepts many technological advantages, and it is flexible with regard to change (Kronenburg, 2007), with facades becoming monitors and media screens, and the dynamic of movement in space changing; interactivity is primary, and "smart" transport and communal infrastructure are imperative. At the same time, the image of the city, but also its organizational hierarchy and the way it functions, become the scenography of a parallel virtual world, from games to social networking. In the urban-architectural profession, tools and software are widely used for simulation and visualization of created spatial components, from the urban plan to the interior. You do not have to go out on the street to experience real space, Google Maps has a layer with satellite imagery, with a 3D option from the perspective of a pedestrian. The need for data availability and participation of the general public has led to the possibility of access to databases, archives and similar, which contain information related to spatial units, including urban plans, architectural and construction projects, networked with documentation on ownership relations, etc. For this reason, it is important to protect data, especially if it

is sensitive, which can be viewed and downloaded in digital format, and as such misused in various ways, including those related to national security and general danger (Klisarić, 2021).

It is a fact that more and more segments of our environment and life are moving from the real to the virtual, and the recent pandemic isolation caused the fear of meeting and the simultaneous need to communicate pushed us reluctantly into the world of the virtual. Social networks, places where you share your thoughts and images from life, as well as numerous applications and platforms for online meetings, have simply “exploded”. Modern technology directly or indirectly shapes our present and future, forming a parallel picture of the environment in which spend our work and leisure time.

By drawing parallels between the real urban environment and basic human needs or behavior in public urban space and the newly formed virtual environment, we can notice numerous similarities and differences (Table 1). Also, the issue of freedom in the use of the real milieu and the feeling of security can be comparatively transferred to created cyber environments. The first parallel that the authors would point out is between the question of public space as a place of interaction, and the formation of so-called social networks, as well as the amount of stimulation and information we receive in both spaces. Another important item is the term “smart city”, which first came into general use as a novelty and trend, but which is now part of the development strategy of complex urban systems, and a necessity in their management. Different programs, applications and the like, as well as numerous services, make it easier for citizens to function in urban conditions, and contribute to accessibility and transparency. The third is the notion of security, the conscious border between public and private, that is, intimate, endangering security at different levels, and the possibility of establishing control and supervision.

Table 1. Connection between basic human needs and the environment in the form of public spaces and virtual spaces (Source: Danilović Hristić & Stefanović, 2022)

Characteristics and requirements for public spaces	Basic human needs	Characteristics and requirements of virtual/cyberspace
Comfortable and safe meeting spaces, spaces that have attributes that encourage socializing and communication	Social belonging	Social networks, creating and belonging to same-interest groups, communication on particular themes, monitoring information
Spaces for cultural events and celebrations, mass gatherings, symbols of belonging and identity, a sense of uniqueness	Cultural and collective meaning	High level of availability, online gatherings, applications for meetings (Zoom, Skype, Viber...) live stream broadcasts of events
Quiet spaces with a low level of sensory stimulation, connection with nature, benches to sit on, or walking paths visually oriented towards the landscape	Rest and psychological relaxation	Virtual worlds for stimulation and relaxation, imaginary scenography
Shelter and intimacy of certain places, the possibility of creating distance between users	The need for privacy, a combination of interpersonal interactions and time spent alone	Real alienation and isolation even in a group, extremes: from the need to break out of anonymity to concealing one's true identity
Places of meeting and exchange, circulation and conversation, good acoustics and visibility of the space, various organized and public programs and events, not disturbing other users	Learning process, knowledge and sharing information	High availability of information, help in the cognitive process, great influence on education, culture, progress, imperative of the new technological and information age
Open space, daylight and sunshine, fresh and healthy (unpolluted) air, ventilation, greenery (grass, trees), animals (dogs, cats, birds, squirrels, etc.), natural materials (stone, wood, sand).	Connection with nature and natural elements	Closed space, isolation from external influences, the ability to cover a huge distance without the need to leave home
Materials of different structures and textures, color variation, scents	Tactile sensations and sensory stimulation	VR technology, 3D-7D stimulation of sensory experiences

The sounds of nature (waves, leaves, birds singing) people's voices, no noise	Friendly and natural audio environment	Possible imitation
Embracing nature-inspired design, organic forms, reducing monochrome patterns	interest in the visual environment and the need for aesthetic elements	Taking the design from the real environment, or unrestricted creation of new spaces and scenography
Landmarks, clarity, orientation, general image of the space	Fulfilment and the search for meaning	Possible imitation
Trails for running, climbing, cycling, horse riding, open sports fields, promoting a spirit of discovery	Recreation, exercise, physical activity	Basic static state, sitting. Limited physical activities through VR games, and applications for monitoring physical activity and health
Equally oriented towards all users by applying the principle of accessibility	A sense of equality	Symbiosis and belonging to a group with common interests and goals, even when they do not know each other

TRANSFER OF HARASSMENT

As the authors have already stated, fear in the urban environment is not caused by the physical form itself, but by the fact that users have discomfort or personal insecurity from other users, primarily unknown or undesirable individuals, who intend to use certain benefits of the space for their own purposes. Cyber security can be understood in the same way. Basic rules of behavior in the virtual, i.e. online space, should be similar to the accepted form of offline behavior: everything that is unacceptable or prohibited offline should be banned online, i.e. as in the case of offline freedom, online freedom can only be restricted by the freedom and rights of others. So even here in the given freedom, there are some rules and restrictions. Online violence can be divided into two groups (Kuzmanović, et al. 2016):

- verbal violence – which includes sexism and hate speech, blackmail, threats of death, rape or torture;
- violence using visual means – which includes taking photographs and posting photographs without consent, threats of graphic means and revenge by publishing pornographic content.

The transfer of harassment from the real to the virtual world and vice versa is very common and in no way accidental. Conflicts initiated offline continue online, they even gain intensity in the attack, because the attackers feel braver when there is no personal contact. The latest news is about the first cyber rape occurred in May 2022 and cases where cyberbullying by hacking and stalking moved to the reality, revealing the home address of the victim and sending serious threats (www.businessinsider.com).

Then, even a single attack can become a real mass lynching when others join in. On the other hand, the internet is a great lure for victims who are falsely seduced and misinformed, in order to initiate actual contact in reality, which can be a fatal trap. Thus, public urban spaces, if they are suitable for abuse, become training grounds for carrying out the imagined aggression (Table 2). The consequences of digital violence can spill over into real life and include:

- fear for one's own safety in the event of organized harassment;
- isolation as a consequence of monitoring women at home and at work through applications and devices;
- lack of safe space for the victim due to the speed of uncontrolled dissemination of personal data and lack of protection, and due to cases of the live transmission of violence and abuse.

Table 2. Comparative overview of types of attacks in real public spaces and in virtual spaces, with possible correlation (Source: Danilović Hristić & Stefanović, 2022)

Types of criminal acts in real public (urban) spaces		Types of criminal acts in virtual digital spaces	Possible correlation and consequences
Verbal attacks	Unwanted advances, provoking, swearing, lascivious comments, insults, threats... <i>It also happens in crowds or in lonely places, and depending on the situation, the victims are "marked" by their gender, race or in another way.</i>	Provoking, swearing, lascivious comments, insults, threats, spreading stories (gossip), labelling... <i>It happens on social networks, through messages.</i>	They can happen independently or in parallel, start anywhere, escalate in the virtual world, or transfer to the real world with more serious consequences. They cause discomfort and fear of the environment, reduced mobility and the like.
Crimes connected with property	Pickpocketing (disappearance of wallets, etc.), theft (stealing personal belongings: bags, jewelry, mobile phone...) <i>It also happens in a crowd (crowded) or in lonely places, depending on the situation. The victim's moment of carelessness is used.</i>	Various types of fraud, so-called "phishing", false representation, theft of personal data, etc., in order to obtain material benefits. <i>It happens on social networks, through messages, by hacking.</i>	The motive is the same. Victims are characterized by carelessness. For example, by posting information about going on holiday, or a picture from a trip on a profile that is public and accessible to unknown persons, we run the risk of someone robbing the apartment we live in during our absence, or accepting requests for help and investment proposals, which require a certain amount to be paid into a bank account, or to provide information about a personal bank account.
Block crimes carried out using force or violence	Sexually inspired assaults, rape. <i>They occur in hidden, inaccessible, lonely, dark places that are neglected and poorly maintained.</i>	Insulting, publishing inappropriate images, etc. Misrepresentation and enticement of victims (pedophilia, trafficking). <i>They occur on social networks, forums, dating platforms, via messages.</i>	They can happen independently or in parallel, start anywhere, escalate in the virtual world, or be realized in the real world, with more serious consequences. Victims of sexual assault are predominantly gender or generationally "marked" in both cases.
	Physical assault, armed assault, endangerment of physical integrity or life (murder). <i>It occurs in public spaces, often as a result of a conflict "transferred" from the private milieu (e.g. domestic violence), or as part of a criminal environment (confrontation between gangs, hooligan groups, etc.).</i>	Hating, insults, threats etc. <i>It happens on social networks, through messages. In fact, it overlaps with verbal attacks, because there can be no direct physical conflict in the virtual world.</i>	Constant or mass attacks in the virtual world can result in various psychological disorders, fear of leaving home, loss of self-confidence and suicide as the final act.

CONCLUSIONS

The issue of security and vulnerability of certain categories of residents is very comparable in connection with public urban and digital spaces, i.e., the problem of the established pattern of behavior has transferred from the real to the virtual world, and has even gained strength and mass. The authors have pointed out the similarities between two parallel spaces in which modern life takes place, as well as the points of contact where problems can meet, escalate, or be transferred. It is logical that the measures for greater security will be similar, primarily preventive, with the aim of correcting and improving the situation, particularly for sensitive groups of the population. By analyzing everyday activities in the virtual world, its multi-layered nature can be seen, via a range of different uses and its enormous potential. It is characterized by its massive scale, variability and adaptability, but on the other hand, not all of its possibilities have been explored, including the consequences of excessive use. User addiction, loss of awareness of time and space, alienation and dullness are just some of the negative symptoms of prolonged and excessive time spent in the imaginary world. This is perhaps the most obvious and widespread type of insecurity, because it threatens traditional values and ways of life, as well as communication and interaction with others, and it creates the illusion of belonging to a social circle that does not really exist. Another aspect of insecurity is also hidden and subconscious, because our use of the internet is at the same time both commercialized and abused. We unconsciously disclose our data, wishes and needs, and then we are exposed to aggressive campaigns and propaganda aimed at drawing us into the consumer world, using all means available for the sake of profit, subconsciously making suggestions to us and constantly offering exactly what we need. Just like in the real world, although there are online rules of good behavior, and people know what is good or bad in terms of social norms and punishment for crimes and offences, there are always individuals who ignore them and represent a discomfort or danger to others, and we should not be under the illusion that this is any different in the virtual world.

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BIM WITHOUT BIM: INTRODUCING THE BIM LOGIC IN ARCHITECTURE TECHNOLOGY CLASSES. THE CASE OF TUC

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ABSTRACT

While the use of BIM is moving up the ranks into contemporary architecture practice and mainstream building services, there is a lag in the integration of BIM software in the curricula of academic institutions in Greece [1] and worldwide. Although in Greece the most popular BIM software is offered for free as educational versions, its application in the courses is practically zero. The reasons may vary, depending on the institution [2], the result is however that training engineers in BIM logic requires additional certified studies.

During architecture studies, there is a constant effort to get acquainted with methods that support the depiction of space on the two-dimensional drawing surface, but also through software modeling. Structural fundamentals, design, and application of materials and technologies that support construction and environmental sustainability are introduced and embodied in architectural design. Through a group project, students were called to design a low-energy residence building. For the perception of space and construction, a scale model of the building was first created, with proper modeling of the different materials and structures introducing an evolving non-software building information modeling. The 2D drawings that followed the analysis highlighted the positive impact of this interactive experience on the accurate design of the structure.

This paper presents the concept and the methodology on which the undergraduate course of Architectural Building Technology at the Technical University of Crete was developed, together with the conclusion of the educational procedure, through feedback delivered by the students via online questionnaire.

INTRODUCTION

In most institutions in Greece, dealing with BIM programs is negligible or independent of the flow of design workshops. Learning is limited to specialized issues related to BIM software, such as lighting simulations, energy models, and the like. However, it bypasses the most basic point of the BIM logic which has to do with the integrated picture of the design, the management of the information and the organization of the study. There has been no thorough research on the appropriate way to introduce BIM software into architecture curricula, while the main prevailing question is related to when is the appropriate introduction time during the studies [3]. In other words, it is important that architecture students have such a maturity in their design that it is not easy for them to be manipulated by the automated sequences of procedures and commands that are offered in design programs. In other words, they should be able to distance themselves from simply manipulating the capabilities of a design software, and transform themselves into creators through the capabilities provided by the software.

The opinion of the authors is that this maturation is practically impossible in the context of studies, as it presupposes an experience which is cultivated through professional involvement in architecture and its application in construction. Consequently, any integration of a BIM software in design courses may only offer a technical training on sequences of commands and procedures, which in the long run always carries the risk of trapping students in automation and convenience, at the expense of creative thinking and the quality of the design object.

After all, learning a software in general and BIM in particular, means choosing a specific program, excluding others that are similar or competitive. This consequently forms the "digital literacy" of the students in the possibilities of the specific software, thus as a rule limiting their design ideas to the possibilities of the program.

However, the advantages offered by the 3D visualization of the virtual building in a BIM environment and the clear picture it gives to the architect and all the researchers involved can, under no circumstances be ignored. This fact alone has made the use of BIM software almost mandatory in the professional field and in the AEC industry. The actions of the EU for the full integration of BIM in studies and constructions - of a public nature for a start - in all member states [4] cannot be overlooked either. A contradiction is therefore created as, on the one hand, BIM design will occupy to some extent every architect graduate in the future of his professional life, on the other hand, it is something that, for the time being, does not seem to occupy the same importance in architecture study programs, at least in the institutions of Greece.

It is therefore understandable that in some way familiarization of students of architecture with the logic of BIM software is imperative, if not in design courses at least in technology and construction courses. However, the interaction should be in such a way as to avoid the risks mentioned above and at the same time to achieve the necessary familiarity in order to meet the requirements of professional employment after graduation.

Based on the above, the course of Architectural Technology: Construction, of the third semester of studies, Architecture of the Technical University of Crete was redesigned in order to introduce students to the essence of BIM logic, without the use of corresponding software.

The present work is developed in two parts. On the one hand, the new design of the course will be presented in relation to the way it was taught until now and its organization around the BIM logic. On the other hand, the results of the questionnaire that followed the end of the course and which reflects the degree of understanding of construction issues by the taught students will be presented.

LESSON OF ARCHITECTURAL TECHNOLOGY - BACKGROUND

The Architectural Technology: Construction course is for students of the third semester of studies at the School of Architecture of the Technical University of Crete.

The aim of the course is to understand the construction structure of a simple two-story house, as well as how issues of construction co-shape the parameters of the architectural design. In the previous semester, the students have faced the issue of a two-story house, but with purely synthetic criteria that do not take into account issues of architectural technology and construction. It is important to emphasize that the students have not come into contact with any special architectural design software, only the simple form of a 2D CAD.

In the 13 lectures of the Architectural Technology: Construction course that are scheduled during the semester, students are asked to deal with issues of construction and architectural technology on the two-story house, without altering its synthetic form. The issues that are analyzed concern:

1. the formation of the supporting body of the building using reinforced concrete
2. the design of the formwork for each level
3. the structure of the shell in terms of thermal insulation, waterproofing and rain management issues,
4. the structure of external and internal curtain walls,
5. the structure of the floors,
6. the form, location, and dimensions of internal and external frames,
7. the strategy of key MEP issues (heating, air conditioning, utilities and drainage), and
8. the representation of all the information obtained from the above points in a complete series of architectural plans.

The approach to the above issues is usually done in the traditional way defined by the use of a 2D CAD program, i.e. individual two-dimensional drawings. Consequently, the students draw lines and surfaces that symbolize construction structures, without however perceiving them as a functionally unified and dynamic whole. In other words, they do not understand what they are drawing, precisely because they treat it as a single two-dimensional representation and not as a three-dimensional structure that is completely dependent on other elements, has dynamic connections and seams with the whole construction. Therefore, all the problems of dealing with design with the logic of visualization with 2D elements, versus rendering a structure in space, are born. The issues that repeatedly appeared in the subjects of the course are summarized in the following four points:

1. Discrepancy between designs on the same subjects to be represented. A beam that exists in the floor plan does not appear in the section drawings, precisely because the beam is not understood as a 3D element but simply as two lines in a floor plan. The resulting architectural plans are apparently complete in representation but are inconsistent with each other both in the depiction of construction elements and in the actual rendering of the 3D nature of the building and its construction structure.
2. Not understanding the structure of the curtain walls as they are all symbolized in the same way and the same thickness regardless of their use or position and consequently their structure.
3. Failure to understand the concept of continuous outer shell and the holistic application of insulations. In 2D drawings the outer linings appear in such a way that suggests a discontinuity in their application precisely because they are not perceived as a whole.
4. Inability to manage construction issues in their totality as they are dealt with individually with the criterion of a depiction of them on a drawing rather than as a three-dimensional structure. Floors for example that in one section appear with a given thickness, in another section appear with different dimensions precisely because the decision of the floor thickness is made individually for each section and not for the whole structure.

Most of these issues arise from the inability to conceptualize the structure as a single 3D dynamic structure, which is the essence of all BIM software. It is therefore deemed necessary to reform the course and to switch to virtual building in such a way that learners will be trained in BIM logic, without the use of software.

NEW CONCEPT - REVERSE OF THE PREVIOUS WORKFLOW

The new design of the course was centered on the virtual building logic of BIM software. In this logic, the study center - building is a shared 3D model which is gradually completed with the (controlled) addition of information by all involved parties. This information is configured as a database, the whole of which allows the monitoring and continuity of the project planning.

The new organization of the course also moved in this exact direction. A regulatory criterion in the new logic was the replacement of the two-dimensional design illustration with a three-dimensional (physical) model of the residence - visual building, which was gradually enriched with the individual construction details. The completed model constitutes the guide and the basis from which the necessary plans for the architectural documentation of the study will be derived. In other words, the design process is reversed: instead of making a model of the building from drawings, it first becomes the model from which the designs are derived. In this way, the construction structure is not described with simple 2D drawing lines, but with 3D structural elements and then described as a 2D representation by full correspondence of the BIM logic composites structures.

In the flow of the course, students are asked to create small prototypes from the structural and construction elements, in a sequence that follows the stages of a real construction: the foundations, the basement, the load-bearing elements are completed, then the fillings, insulation and shell, floorings and final surfaces.

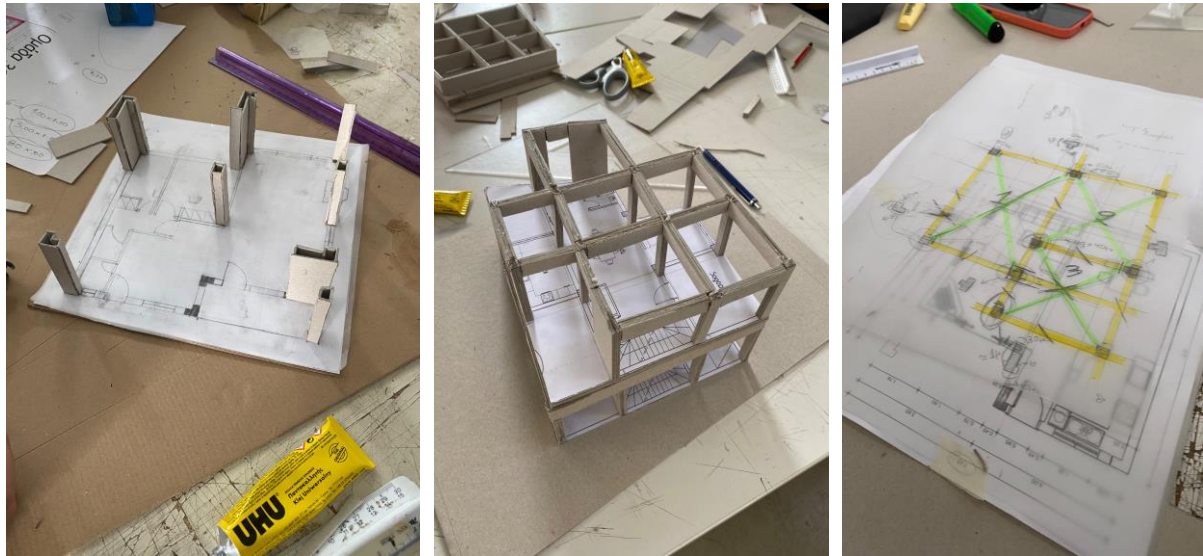


Figure 1. creating a physical prototype for the carrier organism. The drawing that describes the static vector results as a design representation of the mock-up instead of the mock-up being derived from a drawing. In this way, a better understanding of the structure and space seems to be achieved, while the plans and sections agree with each other as they refer to a common model.

In the case of the filling elements, the students are asked to determine on their floor plans, the different types of wall coverings based on criteria: internal - external wall, wall in a wet or non-humid area, wall with soundproofing characteristics or not. Then they make prototypes from each kind of wall, adjusting the structure according to the criteria and the combination of them. In this way, a series of prototypes are created which potentially describe the set of wall coverings needed in the work. These preforms are essentially a library of building blocks which they then place into the carrier organism's preform. In this way, the perception of the wall as a simple outline in a 2D drawing is negated. On the contrary, the construction structure is connected with the quality criteria and most importantly, the total thickness of the wall in the 2D plans in plan view and section are obtained with a fixed point of reference, the preform of this.

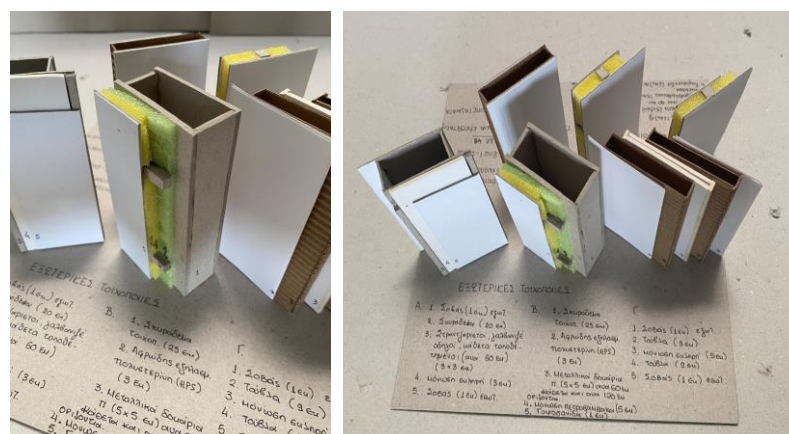


Figure 2. library of wall coverings models with structure analysis. These elements are assigned to the building according to the criteria covered. The design illustration in plan view and section, results directly from the model.

In the same logic, models of floors are made, where emphasis is placed on the thicknesses of infrastructure, frames with emphasis on the structure of the wall and the insulation around it, and roofs with emphasis on

the layering of the various insulation materials and the final surface. All the preforms eventually compose a library of structural elements, the combination of which produces the constructional structure of the building.

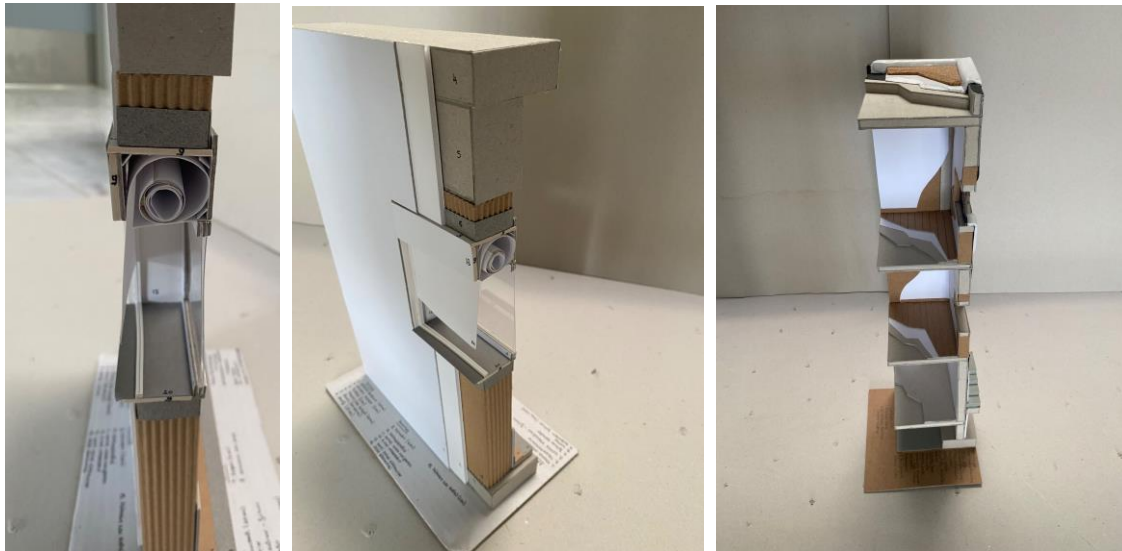


Figure 3. vertical section of the external shell of the building, which is composed of the individual structural elements of the carrier organism, walls, floors, roofs and frames. The design representation of this results with fewer errors as the framework of the structure becomes more understandable.

FINDINGS ON THE NEW CONCEPT

At the end of the course, students were given the opportunity to complete an anonymous digital questionnaire. The questionnaire consists of 3 sections which cover data on student participation in the course, the degree of understanding of the course material and questions about the progress of the students during the semester cycle. The data and statistical results of the digital questionnaire are listed in the following pie charts. From the answers of the students it appears the initial lack of familiarity with BIM software programs with about 2/3 of the students not being able to answer clearly about the logic of BIM in building design (Fig. 4).



Figure 4. Answer to the question "Have you heard of BIM logic in building design?"

The vast majority of students consider the construction of the prototype extremely important in the perception of the building's supporting organism (Fig. 5), the distinction between load-bearing and non-load-bearing structural elements of the construction (Fig. 6), the recognition of the distinct layers of the outer shell (thermal insulation, optical brickwork, etc.) (Fig. 7) and the function of thermal insulation to protect the shell (Fig. 8).

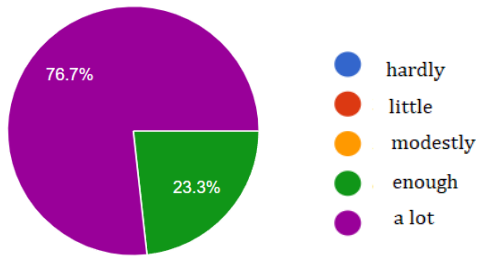


Figure 5. Answer to the question "Did the model help you better understand the structure of the building?" Can you more easily distinguish the supporting organism of a structure from the rest of the elements?"

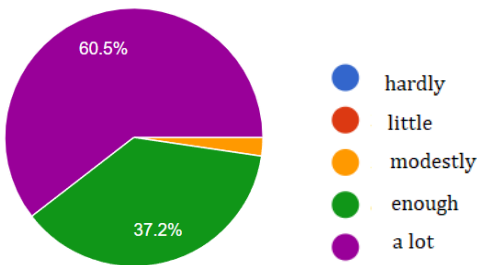


Figure 6. Answer to the question "Did the model help you to recognize the construction elements more easily compared to your previous knowledge?" Can you identify more easily from the beginning of the lessons a plaque of a carrier organism than a floor? A beam from a wall?"

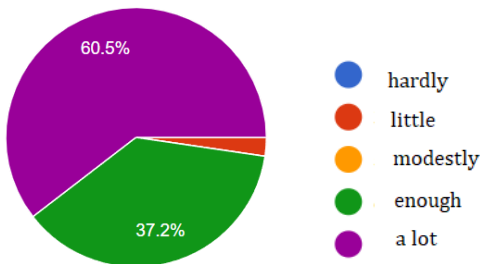


Figure 7. Answer to the question "Did the structure of brickwork become more understandable in relation to the image you had at the beginning of the lessons?" Can you distinguish in an exterior wall the different elements that make it up (thermal insulation, brick, siding, etc.)?"

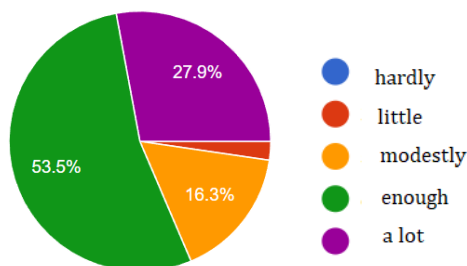


Figure 8. Answer to the question "Did the function of the thermal insulation, due to its position in the structure (external application), become more understandable with the construction of a model?" Was the logic of external thermal insulation understood in relation to the application in the core? Is the concept of thermal bridge understood?"

The majority of students, approximately 70%, recognized a greater familiarity in creating mock-ups from linear drawings after the end of the course (Fig. 9), while almost by an absolute majority (95.3%) the ability of the three-dimensional approach to design was strengthened (Fig. 10).

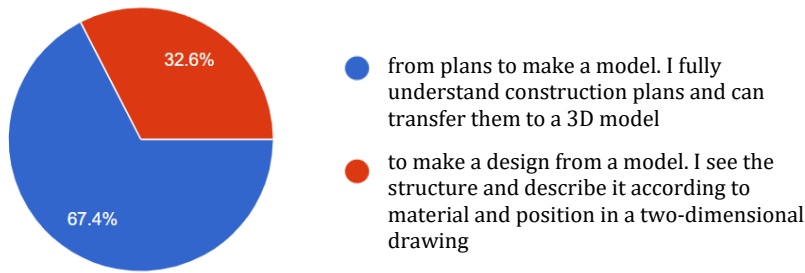


Figure 9. Answer to the question "Do you find it easier after the lessons to create a model from drawings or to produce drawings by looking at a model."

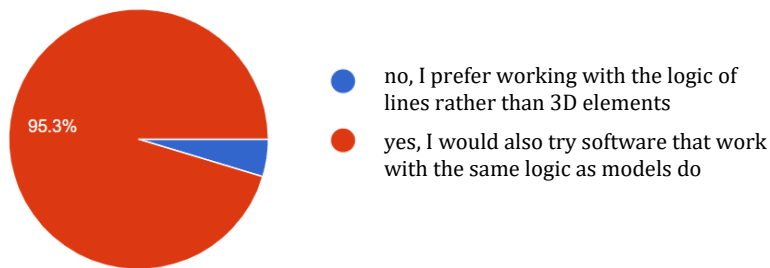


Figure 10. Answer to the question "Do you feel that your courses have strengthened the 3D approach to the design?"

CONCLUSIONS

BIM software, while gaining a larger share of the AEC industry, is lacking in science curricula related to the construction industry, for a variety of reasons. In architecture studies in particular, BIM software could be a key tool in architectural technology and construction courses. The question remains, however, regarding the appropriate way of joining these courses.

The appropriate mode of integration is usually timed, that is, the point of maturation of students to use a particular software, in order not to turn students into mere operators of the software's capabilities, rather than offering tools for design inquiry. This should also include the software itself, as they present a multitude of different tools and capabilities.

In particular, however, BIM software, despite their plurality, presents a basic common element, a specific structuring logic of the study: the three-dimensional design of a model of the building, the virtual building which is enriched and extracts information as it evolves. Perhaps this is also the point at which an architectural technology course can step, in order to introduce students to the world of BIM, without being bound by specific software or digital design tools with whatever the risk may be in the earlier years of study.

Based on the logic of virtual building, the Architectural Technology and Construction course of the School of Architecture of the Technical University of Crete was redesigned, emphasizing the creation of physical prototypes instead of plans, to describe the construction of a two-story house.

Instead of describing the structure of the house with individual two-dimensional drawings, the students are encouraged to construct the structures of the load-bearing organism, the walls, floors, shell and all the elements that make up the building, with prototypes, the subsequent combination of which renders the whole construction in the same way that 3D structural elements and composites make up the virtual building.

The related questionnaires at the end of the course showed a better understanding by the students of the composition of the structure, a better understanding of the relationship between structure and form, and a better design documentation of plan sections and elevations, as well as the dynamic relationship between the plans.

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TOWARDS THE LIMINAL LINE DYNAMICS

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ABSTRACT

Line is a fundamental and polyvalent agency in architectural drawing, it coordinates, shapes and expresses spatial concepts and qualities, it formulates architect's thoughts and ideas. Commonly considered as final statements and descriptions, lines contain multiple complexities of various meanings. With the focus on relation between drawing and building, this study suggests liminal dynamics as an unstable nature within the line, enclosing a specific critical potential in the act of drawing. The inquiry is developed from relation between notions of liminality and line. Starting from instability and fragility as neglected values within the architectural drawing process, my argument considers liminality within the drawing a peculiar modality with the potential for awareness, ethical positions and criticality towards both representation and concrete outcomes. Liminality is here defined as an unstable but dynamic state of line which enables the instability to be preserved throughout the ambiguity in an outlined drawing. From etymological analysis of limit, limen and line, the argument is developed on Derrida's philosophy of limit and line and Benjamin's thesis of preliminary drawing. The final research outcome is denotation of particular, liminal line dynamics and their experimentation in liminal line compositions.

INTRODUCTION

Architectural drawing is considered as an essential medium and tool in the architectural profession, it represents the principal outcome and product of architect's work. Notable Alberti's statement, frequently cited by drawing researchers, practitioners and theoreticians, says that architects make drawings, not buildings. Drawn lines are viewed as a statements and final formulations of architect's thought. This paper argues for a perspective of doubt and instability as a specific quality in the work of lines. The notion of line is pointed out as a particular and singular moment that embodies multiple factors and circumstances included in seemingly mere gesture of a trace on paper or a screen sheet. The focus is on the precise moment of a relational chain between the architect's doubt, non-final decisions in the line-making and an unfinished drawing.

Starting from neglected and overseen values of architectural drawing process, my basic argument is that the notion of liminality is essential for the drawing process and that it contains potential for criticality towards drawing and building. With these interests, I examine the finest nuances of the liminal, as an open and unstable condition of the line. The approach is founded on inter- and multi-disciplinary ground with references in philosophy, theory of art and architecture and graphical analysis in drawing, it is largely based on my PhD dissertation "The role of architectural drawing in the dynamics of the living space partition" (Bnin-Bninski, 2018). First part of the inquiry is articulated around the etymological investigation on the notions of liminal, limit and line and their philosophical and anthropological interpretations; while the second, central part develops the main reasoning about the liminal condition of the line, the third part presents the Atlas of liminal line dynamic that collects particular, liminal line dynamics and their experimentation in graphic analysis (Bnin-Bninski 2021: 277-313).

LIMINAL DYNAMIC

The relation between the liminality and line is based on the etymological analysis of latin terms referent to these notions limit, limen and line. In this etymological analysis the focus is on spatial relations and fine nuances that these relations provide, it is relying on the contemporary philosophical interpretations in work on the limit by french philosopher Régis Debray and studies on limit and wall by Thierry Paquot and Michel Lussault. The analysis of the term line is based on the anthropological analyzes of Tim Ingold and his etymological examination of this term in English language. The notion of line in this study is taken as an agent of spatial relations in the architectural drawing. The objective of such approach is the search beyond binary spatial oppositions: opened-closed, divided-combined, private-public... and it aims to tackle the richness of ambiguous meanings that these latin terms provide for spatial dynamics and dynamics in drawing.

In his book *Éloge des frontières*, Debray examines the term limes and emphasizes the meaning of the term limen: "Limen, from where our liminaire and our preliminaires come from, is at the same time a threshold and a barrier, just as limes marks the path and the border. Janus, the god of passage, has two faces" (Debray 2013: 29). To explore the connotation of the sacred contained in the spatial limit, Debray examines the etymology of the term in other ancient languages such as Hebrew and Arabic and concludes that the idea of separation in both languages is related to architecture – civil and religious, where the sacral and the sacred are always separate or the most hidden part of the building. This connection between the idea of separation and the concept of the sacred, he explains through the etymology of the French word sacred (*sacré*) and its Latin ancestor *sancire*, which means demarcation, enclosure, prohibition.

Limen, liminis is a close variation of the term limes which means house, dwelling, door, entrance, beginning, end, success, but just like limes it can mean a barrier. The Romans had two deities dedicated to the space partition and the dynamics of spatial relations: "Limentinus was a Roman god who guarded the threshold of the door (limen), while Janus was a god who guarded passages and crossroads, the god of change and transition. From the multiple and opposing meanings of these terms derives the meaning of the relation of connection, or binding limier, liemier" (Mitterand, Dubois, Dauzat 2014).

From the analysis of the terms limit, limen and limier and their mutual relations, we single out the key terms related to the space partition, the dynamics of space partition and inhabitation: margin, passage, edge, border, road, street, divider between two fields, territory, line which signifies something, connection, river channel, furrow, trace, separation, difference; house, dwelling, door, threshold, entrance, barrier; joining, linking. The spectrum of meanings indicates the complexity of specific spatial relations of space partition

and their different nuances related to the dynamics space inhabitation. The complexity of the concept of linear partition is emphasized by the French philosopher Chris Younès, she discusses the study of limits and borders in the philosophy of Jacques Derrida: “This is why Derrida is so wonderful when he speaks about the question of limits: it is not to simplify the limits, but to complicate them (. . .) to complicate means to be more complex, more creative, to be able to do something with it, not only to abstract. It is something much more mysterious, in a way” (Milinkovic, Ćorović 2013: 139). This precise point, where complexity of limit is highlighted and underlined rather than its definition (as conclusiveness and simplification), is the point that applies to our approach on qualities of the line. In the creativity and complexity of line-making is the force the line in architectural drawing.

Based on the classification of Jacques Levi from the *Dictionnaire de la géographie et de l'espace des sociétés*, Paquot and Lussault propose three basic characters of the limit: barrier, merger and territory (Paquot, Lussault 2012). As my intention is not to simplify and summarize the numerous nuances and ambiguities pointed in this etymological analysis, I draw out – separating, joining and spacing – as principal spatial relational processes that coexist and intertwine in liminal dynamics.

LIMINALITY OF THE LINE

From the etymological analysis of the terms limit and limes, we see that line is one of the meanings of the Latin term limes. Accordingly, we take the term line as one of the possible translations of the space partition into an architectural drawing. The analysis of the term line is based on Ingold's research (Ingold 2013). In his studies, the author refers to the analysis of Samuel Johnson from the *Dictionary of the English language* (1755), which points out many meanings of this term: “... longitudinal extension, thin wire, tight thread that controls the action, thread that holds fisherman's hook, furrows on the skin (wrinkles), trace, sketch, contour, silhouette, everything written from one margin to another; verse, rank, excavation; trench, method, plan of action, extension, boundary, equator, equinox, descendants or ancestors of one family, one line represents the other part of an inch (unit of measure), a letter, an expression ‘I read your line’, a cotton or flax fiber” (Ingold 2013: 59). Following connotations of the term line, we can notice that the meanings of limits, contours, borders and traces are common for the terms limit and line. Ingold claims that the basic common determinant of the process of drawing and writing is precisely the line that is a trace of a manual gesture at the time of the creation of a text or a drawing. The relationship between the drawn line and the architectural drawing is one of the key themes of the essay “The Preliminary: Notes on the Force of Drawing,” by Australian philosopher Andrew Benjamin (Benjamin 2014: 476).

Benjamin claims that the architectural drawing is always preliminary and is therefore inextricably linked to the meanings of the terms limit and limen. He explains that the preliminary in the drawing is limiting and related to time because it always exists before and after in relation to the drawing. In this context, Benjamin uses the term line to clarify the preliminary virtue of the drawing and to further connect the terms line and limen by analogy: “In the context of the preliminary, the second line appears. No longer a drawn line but a threshold: in other words, limen. That is not just the limit” (Benjamin 2014: 476). He explains the status of the preliminary in the drawing with the condition of the event that follows. The drawing is preliminary if the following event confirms it, this connects the finality of the completed drawing to the term limit, while this restriction, or ‘closing’ of the drawing is simultaneously understood as opening and therefore the term limen is attached to the drawing. From the term limen, the author actually derives preliminary as a virtue of drawing, as Debray explained, it is precisely the limen at the root of the word preliminary (préliminaire).

INHABITING THE LINE

As Paul Emmons, an architect and professor of architectural theory, argues “the line-making decision is the basic act of architectural drawing” (Emmons 2014). Relying on the thesis of Alberti from Marco Frascari's *Eleven Exercises in the Art of Architectural Drawing: Slow Food for the Architect's Imagination*, Emmons reminds that architects make drawings and not buildings, therefore drawing is a basic architectural craft. According to him, the practice of architectural drawing is an embodied activity that engages and informs the imagination of the architect. Thus, in the embodied drawing process architect is expressing and formulating the finest creativity, a person who draws is exposed to drawing pleasures, risks and failures.

In this dual process of engagement and cognition, Emmons distinguishes three aspects of architectural imagination that are important for line decision making: constructive imagination, inhabitative imagination,

and material imagination. 'Constructive imagination' emphasizes the role and importance of dashed lines, as hidden lines on the one hand, and texture lines that indicate the type of building material, on the other. Through the aspect of the 'inhabitative imagination' Emmons considers how an architect projects herself into her drawing using the different properties of the line in the drawing. While inhabiting a drawing, through the properties of line, the architect considers the experiences of future residents of the projected space. The aspect of 'material imagination' emphasizes architectural drawing as a medium. The notion of materiality here refers to drawing tools and materials used for drawing – from different materialities of the line (graphite, ink, chalk) to different types of drawing surfaces – and subsequently the focus in this aspect is on the relationship of these materialities of the drawing with the idea of materialization of the building. Relying on Emmons, I suggest that in drawing process as an embodied activity, there are at least these three aspects of imagination simultaneously engaged. Even regardless of the type or purpose of the drawing, architect inscribes and transmits particular visions and ethics that make permanent relation between him and his drawing. In this case, drawing becomes an extension of architect's thought, that once after its finished, continues its autonomous life open to interpretations and misinterpretations.

Benjamin discusses the complexity of the liminal relationship between engagement and the knowledge production contained in the activities of architectural drawing. He believes that this relationship contains the 'inherent fragility' of the architectural drawing. According to Benjamin, architectural drawing is more of a potentiality than a representation. He highlights the problematic position of architectural drawing in the history of architecture and its extremely important role, as it simultaneously contains the safety and responsibility of architecture (Benjamin 2014: 470). Continuing Robin Evans's studies on the complex relationship between drawing and building (Evans 1997), Benjamin believes that architectural drawing is actually a "liminal state in between potentiality and aporia" (Benjamin 2014: 476). In relation to Emmons and Benjamin, we can see that the 'liminal state' of architectural drawing arises from a dual relation: drawing between the activities of drawing and cognition (Emmons) and drawing between potentiality and aporia (Benjamin).

For the philosophical component of this approach, it is important to highlight influences from the line philosophy in Derrida's studies. At the very basis of the line problematization is in Derrida's work it is the fundamental notion of 'différance' which denotes the activities of differentiation (Derrida 1991). Unlike the notion of difference (différence) as a final, completed process, the form 'différance' by changing the vowel 'e' to 'a' sets the term in the modality of permanent activity. 'Différance' makes it possible to maintain the distinction between activity and passivity, between the interior and the exterior, the visible and the invisible, the empirical and the transcendental, without the need for synthesis and ultimate decision as a result of this activity. In this way, potentialities, contradictions and aporias remain in a constant relational connection to dialectically placed opposites. In this sense, 'différance' provides a context for shifting from the motive of affirmation, towards indecision, vulnerability and dichotomy activities. A line is a trace that distinguishes and creates a dichotomy. Derrida believes that the line is not important in itself, but the way in which it achieves its effect. According to him, the line is what makes the difference and brings the divided entity into the relationship, and it is not important in itself. It is a condition for 'différance' as an activity of dialectics. In this permanent, relational activity of undefined liminal condition there is a state of line's instability based on dialectical activities.

LIMINAL LINE DYNAMICS

The denotation of particular, liminal line dynamics and their experimentation in graphic analysis is first presented and articulated in the Atlas of Liminal line dynamics (Bnin-Bninski, 2021: 291) where each specific line is investigated and its own liminality is tested. This analysis is taking the concern further by approaching unstable line compositions. While avoiding traditional space representations, these compositions are exploring the liminal space of particular lines in their relation and reciprocal impact. The fundamental argument lies in the employment of various, different and specific lines while space and its qualities are questioned in their correlations.

The atlas is based on the relationship between notions of liminality and the line and underlines the nuances of an open line dynamic while merging architectural, artistic and philosophical views on spatial relations in drawing. It presents the invisible line, scale line, dashed line, poché, lineamenta, trait, meandering line, texture line, broken and curved line, Klee's line and fold. Collecting the key points issued from different disciplines and historical periods, these line analyses enforce multi-faceted, ethical and complex attitudes towards the act of line-making. As the atlas suggests nuanced and meticulous work with various relations

while embracing instability as the essence of drawing process, liminal line compositions are challenging these sensitive and vulnerable line characters. The liminal line compositions are presenting the interactive formations while employing from two to four different line dynamics. Using collage techniques, historical and artistic line examples, I advocate for critical potential of their nuanced liminal line states.

First liminal line composition assembles *poché* and curved line. The concept of *poché* was developed from the technology of drawing (in the nineteenth century), into a strategy of architectural and urban design. While *poché* can swallow and hide spaces inside the volume of the wall, it relativizes and triggers the notion of space partition and introduces the vibrating volume of the line (Lucan 2005: 42). The line of the active point that “walks freely” is one of Klee’s basic concepts. However, this line is almost never in unhindered movement, but is accompanied by events in the form of “complementary forms”, “secondary lines” or “described around itself”, and other lines move around the “imagined” main line (Klee 1968: 9). Through the dynamics of Klee’s line, Deleuze develops and clarifies the fold (*pli*) – one of the basic concepts of his philosophy, which inspired significantly architectural theory and practice (Deleuze, 1988).



Image 1. Liminal line composition 1. *Poché* liminal dynamics (in reference to Victor Louis (1731-1800) Grand Théâtre de Bordeaux); Klee’s line and fold liminal dynamics (in reference to Klee (1921-1931) *Active line, Pedagogical Sketchbook*).

Second liminal line composition dwells on *poché* and curved line while adding the texture line and scale line. The accent of the texture line is not in the shape it outlines, but in the characteristics of the building materials it represents. Emmons shows that from the very beginning of the drawing, the architects tried to show the character of the material intended for construction with various lines. This manner of drawing was free in the sense of representing subjective feelings towards certain materials, until the adoption of the first conventions which in the twentieth century resulted in symbols for materials (Emmons 2014: 544). When, in the nineteenth century, the scale was marked on paper and thus became part of the drawing, according to Emmons the scale was reduced to an “exclusively mental act of measurement”, which lost its embodied relationship. In contrast, he emphasizes the value of contextualized scale relationships applied during the sixteenth century, through rod-shaped scales on flat plates of different materials, with a multitude of engraved dimensions from different locations (Emmons 2005: 227).

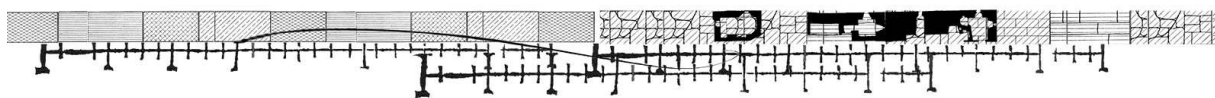


Image 2. Liminal line composition 2. *Poché*, Klee’s line and fold liminal dynamics with texture line (in reference to Thomas French (1918) *Manual of Engineering Drawing*) and scale line liminal dynamics (in reference to Sebastiano Serilio (1537-1551) *Five Books of Architecture*).

The final and third liminal line composition collects texture line, scale line and dashed line. The curiosity of dashed line is another interest in the Emmons’s investigation. As he explains, the essential quality is the nature of this line which signifies absence. He argues that the dashed line exists simultaneously on two levels: one trace is drawn on the surface, while the other level hovers above the surface of the drawing (Emmons 2014: 458). The ambiguity and active condition of dashed line is contained in its fundamental relations with absence and time, as it indicates spatial segments that are above, below, in front or behind the drawing surface, it can also imply the information about the previous or the future states of the drawn space.

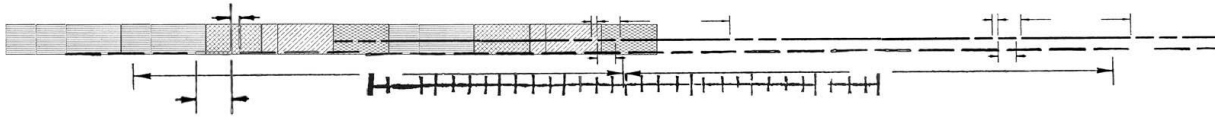


Image 3. Liminal line composition 3. Texture line, scale line and dashed line liminal dynamics (in reference to *Standard for conventional line symbols, American Standards Association Lines and Line Work (1935)*).

LIMINAL LINE POTENTIALITIES

The drawing and line for Benjamin belong to the same part of the drawing process. He sees the ‘force of drawing’ in the complexity of the drawing process and ‘work of lines.’ The complexity of the line, according to him, belongs to the dichotomy between the simplicity of the line and the multiplicity of elements that are connected to it; he considers the line as an after-effect of drawing technology and a place of ideas that contains the necessary question of possible actualization (Benjamin 2014: 476). In this analysis, Benjamin develops a thesis about the multiplicity of the line in architectural drawing and calls the line a ‘multiple event’ that is irreducible. He first explains that the line is the result of what is drawn by it and then adds that the line is not opposite to form and idea, nor is it defining and final, but is precisely in the space between potentiality and aporia because it is conceived as a set of relations. This Benjamin’s idea imposes the liminal, in-between condition of the line as undefined, unstable and fragile state that provides particular strength and power to a drawing.

From the view of drawing act, we have seen that the drawing process is founded on the embodiment and inhabitative imagination, contextual and political awareness in usage of technological and geometric properties of line. Liminal line compositions are emphasizing the un-precise, confusing, fragile and uncanny states of specific lines and this opens up the polygon for the critical phenomenology in architectural drawing (Hale 2013: 18–37). Particularly important for this critical potential in the act of liminal drawing is the activity of the line in the unstable state of limen. The activity that maintains unstable and ambiguous qualities in its “irreducible complexity” that positions the spatial questions and keeps the force of the drawing in its openness for the drawing author and the observer. The ambiguity preserved in liminal, unstable state of lines does not offer the solution and the final answer for architectural design and built environment. On the contrary, liminal line dynamic insists on critique and auto-critique in drawing act that calls for ethical attitude and responsibility in drawing as primary architectural act.

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**THE ARTIFICE OF WATER:
Art project H₃O₂ Vol. 2 – Spatial Installations**

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ABSTRACT

With the Art Project H3O2 Vol. 2 intention is to continue, now an annual tradition, to explore through artistic experimental practice that interprets the structure and elusive form of water. Research is based on the principles of design and artistic thinking constructed on spatial structures and rules by which the emanation of architectural and artistic concept can exist today, in gallery or /and vs. Virtual reality (VR) and augmented reality (AR). That is, as a project in which, in an extremely transdisciplinary, but at the same time interdisciplinary way, we intertwine, expand and explore architectural, but also wider scientific disciplines of critical-artistic operationalization in space.

Water is simultaneously both a precious phenomenon and an everyday necessity. In areas of scarcity and pollution, the lack of water gives it a tragic quality, while in areas of its abundance it is an aesthetic object of elusive form and beauty, of inspiration, admiration, enjoyment and research tool.

Through the H3O2 project, water is mostly seen as a tool for structuring space, building element of the space and ambience in it. The research results are presented through drawings, structures, sculptures, assemblages and spatial installations. The concept that defines the H3O2 Project is open and as such was transformed into the *NO Concept Gallery* exhibition program, with the aim of incorporating the results of the applied workshop to achieve better results in thinking about water, its application and multiple purpose when discussing architectural and artistic activity. The *NO Concept Gallery* is a space where, through spatial installations, water found its way after all, serving as an Polygon of action of the presented concepts of young authors. New *spatial images of water*, new ambiances, prototypes, more precise models, sculptures and structures of water have been created through this architectural and artistic project.

Introduction and background of H3O2 Art Project

The Art project *H3O2* was created in a dedicated post-production of selected works for exhibition in the *NO Concept Gallery*¹ under the mentorship of the *Atrio* group². *H3O2* is annual co-authored project of this group. The authors/curators of the project were invited together with the students to respond to the topic *Aquatectorium - ambients inspired by water*, through the creation of ideas for the obtained space of the *NO Concept Gallery*, where the art project is realized in this exhibition season. The artifacts that were exhibited on that occasion were created as the result of an elaboration of the obtained results of the student workshop *H3O2* realized within the Studio project in the final year of Integrated and Master Academic Studies of Architecture at the University of Belgrade – Faculty of Architecture (UB FA). The concepts and application methods that were researched in the process of working on the subject served to form a unique work – an art project that is exhibited as such in the *NO Concept Gallery*³ in Belgrade (Photo 1), in the form of a author's exhibition (October 1 - 10, 2022), with spatial installation, i.e. with new *spatial images of water*.⁴



Photo 1. *NO Concept Gallery* in Belgrade during the exhibition *H3O2 Vol. 2* (the evening before the opening ceremony of the exhibition), photo by Milica Jovančević

H3O2 is interpreted as a formula for a different view of water, water with structure, water with the power to shape the space around us, water as an interactive tool in the processes of structuring space (Stojković Minić et al. 2021: 197). Also, this formula is connected and interpreted metaphorically through the understanding of the *Aquatectorium*, that is, as one of the ways of forming space (ambience) from and with water. The students' works, which represent the starting point for the further development of the artworks for the exhibition, were created during the regular teaching process in the autumn semester of the academic year 2021/2022, on the subject Studio project. The Studio project and accompanying student workshop were titled with the name *Aquatectorium*⁵, and the corresponding topic of the exhibiton – the water in architecture, which, now traditionally, follows the subject – Studio project in the fifth (final) year of the Integrated and Master academic studies at the UB FA, and under the mentorship of tenured professor and architect Dejan Miljković⁶ and teaching assistant Miloš Stojković Minić, as a continuation of the *H3O2* workshop, which was implemented and performed in the form of an art project (realized exhibition in the Street Gallery) in the previous academic year.⁷ This academic year, the mentors, i.e. authors, curators and editors of the exhibition and the accompanying catalog are: fine artist Stipić Dudwarszky Dušan and architect Petrović Nevena, in addition to the creator of the art project and concept, architect Miloš Stojković Minić⁸. The participants of this year's exhibition were Aleksa Đorđević; Minja Gligorijević; Andrej Jovanović; Jovana Lučić; Irina Živković; Anita Pešić; Nevena Petrović; Dušan Stipić Dudwarszky; Miloš Stojković Minić. The Art project *H3O2 Vol. 2* was supported by the University of Belgrade – Faculty of Architecture, the *Atrio*

1 <https://noconcept.rs/gallery>

2 *Atrio* is a group of architectural and artistic operational practice, and whose members are currently: Miloš Stojković Minić (founder of the group), Nevena Petrović and Dušan Stipić Dudwarszky.

3 Space of the former railway station called Danube Station/Dunav stanica – Belgrade-Danube/Beograd-Dunav.

4 <http://www.arh.bg.ac.rs/2022/09/27/izlozba-studentskih-radova-akvatektorijum-ambijenti-inspirisani-vodom/?pismo=lat>

5 More about the goals and methods of work on the mentioned subjects can be seen in the accompanying curricula (Miljković 2021).

6 <https://www.dejanmiljkovic.rs/sr/home>

7 https://www.youtube.com/watch?v=4Mp_iE2YpsA&t=2s&ab_channel=BrainzTV;

<http://www.arh.bg.ac.rs/2021/08/19/umetnicki-projekat-h3o2/?pismo=lat>

8 <https://www.instagram.com/mist.arh/>; <https://www.instagram.com/aquarelleum.concept/>

group, and the *NO Concept Gallery*, where the exhibition was opened on Saturday, October 01, 2021, at 7 pm, despite persistent rain during the opening again this year. The exhibition in the *NO Concept Gallery* lasted from October 1, 2022 to October 10, 2022. At the opening and during this period, the exhibition was accompanied with two author's guidance through the exhibition⁹ (Photo 2). The exhibition is accompanied by a reviewed catalogue, which is currently under construction, the catalog will also include descriptions and images of all artworks from the exhibition.



Photo 2. Triptych - details from the the exhibition *H3O2 Vol. 2* opening ceremony and author's guidance through the exhibition, (group of photos, photos by Tijana Žišić and Miloš Stojković Minić)

Objectives & Methods of the Artifice of Water: Art project *H3O2 Vol. 2 – Spatial Installations*

This paper deals with the Artifice of Water and examines it through the *Art project H3O2 Vol. 2 – Aquatectorium: ambients inspired by water*, interpreting and clarifying its Spatial Installations, determined as *spatial images of water* (Stojković Minić 2022: 87-88), described in more detail according to the words and methods of each author (Photo 3).

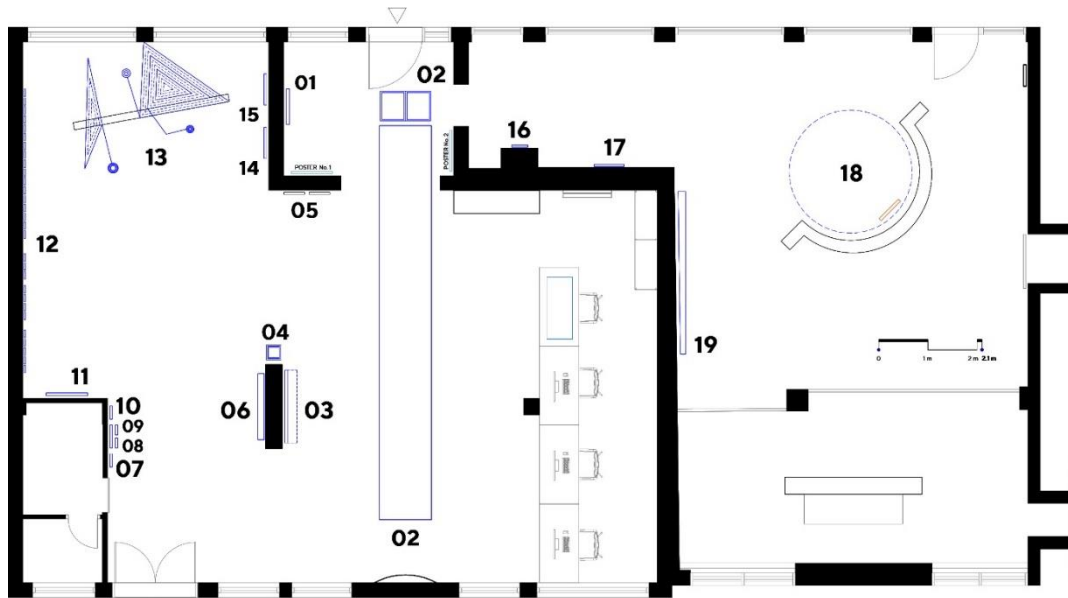


Photo 3. *NO Concept Gallery* during the setting of the exhibition Art Project *H3O2 Vol. 2*, floor plan of the gallery, drawing by Miloš Stojković Minić

Within the framework of the *H3O2 art project*, water is interpreted and thought through spatial inastalations,

⁹ <http://www.arh.bg.ac.rs/2022/09/27/izlozba-studentskih-radova-akvatektorijum-ambijenti-inspirisani-vodom/?pismo=lat>

and also viewed as a tool for structuring space, a building element of space and its ambients (Moore 1994). Therefore, water is viewed as a methodological tool for achieving the visual minimum of the highest conceptual maximum both in spatial and artistic creativity, i.e. author's (spatial) expression as *spatial images of water*. Water is simultaneously both a precious phenomenon and an everyday necessity. In areas of scarcity and pollution, the lack of water assigns it a tragic quality, while in areas of its abundance it is an aesthetic object of elusive form and beauty, an element of possible inspiration, admiration, enjoyment, and nevertheless as a methodological research tool of art and architecture (Stojković Minić et al. 2021: 196).

The concept that defines the *H3O2* project is open and as such was transformed into the *NO Concept Gallery* exhibition program, which follows the offered gallery space during the 2022 exhibition season, with the aim of applying applicative research methodology of water and its occurrence in architectural space (ibid., 2021). Also, the goal is to examine, once again, the ways of new application and reflection about water, its occurrence and multiple interpretations in the discourse of architectural-artistic action in operational practice (Stojković Minić 2022). Certainly, one of the main goals of this project remains the promotion of contemporary architectural and artistic practices of unestablished authors, this time not in the open public city space, but in the closed gallery space of the *NO Concept Gallery*, which is still viewed as a public open space in which anyone can enter. Our intention is therefore to view the space or spaces of the gallery in which we exhibit as an operational training ground, where it is possible to create new *spatial images of water*, new ambients and structures inspired by water, through the *Art project H3O2 Vol. 2*.

Objectives of this year's art project with its own subtitle *Aquatectorium: spatial ambients inspired by water* explores and offers abstracted and intuitive ways of thinking, i.e. modeling artefacts and structures that formally and by theme belong to the element of water, through the structuring of materials (sand/stones/wool/ice) that is causally and consequentially connected with water and its occurrence in nature. In the course of the work, the duality of the relationship between water and the built - artificial and natural environment was investigated, as an interpretation of the occurrence of water or its absence, and through the paradox of the application of such a methodology of work (ibid., 2022: 91-96). During this artistic project and the post-production (creation) of the works for the exhibition, the students were introduced to the complex relationships of volumes, structures and functions of building space, the creation of physical models, concepts and prototypes, with the aim of mastering specific approaches to solving contemporary design problems of Aquatecture (Wylson, A. 1986; Barker and Coutts 2016), and through modeling, drawing and photographing the research process, during the creation of an artistic project, that is, an architectural work of art.



Photo 4. The appearance of the Street gallery during the setting of the exhibition Art Project H3O2 Vol. 1 (Diptych), photo by Vesna Dobričić

Before further descriptions of artworks from this year, it is important to note that the original *Art Project H3O2, Vol. 1*, was created in the dedicated post-production of selected works for the space of the Street Gallery (Photo 4) under the mentorship of Miloš Stojković Minić¹⁰, Milica Grbić¹¹ and Nikola Dimitrović¹², as an elaboration of the results obtained from the student Workshop *H3O2* realized as part of the Studio project course of the academic year 2020/21 in the final year of the Integrated and Master of Architecture studies at the UB FA (Stojković Minić et al. 2021). The concepts and applied methods that were investigated in the process of working on the subject served to form a unique work - an art project that was exhibited in

10 <https://www.instagram.com/mist.arh/>

11 <https://www.behance.net/milicagrbi6762>

12 <https://www.nikoladimitrovic.com/>

the Street Gallery in the form of a group exhibition with spatial installations, aiming to reflect on spatial ideas and imagination of the desired [artistic] space or structure of water - *spatial images of water* as artistic installations in space. With this year's exhibition, and in the second edition (Volume 2), this tradition continues through the specific architectural and artistic concept that is transmitted further through the river of time.

The *NO Concept Gallery* is a space where, through spatial installations, water found its way after all, serving as an Polygon of action of the presented concepts of young authors. New *spatial images of water* new ambiances, spatial installations, more precise models, sculptures and structures of water have been created through this, now a two-year long, architectural and artistic project (ibid., 2021).

Descriptions of the exhibited Spatial Installations

A total of nineteen works were exhibited at the *H3O2 Vol. 2 Art Project* exhibition (Photo 3), out of which three were exhibited also in the *Street Gallery* (last year but in other form – Photo 4), while all other works were are placed in the space of the *NO Concept Gallery* (of which a total of sixteen new works are exhibited in both exhibition areas of the gallery for a first time). Each of the works was purposely created for its place and space, that is, the exact place was determined – the space in which the work is placed and exhibited (Photo 5). Before setting up the work and exhibition, it was preceded by a production process in which the authors of the exhibition actively participated as mentors to students who were actually the most active participants in this art project (Photo 6).

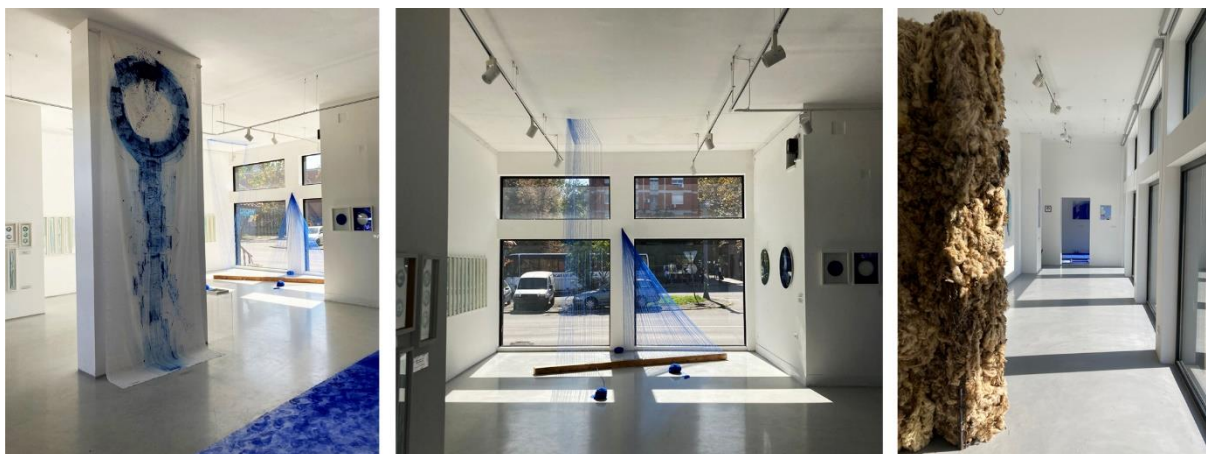


Photo 5. Display of the art works at the exhibition Art Project H3O2 Vol. 2 (Triptych), photo by Miloš Stojković Minić



Photo 6. Process of the production of the exhibition Art Project H3O2 Vol. 2, (group of photos, photos by Miloš Stojković Minić)

The artworks at the exhibition bore the following names: *PLAVA TENZIJA | BLUE TENSION* (01); *Zajedno – PoPLAVOM | All TOGETHER & All ForONE – BlueFlooding* (02); *Aqua fluunt portal* (03); *Kapi vode života | Gutta(e) aqua(e) vita(e)* (04); *Voda života | Aqua(e) vita(e)* (05); *Otisak talasa | Imprint of wave* (06);

Akvarel triptih | Watercolor triptych (7); Četiri kruga vode | Four circles of water (8); Linije vode (diptih) | *Linea aqua est* (diptych) (9); VAPOURABLE SUBLIME (10); *Dum expexto spero* (11); Linije vode (valerski niz boja vode) | *Linea aqua est* (valer series of colours of water) (12); *Niti* (13); Palace of Water No. 1 & Palace of Water No. 2 (14&15); *Prevlaka*, Adriatic (16); *Ozblak* | *Oz cloud* (17); Sakrament IV | Sacrament IV (18); *AQUATECTORIUM – ambients inspired by water* (19).

In the following text, the above-mentioned works of art (artworks/artefacts) will be explained in more detail, in the order in which they were exhibited in the *NO Concept Gallery* (Photo 3), i.e. according to the given ordinal numbers according to which they will be shown in the accompanying catalogue of the exhibition.

01. PLAVA TENZIJA | BLUE TENSION

Author | Nevena Petrović, m. arch.

Blue pigment, white wooden frame, double glass

Framed (blue) pigment, spatial image, 77 x 72 cm, 2021.

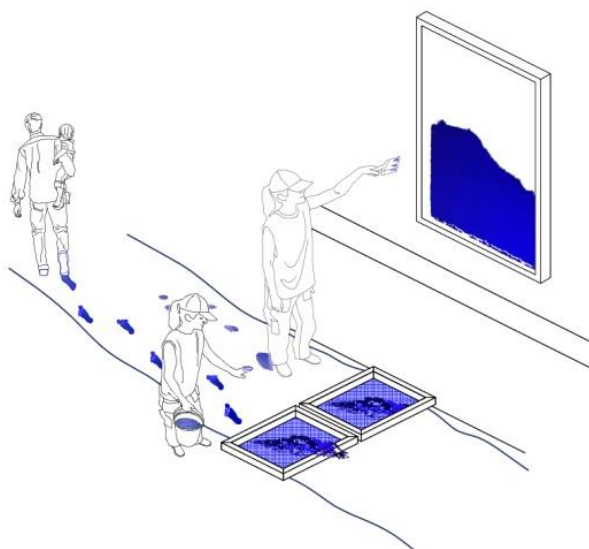


Photo 7. *Zajedno – PoPLAVOM & PLAVA TENZIJA*, illustration of the art works, drawing by Miloš Stojković Minić

„Blue tone as a universal visual symbolic carrier of the meaning of water is taken in the work as an aesthetic – conceptual category. The focus of interest is thinking about the conceptual relationship of tension, more precisely freedom and non-freedom, but also the issue of art performance in space (Photo 7 & 8). The choice of materials, that is, the structural coloured values, were brought into relations in such a way that their characteristics form the uniqueness of the artistic appearance of water in space. The glass form of clearly defined proportions of the picture frame was used as an element that, with its geometry and transparency, makes a distance from the blue content that is in its centre. The blue matter inside the frame is visually distanced - trapped, which the observer reads as "safe". Thinking about the basis of the resulting image and the relationship between freedom and non-freedom, a solution was reached in which the free particles of blue pigment are the ones that can be read as a pedestal. The sculptural whole is conceived in relation to two extremes where, contrary to the mentioned limited form of the image, the quantity and free movement of particles - a pile of scattered pigment creates a certain kind of tension in the observer. The mentioned feeling is also emphasized by the conditions of exhibition in the given "gallery space" where these free particles are located in the urban exterior - the Street Gallery, and where there is a possibility of their distribution in the city space - the street (Stojković Minić, et al. 2021: 199-200).”

Nevena Petrović



Photo 8. *Plava tenzija* (Blue tension), artwork display during the exhibition Art Project H3O2 Vol. 1 in the Street gallery, (group of photos, photos by: Nevena Petrović & Miloš Stojković Minić)

What is interesting is that this art work, this year, this time, in *Art Project H3O2 Vol. 2*, exhibited as the first, and at the very entrance of the gallery (as the work of art that opens the exhibition and thus continues the tradition of the *H3O2 art project*). Again, it deepens the described relationship (tension) with the work in which it flows, and into which the blue pigment, like water, is poured and leads the visitors further through (and into) the space of the *NO Concept Gallery* into the *H3O2 Vol. 2* exhibition (Photo 9).



Photo 9. *Plava tenzija* (Blue tension), artwork display in the *NO Concept Gallery* in Belgrade during the exhibition Art Project H3O2 Vol. 2, (Triptych), 2022, photo by Miloš Stojković Minić

02. *Zajedno - PoPLAVOM* | All TOGETHER & All ForONE - BlueFlooding

Author | Nevena Petrović, m. arch. & Miloš Stojković Minić, m. arch.
 Screen printing frame 2x [Al. frame 51x61cm], blue pigment, white canvas, water
 Canvas, 110 x 800cm / Barriers/frames, 2 x 51 x 61 cm, 2021/2022.

During the exhibition *H3O2 Vol. 2 Art Project*, this artwork was used, this time, as a blue entrance carpet, leading visitors further into the gallery (Photo 10 & 11). Its function from last year has now only been deepened - with a new type of performance in the closed space (but at the same time open space) of the *NO Concept Gallery*, so that visitors at the end of the canvas (blue carpet) would meet a reflective sphere (lens) in which the entire gallery space with the installed works was reflected (Photo 33).

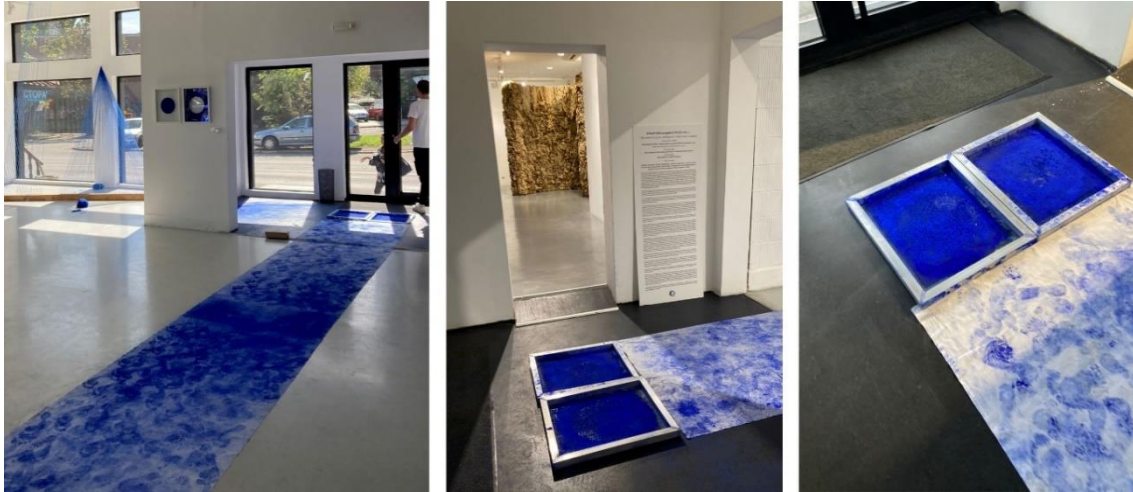


Photo 10. *Zajedno - PoPlavom (BlueFlooding)*, artwork display in the NO Concept Gallery in Belgrade during the exhibition Art Project H3O2 Vol. 2, (Triptych), 2022, photo by Miloš Stojković Minić

Below is a brief description of this artwork, and its full description can be read in last year's paper *The Artifice of Water: Art project H3O2 – Spatial streetscape Installations* (Stojković Minić et al. 2021).

„Water entices us to touch it, to feel it, it is a way for us to feel a little free. Structuring water can lead us to adapt to its basic characteristics, but also to the characteristics of all other materials in contact with it [floating, rippling, flowing]. What happens when it appears where we don't expect it at all, when it starts controlling and disturbing us? Disinfection barrier – *PoPlavom (BlueFlooding)* calls a person to consciousness by placing him in close contact with water [in his absence of presence], which he still somehow "bypasses" (ibid., 2021: 198).”



Photo 11. A group of photographs showing this artwork during the exhibition Art Project H3O2 Vol. 2 in the NO Concept Gallery, 2022, (group of photos, photos by Miloš Stojković Minić)

A barriers with a blue pigment instead of water provides the next best thing, it allows us to feel it, touch it, and see it. It addresses man and draws attention to itself - it creates a new *spatial image of water* with blue prints created during the process of performative action during the duration of the two exhibitions time (Photo 12).



Photo 12. A group of photographs showing this artwork during the exhibition Art Project H3O2 Vol. 1 in the Street gallery and the performance (proces of creation) that accompanied it, 2021, (group of photos, photos by Vesna Dobričić & Nevena Petrović)

03. Aqua fluunt portal

Author | Minja Gligorijević, m. arch.
Acrylic (blue) paint on white canvas
Spatial image/painting, canvas, 400 x 150 cm, 2022.

„The process of water outflow, the source as a place of creation and further flow as the process itself. The roundabout represents a beginning, a place, a point of departure, which in its course leads to a new place, a point of inflow. The process of moving from the starting point to the end point, and vice versa, represents a period of time, that is, a flow. The flow itself represents a portal as a step into a new, time-limited ambient environment created as an inspiration of the everyday behavior of water, which is shown on the canvas through different strokes of the brush and (blue) paint (photo 13).”

Minja Gligorijević



Photo 13. *Aqua fluunt portal*, artwork display in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H302 Vol. 2, (Triptych)*, 2022, photo by Miloš Stojković Minić

04. Kapi vode života | Gutta(e) aqua(e) vita(e)

Author | Miloš Stojković Minić, m. arch.
Laser cut circles in different diameter dimensions, laser cut (Klein) blue mirror and transparent acrylic 3 mm thick (wooden white frame, 4 cm, double reflex glass)
Framed drops (circles), spatial image, 21 x 21 cm, 2022.

*„This artwork is created in the process and during the production of the next work entitled *Water of Life (Voda života - Aqua vita)*, it reflects the methodology of my water-space research that I set up during my doctoral studies, where I observe water - more precisely the water droplet(s) under a microscope and from that intuitively-perceptual process, I extract information, such as colour and shape, essential for my architectural and artistic imagination of space creation (Cmojkoeuĥ 2020; Stojković Minić 2022).”*

Miloš Stojković Minić



Photo 14. *Kapi vode života – Gutta(e) aqua(e) vita(e)*, artwork display in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H3O2 Vol. 2, (Triptych)*, 2022, photo by Miloš Stojković Minić

This work (artefact) was not placed on the wall, instead it was displayed on a transparent pedestal (and opposite the mentioned work with which it is related), so that anyone could take it and in that act sieve the framed droplet(s) of the water of life in the space of the gallery (Photos 14 & 15). As such, the work is interactive and can be exhibited in various ways in the space - it represents the embodiment of a possible *spatial image* that is created according to the methodology that explores water as an element and tool for space structuring (Stojković Minić 2022).



Photo 15. A group of photographs showing this artwork during the exhibition *Art Project H3O2 Vol. 2* in the *NO Concept Gallery*, 2022, photos by Miloš Stojković Minić

05. *Voda života | Aqua(e) vita(e)*

Authors | Miloš Stojković Minić

**Laser cut (Klein) blue mirror and transparent acrylic 3 mm thick (wooden white frame, 4 cm, double reflex glass) / Spatial image - module (Blue-water) circle (of life) with a diameter of 21 cm
Framed circles, spatial images (diptych), 2 / 42 x 33 cm, 2022.**

„This artwork is created in the post-production process as a dedicated and purposely made gift with a deeper, life-giving meaning, and as such is part of the private collection of my friends for whose wedding it was made - created. The work consists of two spatial images (diptych), i.e. two circles, one blue on a transparent background and one transparent on a blue background (mirror, Klein blue acrylic). Together they make one thing - they make a new life.”

Miloš Stojković Minić

This artistic work is correlated with the previously described work called *Droplets of water of life (Kapi vode života - Guttae Aquae vitae)* and as such were exhibited in the gallery space at this exhibition, this year (Photo 16).



Photo 16. *Voda života – Aqua(e) vita(e)*, artwork display in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H3O2 Vol. 2, (Triptych)*, 2022, photo by Miloš Stojković Minić

06. *Otisak talas* | Imprint of wave

Author | Aleksa Đorđević

Shaping, bending and stretching of panels using heating

Spatial (wall) installation, plastic, 240 x 105 cm

„The work represents the uncontrollable and unrepeatable movement of water (waves) in a specific time and context, where concrete forms are relativized and turned into an abstract sculpture – spatial installation. The visual appearance of the wave imprint in sculpture, characterized by a set of unique amorphous forms, emphasizes the unpredictability of this specific movement and its memory in time and space (Photo 17).”

Aleksa Đorđević

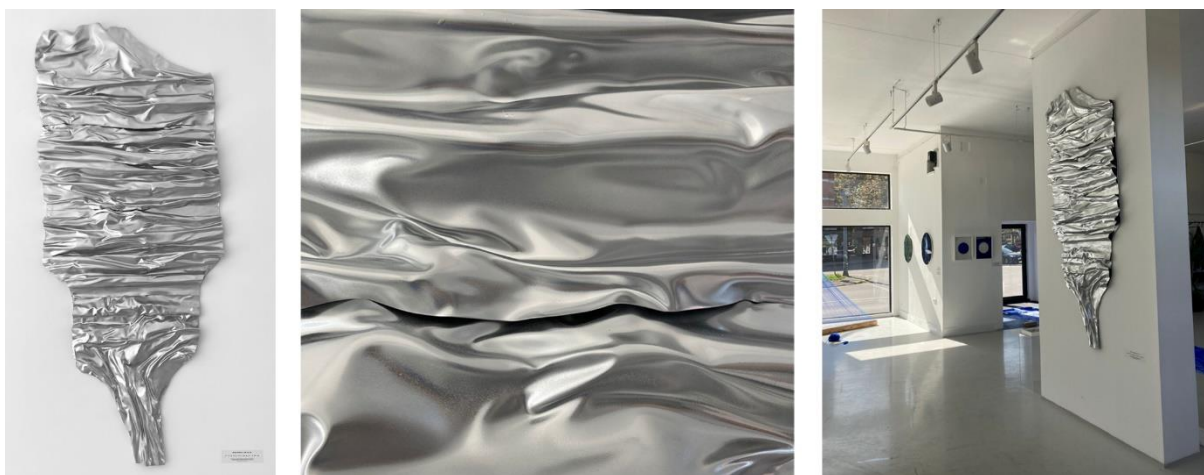


Photo 17. *Otisak talasa* (Imprint of wave), artwork display in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H3O2 Vol. 2, (Triptych)*, 2022, photo by Miloš Stojković Minić

07. Akvarel triptih | Watercolour triptych

Author | Miloš Stojković Minić

Three circles of colours of water on aquarelle paper (wooden frame, 4 cm, double reflex glass)

Aquarelle triptih, spatial image, 33 x 21 cm, 2020/2021/2022.

This artwork consists of three watercolour circles of water and was created as part of the artist's earlier research on the occurrence of water, which follows the mentioned methodology of structuring space with water. This artwork is in a private collection (Photo 18).



Photo 18. *Akvarel triptih* (Watercolour triptych), artwork display in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H3O2 Vol. 2, (Triptych)*, 2022, photo by Miloš Stojković Minić

08. Četiri kruga vode | Four circles of water

Author | Miloš Stojković Minić

Four circles of colours of water on aquarelle paper (wooden frame, 4 cm, double reflex glass)

Aquarelle circles, spatial image, 42 x 42 cm, 2020/2021/2022.

The aim of the group of artworks, the watercolour (aquarelle) series, to which this artwork also belongs (which consists of four watercolours circles – four circles of water), is to show water that has been seen as the subject of dedicated, contextual analysis and methodology, but also as a possible manifestation of that methodology through the art, and in space. The uniqueness of this artwork (like the previous one, that is, all the works in this group) can be read in the fact that it arises as a direct consequence of the author's methodological examination of the space structuring with water (Stojković 2020). What should be pointed out is that one of the four (watercolours/aquarelle) circles of water, shown in this work was on the title poster for exhibitioins at the very entrance to the gallery, and also on invitations cards for the author's guidance through the exhibition (Photo 19).

Miloš Stojković Minić



Photo 19. *Četiri kruga vode* (Four circles of water), artwork display in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H3O2 Vol. 2, (Triptych)*, 2022, photo by Miloš Stojković Minić

09. Linije vode diptih | Linea Aqua est (diptych)

Author | Miloš Stojković Minić

Lines of colours of water on cleaved watercolour paper,

Aquarelle (wooden frame, 3 cm, double reflex glass)

Framed lines (valers) of water, spatial image(diptych), 75 x 15 cm (30&31/33), 2021/2022.

This artwork is a part of bigger series of artworks named *Linije vode (Linea Aqua est)*, what distinguishes this work from the rest of the artworks from the mentioned series is that these two works are exhibited as a diptych, and also in their dimension, in terms of height, they are shorter than the rest of the watercolour artworks (aquarelles) in the mentioned series of artworks (Photo 20). Description in more detail of the entire series of artworks and its origin, as well as the methodology, will be given in the continuation of the text, in the description of the work under number 12. *Linije vode (valerski niz boja vode / valer series of colours of water)*.



Photo 20. *Linije vode (Linea Aqua est)*, artwork display in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H3O2 Vol. 2, (Diptych)*, 2022, photo by Miloš Stojković Minić

10. VAPOURABLE SUBLIME

Author | Miloš Stojković Minić

Three circles of colours of water on aquarelle paper (wooden frame, 4 cm, double reflex glass)

Aquarelle triptih, spatial image, 33 x 21 cm, 2019/2020.

This artwork is specific in that it was created as the first watercolour triptych at the very beginning of the author's early research and dealing with the theme of water in architecture during 2019 and 2020, when he began to apply the previously established methodology during the creation of competition projects in his architectural design and operational practice. Thus, three circles of water are shown, used as a concept diagram for the *Vapourable Sublime project* for the revitalization of a chateau in the French (Photo 21). More about this work and the methodology behind the competition project and design process in the papers and proceedings from the 2020 and 2021 conferences *Places & Technologies* and *Building services & Architecture*, under the titles: *VAPOURABLE SUBLIME – AQUATECTURE EXPERIMENT AND PROJECT REVIEW* (Stojković 2020) and *THE PHENOMENON OF WATER IN ARCHITECTURE - RESEARCH THROUGH CONCEPTUAL PROJECTS* (Stojković Minić 2021).

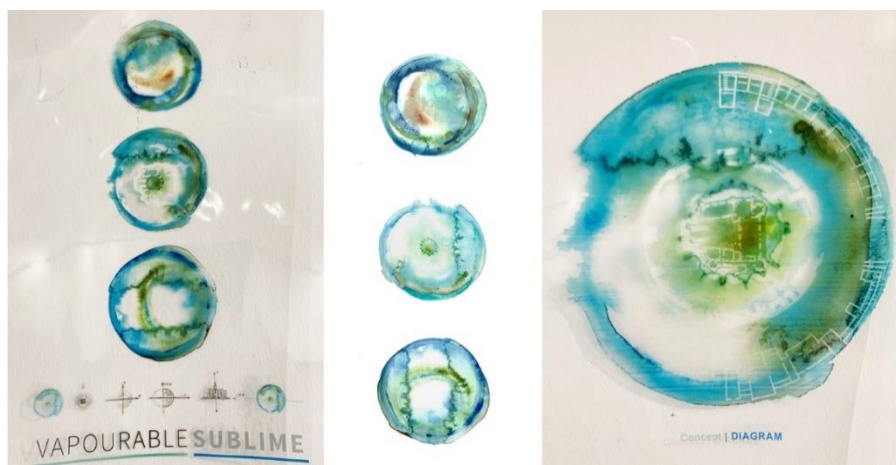


Photo 21. Vapourable Sublime (within group artwork: *Aquatectorium – ambients inspired by water*), artwork display in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H302 Vol. 2*, (Triptych), 2022, photo by Miloš Stojković Minić

Water (with the colours and shapes it carries) is the key element of imagination, as all of its states are familiar to the visitor and thus serve as an effective stimulation of the senses. That notion appears as a leitmotif throughout all parts of the depicted project and artwork (Photo 22).

„The most sublime state of water is vapour. It is manifested here as a visible exhalation of the ruin, a mist that disintegrates architecture, dematerialises space and annihilates gravity. Vapour makes architecture insubstantial and the visitor’s emotions transitory. It provides strange, senseless and fantastic notions which rewrite the overall story of the chateau with each visitor. On a wider scale, the ruin itself functions as a water droplet. It emanates vectors, emits surfaces and structures which physically manifest as ripples crystallized in time (Dundović 2019:1). Conclusively, the common ruin of the manor (chateau in the water), architecture and art transcends the known physicality and emerges as a notion of sublimity – that is, the Vapourable Sublime (Stojković 2020: 438).”



Photo 22. Vapourable Sublime, artworks display (in a group with other artworks) in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H302 Vol. 2*, (Triptych), 2022, photo by Miloš Stojković Minić

Ambients, conceptual diagrams and drawing from the *Vapourable Sublime* competition project were, also, presented as part of the group artwork of the exhibition participants under the name *Aquatectorium – ambients inspired by water* (Photo 21 & 32).

11. Dum expexto spero

Author | Irina Živković

Digital print and acrylic on canvas, laser cut acrylic details 3 mm

Spatial (drawing) painting, spatial image, 147 x 84 cm, 2022.

„While we can still use the water resource, we hope that a change in environmental awareness is possible. The starting idea of the work is the examination of boundaries - the "space between" within the architecture of the theater. The basis of the work is a theater filled with water with all its reflections, the product of which is a measuring instrument of culture. It is designed as a space that lies exactly on the mentioned border, whose impact on the environment and the individual is examined through the relationship between the liquid and solid states of water. Both in nature and in architecture, water is an important driver. Mind mover. It connects and separates the urban environment from the uninhabited, forms of life on land and those that belong to it. When a theater is erected in such a place, with a precise plan for the inflow of water onto the stage, a well-designed "laboratory" suitable for experimentation is obtained. Also, the theater is located between the real and the imaginary, the real and the impossible, as an illusion or a semblance of life, it is perceived as its own mirror where reflective surfaces are created when water floods the stage. This would be an experiment that separates the members from the real world by guiding them through their own lives, during which there is an awareness of individual, social and ecological changes - a space of ecological changes initiated by water (Photo 23).”

Irina Živković

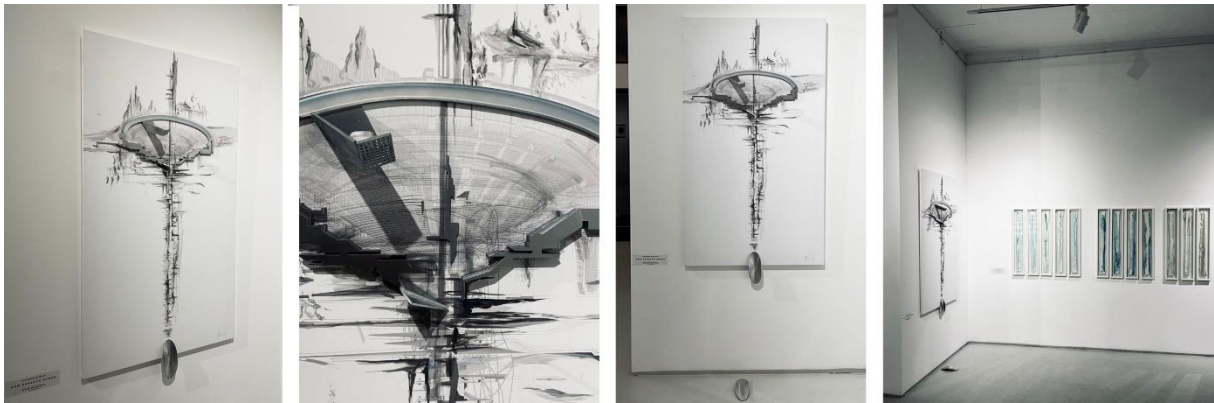


Photo 23. *Dum expexto spero*, artwork display in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H3O2 Vol. 2, 2022*, (group of photos, photos by: Miloš Stojković Minić)

12. Linije vode (valerski niz boja vode) | Linea aqua est (valer series of colours of water)

Author | Miloš Stojković Minić

Lines of colours of water on cleaved watercolour paper,

Aquarelle (wooden frame, 3 cm, double reflex glass)

Framed lines (valers) of water, spatial images, 87 x 15 cm (01-29/33), 2021/2022.

This artwork is consist of twenty-nine aquarelle in a bigger series of artworks all called *Linije vode (Linea Aqua est)*, what distinguishes this work from the rest of the artworks from the mentioned series is that series of artworks are exhibited as continuous line on the wall – as spatial installation (Photo 24).

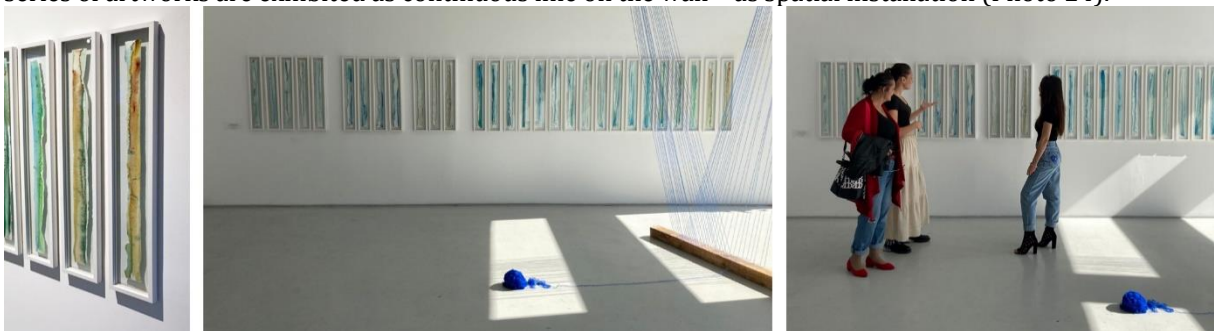


Photo 24. *Linije vode (Linea Aqua est)*, artwork display in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H3O2 Vol. 2, 2022*, (the whole series), 2022, (group of photos, photos by: Miloš Stojković Minić)

When creating this piece, it was a dedicated post-production for the exhibition *H3O2 Vol. 2*, originally the watercolour under the specified number on the back of the paper was exhibited as part of the work *Aquarelle Organum* at the exhibition *H3O2 Vol. 1* in the *Street Gallery* in September 2021 (Photo 25). The spatial installation *Aquarelle Organum*, which is structured from torn paper that has been previously painted with the watercolour technique in the colours obtained according to a strict procedure. The resulting blue tone and valer is just one of the series of colours obtained in such a methodological process that the author is studying for his PhD research, which deals with the theme of structuring space with water. And so, a year later, the aquarelle in question in the series of works become or remain just one of the lines of water (with deeper meanings in the eye of the beholder) in a series of aquarelles that are framed, and as such form a whole series (collection) of 33 works, which all together bear the name *Linije vode (Linea Aqua est)*.



Photo 25. *Linije vode (Linea Aqua est)*, artwork display in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H3O2 Vol. 2*, (the whole series), 2022, (photos by: Miloš Stojković Minić)

„The *valer* series of aquarelle paintings, shows the spatial structure of watercolour paper, which dissolves under the influence of water and its colours, revealing its interior which time has transformed and the point of degradation of the material. In the end, the installation tries to be a manifesto for a new/or other possible way of connecting architecture and nature, structure and ecosystems, space and time, man and the (spatial) art. The spatial installation *Aquarelle Organum*, from last year, and at the same time *Linea Aqua est*, from this year, is defacto a type of spatial image, which is structured from torn paper that was previously coloured with watercolour technique in colours, tones and valences (*valers*) obtained by observing a sample of water under a microscope. A sample of the observed water was taken from the site – *Street Gallery* (Photo 26). The palette was obtained by pixelizing a photograph of a sample of water droplets under a microscope, using the *Picassa* photo processing program (*ibid.*, 2021: 199).”

Miloš Stojković Minić

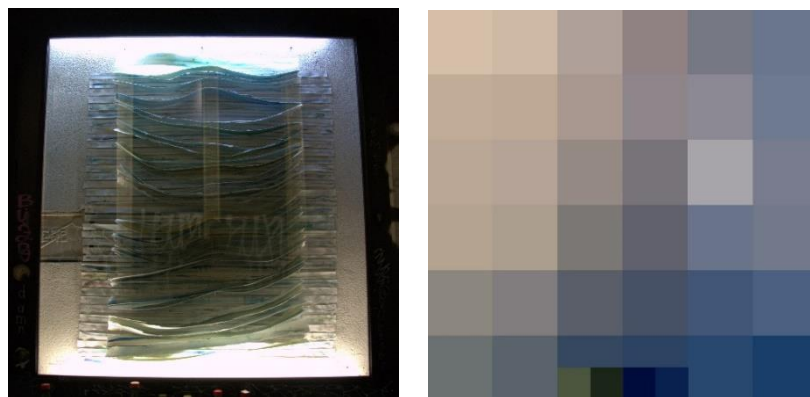


Photo 26. *Aquarelle Organum* (and the obtained palette of colours of water), artwork display during the exhibition *Art Project H3O2 Vol. 1* in the *Street gallery*, (photos by: Miloš Stojković Minić)

13. Niti

Author | Nevena Petrović

Ultramarine dyed wool, wooden beam, air (space)

Spatial installation, 420 x 420 / 420 cm, 2022.

“Artwork named NITI at its center of artistic interest has the problematization of space as an ethereal environment, naturally and artistically shaped – spatial installation (Photo 27). Assignment of the exhibition space is the initial starting point towards a visual solution, which has as its goal the artistic architectural design of a micro space that is subjected to universal visual aesthetic criteria, building an architectural imagination - a spatial dream. The material used in the solution is ultramarine dyed wool, which with its spatial movements, forms movements and surfaces mutually conditioned densities, grids, durations and wooden beam, as a traditional basis and symbolic connection with an attitude of respect for continuity and the importance of heritage, which is the focus of the artistis professional interest.”

Nevena Petrović



Photo 27. *Niti*, artwork display in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H302 Vol. 2, (Triptych)*, 2022, photo by Miloš Stojković Minić

14 & 15. Ambients inspired by water: Palace of Water No. 1 & Palace of Water No. 2

Author | Jovana Lučić

Digital print on the acrylic / Acrylic paint on the mirror

Two spatial circles, spatial images, diameter of the circle 63 cm

„All existing life depends on water and everything requires water. It represents peace, a threat, a source of energy, a habitat, an attraction, or a change and the means of releasing material and spiritual (un)necessities. Its presence affects the glorification of the object and its observation through symbols, such is an example where the presence of water affects the glorification of the object into a symbol of home, through all the elements that influence that home to be a place for life - a well (of life or wonders).

Wells viewed as micropoints are carriers and factors of development of life in the sandy context, and columns of water represent the foundations of life, creating the possibility of developing sandstone. The well as a point of life, i.e. the main factor, represents a new epicenter of the development of a region of a certain context. With the structural development of the well as a basic appearance point, it is depicted in the space as an inverted temple (of water) that emphasizes the sanctity of water and with its intensity tends to reach the underground thermal water in its context and impel it into its structure, so that it becomes its main element (Photo 28).”

Jovana Lučić



Photo 28. Palace of Water No. 2 & Palace of Water No. 1 – ambients inspired by water, artworks display in the *NO Concept Gallery* in Belgrade during the exhibition Art Project H3O2 Vol. 2, 2022, (group of photos, photos by: Miloš Stojković Minić)

16. *Prevlaka*, Adriatic

Author | Andrej Jovanović

Digital drawing on transparent foil - map

Digital drawing, spatial image, 33.33 x 100 cm, 2022.

„Through its layers, the map shows the spatial forms, frequency, overlaps and changes of the water currents of the investigated location and shows the relationship and general interchangeability of the two basic aspects of the territory: water and land (Photo 29). The exploration of the territory is approached in an unconventional way, recording and showing above all the movement of water through an analytical drawing that aims to show the frequency and characteristics of specific water currents of the sea and the land through the color and density of its elements, thus formally breaking down and also breaking down the landscape into a clear divided water units that can now be interpreted as a base, i.e. a tool for further iterations in the architecture of the water-affected area and formal and meaningful prediction, use or shaping of some new future coastal unit. ”

Andrej Jovanović



Photo 29. *Prevlaka*, Adriatic, artwork display in the *NO Concept Gallery* in Belgrade during the exhibition Art Project H3O2 Vol. 2, 2022, (group of photos, photos by: Miloš Stojković Minić)

17. *Ozblak* | The O2 Cloud

Author | Anita Pešić

UV printing on transparent acrylic 5 mm

Spatial image, 120 x 60 cm, 2022.

„It is in the nature of water to take different forms of the surfaces in which it is located. In architecture, it can serve as a tool for solving, (re)thinking, and shaping of space, but also to enrich it aesthetically. As water can create life, it can also destroy it, and this duality of water and changeability, that it creates and destroys, was the inspiration for conducting this research.

*The main idea when performing this spatial installation was the experimental capture of water from which it is later possible to extract a spatial structure or capture a spatial structure (spatial image) of water (*Ozblaku* – *The O2 Cloud*).*

When it comes to architecture, we cannot ignore water permanence. But if we consider architecture as a continuation of man, it is necessary to enable it to hide. Clouds and water vapor have the role of completing the contact between the object and the environment, and more and more often, they hide the object completely. In this case, the architectural object receives a type of membrane with the help of which it can be protected. Therefore, water (cloud) becomes an exclusive part of architecture and gives it a mystical character (Photo 30).

Ozblak (The O2 cloud), and water in this phenomenon, has a role to show the observer the elusiveness of architecture, and to allow the user to feel disconnected from the rest of the world when he wants it. "

Anita Pešić



Photo 30. *Ozblak* (The O2 cloud), artwork display in the *NO Concept Gallery* in Belgrade during the exhibition *Art Project H3O2 Vol. 2, (Triptych)*, 2022, photo by Miloš Stojković Minić

18. Sakrament IV | Sacrament IV

Author | Stipić Dudwarszky Dušan

Technique: Spiritual-aesthetic distillation

Dimensions: Cosmological

The year of creation: 2022.

„Spatial installation, named Sacrament 4 was created within a series of works inspired by personal artistic and philosophical theme, which for its focus has understanding of the concept of Holy, its conditioning in the context of the social present and heritage, through material and immaterial cultural aspects.

Understanding religion as a shelter, that is, a seceded part of the cosmos in which man is easier to exist than in a unified cosmic cylinder, in which the only the finale partition into light and darkness, has brought me to the creative need for forming an artistic notion of that vision in context of Christian culture to which I belong. Choosing the form of the installation was conditioned by architectural articulation and traditional perceptions of the most sacred space of the Christian temple, the altar-apse semi-arch with two monumental pillars which as a whole forms an altar - shelter. That kind of form fits the idea of a shelter, that is, a capsule to which a certain community pays its respects to the Holy, while trusting its strength traveling through cosmic space (Photo 31).

By choosing the incidence of this artwork I have formed an element that carries the title of abovespace, which is rooted in the Christian spiritual philosophical tradition and Byzantine heritage. The second used element in the materialization of the presented idea is a filler - raw sheep's wool, which in its naturalness possesses everything that in the perception of man as a dualistic being with his two natures, earthly and spiritual, should own. Raw sheep's wool possesses a complete visual symbolic representation of life, from a confirmation of an individual's life, as a basic unit of the cultural-religious circle to the biological conditions represented in the form of tassels of sheep excrement. In a concrete artistic vision the totality in relation to matter is used as a reliquary monument, stored in the continuity of an individual in the Christian and universal shelter which for its center has an immaterial light in the form of a square element as the nameless potential of perfection. "

Stipić Dudwarszky Dušan

As one of the authors and mentors of this year's art project *H3O2*, fine artist Dušan Stipić Dudwarszky responded to the given topic of the exhibiton, as a participant, in his own manner, with a work of art that transcends space and time – this artwork was the largest spatial structure (spatial installation) at this year's exhibition (Photo 31).



Photo 31. *Sakrament IV* (Sacrament IV), in the *NO Concept Gallery* in Belgrade during the exhibition Art Project *H3O2* Vol. 2, 2022, (group of photos, photos by: Miloš Stojković Minić)

19. AKAVATEKTORIJUM – ambijenti inspirisani vodom | AQUATECTORIUM – ambients inspired by water

Authors | Andrej Jovanović, Anita Pešić, Jovana Lučić, Irina Živković, Minja Gligorijević, Nevena Petrović, Miloš Stojković Minić (group artwork of exhibition participants)

Mixed media, printing on transparent foil (A4 & A3 format or 21 x 21 cm)

Spatial (wall) painting, spatial image, 330 x 420 cm, 2022.

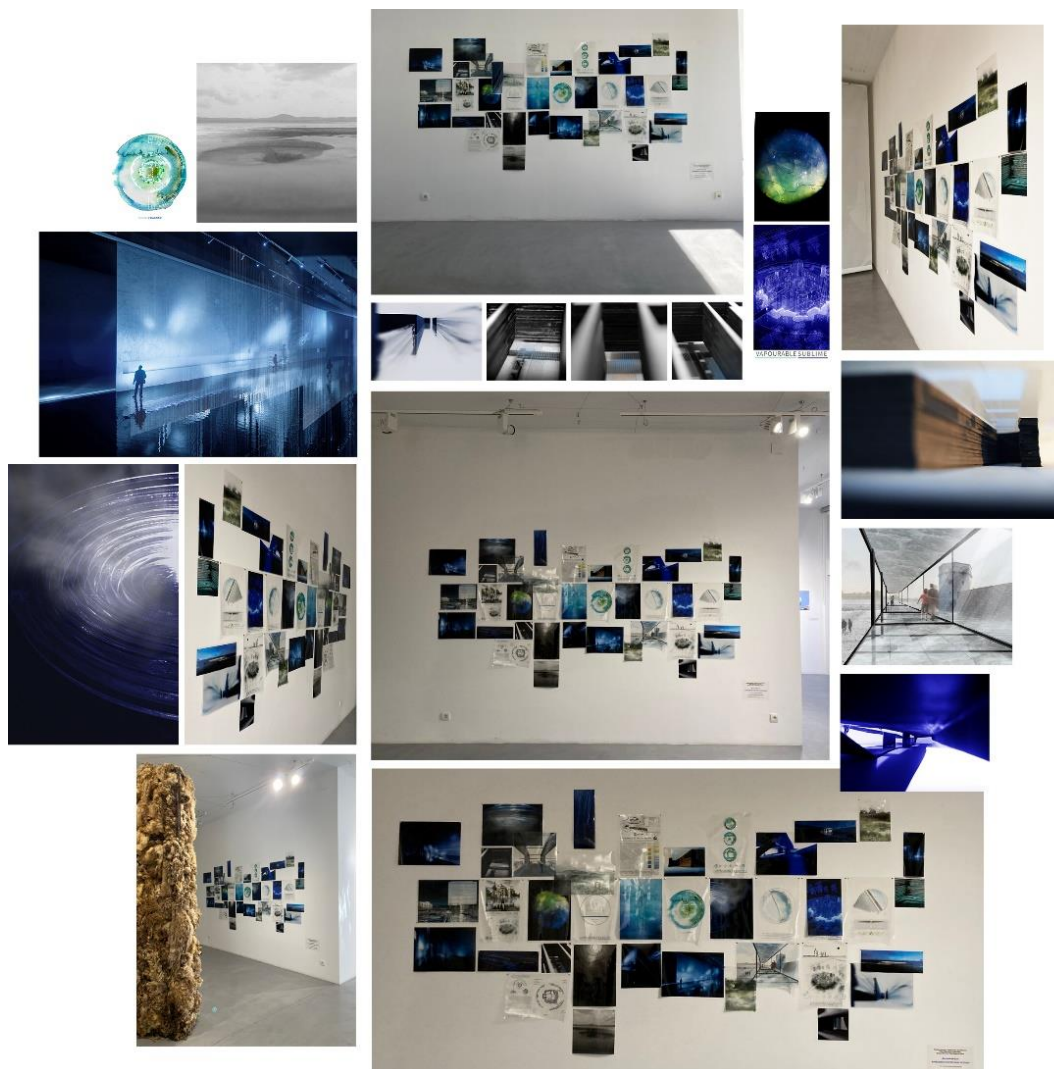


Photo 32. AKAVATEKTORIJUM – ambijenti inspirisani vodom (AQUATECTORIUM – ambients inspired by water), the NO Concept Gallery in Belgrade during the exhibition Art Project H3O2 Vol. 2, 2022, (group of photos, photos by: Miloš Stojković Minić)

Work under the name *AKAVATEKTORIJUM – ambijenti inspirisani vodom* (AQUATECTORIUM – ambients inspired by water), represents a series of ambients inspired by water (printed on transparent foil). In such a persistent spatial installation on the wall, mainly dominated by displays of student projects from the Studio project (M03A02-21 - Studio M03A/07A) from last academic year from UB-FA, but there are also competition projects such as the Vapurable sublime project that is created according to the author's method (Stojković 2020) or competition projects for Ložionica¹³ and City square Aquatecture in Priboj¹⁴.

This group art-work (spatial installation) of the participants of the exhibition was also the last artwork at the this year exhibition, and as such it contained different ambients inspired by water, created in different

¹³ <https://lozionica.konkurs.rs/web-izlozba#gallery5d93725a51-1>

¹⁴ <https://www.priboj.rs/sr/vesti-lat/24-vesti-lat/6083-saopstenje-o-rezultatima-konkursa-za-trg;>
<http://www.strand.rs/exhibition-posters-2021/>

time intervals and in different projects (Photo 32). What they all have in common is that they are connected by the theme of water, or the occurrence of water in architecture. With the presented work and research, we wanted to complete the procedure (include the circle, once again, and actually for the second time), which led from the creation of student projects at the faculty to the very act of presentation, and to the creation of artworks through a workshop with postproduction and in the end to the act of display in this year's *Art project H302 Vol.2* in the *NO Concept Gallery* in Belgrade.

Findings & Conclusions

Art project H302, in its second volume (edition), still sought to examine through art and artistic application burst (artistic applied practice), the possibility of expanding the horizons of observing water as inspiration in the processes of creation. This research also examines the use of water as a methodological tool in a process of structuring space, one that affects both the space of art and the architectural space, even if it was the closed gallery space of the *NO Concept Gallery*, where once again a combination of happy circumstances allows exhibition and exhibiting of artworks, whose echo has yet to be seen, heard and experienced, this time more than ever, through the Virtual Reality (VR) and Augmented Reality (AR).

Findings of this paper and research can be defined in the following words: The first finding is that water, whether as a metaphor, inspiration or methodological tool, still finds its way after all, in the space of art and architecture, in the processes of creation of *spatial images of water* (structures and spatial installations), in such processes new ambients inspired by water are created through the *Art project H302 Vol. 2.*; Another, no less important, finding of the conducted research can be that the works of art shown at the exhibition have become virtual through the possibilities that allow Virtual Reality (VR) and Augmented Reality (AR), and according to that observation, the conclusion of the research can be that any further occurrence or possible post-production of some artworks can be expected in the metaverse, i.e. in the creation of non-fungible tokens (NFT). Such a process can still be carried out with the help of drawings, physical or virtual models, structures, sculptures, assemblages and installations in (virtual) space, so that the structure of water, or just one of its droplets, can precede and fill the processes of intuition and inspiration in artistic creation, but also the possible processes of design and the formation of a unique operational concept of the creation of the artefact, e.i. work of art, either in physical or virtual space, which does not necessarily have to be finished, but only extended through time and space

As a visual conclusion of this paper, we provide the perception of exhibition users through Virtual Reality (VR) and Augmented Reality (AR), by highlighting photo collage of print-screens instagram stories and live recordings from social networks of visitors of to the exhibition *Art project H302 Vol.2* in the *NO Concept Gallery* in Belgrade., during the opening and duration of the exhibition (Photo 33).

According to all that was indicated in this paper, it can be concluded that the next year's *Art project H302 Vol. 3*, shall go in the direction of creating works of art for the virtual space and appraisal the perception of art and architecture that emerge not only in the physical space, whether such space is open or closed, private or public, if water is poured into it, the water that opens the space, that kind of space then becomes boundless and unlimited.

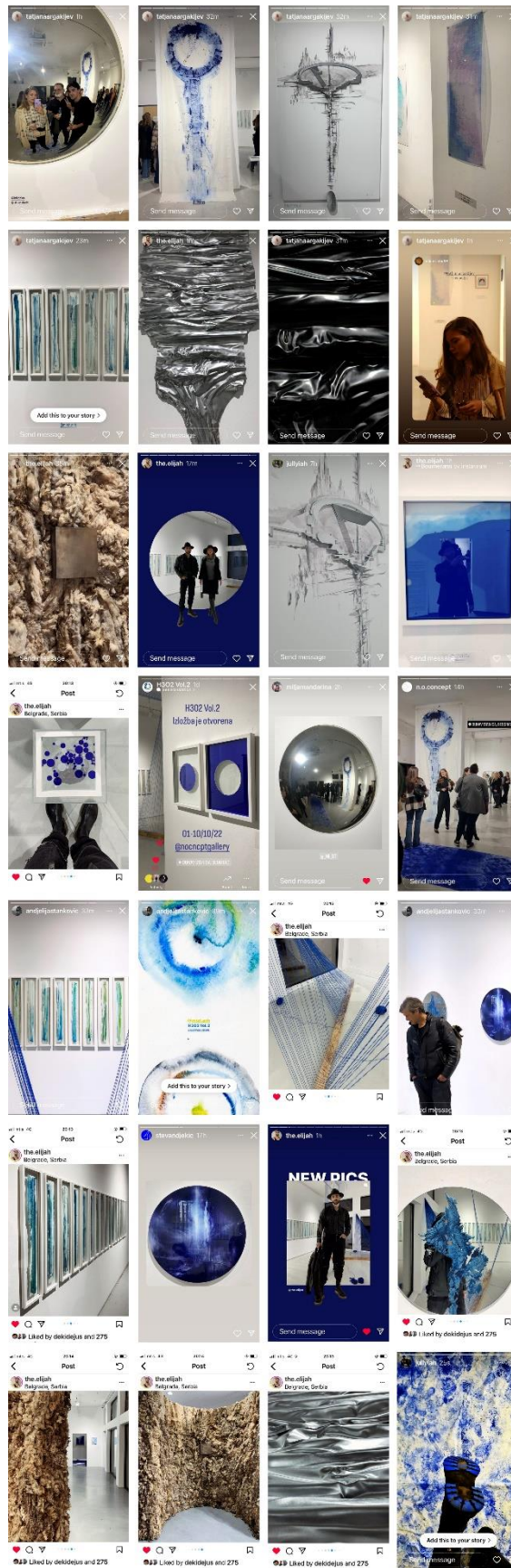


Photo 33. Display of the artistic concept H302 in Virtual Reality (VR) and Augmented Reality (AR) – *NO Concept Gallery* in Belgrade during the opening time of the exhibition Art Project H302 Vol. 2, 2022, (group of print screens photos, photos by: online users of the social networks, i.e. visitors of the exhibition and students who will participate in the exhibition next year)

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METHODOLOGY OF REPRESENTATION AND TRANSCRIPTION OF ARCHITECTURAL SPACE: DISCOVERING THE HYBRID MODEL OF ARCHITECTURAL DRAWING

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ABSTRACT

This paper problematizes the position of contemporary architectural drawing by examining its manifestations in new, hybrid forms and roles of drawing, as a consequence of the paradigmatic changes brought about by the digital revolution. Furthermore, it assumes that the drawing in the architectural design process becomes a versatile, multi-layered and hybrid tool, which has an increasingly important role in the field of architectural research. Digital technologies are influencing the way in which the architectural drawing participates in the design process and the process of representing architectural space by establishing different models of drawing. One of these models is based on the methodology of transcribing architectural space, which includes the simultaneous use of drawing as a means of research and representation. Selected model discussed in this paper, examines the use of traditional drawing techniques, everyday tools for documenting space and digital applications for simulating virtual reality experience. Combining these three, arises the possibility of creating a novel visual language in architecture, which is here to be discussed.

Keywords:

Architectural drawing, Visual language, Representation, Twenty-first century, Digital paradigm, Virtual reality

INTRODUCTION

This paper elaborates on the PhD research project developed at the University of Belgrade – Faculty of Architecture, assuming that the digital technologies are influencing the way in which the architectural drawing participates in the design process and the process of representing architectural space by establishing different models of research drawings. One of these models based on the methodology of transcribing the architectural space, which includes the simultaneous use of drawing as a means of research and representation, develops a hybrid “representationally-transcriptive” architectural drawing. Specified model combines the use of hand drawing techniques, everyday tools for documenting space and digital applications to simulate virtual reality experience used for perceiving the architectural space. In order to examine the relationship between traditional (“made by hand”) drawing techniques and contemporary digital platforms, established methodology examines the possibility of developing a new visual language in architecture. The selected model of the architectural drawing is a result of a research art project created in the Architecture and Visual Language postgraduate course at the University of Belgrade – Faculty of Architecture, during the 2016/2017 academic year. It has been further developed as part of the extracurricular course at the student workshop in Rijeka in 2018 and exhibited within the Modern in Belgrade (MuBGD) art and architecture project in 2019. Since this research is also part of the paper titled “Discovering the Hybrid Model of Architectural Drawing at the Beginning of the XXI Century”¹, which comprehensively explains the methodology of the drawing and its creative potential within the field of architectural education, this paper will only focus on drawing’s developmental potentials and applicability within the field of research and exhibiting practice.

Developed methodology will be introduced by displaying two projects. The first project explains the process of establishing the methodology of spatial transcription, which results in representationally-transcriptive model of drawing. Methodology consists of seven steps divided into three phases of work, which will be presented in detail below. These steps result in a set of four large format hand drawings and one spherical digital drawing. In the second project, the established methodology is repeated in order to review and discuss on its developmental possibilities and the creative potential of the final digital drawing.

HYBRID PERSPECTIVES AND THE INFLUENCE OF DIGITAL TECHNOLOGIES

Architectural drawing has always had several roles, three of which it may be argued, are dominant today. The first is the role of an informant – an architectural drawing that bears information from different phases of architectural design process linking them with the construction phase, developing a common language of all disciplines involved in the process of designing an architectural space. The second role is the collaborative, or the associative role, when the architectural drawing embodies the thoughts of the architect and becomes an integral part of the design process, helping the architect to materialize all the thought processes related to the design of an architectural space. Finally, the third role is a representative role - an architectural drawing is used as a commercial product that follows the market needs for building the designed architectural space. For centuries the role of drawing as the architect's creative work had one aim, and that is to communicate the characteristics of the designed space. In that sense, during the twentieth century, drawing was dominantly used as the ultimate design product, most often taking the role of informant, and somewhat frequently the representational role.

Until the twentieth century paradigm shifts, the research role of drawing was minimised to the initial conceptions of space which were presented and communicated in the form of the first drawings of space - sketches. With the development of society, its emancipation, the rise of avant-garde architecture, then the implementation of humanities and digital technologies into the discipline of architecture, the framework in which drawing plays a significant role is being expanded. The interweaving of digital and analogue tools in contemporary architectural practice, which can be named as an act of hybridity, accordingly emphasises research attributes of drawing. From a historical perspective, in the greatest extent of its implementation,

¹This paper represents an excerpt from the research published in *SAJ - Serbian Architectural Journal: Drawing in Action*, which explains the theoretical framework of the paradigmatic shifts caused by the emergence of information technologies and its implications on the visual language of architecture; physical context of emerging digital platforms and applications with a high developmental potential for implementation in the field of architecture; as well as, the methodology of representationally-transcriptive model of architectural drawing and its creative and developmental potential. Considering that the established methodology is clearly defined and follows certain subsequent steps in the process of drawing, this paper borrows two sub-sections from the second chapter of this article, entitled *Identifying the Hybrid Architectural Drawing: Representationally-Transcriptive Model*.

drawing represented a communicative apparatus between the architect and the builder, which has the role of transmitter of all the objective characteristics of the designed space that are necessary for its understanding and construction. An architectural drawing can also convey objective or subjective characteristics of an existing space, as well as a space liberated from the possibility of being built. Such drawings have the ability to critically observe and represent concepts of certain architectural space. When these drawing gain the power to explore concepts of architectural space, that is, to direct critical thinking in the phase that immediately precedes the process of architectural design, they can be appointed research drawings. According to Robin Evans, relying on Alberti's statement that architects do not make buildings, but drawings of buildings², drawing as an architect's work has two genuine forms – first, the architectural, when it is created before what it represents, and second, when it is created on the basis of an existing object or space, thus when it gravitates towards fine or visual arts, and slightly loses its architectural attributes.(Evans, 2003:156) Speaking of research drawings, this kind of drawings often arise as autonomous and self-sufficient, and to add, are usually critically remote from the practice of architectural design. On the other hand, this distance opens up the possibility for complex interpretations, given that the information conveyed by the drawings do not refer to the future architectural space meant to be built. Such drawings usually take the form of speculative, hypothetical or visionary blueprints that undeniably unfold new subject for different discursive interpretations. This type of drawings could be explained by differentiating them from drawings used as instructions for building an architectural object. Since they are carriers of ideas about architectural space, they tend to be subjective and rather suggestive, unlike the latter, being characterized as objective and neutral. (Frasconi, ____:108) During the twentieth century, a variety of research drawings can be recognized in the design practice of distinguished architects, in particular, Ludwig Mies van der Rohe's representative collages, Yakov Chernykhov's axonometric drawings of imaginative constructions, Tadao Ando's atmospheric spatial fragments in his section drawings, Paul Rudolph's perspective drawings of city's mega-structures, then Superstudio's dystopian montages, Hans Hollein's collages conveying ideological messages, as well as the impossible spaces in axonometric drawings designed by Peter Eisenman, et cetera...

The development of information technologies in the last decade of the twentieth century changed the way the work of art is being reproduced. This led to the creation of variable products and the use of parameters in the architectural design process, thus placing architecture in the field of digital reality, unfolding a spectrum of new possibilities and the rise of a novel architectural language – shaped by the digital drawing. The overflow of information technologies in the architectural design process and their presence in everyday life have allowed the architectural discipline to once again reconsider, reshape and expand the field of architectural design. The influence of digital tools in the architectural discipline began in an atmosphere of global fascination and inspiration with new and yet undiscovered possibilities that digital tools were offering. Remaining in close relationship with electronic media, digital tools anticipated the future of architecture with the transition to virtual space as an alternative to the real and physical space. The first paradigmatic shift is characterised by the emergence of new software based on direct manipulation of curves constructed through vectors and points on a computer, and therefore of architects' pursuit of mastering them in order to expand the possibilities of drawing manipulation and then deriving certain, complex forms which were by the time unable to draw and build. (Carpo, 2011) This shift changed the way architectural objects are being built. The second digital paradigmatic shift resulted in developing new models of processing and distributing information using artificial intelligence. Building on the previous shift, this one changed the way of thinking about architectural objects. (Carpo, 2017) The consequences of the second paradigmatic shift in terms of digital technologies resulted in changes that affected the visual perception, enabling quick and easy access to virtual space as a new spatial or architectural field of experimentation. One could argue that the emergence of digital tools and applications allows present-day architect to balance between real and virtual environment and take constant leaps from one to another. This action, not only generates combined, hybrid perspectives of the physical reality, but it blurs the lines between architecture and its related disciplines, such as visual or graphic arts. From the perspective of perceiving, on one hand, and documenting, or rather representing physical space, on the other, it can be noted that a wide range of new media are emerging and extending the experimental field of architecture, particularly architectural drawing. One such medium, virtual reality, as one of the conveyors of the second digital turn has become widespread and easily accessible, thanks to social media. Virtual panoramic images, as a form virtual reality simulacrum, are more commonly being used in architecture in communicating with clients for presenting a newly designed or existing space, depending on whether it is a conceptual solution or an already constructed object.³

² Stating Alberti, Leon Battista. *On the Art of Building in Ten Books*. (Cambridge, Mass. [etc.]: MIT Press, 1988).

³ Such virtual panoramas provide a complete, spherical view of the documented space (360x180°), where the perspective can be easily controlled and changed in all directions. Additionally, multiple panoramas can be

HYBRID MODEL OF DRAWING: INTRODUCING THE FIRST PROTOTYPE

The starting point for the project conducted in the Architecture and Visual Language post-graduate course in 2017 was to examine new possibilities for using digital tools in architecture, with the aim to explore how the use of new media inspires and participates in experimenting with drawings today. The chosen medium for this purpose was virtual reality, precisely a smartphone application for making virtual panoramic images⁴. This virtual reality tool was supposed to be combined with traditional ("made by hand") architectural drawing, with an aim to research and represent the existing physical space, chosen by the author. The selected case study for the first drawing experiment was the interior of the Reading Room at the University of Belgrade - Faculty of Architecture. It was important to build on the thesis of questioning the usability of traditional drawings in architecture, hence the methodology of manipulating the captured panoramic image. This manipulation was based on using various hand drawing techniques to explore the specific characteristic of the analysed space. Furthermore, experimenting with hand drawings shaped the whole process of the project, resulting in manually transcribing the captured panoramic image into a series of hand drawings, which were afterwards digitally processed and manipulated using computer-aided tools and finally presented as a virtual panoramic drawing.



Photo 1. Reading Room at UB-FA, virtual panoramic drawing

The applied methodology consisted of seven steps divided into three phases, following *pre-production*, *production* and *post-production*, in order of application. Used methodology combines a myriad of analogue and digital tools such as photography, ink on paper, marker pens, technical pens, Photoshop CS editing. The *pre-production* phase involves capturing a 360°x180° panoramic image of a chosen physical space, in this case the interior of the Reading Room. The unwrapped two-dimensional image of the captured panorama is then used as the initial basis for the work. The *production* phase includes four groups of drawings done in different techniques - drawing on tracing paper using ink, technical and marker pens. The analysis of the obtained photographs determined four categories of space transcription that correspond to different layers of the spatial image, and which together, superimposed, give an abstract image of the same space. Each technique involves making 12 drawings which together form an image corresponding to the aforementioned unwrapped panoramic image. Each group of drawings represents one level of spatial transcription - *Edges*, *Surfaces*, *Light* and *Shadows*. The *post-production* phase involves translating hand

combined into a unique virtual promenade, which adds to the illusion of walking from one space to another, making the virtual tour appear less static.

⁴ In 2015, Google launched a free application *Google Street View* that enabled its users to browse 360°x180° panoramic images of every corner of the world or to contribute to the entire public database of panoramic images by creating personal panoramic images. The application enables capturing the 360°x180° image using a smartphone and viewing it as a spherical image or downloading and storing it in the phone as an unwrapped two-dimensional image. By doing so, this kind of image becomes easy to access and reproduce, unfolding a spectrum of new manipulative possibilities in the fields of visual and fine arts and architecture.

drawings (48 drawings in total) into digital form and assembling them into four corresponding spherical images. The obtained images are then being superimposed using computational tools, such as Photoshop CC 2015. As the final result, the obtained spherical image, must be added up with certain metadata, becoming suitable for wrapping back into the application as a new, transcribed, panoramic image or panoramic drawing.

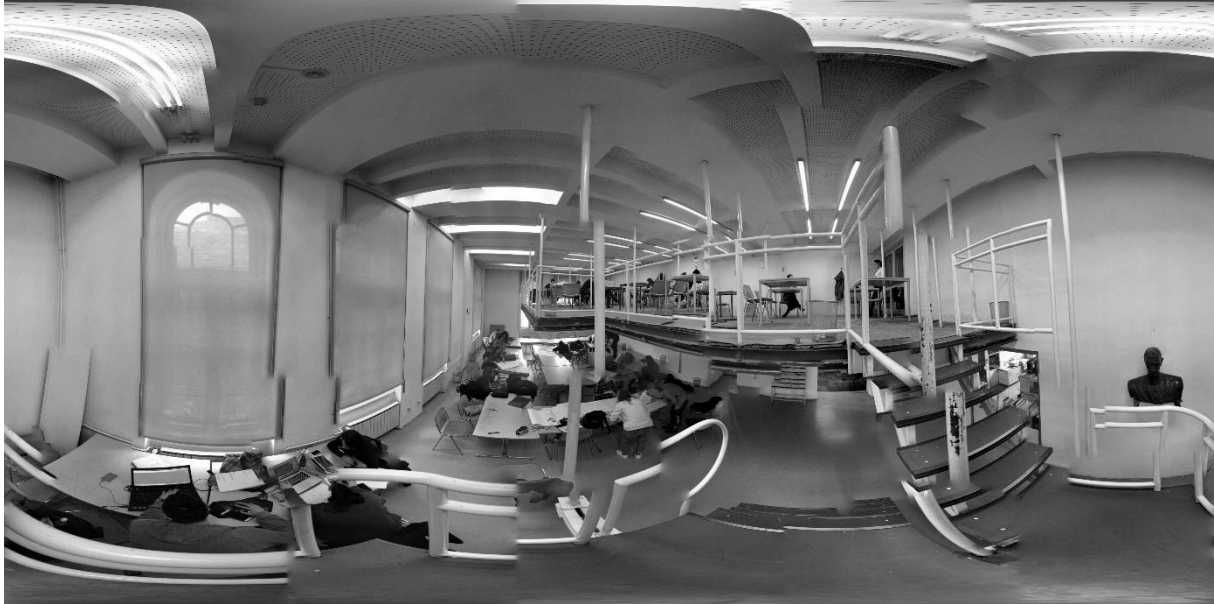


Photo 2. Reading Room at UB-FA, unwrapped 360x180°panoramic image

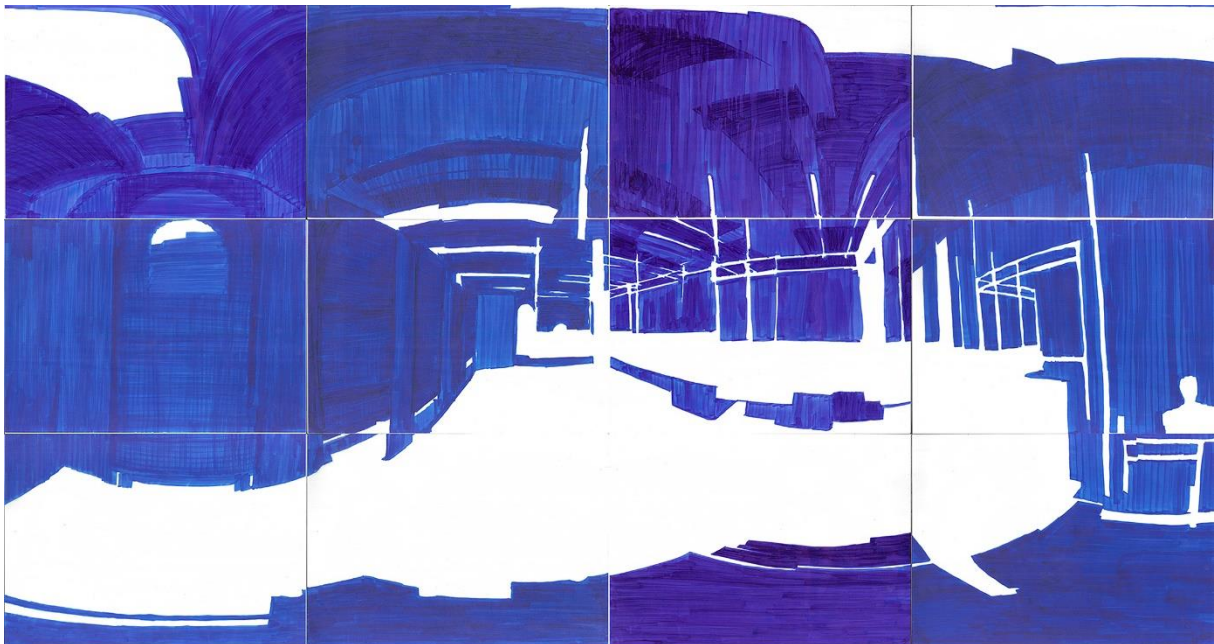


Photo 3. Second level of spatial transcription – *Surfaces* (marker pen on tracing paper).

The established drawing model resulted in four large-format hand drawings, i.e., 48 small-format drawings which were scanned, digitally post-produced, superimposed and merged into a single image. Finally, the two-dimensional image was made spherical using metadata and presented via the same application used for capturing the initial photo. The final result, a spatial drawing can be viewed by following the appropriate link⁵ which gives the observer the freedom to choose the vintage point and therefore, the most preferable fragment of the drawing as a separate image.

⁵ Project is available at the following link: <https://roundme.com/tour/167963/view/425790/>.

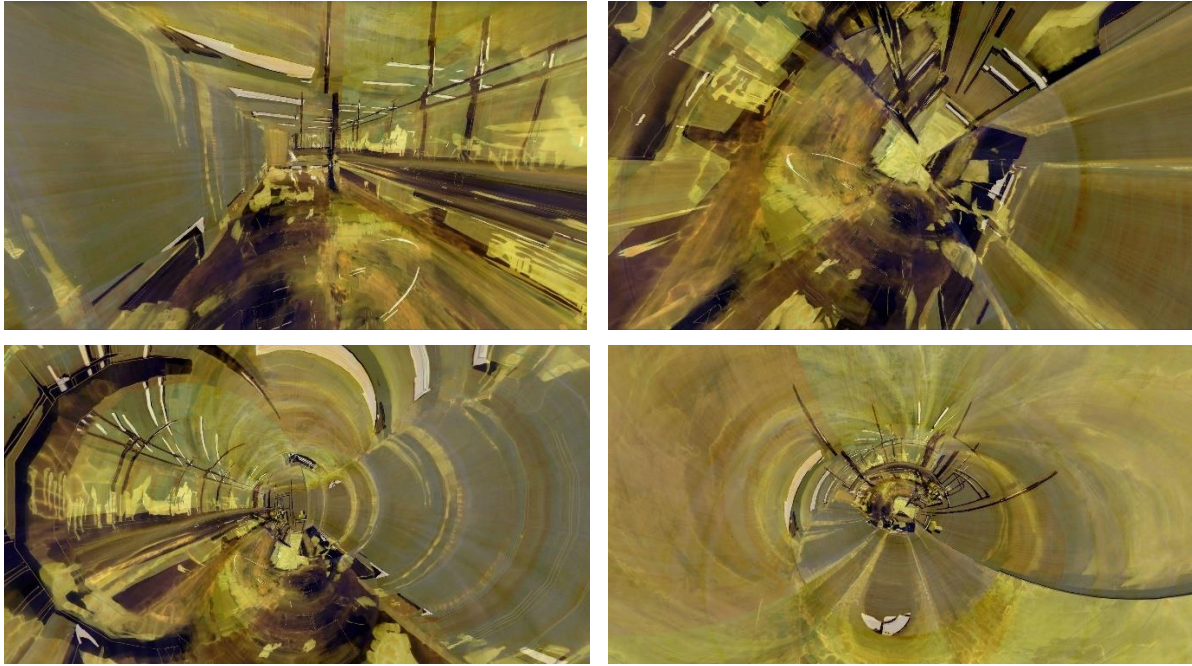


Photo 4. Reading Room at UB-FA, virtual panoramic drawing. Various fragments of a spherical image.

MORE ON METHODOLOGY: EXPLORING THE CREATIVE POTENTIAL

Being a member of Modern in Belgrade group,⁶ which held several solo exhibitions during 2019, the last exhibition in the series served as a testing ground for further research on the topic of presentational possibilities of the established drawing model. The exhibited work for the exhibition titled *Black on White*,⁷ represented the second drawing experiment, the interior of the Reading Room at the National Library of Serbia.⁸ The applied drawing methodology was repeated, following the example of the previous project – using four levels of spatial transcription (edges, surfaces, light and shadow). These levels correspond to the four stages of identifying the essential elements of space. While observing the drawing, the most dominant layer is recognised as the one representing the structural elements and the disposition of volumes in space presented with different nuances of drawn planes. The second notion is the overlapping of two closely related layers – one representing light, and the other representing shades. Their superimposition gives life to the drawing as it seems to document one precise moment in time of the observed interior. Finally, the last layer, playing hide-and-seek with the observer’s eye, reveals itself very discreetly, like the author’s signature – present but gently hidden. It subtly emphasises sharp edges providing stability to the structural elements holding the interior space. Nevertheless, the theme of the exhibition conditioned the final drawing to be presented as a digital grayscale print, lacking colour. Therefore, in addition to the link⁹ that provided visitors with a virtual experience of entering the drawing, the project was exhibited in the gallery space on a 200x100cm digitally printed poster and a video projection presenting fragments of virtual walks broadcasted in colour and overlapping with the poster.

⁶ The Modern in Belgrade (MuBGD) project, established in Belgrade, Serbia in 2018, brings together a group of architects (Iva Bekić, Petar Cigić, Dalia Dukanac, Stefan Đorđević, Irena Gajić, Mirjana Ješić, Hristina Stojanović, Snežana Zlatković) who share a particular interest in architectural illustration, graphic design and fine arts. Together, they launched the MuBGD platform as a means of promotion, but also critical analysis of Belgrade’s architectural heritage within the field of visual representation.

⁷ Exhibition *Black on white* at gallery O3one Art Space, Belgrade, Serbia (29 November-05 December 2019).

⁸ National Library of Serbia (1966-1973) architect Ivo Kurtović, interior reconstruction by architect Zoran Radojičić.

⁹ Project is available at the following link: <https://roundme.com/tour/523469/view/1734841/>.



Photo 5. Reading Room at the National Library of Serbia. Exhibited poster at gallery O3one Art Space.

Repeating the established methodological steps once again, specified the basic features of the drawing, the usability of the hybrid model was confirmed and following observations were noted:

- The conducted drawing procedure focuses more on the development of the specific transcriptive technique than on the analysis of architectural space itself. Whilst the drawing process relies on the procedure, the analysis comes at the end. The drawing process in that sense can be claimed more artistic and less architectural.
- The three-dimensionality of the drawing and the use of virtual reality creates a switch in the context of image perception. It opens the possibility of viewing the represented space from infinite number of different angles and generates always new images of space, which makes image reading itself an architectural experience.
- It may be argued that a drawing refers to a specific moment in time in the life of an architectural object, showing it through the lens of the author's observation and virtuosity of drawing.
- Architectural drawing as the final result mostly relies on the traditional drawing techniques, and in that sense, is highly dependent on the author's sharp eye and skilful hand. On the other hand, the computer-aided manipulation generates a multitude of output images as final representations of the selected space. This gesture creates a scale of different levels of abstraction of selected viewpoints - from unrecognisable images composed, it seems, only with a few hand strokes, to detailed, precise documentations contained in several layers of spatial transcription.



Photo 7. Reading Room at the National Library of Serbia. Fragment of a spherical image.

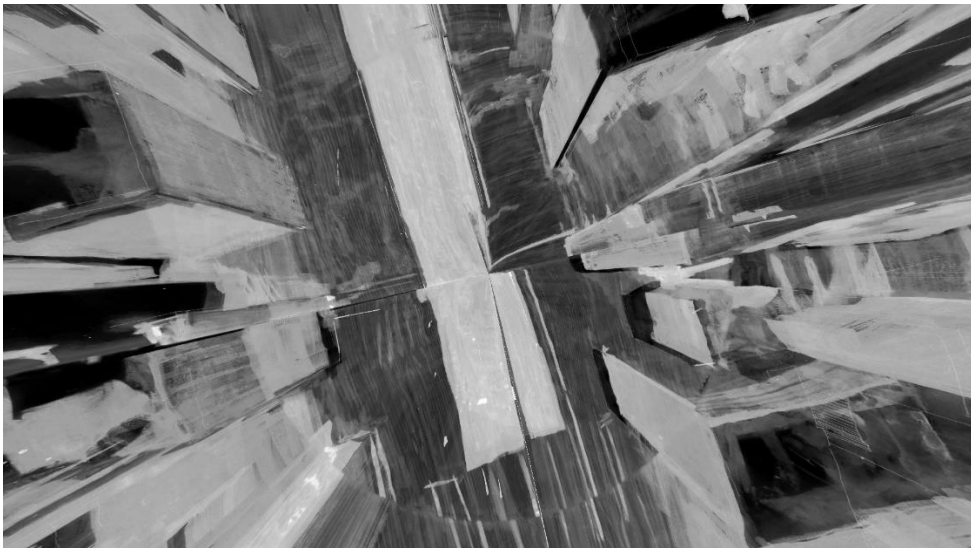


Photo 8. Reading Room at the National Library of Serbia. Fragment of a spherical image.



Photo 9. Reading Room at the National Library of Serbia. Fragment of a spherical image.

CONCLUSION

The examined hybrid model of drawing brings up two specific characteristics, one referring to the research, and the other to the representational attributes of the presented methodology. One part of the methodology relies on the absence of digital technologies in the process of drawing, which therefore emphasises the presence of the author of the drawing. Traces of manual work become embodied in lines and surfaces of the hand drawing suggesting to the unavoidable presence of the author, who emerges with every pen or brush stroke. Unforeseen mistakes made in the transcribing process are uncontrollable but unique expressions, and nevertheless, impossible to produce digitally. Finally, a question of preference arises – to choose between the conventional precision, computational glitches, or rather the uncontrollable aesthetics of the handwritten mistakes. On the other hand, digital space offers infinite possibilities in perceiving the work of drawing and finally emphasises the presence of the viewer offering him unlimited playground of different perspectives. In this way, the precision of drawing distributed with the use of software is avoided, which is bounded by the excessive limitation and control of the each of author's specific gestures, always present when using digital tools. However, in the context of its presentation, this drawing model offers a myriad of possibilities embodied in different mediums, as well as infinite observing options, as it is simultaneously present in real and virtual environment. In this sense, digital surrounding presenting the final image highlights the presence of the observer by offering him the freedom to find his own vintage point and experience the same image each time differently. In this way, the user is being placed in a partially authorial position as the creator of different, always new, worlds inside the given image. It may be argued that digital environment offers flexibility in the phase of post-producing the final drawing as it can easily be accommodated to different scale, format and media. Finally, the anxiety about the future of traditional drawing techniques in architecture is reduced as the presented project underlines the hypothesis that the emergence of digital technologies has emphasised and upgraded the traditional architectural tools, objecting them to constant development. It can also be noted that digital tools have, and still are, expanding the creative potential of architectural drawings as research tools. Therefore, the presented hybrid model of drawing offers a vast developmental potential that is yet to be discovered and explored. It is noticed that the established, representationally-transcriptive model of drawing is limited on its two iterations and needs further application and confirmation within different fields and environments of architectural design. Nevertheless, it is advised to expand the research carried out within different fields of architectural discipline. Complexity of the established methodology of drawing offers various exploratory possibilities of its different aspects – case study selection, drawing techniques, properties of spatial transcription, digital post-production techniques and last, but not the least, presentation of the final image. Once there is a variety of output results, they will be suitable for further development in multiple directions. Ultimately, the elaborated architectural drawing can be positioned as a peculiar and idiosyncratic representation of ideas about physical space which frees the architect as the author, allowing him to step back from the physical space on the one hand, while, on the other hand, it brings him closer to it while affirming his distinct and very personal interpretation of space.

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SPATIAL IMMERSION: ARCHITECTURE OR ART

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ABSTRACT

Immersive architectural installation is relatively new phenomenon in architectural practice. Authors who are architects, but even more often artists, aim to make visitors reach the state of total immersion in designed space by evoking their mental or physical interaction with space or an artwork. The question that could be raised is if the space by itself or only the artistic content of the space is the new virtual or physical reality in which visitors are being immersed. This research aims to showcase the capacity of architecture to create immersion independently from digital technologies (VR, AR). Some similarities of methods used in digital immersion are recognized in purely spatial immersive installations, which will be elaborated through examples of installations by architects Serge Salat and Nassia Inglessis and artist Yayoi Kusama and Rozin. The way of manipulating with the reflection of visitors' bodies and the reflection of their movement present one method often used for immersive experiences, such as reflection in physical elements which uses various components from mirrors to kinetic elements. The resulting quality that immersion brings up in spatial installations is their similarity with definition of ambience. As installation and ambience i.e. environmental art are covered in theories of art, the disappearance or visibility of border between art and architecture needs to be explored when discussing spatial immersion. The results should theoretically review the position of spatial immersive installations in professional field as well as they should define some of the most common methods applied in the design process.

Keywords:

spatial immersion, reflection, spatial installation, ambience, art and architecture.

INTRODUCTION

The notion of immersion in theory of architecture presents complex idea, lacking of its determination if it is an architectural concept, a design methodology or simply a type of experience of space. This question requires wide and systematical research, which should be based on existing philosophical papers, analysis of architectural projects as well as analysis of art projects. If we set starting comprehension of immersion as type of aesthetic experience, it is a common experience for all different forms of art: theatre, music, literature, digital art, architecture etc. Nowadays, immersion is mostly associated with contemporary digital technologies of virtual reality (VR) and other variations of extended reality such as augmented reality (AR) or mixed reality (MR). Immersive digital technologies are applied widely and they also create a significant contribution to digital art. However, the aim of this paper is to look into creative capacity of immersion separately from its digital aspects. Anyway, basic theoretical knowledge about immersion inducted from manipulation with digital tools will be considered and reversed back into this research that discusses examples of projects that create immersion with analog tools. The foundation of phenomenology of immersion will be introduced through theoretical work of Harri Mikael Mäcklin, with further explanation of multiplicity of meanings of the term immersion and about its modalities of application in architectural design. As explained, aesthetic immersion is connection between more forms of art and that is why this research will examine two examples of art installations and two projects of architectural installations, all of them being defined as immersive installations. The comparative analysis of art and architecture within same topic will raise the discussion about the role of architect as artist. Also, introduction of expressions spatial installation and spatial immersion brings the final theoretical questioning about spatial typology, as the typology of installation analysed through four examples shows the resemblance with two other categories such as the ambience or environmental art. The overlapping between art and architecture through immersive concept is present in all elaborated statements, which theoretically precedes the research methodology through case studies. Rozin's interactive art is recognized by various mechanical mirrors on one side and software mirrors on the other side. This project will introduce the strategy of reflection as immersive methodology. Guided by the same strategy, next selected series of art projects is Yayoi Kusama's Infinity mirror rooms. Serge Salat's architectural installation 'Beyond Infinity' manages the topic of reflection in diametrically opposite way compared to Nassia Inglessis' architectural installation. Four installations tend to cover all mentioned theoretical questions, showcasing the vagueness that exists on the line between art and architecture.

PHILOSOPHICAL STATE OF IMMERSION

Besides the basic knowledge about immersion where it presents the state of mental absorption into some kind of art project, e.g. immersion in an art exhibition, a book, digital installation or simply in space, it is also often defined as a type of aesthetic experience. However, the main task of wider research about spatial immersion is its role in the process of conceptual constructing of space and vice versa - the role of space in the creation of immersive experience.

At this point, there are two potential ways to continue the research. The first one requires complete abstraction of spatial immersion. That would include the direct search for philosophical methods of immersion, the way that the "machinery" of immersion into space works, excluding all physical features of space, but also all technical and technological tools. Further on, the mental gradual relocation from our reality to alternative reality of art piece or architectural space becomes the main topic of philosophical discussion about immersion. Explained approach requires that the artist or the architect leaves his primary role of designer or engineer and take the perspective of philosopher because every architectural gesture shows previous architectural necessity for conceptualisation and mastery over reality (Vesnić, 2017, p. 205). The second way of continuing this research may include extensive list of projects defined as spatial immersive installations and the analysis of their methodologies. Before entering the analysis of certain projects, there are a few already existing philosophical and theoretical thoughts that need to be discussed and further developed through selected projects. Both Oliver Grau (2003) and Peter Sloterdijk (2011) rely their first thoughts about immersion on panoramas. They presented a shifting moment for perception of an art piece, enabling deeper mental absorption of presented work. Sloterdijk discusses Immersion or *Immersionkunst* (immersive art or art of immersion) as a phenomenon developed much before digital immersion assisted by technical equipment. The idea of panoramas influenced his definition, where "immersion as a method unframes images and vistas, dissolving the boundaries with their environment" (Sloterdijk, 2011, p. 105). In that way, Sloterdijk introduced the fact that we observe our everyday reality as one and (un)framed reality of art piece or architecture as second reality. Exactly this statement about

existence of two realities: everyday reality and alternative reality is the core of Harri Mikael Mäcklin's philosophy (Mäcklin, 2019, p. 167). His treatment of aesthetic immersion is based on the diagram which differs two realities like two different places with a threshold between them, defining the first one as 'lifeworld' (Husserl's *Lebenswelt*) and the other one as 'poetic world'. The process of immersion requires the act of 'going elsewhere', which could be used as starting point for philosophical space of the 'elsewhere' that is actually the abstraction of immersive architectural space. Further explanation discusses the nature of the second, alternative, parallel, newly created reality of art piece or immersive space. 'Elsewhere' needs to have at least one significant difference compared to 'lifeworld', so it cannot entirely fit in the existing 'lifeworld'. The bigger difference it has, the higher impression of immersion is created, in other words it is more captivating and keeps the consciousness of the visitor preoccupied with the content of art or space for a longer period of time. Precisely that different feature or 'foreign element' that is contained in 'elsewhere' is the essential peculiarity of each immersive space. As Mäcklin marked it out as 'extraordinary' element, in quest of methodologies of spatial immersion through design examples we can try to recognize the 'extraordinary' in each of them.

Anyway, continuing the sequence of comparison between existing worlds and new immersive realities, Laura Bieger (2013), while describing immersion as experience of urban space, explains how border between material world and world of pictures is being blurred in the case of Las Vegas. Las Vegas, with its hyperrealistic replicas of objects such as Eiffel Tower, Arc de Triomphe, Colosseum etc., implies that the creation of 'new worlds' is based on existing settings or postulates. The crucial difference can be even made just by setting the existing objects in new environment and that is how further philosophical question of the difference (Gilles Deleuze, *Difference and Repetition*, 1968) can be introduced into discussion about the methodology of immersion in space. This association with the problem of difference can be relied on the story about Pierre Menard's treatment of Don Quixote's narrative (Peters, 2020) that was translated in new space and new time, which ensures that the story has 'enough' differences in order to become even more immersive compared to the starting reality.

SPATIAL IMMERSION THROUGH DESIGN EXAMPLES

As immersion is not theoretically defined and structured in architectural discourse, we can simply make an intuitive list of common strategies or methods that are recognized as specific in the process of conceptual constructing of immersive space. The wider goal of the research of spatial immersive installations is to establish the scientific theoretical platform of efficient design methodologies that can provide mental immersion into space. Therefore, some of noticed strategies could be: indefinite duplication of one visual element; the illusion of indefinite space; usage of audio or visual reflections; imitation of human movement etc. That is why one of these approaches will be analysed through selected art and architectural installations, created by artist on one side and architects and engineers on the other. In that way, two opening questions about spatial immersive installations can be introduced: the methodology of immersion and spatial immersive installation's position between art and architecture. The criteria for selecting four design examples is common strategy or methodology: the reflection of human movement.

Yayoi Kusama: Infinity Mirror Rooms

One of leading avant-garde artists since 1960s expressed her obsession with one visual element through different art media, from simple drawings, through covering her body with it, designing clothes, but also through pervading whole rooms with infinite multiplication of one same visual module. Yayoi Kusama's well-known ceaseless preoccupation with nets and polka dots inspired her to enter the design process which served primarily as her self-therapy. Besides the immersion of visitors, Kusama writes about her own identification with polka dots, 'forgetting' about herself as they 'envelop her' (Oyebode, 2012, p. 249), which could be comprehended principally as artist's immersion into art piece. The extended matrix of dots presents infinity of the universe, whose one single element, dot, further presents her own life. Her goal, regarding the visitors' experience, was to make an illusion that their existence disappears within the matrix, being mirrored in all surfaces of the room (floor, walls and ceiling) and being equalized with visual elements and, therefore, absolutely obliterated. Whole idea is the result of hallucinations artist claims she experienced (Kusama, 2011, p. 62), which gave her impression these elements and objects have their own 'auras' that can be assumed as 'extraordinary' features that enable the immersion in their infinite repetition inside of the system of reflections. Same strategy was applied in a series of Infinity Mirror Rooms (Photo 1). However, Kusama started with application of mirrors in many previous works such as 'Floor Show', 'Kusama's Peep Show' and 'Narcissus Garden' (Yamamura, 2009, p. 104). All in all, Kusama managed to

point up the power and capacity of reflection as immersive methodology by implementing them into space, upgrading the immersion to spatial immersion with her installations.



Photo 1. Yayoi Kusama, Infinity Mirror Room
(Source: <http://www.dreamideamachine.com/?p=30547>)

Serge Salat: Beyond Infinity

Officially determined as an architectural installation, Beyond Infinity (Photo 2) is a full-scale room with specific physical and emotional stimulations integrated in space. Designed by an architect, it is based on Chinese Taoist philosophy, Western Renaissance, but also inspired by the topic of fourth dimension introduced in 20th century by Duchamp, Malevich etc (Frearson, 2011).

The updated feature compared to Kusama's model of Infinity Mirror Rooms is multimedia manipulation of the atmosphere combined with light-structured cubic forms dispersed over mirror surfaces of walls, floor and the ceiling. It included layers of electronic art, music, sculpture and architectural manipulation of space. This setting provided the illusion of infinity, common for the works that tend to create immersive experience for their visitors. Conceptually, it is abstraction of Chinese courtyards with the idea of constant transformation and mutation, which implies reversing of colors and shapes explained with yin-yang contrasts each element has. Even though we may consider the type of projects that are designed as closed boxes or rooms with all six surfaces covered in mirror as seen before, afresh involvement in such a space always creates unique experience because of 'extraordinary' feature of constant illusion of multiplication of our own body and specific dialogue between virtual and real world.



Photo 2. Serge Salat, Beyond Infinity
(Source: <https://www.dezeen.com/2011/09/27/beyond-the-infinity-by-serge-salat/>)

Rozin: Mechanical Mirrors

Compared to literal reflection made in mirrors, one step onward was established in the form of mechanical mirrors made from various materials. Danny Rozin is an artist with significant research of interactive art pieces, especially recognized by a series of work based on pixelated displays. The essence of each piece of art is that 'pixels' of physical displays are able to recreate the visitor's reflection. Independently from the material used for the whole display, segments i.e. tiles are being tilted up and down correspondingly with the source of light above the display (Photo 3). The dialogue between mechanical segments of art piece and the body of the visitor alternates the appearance on the display, being indefinitely changed until the visitor leaves and the piece gradually returns to a still state. In the search of 'extraordinary', besides the fact that the reflection is made by mechanical element, each of mechanical mirrors fabricated since 1999 was realised from unexpected material, such as rusted steel, pom pom, troll toys, mirror, shiny balls, wood, fabric, trash etc. that are being followed by the sound made of sculpture's moving parts (Smoothware). The state of immersion arises from intensive interaction between person and art piece, additionally augmented with 'extraordinary' selection of material. This human centric approach, where basically the content of the art piece doesn't exist without the participant (Allerton, 2021), challenges and provokes unpredictable patterns of human behaviour. Regardless of hybrid approach that included programming and computation within an art piece, in the sense of spatial immersion, it lacks of third dimension. Anyhow it reaches high level of immersion, demonstrating how methodology of reflection increases the state of immersion even though it is not fully spatial.



Photo 3. Rozin, Rust Mirror

(Source: <http://www.smoothware.com/danny/rustmirrorbitforms.jpg>)

Nassia Inglessis: Disobedience

In the light of previously introduced direct dialogue of body and art, Nassia Inglessis's (Studio INI) project for Greek Pavilion at London Design Biennale 2018 named Disobedience (Photo 4) demonstrates the possibility of direct dialogue between body and spatial element (wall), where architecture reflects the motion and emotion at the same time. This project created special opportunity for visitors to shift several tons of metal based on their behaviour, breaking truisitic perception of architecture as "something static or emotionally inert" (Studio INI, 2019a). Conceptually simple, but technically highly complex procedure of making the wall as dynamic component of space provided 'the extraordinary' feature, the unexpected experience where malleable material deconstructs upon the human's presence. Inglessis is educated as an artist, an engineer and a designer with professional capability to choose any approach to design. Anyway, the engineering mind is present in the idea to explore and update the limits of existing structure through digital and computational tools. However, neither a material nor a technique were the initial ideas to be developed (Studio INI, 2019b), while the main goal of Disobedience was to provoke new prototypes of behaviour, which is exactly one of common characteristics of all four presented immersive projects, besides the incompleteness of the meaning of installation before the visitor's engagement and unpredictability of their actions.

Theoretically the most significant novelty in Studio INI's research developed through experimental practice is their definition of Augmented Materiality. The idea is to diverge from overlaying digital content onto the static state of the matter. When referring to Augmented Reality, reality is being altered by digitally attached virtual creations. Anyhow, the explanation of method to create Augmented Materiality is explained in the statement: "digital and computational tools are being used to embed new capability in matter (...) research

attempts to step away from digital augmentations, away from simulations experienced via a headset or intangible layers and delve into material augmentations instead” (Studio INI, 2019b). In such a way, authors returned the immersion from strictly digital discourse back into material world, merging art, engineering and architecture.



Photo 4. Nassia Inglessis, Disobedience
(Source: <https://www.nassia-inglessis.com/disobedience/>)

DISCUSSION: ARCHITECTURE OR ART

In theory of architecture, the distinction between architecture on one side and archeological artefact or piece of art on the other one is specific philosophical and historical problem (Šuvaković, 2005, 72). The parameter which makes difference between architecture and art is utility or utility value, which is indispensable feature of an architectural project. The first inconsistency of this statement comes with comparison of architecture and sculpture, when taking into consideration historical or archeological architectural objects that lost their everyday, political and religious functions from the perspective of contemporary individual (Šuvaković, 2005, p. 72). The most important distinction between architecture and art for this research of spatial immersive installation is similar to the question of modern, avant-garde and postmodern relativisation of this relation through ambient art and installation. Unique spatial disposition of paintings, pictures, sculptures, objects and constructions, which do not take their place individually, but exclusively as a part of wider system, defines an installation (Šuvaković, 2005, p. 277). There is necessary dependence between at least two pieces which can be arranged in various possible ways. In order to be perceived, the visitor needs to move between elements of the setting. Most obvious example of an installation, out of four presented examples of immersive pieces, clearly is Serge Salat’s *Beyond Infinity* because of author’s multimedia approach and assembly of cubes. However, the essential reflection that makes the visitor’s experience immersive is created by the treatment of the setting as one whole, one unity and not only specific relation between different elements. Exactly that handling of the space differs ambience from installation. The ambience or environmental art is based on the articulation of open or closed space as a piece of art, while space is not passive framework of art, but an equal part of the whole creation (Šuvaković, 2005, pp. 42-43). It connects various phenomena (space, light, sound, objects, motion of the visitor) and it is a synthesis of different forms of art that are merged into final spatial art product.

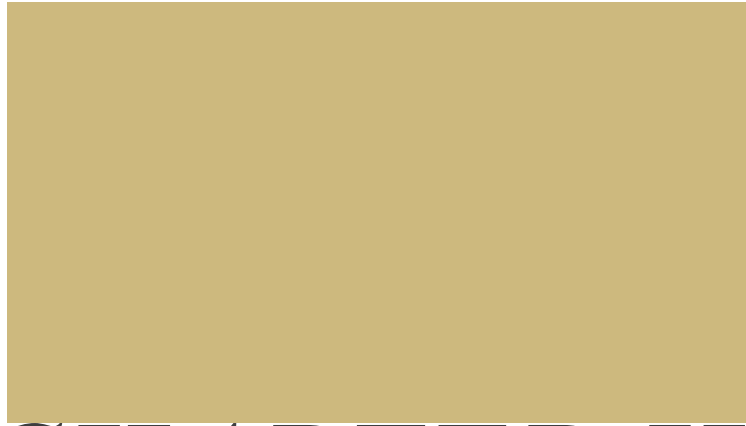
Mechanical structures and kinetic constructs such as Rozin's and Inglessis' pieces belong to some kind of ambience. However, crucial divergence is in the disposition of mechanical elements: Rozin treats them in one dimensional surface, while Inglessis surrounds the visitor with kinetic structure treated as architectural space which dissolves the boundary of art/architecture and surrounding, making not only the basic immersion in an art piece, but spatial immersion. That is why the direct perception occurs. It is not passive observation, but the act of entering the space and its exploration that provokes new behavioural patterns. Kusama's Infinity Mirror Rooms, pioneering in experimentation with reflections, provided both approaches: the articulation of space as an installation and as an ambience.

CONCLUSION

The topic of spatial immersion always takes architecture into consideration as art, whether architectural project is categorized as installation or an object with certain function. Taking into account philosophical background of immersion, as presented, it demands the 'extraordinary' treatment of space in order to provide deeper mental absorption. This paper intended to recognize reflection as one of possible methodologies for immersive design in physical space, as new approach to design common for both art and architecture. Whether the reflection of human motion is made by visual, audio, kinetic elements or simply in mirrors, the space enters the interaction with human body opening further philosophical issue: merging of subject and object. In process of immersion the visitor identifies himself with space, which keeps the visitor's consciousness longer in alternative reality of immersive architectural installation. The alternative reality as place of existential dislocation in philosophy is specified also as space of aesthetic experience, still presenting unexplored theoretical topic in architecture. Kusama, Salat, Rozin and Inglessis assisted in this first step of establishing the methodology of immersive design, which could help in further definition of spatial immersion as valid architectural concept. Finally, the unspecified position of immersive spatial installation still holds the question of its future, whether it will be kept on being designed as exhibition space or it will gain some new independent function or even utility value within some existing architectural typology and create hybrid structure together.

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CHAPTER III

SMART CITIES AND ARCHITECTURAL STRUCTURES: COMMUNICATIONAL AND INFORMATIONAL SPACE

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ABSTRACT

The expectations for shaping the urban landscape toward the ethical and aesthetic values of democracy are seen as the main challenge of an intelligent environment, made possible via information and communication technologies. Consequently, architecture's tendency to embrace digital media strives to create innovative and sustainable infrastructure. This approach aims for an argumentative theoretical analysis of aesthetics and communication sciences. The focus is on the context that continuously evolves living traditions persuaded by innovation that modifies and facilitates the evolution of society. The approach is also supposed to be a constantly evolving practice that engenders interaction between past, present, and future, configuring a unique urban landscape. The goal is about the metropolis as a collective achievement, seeking innovation through technologies while preserving tradition. Therefore, the convergence between architecture, technology, and new media requires the consideration of two viewpoints in this analysis. The first is the adopted architectural spatial models. The second is the transformative structure through new media, creating realities, intelligent environments, and interactive communities. Under these two directions, the artificial environment and imagined configuration through digital media are discussed, considering that technology overcame natural boundaries: the leitmotif of human cultural development.

Keywords:

new technologies; mobility; connectivity infrastructure; urban sustainability.

INTRODUCTION

New forms and contents emerge as processes of transformation that imply values from each culture in the construction of the collective imaginary. The contemporary urban environment is formed by the new principles of digital technology configuring environments. However, different conceptions and new forms in the creative and aesthetic process prevailing nowadays aim to meet the new paradigms of the fourth industrial revolution regarding communication and information systems in large metropolises. Furthermore, the interest is to know what would designate and condition the current architectural and urban design projects concerning existing technological resources. This analysis focuses on the concept of a smart city and the process of urban aestheticization and technicization. In this way, interventions in urban centers, by digital technology or by materializing new ideas aimed at the smart city concept, must be understood in their social and aesthetical meaning. The communication system in urban planning and cultural diversity are considered essential factors for public architectural spaces, based on transdisciplinary studies about societies in their history and current context. Currently, in the face of technological convergence and digital images, the objective is to discuss the conditions of social and cultural participation of individuals.

The emphasis is on a context that continues to evolve living traditions, which are influenced by innovation and can change and facilitate society's evolution. Therefore, the approach should also be considered a continuously evolving practice, which creates an interaction between the past, the present, and the future, resulting in a distinctive urban environment. The goal is to explore the metropole as an initiative for innovation through technology. Therefore, integrating architecture, technologies, and the new media in this study requires two perspectives. The first is an architectural spatial model, and the second is a transformational structure using new media to create realities, artificial environments, and interactive communities. Under these two directions, the virtual environment and the imagined configuration of digital media will be discussed, taking into account that technology has overcome natural boundaries, which is the enabling factor for human cultural evolution. Therefore, these questions are the basis of this analysis: How is it possible to have public spatial architecture driving the collective and democratic intelligence of a city's ethical and aesthetic productions and experiences? Would the basis be in the interactive communicational structure; in the capacity of human communities to cooperate intellectually, ethically, and democratically; or in the capacity of artificial intelligence as a solution? To this end, seeking answers to these questions, as a guide to the discussion, the dialectical method is considered regarding the contradictions implicit in the application of empirical concepts related to the employment of new technologies and their effects, that is, the spatiotemporal form of an object in the Kantian meaning on the ongoing experience and updating context in the Hegelian sense. That is a continuous updating of the visual narrative towards the challenges posed by technological convergence as an image model and aesthetic experience of the current urban environment.

ARCHITECTURAL SPATIAL MODELS

Communication and information technologies play the leading role in the challenges of a smart city. In addition, digital technologies generally provide new experiences that connect urban and natural environments. Technology has reached a stage where many of the aspects that were once considered negative for humanity are now considered forms of solutions and thus viewed positively for achieving sustainability goals. However, social problems still need to be solved. Many of the visualizations for a smart city are still only in projects, and their implementation still depends on other priorities being solved. The most essential is that everyone has access to new technologies. Political will and investments are still required to make Internet access feasible. Digital inclusion can thus become a basic need over time, after health, education, and quality of life. Crucial aspects throughout development are part of the narratives of everyday urban life and the utopias that shape the uncertain future. However, it is worth remembering that utopias are essential because they represent the idea of a critique of reality, imbued in which is the imagination of an ideal. Utopia is not simply a word that evokes a kind of social fiction or a type of illusion; rather, the idea of a utopia arises from a critique of social conditions. Embedded in the principle of utopia is critical intentionality, as was demonstrated by Erika Naginski from the Harvard University Graduate School of Design when she discussed Claude-Nicolas designing what he imagined, namely a utopia he called the *Ideal City of Chaux*, and also Sir Thomas More's novel *Utopia* (1516). More's *Utopia* was published in Latin and later reprinted and translated into other languages. An essential aspect of this work even today is the

binary structure. The first part is a critique of contemporary society in England, of kingship as a model for the state and as a political principle. The second part is about a traveler who describes the Island of Utopia. In this binary structure, the idea of a critique of reality as a utopia is developed. The term “utopia” is used for the first time in this novel, which etymologically has two meanings. Derived from Greek, it can mean both “nowhere” and “happy place,” thus emphasizing according to Naginski, a Harvard architect, throughout the course *The Architectural Imagination* (2017), that a utopia is not necessarily something unrealizable but rather something that establishes conditions of possibility, whether architectural, urban, in design, or in terms of economic and social policies. Therefore, through the configuration of the architectural spatial models and urban image in its process of aestheticization and technicization in contemporaneity, designating time and its relationship with space, one can think about all of these utopias for the future of cities. That is, critically and in the sense of the evolution and perception, think about the new interventions related to communication technologies in sync with the urban rhythm, enabling new dimensions of spaces and relations for a future based on sustainable industry and fair trade. These new dimensions of spaces imply increasing needs for design planning.

The fourth industrial revolution, also called Industry 4.0, encompasses a system of advanced and connected technologies comprising robotics, artificial intelligence, machine-to-machine connections, big data, the Internet of Things (IoT), cyber security, 3D modeling, and cloud computing, which are changing the methods of production and the patterns of urban life. In urban projects, simulation systems with computers and techniques are used to generate digital models that enable complex interactions and applications in virtual and augmented reality, thus imitating real-world processes. Moreover, the entire socioeconomic structure has been fully digitalized in its productive, educational, and cultural aspects. This rationalization of the system in its course of industrial development, considering the changes in urban space, implies the technicization and aestheticization of social and urban structures—that is, how society is technically and aesthetically reconfigured in the face of Industry 4.0. In this evolutionary sense, this discussion aims to clarify the articulations focused on inducing the adoption of digital technologies and thus to analyze the advantages and disadvantages of this use by today’s society and that of the near future. Urban life, in its complexity, is the essential part of many cities, where people live together, building and rebuilding their histories as well as their moral, ethical, economic, cultural, social, and political values. Many cities aesthetically represent the space and time of this transforming urban life. When thinking about time and space in the context of practical and aesthetic achievements in the city, what matters is the perception of urban space and everyday life experiences related to the past and the future. Today, issues of urban life as consequences of industrial development focus on the problems of overpopulation, lifestyle, transportation, and housing. Besides public policies and social projects, urban designers and architects project solutions for these problems. Moreover, the main factor in the evolution of science and technology is industrial modernization and design. Therefore, the relationship between art, design, architecture and social reality is complex in terms of technological and sociocultural development. Thus, a visual analysis of the social context as aesthetic experiences of the social actors has become essential. Under these conditions, media images produced as part of the urban space are part of the complex system of visual culture, which implies current ethical, social, and political values. An analysis of the configurations of human social life throughout the evolutionary history of humanity yields the observation, according to Antoine Picon (2005; 2006), that in the 19th century, the separate existence of an Ecole des Beaux-Arts and an Ecole Polytechnique in Paris highlighted a gap between art, architecture, and construction. Consequently, the search for traditional values, as opposed to the ideal of innovation, in a dialectic constructs narratives for an aesthetic value judgment toward an aestheticization and technicization of urban spaces. Architecture in public space has several ways of being presented; for example, it can be figurative and propose its configuration of public space with areas of socialization, testifying to the importance of architecture’s relationship with the great social and material activities of human life.

INTELLIGENT ENVIRONMENTS AND INTERACTIVE COMMUNITIES

An essential aspect of architecture and urban design is the balance between the market and the economic context and creating a new relationship between public infrastructure and its place in cities, as “digital technologies create new and challenging opportunities in the field of sustainable urban design,” as stated by Avi Friedman (2021, p. 139). Therefore, in the face of this new digital reality, human life follows the new path on which all things are under the control of the digital age, IoT, Big Data, and AI; in short, under binary reading and algorithms. Thus, to think about the city is to think about all the conditions in which urban life is inserted and, as a basis, the functional and aesthetic aspects of urban and architectural planning. In a recent article, “Is the city becoming computable?”, Antoine Picon and Thomas Shay Hill (2020) present positions on urban planning based on tracing the history of representing cities in the process of

digitalization by clarifying that since European urbanization in the 19th century, this topic has been discussed in academia in different ways. They state that there is a romantic point of view, “a belief in the city as fundamentally beyond the powers of human comprehension and thus best apprehended through qualitative means.” In contrast, this view is the tradition of quantitative values, “a belief that the structures, patterns, and dynamics of cities can be reduced to numbers” (2020, p. 29). Well, would this number reduction precisely represent the city, that is, as mathematically constructed? Contrarily, the authors give significant consideration to understanding that the city is a social system involving the time-space relationship while clarifying that “many features that seem to define cities—the abundance of creativity, cultural richness, the fast pace of life, etc.—have been beyond the traditional methods of scientific analysis, precisely because these parameters themselves elude exact definition or measurement” (Picon and Hill, 2020, p. 30). According to Picon and Hill, quantitative values are essential for evaluations in the science of cities compared to qualitative values. This city science originated in the 19th century with urban planning. The urban planning concern arose with the rapid growth of cities, the problems resulting from this growth, and the need for control and organization aimed at obtaining quality of life. It is in this context that the first statistical agencies appeared in Europe for the quantitative analysis of mortality, birth, crime, and essential conditions of sanitation, education, and public health. Then, in the second half of the 19th century, a profusion of data analysis and visualization methods appeared in Europe and North America.

The development of a science of the city emerged effectively at the end of the 19th century based on quantitative social thinking as spatial and, according to Picon and Hill, “only in these closing decades did urban and territorial concerns come center stage, and only then did a set of techniques develop to analyze the urban and geographic aspects of social data” (2020, p. 31). Historically, it is evident that the development of quantitative scientific methods for analyzing cities resulted from the need to reorganize the structure of the urban environment (p. 33). Another stage that marked the development of cities under the control of the science of numbers was the emergence of cybernetics after the Second World War, and “in the middle decades of the 20th century, digital computation seemed to offer the possibility of bridging the divide between the social and natural sciences—of putting the study of society on a solidly scientific basis” (p. 35). One of the main reasons for the technological advances and the control of city flows and spaces, especially in North American cities, was the insecurity generated during the Cold War, which has been extended to the current time. This insecurity is due, on the one hand, to the Cold War period and avoiding any possibility of atomic attack and, more recently, against any case of terrorist attack following the September 11, 2001 event. On the other hand, every new technology is tested in secrecy, utilized by the state intelligence services, and used in cases of defense or attack. Furthermore, cybernetics offered no solutions for city planning. The basics of cybernetics applied to the context of cities did not consider the primary forms of human internal and external perceptions of time and space, that is, “the facts that historical circumstances matter, that past event, and decisions constrain future developments, that geographical unevenness is both cause and consequence of social and economic dynamics” (Picon and Hill, 2020, p. 36). Thus, the authors clarify that the critical highlight of advances in communication and information technologies arrived with the discoveries of Jay Forrester, engineer and researcher at the Massachusetts Institute of Technology (MIT). However, his research was focused on the development of state defense technologies, leading to the design of the SAGE missile defense system in the 1950s, which later, in 1961, served to address communication and optimization issues in human and machine network systems. Forrester has developed complex system dynamics to apply the new mathematical and computational methods corpus (Picon and Hill, 2020, p. 35). Cybernetics then consolidated the science of the city under the control of numbers in Forrester’s *Urban Dynamics* (1969) as the foundation for a computational structure to simulate how cities function. The authors clarify that “Forrester devised a set of equations describing how all of the major components of urban systems operated and interacted with one another” (p. 35). However, with the current advances in research, complex digital systems now make it possible to simulate social phenomena involving time and space. Furthermore, Big Data is not specifically a feature attributable to the smart city concept but to computational methods and traditional modes of data analysis. According to Picon and Hill, Big Data “is more a product of the ubiquity of the smartphone, and thus should be dated to slightly after the dawn of the smart city” (p. 39). In general, the logic of Big Data is the ability to quantify all aspects of urban life by numerically representing reality and archiving it in the cloud. Consequently, considering the continuous technological development, cities are becoming information systems. Information is available in real time, as stated by Antoine Picon (2015, p. 39), who added that “within these systems, relationships between physical infrastructure, service offers and users are being reconfigured, to work toward improved reactivity and greater flexibility of use.” In this sense, visualization is essential for the communication process between the different types of simulations by Artificial Intelligence (AI) concerning the paradigms in their applications.

Thus, the moving image in the sense of flow and connectivity is fundamental to the goals of a smart city. As stated by Michael Batty in *The New Science of Cities* (2013), “our science of cities, since resource constraints and different expectations dictate the need for simplicity in design and communication. All this implies fast, simple, visual, and accessible models.” Moreover, in the chapter “Urban Simulation” of Batty’s work (2013), he further emphasized the importance of visualization in the face of the complexity of cities and their forms of communication, adding the following: “In using the model for integrated assessment, which consists of chaining different models together across different spatial and temporal scales, different kinds of expertise are required.” Consequently, the interdependence between social, political, cultural, and economic structures for decision-making involves the dynamics of the city through communication strategies, whereby Batty highlights that “visual media makes it easier to communicate model structures and outcomes to other scientists involved in models that require different disciplinary and professional expertise” (Batty, 2013). Furthermore, the digitalization process proposed by the fourth revolution in projects aimed at a smart city consists of digital technologies in production processes, education, and services for optimizing and making processes more efficient. Then, the integration of computer systems works in a coordinated manner to exchange information between different systems. This connectivity is where the Internet of Things (IoT) stands out, for the interconnection between objects enables infrastructure (electronics, software, and sensors) organized in networks, thereby facilitating communication and interaction. These are the main features that outline the fourth revolution and are part of the projects aimed at a smart city, essentially including cyber security. This security is inevitable and concerns hardware and software infrastructures for protecting information that is processed, stored, and transported by digital information systems. However, in connection with the physical urban space, security is also a concern, especially in terms of increasing violence in large metropolises. For this, surveillance and monitoring services using new digital technologies, through security cameras, are employed to provide greater security, including the use of facial recognition to secure access to specific locations. Through technological integration, cameras with remote connections transfer images in real time to servers in the cloud (datacenters), which can be accessed from any device connected to the network. The right to security guarantees that public authorities can install this technology to monitor public spaces. However, other rights are at issue when these forms of monitoring come to be used for control—when public power is exercised in an inappropriate, misappropriated manner, it is a matter of the right to privacy in public space. Under these conditions, many projects under the smart city concept (Figure 1) are being designed worldwide. However, on the one hand, some cities are questioning the lack of privacy and the need for a technology-driven environment. Nevertheless, ethical aspects must be considered in all urban design and architecture practices in implementing digital technologies, in addition to the goals of technicization and aestheticization. On the other hand, a smart city also creates democratic and accessible spaces for coexistence. For example, São Paulo (Figure 2) has several initiatives in this direction to execute works in the city space, ensuring accessibility, safety, and well-being for all users in public spaces. As a result, São Paulo was included in the “Global Cities of the Future 2021–2022,” occupying the fourth place in the list of the ten “Megacities of the Future” and the tenth place, among the megacities, in the “Human Capital and Lifestyle” perspective. Other highlights contributing to the city’s good ranking are the creation of three technological poles, the percentage of 4.4% of formal jobs in the technology sector and 4.5% in the education sector.

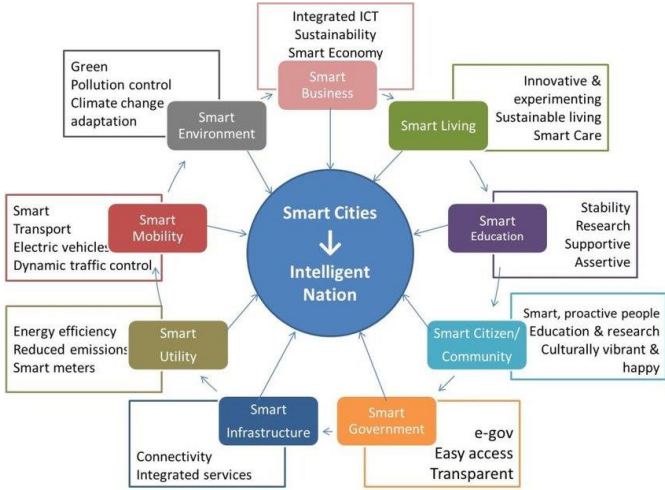


Figure 1. Smart city concept. Image under CC BY 4.0 license.



Figure 2. São Paulo City. Photo by Sergio Souza. Image under CC BY 4.0 license.

Nonetheless, statistical and machine learning techniques are required to solve problems with data of greater variety and complexity, namely Big Data, which arrive in growing volumes and at ever-increasing speed, making them impossible for humans to solve. In addition, to the greatest challenge of improving human qualities, artificial intelligence offers an advanced analysis based on logical techniques and machine learning. That enables situations to be interpreted and trends and system behaviors analyzed to support, automate, and make decisions. In addition, one must consider the other digital technologies for this world appropriated by digital technology, such as robotics, integrated systems, computer-based technologies that enable 3D simulation and visualization, and even 3D modeling software and 3D printers, which produce parts from a digital drawing and simulation plays a significant role in all production sectors and is made possible with digital technology. Technically, simulation offers experiences through models that represent reality in various situations. Moreover, digital technology is fundamentally driven by mathematical thinking, and, in the case of architectural and urban environments, the basis is dynamic geometry. Nevertheless, models must be validated against experimental data for an efficient simulation. Simulation is a technique that involves imitating situations, various operations, and types of real-world processes and facilities that employ digital technologies. It concerns methods of calculating the effects, consequences, and results of situations that humans would experience by the mathematical logic that underpins digital technology. A simulated model is developed based on specific parameters and tested for refinement and similarity with physical reality under different conditions. Simulation in three dimensions is essential in the spatial context for location (longitude, latitude, and altitude) and 3D objects (length, breadth, and height). With 3D simulations, an entirely virtual configuration or reproduction with the possibility of interaction through virtual reality is possible, with designs limited to three (where they occur) or four dimensions (space-time). There are also other simulations that involve complex resolutions, combining physical phenomena such as dynamics. Consequently, the combination of 3D and multi-physics simulations offers more accurate results. Through these simulations, it is possible to test a large part of the variables of a process without spending on raw materials and with a considerable reduction in direct labor. This technique is also applied to entire cities, simulating basic sanitation, the power grid, car traffic, and patient flow in a hospital, among others. Artificial Intelligence (AI) makes these processes possible through data from technical tests and simulations virtualized in large proportions with accuracy and are already being incorporated into the software. Furthermore, AI enables complex connections that are not possible for humans or static simulators (Hoppen and Berti, 2021).

In general, one can see that the aesthetic process of this current reality involves all dimensions, characterized not only by a superficial aesthetic experience but a deep process of aestheticization, according to Welsch (1996), when discussing the topic "Deep-seated Aestheticization: The Transposition of Hardware and Software and the New Priority of the Aesthetic" in his article entitled, "Aestheticization Processes:

Phenomena, Distinctions and Prospects.” For this author, “the daily interaction with microelectronic production processes effects an aestheticization of our consciousness and our whole apprehension of reality.” Thus, Wolfgang Welsch (1996), in concluding his article, made it clear that:

Aestheticization is neither to be affirmed nor rejected without qualification. [...] In the thought of the epistemological aestheticization [Welsch] tried to name a principal reason which makes the modern inevitability of aestheticization processes comprehensible. If we look at deep-seated aestheticization, then we are concerned with a form of aestheticization which seems to be as good as incontestable. [...] Whereas if we look at surface aestheticization processes in no way means that it is precisely from an aesthetic standpoint the objections to current manifestations of anesthetization are both possible and necessary.

However, understanding the dynamics of urban space in its complexity as an essential part of everyday life is to know that the fundamental bases are in the construction of space by society and culture. However, for the conception of space, time is also essential concerning the experience with things in the world. The possibilities of perception provide the understanding in association with the senses, still in the Kantian conception, considering that the experience without understanding does not offer any correct form of knowledge. In this sense, eliminating any sensation facing the possibilities of perception, Immanuel Kant (1790) presents two pure forms of the meaning of appearances as the principle of understanding: space (*äußerer Sinn*) and time (*innerer Sinn*), which are infinite and subjective. Therefore, they are not concepts—*a priori* characteristics—and, because they are not concepts for thought, they are not rational. Instead, they have the character of visualization. Imagining space and time alone is not discursive and is independent of experience with things. However, one can imagine that there is no element, nothing, but eliminating this imagined space would not be possible. Consequently, the importance of space is more significant in the sense of knowledge independent of any experience as an idea. In this complexity of understanding the visual experience, the construction of space in its historical, social, and cultural values is also considered. It is essential for the associations established in urban scenes, in the Hegelian spirit of the time, to establish a relationship between the logic of space and the practical mental and social world for the space of everyday life. From this contextualization, in the book *Visualizations of Urban Space: Digital Age, Aesthetics, and Politics* (Wagner, 2023), the context of the everyday experience of metropolises is discussed, through an interdisciplinary analysis, in philosophy, social sciences, humanities, and arts.

FINAL CONSIDERATION

By seeking answers to the guiding questions of this discussion on the possibility of having public spatial architecture driving the collective and democratic intelligence of a city’s ethical and aesthetic productions and experiences, and the interactive communicational structure, the capacity of human communities to cooperate intellectually, ethically, and democratically, and in the capacity of artificial intelligence as a solution, the result was a synthesis based on a dialectical relationship of the innovative and traditional evidence in urban space. Hence, it was not simple to distinguish the political and economic aspects from the social and urban structures in their immediate needs to find solutions for the sociospatial environment. Accordingly, this paper has discussed the adopted architectural spatial models and the transformative system through new media, creating realities, intelligent environments, and interactive communities considering urban space—physical or digital—through the visual aspects of the entire environment. On the one hand, the discussion has addressed the achievements of the smart city project and technization process. On the other hand, the analysis has addressed concerns about achievements related to digital technologies in aestheticization. Therefore, in the technological evolution, humanity follows, without control, a journey of accomplishments on an invented, artificially built path as everything materializes while adapting, growing, and absorbing all technology. As a result, a synesthetic relationship between human beings (users) and technology (products) has been established. It is the materialization of ideas as a consolation for overcoming nature, characterized throughout the evolution of technologies as a way to better relate to the environment, even under pretentious control.

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META-TYOLOGIES

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ABSTRACT

The post-era in which we are living is surprising and unpredictable; full of transformations, permutations and shifts. Modern rigid categories and strict architectural typologies are succumbing under the influence of an apparently more elusive, vague and open-ended world. The premodern world of the past, where control was limited and humanity was not definitely separated from its surroundings, led to the later modern world, where humanity objectified the world and established its sovereignty, by controlling, dissecting and organizing it in categories and typologies. Nowadays, in the post-era, hybrids, mixtures and crossings regenerate our conception and our positioning in the world.

This conversion comes as a result of the advances and proliferation of digital technologies, which reinvent our relation to the world and, consequently, create new opportunities for architecture. Architectural design that integrates digital technologies can dissolve many of the limitations and constraints of the past and lead to looser and adaptable meta-typologies.

Urban space is a perfect testbed for the incorporation of digital technologies in architectural design. Three case-studies of emerging urban meta-typologies are presented and analysed, in order to showcase how the use of digital technologies can enable both the extension and the intensification of the urban environment experience.

T TYPOLOGY

The proliferation of taxonomical interpretations of the world is distinctive of the modern age, a moment of unforeseen sovereignty of the humankind on the world. The world, organised in categories, classified and taxonomized, becomes an object of observation, but mostly an object of possession, a belonging. In this fervour for control even the human deeds are reinterpreted and inserted in categories; and previously combined fields of study become separate, delimited fields where sciences impose rules and regulations. Everything can be reconsidered through systematic categorisations and thus, new ways of worldmaking emerge as the dominance becomes total and apparent.

Therefore, even architecture, which can be said that has never completely arrived in the modern era -at least not inasmuch as constituting a strict, scientific discipline- becomes obsessed with types and typologies that in many cases are retrospective lectures of what has been; they explain the architecture of both the past and the present. The main interest was to analyse architecture in its primary elements and focus on the architectural composition as a procedure through which units are formed so as to assure that their assemblage organises each time higher level of typologies. Typologies were primarily understood as morphological and constructive but the aspects of utility and functionality cannot be overlooked. Modernity engenders at the same time new paradigms; in the case of the museum, for example, architecture expresses the desire of modernity for control over the world through a custom-made representational apparatus. Simultaneously, old paradigms are normalised and become canonical representations of the statistically classified as typical circumstances, like the nuclear family apartment. Architectural typologies can respond to different societal aspects and refer to construction or formal preferences; still functionality aspects and space determination becomes the most usual trend. As the modern era succumbs and the post-modernity is succeeded by the hypermodernity and as the proliferation of digital technology alters the norms of the past, architectural typologies are modified and revised. Strict designations and classifications become not only impossible but also irrelevant. Formal representations are substituted by information-al codifications and this affects the relay subjects relate to the world and the way architecture mediates and regulates this relation.

META-T TYPOLOGY: THE MUSEUM

The most prominent typology of the modern world is probably the museum. The museum starts its history as a democratic mechanism of knowledge offering, which offers representations of the world to the occidental publics. It is conceived as a detached building, introverted and with its interior indifferent to the exterior, which in turn, is often designed as a shell that expresses dominance and authority. The museum as a descendant of the *cabinets de curiosités* is a decontextualising collection of fragments, which are presented in a synecdochical way; the bits and parts stand as a representation of their whole context. The traditional museum places the selected objects in parataxis and offers them frontally to the dominant subject. The neutral surroundings, the absence of references to space and time conditions, are important for this reductionistic function of the museum. The museum as a cleanroom is restrictive and austere; it is authoritative and enforces a representation of the world which is binding and arbitrary at the same time. Still, it has successfully expressed for decades the centrality of the subject; it is the subject's view that places the objects in the museum so that they can be objected to, opposed to and supervised by it. Their existence is not just appreciated but also derived by the eye of the beholder. The museum is the kingdom of the human subject; it detaches fragments, combines them and presents them, frontally and firmly, as representations of the world; as if they have had no other purpose but to be perceived, contemplated and experienced by subjects. As postmodernity emerged, all strict regulations and subsequent simplifications were questioned and the museum as the architectural typology that condenses modernity's soul, became a terrain of scepticism.

Gradually, context regained its importance and the fragmentation, sterility and authority of the museum were questioned. In the case of art museums, the reinsertion of art in the public space became a demand, which is still ongoing; the frontal placement of the subject across white walls and black holes became an antiquated way of standing in the postmodern world. The selection of the represented fragments/objects has also raised objections. Curatorship that has been invisible in the past, became evident and thus lost its objective, factual role. The curatorship of the past was assimilated as the unique, truthful way to construct the museum's content; once the single, objective truthfulness succumbed to the multiple points of view, curatorship was manifested as one of the multiple, possible stories to be told.

PALIMPSEST is a Interreg V-A Greece-Italy funded project that rethinks the museum as a typology by integrating digital technologies in order to make the museum experience a participatory, contextualised,

interactive and personalised multiplicity. PALIMPSEST's name refers to a surface that can be rewritten conserving previous scriptures, something that is reused or altered but still bearing visible traces of its earlier form. In the case of the city, it is its past that was erased or covered up by its present; it is about urban history, tales, occurrences and stories of the past that are reinserted in the urban space.

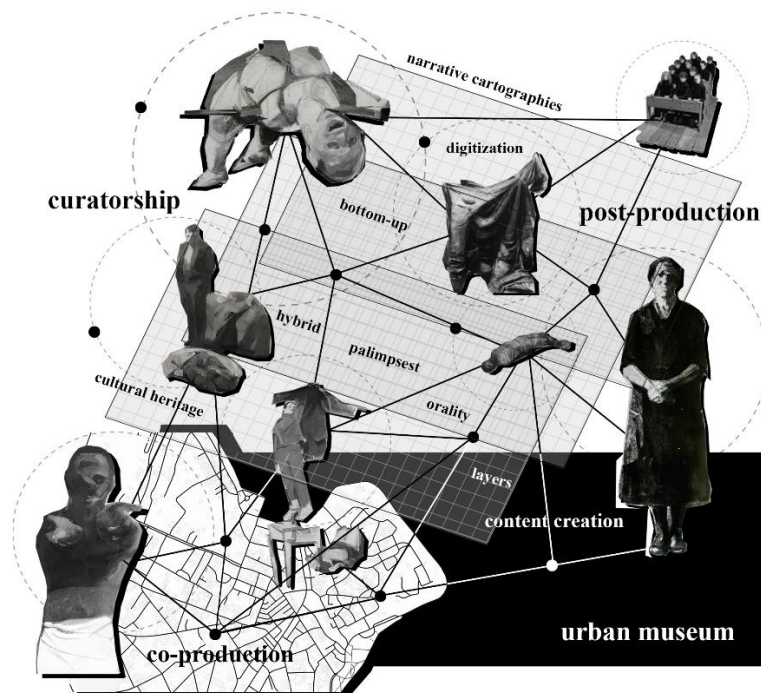


Photo 1. PALIMPSEST's concept diagram

The project was set in three distinct, but interconnected phases. The first phase was about the creation of an archive, with the participation of schools and trans-generational collaboration. Students found stories related to the city's past, from elder people in their familiar environment. Then they transcribed, tagged, and archived them. In the second phase the collected material was uploaded on a digital mobile Application. The users can search for stories using filters; add stories and comments and suggest links among them. They can also use the Booth, an integrated tool in the App, in order to automatically produce animated visualisations of their narrated stories. The App and the Booth constitute tools that help the city's past extend on virtual spheres. In the last phase, PALIMPSEST focused on the creation of art installations in the urban space. Artists selected stories from the archive and then they reinserted them in their original location as art installations. These settings, activated by visitors, are interactive and multi-sensory, with no visible footprint in the urban area.

Extending the reality of the city is attempted through the insertion of art installations that refer to, document and reconstruct stories and events of the city's past. The project aimed at the creation of an augmented, multi-layered and enriched museum experience in the open urban space, by using digital technologies and co-creation methods. The project is based on the understanding of the city as a palimpsest, where the city's public space is reconstructed by its time layers that are overlaid making visible the vertical time development of the city.

Artists, architects, software engineers, archivists, educators collaborated in a participative and engaging process in order to revive hidden and even lost layers of the city's Immaterial Cultural Heritage and extend the reality of the present by activating its co-existence with the past. PALIMPSEST extends the urban space in a way that digital and physical spheres concur, creating an immersive merge of fiction and reality. There are no fixed roles, as spectators and protagonists alternate and interchange, blending everyday life with art, thus blurring distinctions and categorisations.

PALIMPSEST is curated by: the pupils who collaborated by collecting old stories from elder relatives; the artists that selected the stories and interpreted them in their installations; the municipality and the stakeholders that gave access to certain location in the public urban space; the multidisciplinary PALIMPSEST team that enabled the integration and connection of the physical and the digital, the ordinary and the artistic, the past and the present.



Photo 2. PALIMPSEST's art installation

This open-air, public museum is not *seen, observed* by the beholders; it is not offered on demand and doesn't establish a frontal, directed, controlled sight, but rather, it constitutes one-off encounters for the holders of the App. Although the installations can be experienced by everyone as they operate in the physical space and are mostly audio-visual, they are solely activated through the geolocation signal sent by the App when a user is nearby and are programmed in order to prevent repetitions and on demand triggering. From the enclosed museum where fragments/objects are decontextualized, curated in a top-down approach and frontally offered on demand, PALIMPSEST proposes a participatory, aleatory, personalised curation and an urban atmospheric, immersive, recontextualized experience, where mixed, extended realities become possible in a spontaneous, actual condition. PALIMPSEST reconsiders the typology of the museum, it questions its seclusion and its indifference to the city's public space but, moreover it questions the delimitations and taxonomies that this typology prerequisites; it redistributes roles and re-examines authorities and top-down organisations.

PALIMPSEST suggests a different option for the museum, where museum objects, whether they are related to art, to the past, etc., are reinserted and reintegrated in their context, which is possible through the extension that digital technologies offer us. This model of museum meta-typology is both scalable and transferable in diverse use-cases and can be further researched and developed.

META_PROGRAMMING: PUBLIC LIFE IN THE CITY

Open urban spaces are a prolific and sometimes even promiscuous field for testing how digital technologies can be integrated in design procedures and offer novel possibilities for participation, adaptation, renovation and interaction. Digital technologies have frequently been accused of debilitating physical public city space by offering an immaterial public space that is more biased, controlled and apparently safe, thus less public at the end. These digital technologies can also be used for enabling users to interact with space and even define it, while at the same time they can instigate more interaction among users and therefore engender a more coherent and cohesive public life. Different urban projects have been implemented over the last decades where digital technologies are used in order to allow a more engaging, inclusive, artistic or even spectacular experience of public urban spaces. Designing the physical and the digital at once, not as separate projects but rather as a unified condition that can only forcefully be considered as discrete is an important typological shift. It presupposes a new understanding of notions such as programming in architectural and urban design and the ability to incorporate not just cross-fertilising (Koolhaas) and cross-programming (Tschumi) but also a *meta-programming*, a participatory, interactive, changing, real-time programming, where the designer offers options and possibilities; where architects do no longer just *form* but

rather *inform* an adaptable system of open, multiple, coalescent possibilities. Space understood as a transformational field of action, in a continuous network-actors dynamic, presupposes that the typology of urban design is reconsidered and architects become enablers in this informational, procedural lecture of the city's space.

PATR-on is an architectural project presented, and awarded with an Honourable Mention, in the Architectural Competition organised by the Municipality of Patras, Greece, for the renewal of the beachfront of the city of Patras. PATR-on suggests the development of certain fundamental operations, which could be considered as a kind of design infrastructure, a basis upon which many actions can be supported. Upon this basis a manifold of possibilities is open and can be sustained and, of course, further developed in the future. The set of actions covered by the proposal includes almost all possible functions that may take place in a public, urban landscape. The routes, sometimes clearly marked and sometimes less distinct through planted or forested areas, create a walking system that unifies the experience of the entire area. Correspondingly unifying elements are the bike paths, the urban equipment, which in many cases results from folding of the ground surfaces, various vertical elements that produce a third dimension but also different visuals and to a large extent the digital application, PATR-on, that is proposed. The application facilitates interaction with the urban space on multiple levels.

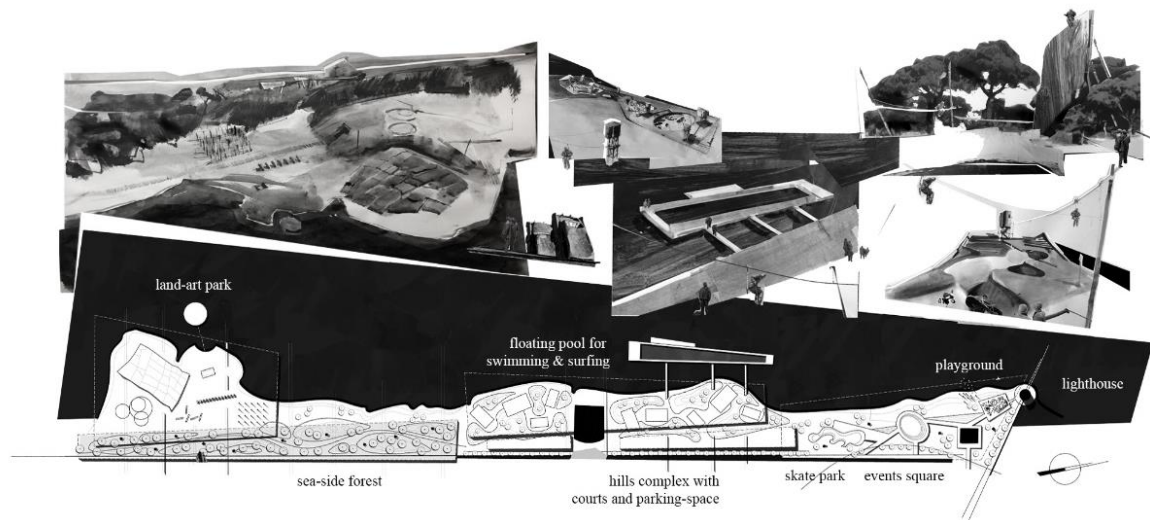


Photo 3. PATR-on masterplan

Using PATR-on, the visitor can interact with water elements such as fountains, nozzles, but also surface water that acquires movement; light systems apart from those that are obligatory for security reasons; projection surfaces where users can leave ephemeral notes and images; speakers and audio-visual equipment; for all of which they can gain access through the app; but also, with a utility and service management system. The management is multi-levelled as on the one hand, it allows the public to be informed about events that may take place in the wider area or for posts by other users, while, on the other hand, it can allow the renting or making available of spaces for the organisation of cultural or other events but also the reservation of parking spaces or other areas of sports activities such as courts or floating structures as well as small boats or bicycles. Overall, the application allows the interaction of the visitor with many elements offered as potential programming, forming a more personalised experience.

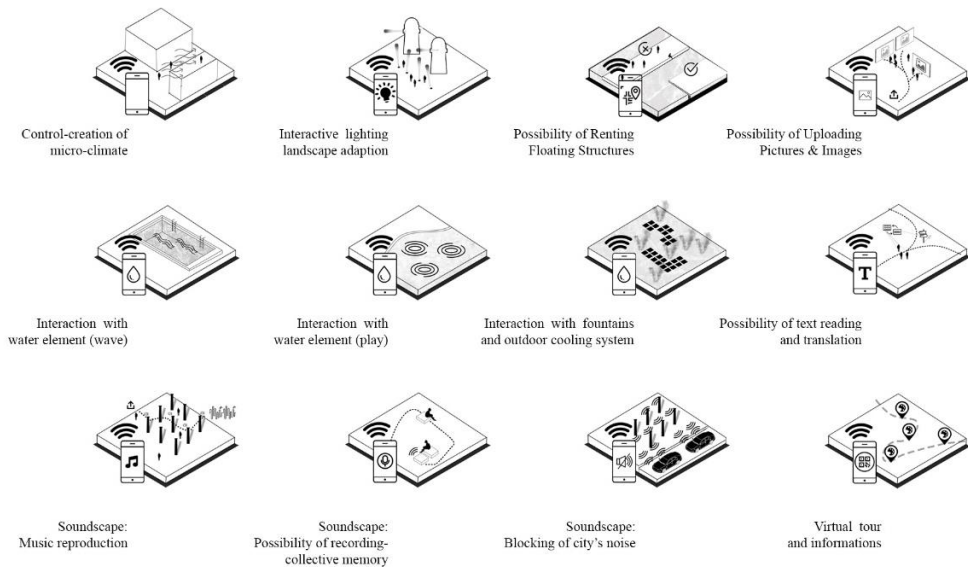


Photo 4. PATR-on App's indicative possibilities

The PATR-on application aims not only to facilitate the use of the beachfront but also to encourage a more participatory and interactive relationship with the public space by activating, thanks to the immediacy of digital media, the subject's interaction with his environment and with other subjects. PATR-on makes planning more flexible and less hierarchical as it is based on the actor-network theory; it turns the field into a network that interacts and is activated by actors. The interaction of user and environment allows the design to move away from monumental placements and to some extent to adapt to the flow of time and the different requirements as they are formed for each visitor. Moreover, PATR-on suggests a shift in the typological organisation of fixed space patterns in the city's open urban space, understood as containers and recipients of actions and opts for conceiving space as a dynamic field (Allen) that triggers and facilitates action and interaction. PATR-on uses digital technologies as an infrastructure that liberates space from fixations and predeterminations that have always resulted problematic in architectural programming as neither architects can predict accurately nor public life should or could be programmed. This proposed *metaprogramming* of the space of public life refers to different meanings of the word *meta*, that is i) *post*, the one beyond or after; ii) *with*, accompanying iii) about itself, self-reflective. Architecture is here operating as a hardware that not only supports software but also empowers coding. Participation, adaptation, flexibility and sustainability become the key features that *designate* this proposed *metaprogramming* design.

META-PRODUCTION: REUSE OF RESOURCES

The existing building stock in our era is part of the environmental equation that needs to be solved; it constitutes a significant resource but at the same time a great responsibility as its management presents us with many and different challenges. Reuse is based upon the recognition that buildings are not unequivocally related to a utility; form doesn't express and host a unique function; and building stock is a resource that like natural resources, cannot be disbursed carelessly. Still, reuse needs to face the question of how this makeover occurs in a coherent and intelligible way. For this, architects frequently adopt functional narratives, in order to create relation and generate legibility, that is, capability of recitation, interpretation, decipheration. (Czerniak, 2007) Design has to work upon the possibility of comprehension of its references and relation to its narratives, so that continuance can be possible. But it is not only legibility that is important for continuance. Another important aspect to take under consideration, is that of resilience, understood as "the ability to recover from or adjust to change that may be perceived as "good" or "bad" (ibid 215-6), "to adjust in the face of challenging conditions" (ibid 216). The aspect of resilience is of extreme importance as design has to acknowledge the site's history and dynamic but at the same time it has to be able to prepare the site for unforeseen developments. It is thus necessary to assure constancy but at the same time permit change, to combine openness and armouring, to make possible change without dilution. (Mantzou, 2017)

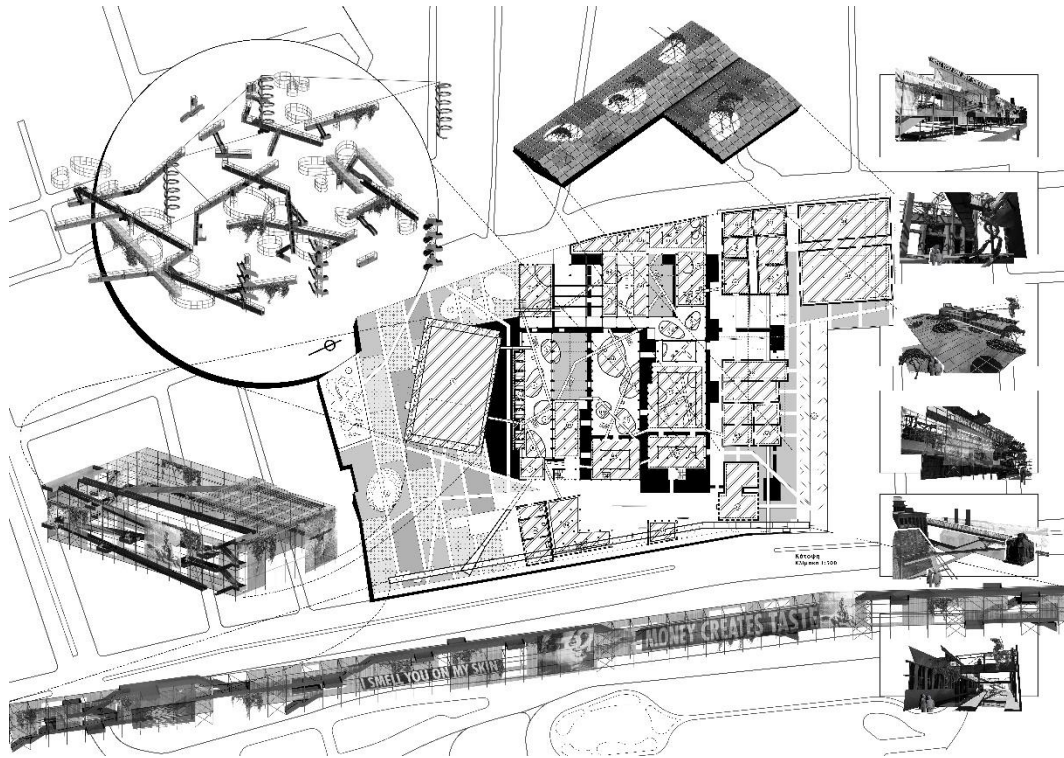


Photo 6. Meta-factory masterplan

Trees and climbing plants are used as an element that can be dispersed throughout the whole complex and is intensively present both in interiors and exteriors. Water tanks that collect and use rainwater and other passive bioclimatic tactics as well as heliothermic systems aim to enhance the energetic needs of the complex and create a more sustainable ecosystem, reintroducing nature to the harsh man-made industrial environment.

The economic sustainability of the proposal is also a matter of great importance for the strategic plan. The proposed creative hub can prove to be an innovative type of company, a spin-off and spin-out, which connects cutting-edge research with artistic creation and therefore lead to novel, state-of-the-art activities. The collective, multidisciplinary and ground-breaking interaction of artists, engineers, researchers, and managers can facilitate new methods and original products with high levels of added value. Consequently, the industrial complex will remain a place of production and innovation that instigates further development and strengthens the local economy, while at the same time allows cultural heritage assets to be preserved and reused as the basis for novel cultural and creative industry products.

Meta-production is important in a world that is threatened by our presence and becomes consumed and exhausted by our hyperactivity; architecture has to embrace the use of previous, rather strict and rigorous typologies for new, adaptable, flexible spaces that can adjust to new technologies, uses, aesthetics and respond to requirements for sustainable, accountable new ecosystems. Meta-production (Bourriaud) as use, appropriation and transformation of pre-existing resources is a sine-qua-non condition for the future of architecture.

META

The current era is one where comprehension and supervision becomes difficult. Theory fades. Immersion entangles the subjects that previously objectified the world and obstruct the frontal, theoretical view and control. In this meta condition typologies are no longer easily, if at all, recognised. Still, new possibilities for less canonical but more vibrant realities emerge; as definitions, limits and borders become obsolete. New merged and combined typologies are enabled; more participatory and dynamic spaces that are fields of active partaking become possible; and continuance with the past, in the form of resilience, where change is accepted and integrated guarantees a more sustainable and responsible attitude. The greater challenge in this meta condition is the ability of the subject itself to adapt to the change brought by its own actions. Meta is beyond and after but it is also with and to show an explicit awareness of itself or oneself as a member of its category (Merriam-Webster, 2014). For architecture, the subject is a twofold issue, on one hand, there

are the users who are empowered by digital technologies and can actively participate, curate and co-create their surroundings and, on the other hand, architects that need urgently to manifest an explicit awareness of themselves as members of a category, that can no longer be considered fixed and static, but is rather evolving beyond.

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GAME-AS-A-SERVICE FOR URBAN DESIGN AND URBAN RESEARCH COMMUNICATION

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ABSTRACT

How can designers, researchers, and urban policy makers leverage gaming and immersive experience to communicate their solutions in a more comprehensive, more inclusive way?

At BLOK 74 Urban Simulations / Urban Communications practice, we have frequently asked ourselves what will happen if we can transpond some of the urban gaming solutions (used to drive the dialogue in participatory urbanism process) to scientific communication. The idea behind this new development was to use games and gamification as a method for better understanding and wider outreach of urban planning and design scientific research.

We started developing GAS! (games-as-a service) approach in the middle of the Covid pandemic. The first prototypes combine elements of urban gaming, storytelling and diverse urban planning tech tools with Web 3D technology.

Concrete project where we applied this approach that tackles increasingly complex challenges of presenting research data in a comprehensive and engaging way was structuring the outputs of the Urban Research Incubator (URI) programme of ISTP / ETH Zurich.

To respond to the URI main research question of “How can urban policy-makers leverage science and technology to create safer, more inclusive cities that serve the needs of all citizens?” we created an interactive “mini-world”, a 3D representation of the complex, interdisciplinary URI ecosystem. The 3D mini-world presents a radically flexible, interactive platform to playfully explore different stakeholder perspectives and understand key data for the future development of two research subject cities - Bogota, Colombia and Cape Town, South Africa.

INTRODUCTION: SETTING THE SCENE

GaaS or “game as a service” is a term well-known in the gaming industry. In its base, GaaS means offering special additions (“services”) within the main gameplay narrative, which bring new, exclusive experiences in exchange of a subscription. In this way, special features of the game can be unlocked, offering more interaction and engagement.

Although GaaS is a very well known model for commercial entertainment games, within our BLOK 74 we have tweaked this model so it can serve better communication of complex research data and facilitate the creation of interactive co-design formats. One of the possible areas if applying this tweaked model is design and planning education. Game-as-a-service in this context means building a new layer of understanding what design can do, making this way of using games an excellent design education tool. It allows design and planning students and professionals to become more daring, explorative and creative in finding the right solutions, by “playing out” different scenarios or trying out different designs.

In the field of communicating complex research and generating more attention to the urban design process, game-as-a-service brings better understanding of complex issues to the broader scope of stakeholders who are non-professionals in terms of design and planning, but are end users and active citizens. Gaming graphic language and basic mechanics (such as roleplay, solving tasks or orientating in space) nudge and drive co-creative processes, making the built environment easier to understand and therefore creating a safe environment to express new ideas. To the contrary of the traditional planning process, in which urban plan development follows linear steps starting with analytical to design to implementation phase, hoping that what was planned at the beginning of the process, will pan out more or less exactly the same at the end. This rigorous scheme is historically based on the limited number of stakeholders in the planning process. With widening the participatory and inclusive process of citymaking, and within the context of many uncertainties which contemporary cities are facing today, the linear flow of steps is much more likely to become a complicated scheme of many parallel “paths”. In this context, using games as a service to test and explore many parallel paths contributes to better understanding and solving real-life issues in the built environment, in an inclusive way.

Finally, when applying games as a service to scientific communication, the immersiveness, interactivity and options for limitless playfull explorations helps build an extra understanding and uptake of the scientific data. The ability to connect different audiences within an immersive experience offers a field not only for understanding, but also for a meaningful inspiring action.

CASE STUDY IN VISUALIZING COMPLEX URBAN RESEARCH: URBAN RESEARCH INCUBATOR

In 2021, the ETH Zurich’s ISTP - Institute of Science, Technology and Policy - has invited BLOK 74 to come up with an interactive, immersive web-based solution for presenting the complex research on socio-spatial segregation, insecurity and low access to quality public infrastructure for informal settlements in Bogota, Colombia and Cape Town, South Africa. ISTP selected these two cities for concentrated and collaborative empirical research under the title of “Urban Research Lab”, (URI) for the purpose of the development of policy recommendations and technological solutions applicable not only to the test cases themselves, but to other cities worldwide similarly affected by problems born of rapid urbanisation.

From the beginning of the project, BLOK 74 has opted for using the gamification principles to communicate not only the end results of the research, but to present the whole research arc, spanning 4 years of doctoral trajectories of the seven researchers from the ISTP. In that way the research becomes more than gathering and processing of data, but also a personal storyline of all the researchers and mentors involved. From the beginning we wanted to create the opportunity to discover the persons behind the research, since their motivation and professional storylines can add new dimensions to the outputs and methods they created. The main URI research question - “ how can urban policy-makers leverage science and technology to create safer, more inclusive cities that serve the needs of all citizens?” receives an understandable, human face, through the eyes of the researchers and the many citizens that were involved in different research phases.

METHODOLOGICAL STEPS

Thinking about using gaming elements as a service to communicate scientific research results seemed a bit odd at the beginning. Academic research is usually caught up in a traditional way of presenting the outcomes, focused on the academic groups and its ways (and guidelines) of sharing knowledge. Using gamification, it is possible to address these other audiences, and make the threshold to understanding and appreciating scientific research more flexible. The initial idea of the ISTP was to open up their research results not only to the wider public, but also make it more useful for policy makers and decision makers crafting actual policies for urban development, who need evidence-based research results in order to make the right decisions.

The first step in realisation of the gamified framework was to understand these “new audiences”. and how to make the research approachable and less abstract. Since the actual research took place in two different cities of the Global South (and for one part also in Europe, namely Zurich) we decided to shape the whole experience as a free explorative journey through different chapters of the research. The journey could then be started from taking on different roles. Each role represents a real-life stakeholder in the process of urban transformation, such as a policy maker, an academic or a data analyst. For each role we thought about making a special “discovery path”, as a way to filter and curate the content of the research for that particular user’s interests. The role with insight in the whole research and topics complexity, without pre-curated choices, is called a “general visitor”, free to explore all the research topics.

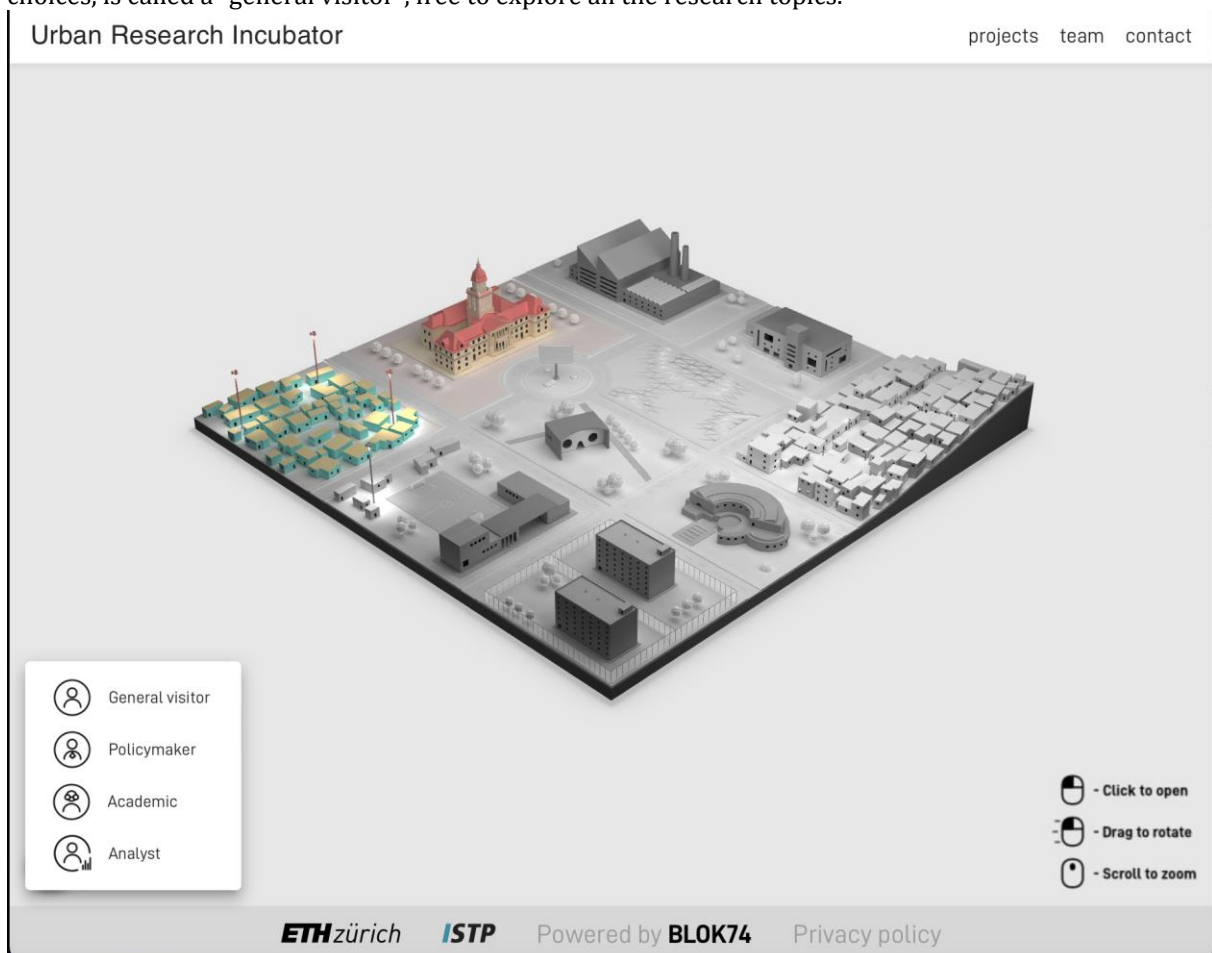


Photo 1. Roles selection

The second step in realising gamified presentations was to interview directly the researcher’s group, find out more about their particular methods and approaches, and decide on what would be the best web-tech and software solution to make the gamified representation comprehensive.

The starting point in these conversations (the gamification preparatory workshop”) was to hear from the researchers themselves how the interactive presentation should be immersive, fun and attractive to

explore. Based on the findings of these interviews we have started to build a 3D model of “Urban Research Incubator City”, with blocks representing both the chapters and methods of the research, as well as iconic typologies from Bogota and Cape Town. For the chapters and methodologies which could not have its direct translation in some of the existing building types, we came up with a iconic representations, such as “lab” for displaying the experimental work in the research, or “control room” for learning about and testing some of the numerical / spatial data coming out of the research.

Applied Web 3D technology allowed the generation of this imaginary “research city”. The same technology enables the users of the website to manipulate the 3D model in terms of zooming in or turning it around, through a standard web browser, giving the experience of real city exploration. This particular technological solution enables simple use on any device, without need for special software. The Urban Research Incubator City is accessible for anyone, regardless of the professional background, which makes it special when it comes to scientific representation and widening the audiences for understanding the topic of urban renewal in the Global South. The main idea of the 3D city was therefore to inspire, provoke, raise questions and invite people to participate, explore, and scale up their visions.

For illustrating the URI City, we have used several gaming aesthetics and cartoon references, borrowed the basic mechanics and UX following the existing models of web-based games. The interdisciplinary character of the research should have also been represented in a good way - with cross-cutting topics and cross-cutting methods, which overarch the broader topic.

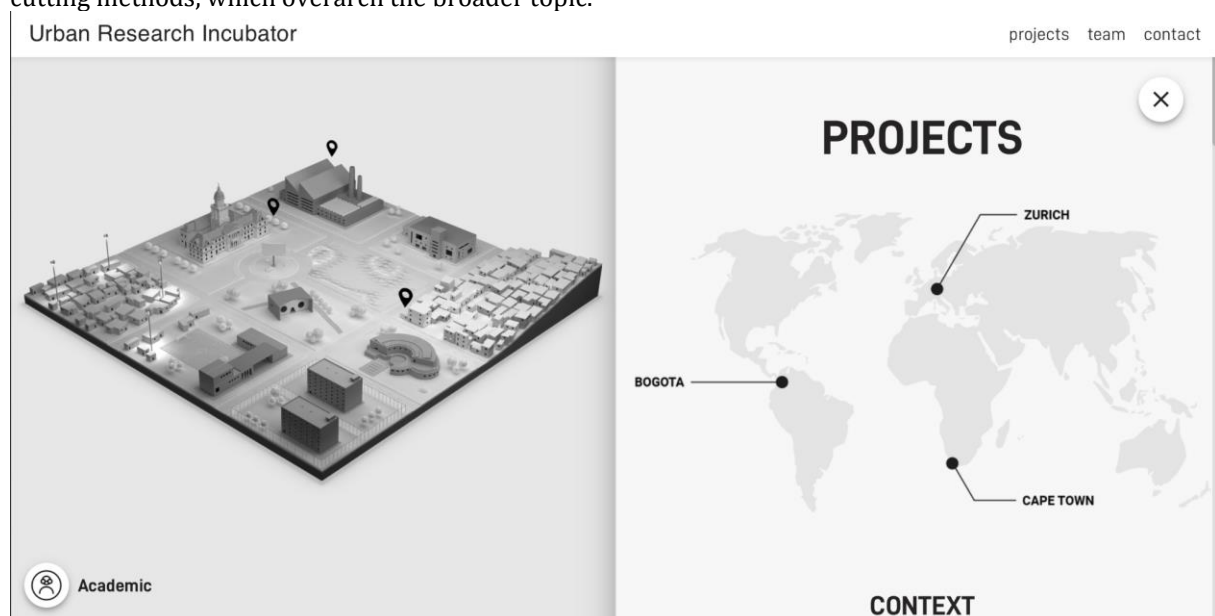


Photo 2. Research cities in 2D and a 3D model URI City representation

The complexity of the research asked for a closer look at the topics of the research: public lighting infrastructure for informal settlements, feeling of safety and security and increasing urban segregation. Each of the topics has a different set of produced results: some of them were scientific papers, some of them data sets, or short films and photographic material. In this third step, we evaluated the produced material in terms of complexity and categorised it into several categories: basic knowledge, site-specific knowledge and in-depth data and cross-cutting methods, such as visualisation technologies, VR sims and ABM - Agent Based modelling of the urban data. In this way we have been able to connect the layers of the research with the roles and the proposed “pathways” of discovering the URI City. The role was sent visitors on the multi-faceted “research city walks”. These walks offer them samples of data, visuals and methods as well as multimedia tools (such as explorative VR) . The role walks are a playful simulation where the future is staged, and the socio-ecological transformation can be experienced. With the role walks we helped to break through the usual patterns of scientific representation and open up new spaces for thinking and feeling about scientific communication, from which previously unimagined ideas of how to dynamize the scientific content emerged. The idea behind the roles is to offer curated content that fits that role, and in that way help the visitor discover the content that is relevant for them.

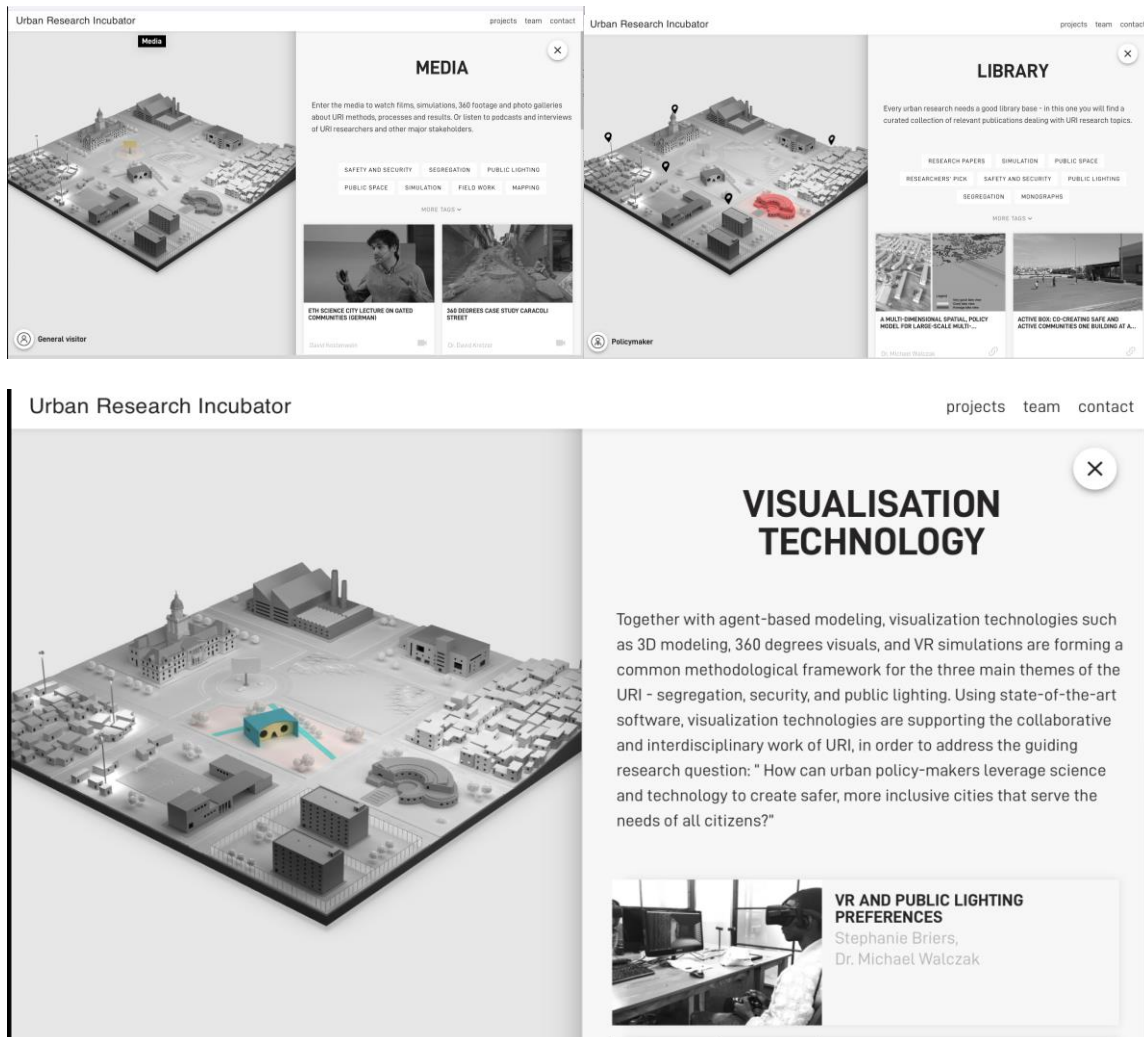


Photo 3. Media Room, Library and Visualisation Technologies collections

For example, Media Room offers sneak previews of the whole research process, often through the eyes of the researchers and their subjects (such in case of Cape Town townships). Control Room offers a limited “data dashboard” function to the website users, while Library offers insights in various kinds of literature used for the research, handpicked and recommended by the researchers themselves, and an overview of published scientific papers. With these approaches, we attended to tempt the users of the site to get interested in all the diverse perspectives of the topics and the new knowledge.

CONCLUSIONS

Creation of the URI City has brought a lot of new insights, besides being a serious communication project combining web development, experimentation and design. The main conclusions which can be pulled out of the creative process can be summarised as following:

a/ the experimental character of the URI City website has shown that there is a lot of space for interpreting scientific data in a new way, without losing the depth of the academic research.
 b/ the URI City interactive website shows how digital, real-world experiments offer an effective way of taking abstract knowledge (structured in a scientific way) and making it tangible. The inclusion of as many as different dimensions of the research as possible is essential in order to find the right solutions and motivate people to act and think differently.

c/ the website is made in a way that the presented results offer a certain follow-up, and an open-ending research narrative, to be able to last beyond the initial 4 years, keeping the original research topics alive, by adding the new relevant material.

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PHILOSOPHICAL CONTEXT AND QUESTIONS ABOUT THE FUTURE OF TECHNOLOGICAL REVOLUTION IN ARCHITECTURE AND URBANISM: ECOLOGICAL, ECONOMIC, SOCIOLOGICAL PROGRESS OR A STEP BACK

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ABSTRACT

This paper elaborates the problems which science and the profession are facing, in relation to the development of new technologies in the function of smart cities in architecture and urbanism. What high technologies bring to us, and what they deprive us of, is increasingly becoming a sociological and philosophical question.

On the other hand, the development of new technologies has contributed to the great progress of cities around the world, but it is often a kind of illusion. Reality has been replaced by virtual reality. Economic power, consumerism and profit have become a new ideology in many areas, and it is especially visible in construction.

The position of investors and politicians, in fierce competition for prestige and gaining material profit through fast and low-quality construction in cities, is becoming an important segment in the strategy of many, especially developed countries. New technologies, sustainable development, new concepts in urban planning and participative processes are visible, but often powerless to face the demands of big capital and economic arguments, which impose a new paradigm not only in planning, but in all spheres of society. This paper will present new tendencies in smart city solutions.

Keywords:

new technologies, sustainable development, architecture and urban planning, participation, smart cities.

INTRODUCTION

Ever since, the earliest civilizations cities have been synonyms for development and progress representing, at the same time, the differences and inequalities between communities and countries in which they were founded. However, never in the previous practice have the doctrines and theories about future urban development (which seems to be uncertain more than ever) changed so quickly.

The concept of smart cities, which advocates sustainability, innovation and management of important urban systems ties in with information and communication technologies (ICT). Technological revolution in architecture, conditionally speaking, is moving into two directions that often intertwine. On one hand, High-Tech means style, concept and way of building, development and implementation of new materials with high performances that meet complex formative, constructive, ecological and energy demands. The other direction is the development and application of Internet, computer tools, software, AutoCAD, 3D animation, numeric modelling of the building performances, programs for calculating energy consumption, economic cost-effectiveness of implementing new technologies etc. (Pucar, Lojanica, 2014).

Will new technologies bring some new developments in architecture and urbanism? World will continue to make buildings out of cumbersome, messy, imprecise using materials such as bricks, mortar, concrete, and timber or will light and precise components made of metal and glass, manufactured in factories, which can be quickly assembled on the construction site? There are numerous contradictions in relation to green, sustainable construction, which advocates for natural materials and architecture based on new technologies.

As for urban planning, in the second half of the 20th century, urban theorists raised questions about the impact of new technologies on the continuity of the city and the urban context. High-Tech Buildings, according to many theoreticians, do not fit into the urban tissues and do not allow the continuity of urban development. Naturally, there are other opinions. The best examples for this are the three most important representatives of this architecture: the Centre Pompidou, Lloyd's and the Hong Kong Bank. The urban planning context had had a profound influence on Roger and Foster's projects. However, the truth is that the urban planning problems are not the primary elements of High-Tech philosophy. "For the High Tech architect, space is an abstract entity that is devoid of specific qualities until it is inhabited and adapted by its users. But for the urbanist, or contextualist, space is necessarily specific because it is defined by its relationship to the context of the city" (Davies, 1988).

Additionally, High-Tech philosophy does not entail a link with the past, which is contrary to the basic postulates of urban planning. High Tech architecture is facing the future, that is, the so-called „optimistic architecture that believes in progress through industrial technology". It believes in invention rather than tradition, in temporary arrangements rather than permanent institutions, and in the ability to control the environment rather than adapting to it. If the city is the embodiment of tradition, permanence, continuity, and history then High Tech is an anti-urban style, affirms Colin Davies

High-Tech architecture cannot be imagined without the implementation of Internet, computer tools, software, CAD and CAM technologies, 3D animation, numeric modelling of building performances, programs for calculating energy consumption, cost-effective application of new technologies etc.

The command of this knowledge has led to big changes in architecture; it has changed the way of designing and facilitated a simple approach to data and faster variant solutions; it has provided communication between team members who now can collaborate on a planetary level, communication with investors, local authorities, manufacturers of materials etc. In the last few decades this process has gained such proportions and adopted the premises of technological revolution.

Computer modelling and simulation have become fundamental to the field of design. It is notable that environmental design and computation have become conjoined, often existing within the same research units in bigger practices.

For years, the architectural world has been struggling for drawing on paper to keep up pace with what computer modelling has brought, which allows the use of tools for algorithm and parameter architecture. Designing by computer has come into practice in the 1980s and has radically transformed previous basic settings based on knowledge, talent and creativity of architects. Architecture has fallen behind, as it was unprepared to face reality, "... immersed in ideological and tautological debates and adrift in a realm of referents severed from material production. The clear disconnect between how/what we design and the tangible manifestation of tectonic form has stalled the future of architecture. A beauty and suspense that came with the "paper architect" was the hope of one day being able to build and realize that which the mind created long before it was possible to build. One reason for this disconnect is the continued separation between building and structure, another being the lack of emphasis and research with materials science and the exploration for a means to break-away from traditional building methods" (Lopez, 2011).

Economic and technological development should offer solutions for growing problems on a global scale such as ecology, sociology, psychology, ethics, economics, etc. Whether this is always possible and whether the offered options and conceptions of development are sustainable are not only technical questions and do not relate to only one area of human activity.

How to curb the negative trend that follows new technologies and make them a part of sustainable development is certainly one of the most important tasks of our profession and the society as a whole today.

DEVELOPMENT OF NEW TECHNOLOGIES IN THE SMART CITIES FUNCTIONING

Smart City is a common term which majority of the researchers use in order to summarize strategic concepts for the comprehensive digitization of our world big and small cities. Cities of the future should be more modern, efficient, sustainable, safe, and livable with the help of technological innovations. Smart cities are aiming towards realization of the digital transformation in urban areas. Aim of the smart city strategies is providing relationships between citizens, administration, politics, science and development through organization of the public spaces.

Main goal of development of the smart cities in terms of development of the new technologies can be divided into several categories, of which some are more and other are less important. Smart cities consider *smart economy* (the economy is integrated and networked at all levels to enable optimum knowledge transfer and high productivity), *smart citizens' participation* (digital platforms for different purposes such as car and bicycle sharing, voting on various topics that may be of interest to citizens, platforms for meteorological conditions and/or status of the air/water/soil quality, status of the landfills, etc.), *smart mobility* (digitalized and technologically improved traffic infrastructure in the city in order to minimize/completely reduce traffic jams in the city with the smart sensors on the streets, bicycle, car sharing, different-purpose mobile applications, smart route planning, possibilities for "driving without a driver" which raises serious ethical issues), smart governance (with different multi-purpose platforms of any city, including GIS, chatbots, possibilities to reach the Mayor or his associates at any time, smart waste management, smart solutions for reducing emissions from traffic, etc.), smart energy efficiency systems (in public lightning, remote control of the renewable energy sources, smart grids, etc.), smart environment (control of the renewable energy sources devices on public building and/or public spaces) and others.

All of the abovementioned smart city solutions, beside evident advantages in shortening the time to act on negative impacts, enabling an easier and safer life in the city, as well as better environmental conditions also have some other, potentially negative ethical issues, mostly in the area of potential and unintentional use of private data of the citizens. Data can sometimes be misused by third parties for various purposes, and the fact that it can sometimes be poorly protected leads to potential violations of users' freedoms. In smart cities, special ethical problems are related to the robotization of city traffic and the phenomenon of so-called self-driving cars that have an autonomous and computer-guided route. Driverless technology can be beneficial for society by lowering carbon emissions and paving the way for more sustainable ways of living, but also can be vulnerable to cyber-attacks, can make mistakes in making moral decisions, etc.

Nevertheless, all other smart city technological solutions represent significant improvement in the quality of life of all the citizens, if they are used smart and responsible, and separate from political, economic and interest and other influences.

The concept of smart cities, which advocates sustainability, innovation and management of important urban systems ties in with ICT and supports the collaboration between city authorities, inhabitants and enterprises. The International Telecommunication Union defines a smart sustainable city as "an innovative city that uses information and communication technologies and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs economic, social, environmental as well as cultural aspects." (ITU, 2015). A smart city can guide better decision-making with respect to prosperity, sustainability, resilience, emergency management, or effective and equitable service delivery. Technology solutions and the effective use of data are providing city leadership with new tools and opportunities for effective change.

ADVANTAGES AND DISADVANTAGES OF THE DEVELOPMENT OF NEW TECHNOLOGIES IN ARCHITECTURE AND URBANISM (technological, ecological, socio-psychological-ethical-philosophical, economic aspects)

Technological aspects

The development of new technologies has seen great progress, and the influence on urban building can be characterized as a new movement in architecture and urban planning. On the one hand, this progress is due to the ongoing development of digital technologies, including the Internet, as well as new software

programs (3D animation, numeric modelling packages etc.) On the other hand, new materials and systems offer great possibilities, provided they are available and economically justified (Pucar, Lojanica, 2014).

Cities and city dwellers generate a large amount of data that can be used smartly to achieve strategically important goals. City authorities throughout the world and numerous professionals who recognize the importance of the concept of smart sustainable cities increasingly advocate for the use of high technologies for solving the existing problems. Solving them requires a close cooperation between experts, city dwellers, companies, organizations and the national and city authorities. New knowledge is being developed, and the concept of sustainable, green, ecological and energy efficient construction, which could slow down, if not even stop the negative processes and phenomena, is being promoted (Pucar et al., 2016).

ICT implementation in cities has revolutionized communications, budget management and infrastructure systems, innovations, investments, networking of firms and small and medium enterprises. There are numerous examples of significant reductions in business costs, of greater productivity, more efficient healthcare and traffic, energy saving, reduced GHG emissions and environmental protection.

Further, ICT implementation in cities supports innovations and promotes efficiency in urban infrastructure, which results in cheaper city services. An increasing use of geographic information systems (GIS) allows the connecting of the spatial referential data from different sources, offering a clear picture of what takes place in the cities (WCR Ch-1, 2016).

With Big Data and the Internet of Things, city leaders are gaining a more detailed, real-time picture of what is happening within their city. The Internet of Things is reaching a tipping point. As more people and new types of information are connected, Internet of Things becomes an Internet of Everything— a network of networks where billions of connections can create unprecedented opportunity for cities. Notably, the volume of digital data is almost doubling every two years (Turner, 2014.; Oudenhoven, Pontika, 2017)

Over the past few decades, the advancement of digital technologies and the development of internet have created a new risk. Cyber insecurity, which goes beyond physical boundaries, has become extremely prevalent in today's digital world. Digital technology is being deployed in many aspects of a city's infrastructure and service delivery systems. Over-reliance on technologies and electronic service delivery has made cities more vulnerable to hacking and cyber attacks, which are reported to be occurring as frequently as every thirty seconds (The Economist Intelligence Unit, 2015). Lloyd's of London estimates that cyber attacks cost businesses as much as US\$400 billion a year (Fortune, 2015). This in part explains why global spending on cyber security is projected to increase from US\$77 billion in 2015 to US\$170 billion in 2020.

Ecological aspects

Environmental issues are becoming a global priority. Cities are complex systems and big consumers of energy.

Expansion of cities and occupation of arable land at the same time affects energy consumption and GHG emissions, which has changed the ecosystems in many cities during the last two decades (UNEP 2007).

Investing into urban ecosystems and green infrastructure can offer economical solutions, based on a city's natural resources and potentials. Using new technologies to improve city ecosystems is an important measure for climate change adaptation, while at the same time it creates opportunities for increasing social justice, green economy and sustainable urban development. Strengthening urban ecosystems and investing into green infrastructure have multiple common benefits, including improving quality of life, people's health and social welfare.

Providing safe affordable transportation, with a low carbon footprint should be one of the paradigms of urban sustainable development. In this context, ICTs have an increasing importance.

Improving urban infrastructure, smart e-management of city systems (traffic, public lighting, energy, waste waters, sanitary protection, water management, environmental protection) will have a direct impact on the city dwellers' health. Measures taken to limit GHG emissions and air pollution in cities and to increase green and water surfaces are environmentally-friendly public transport; good connectedness of pedestrian and cycling paths can also influence the health of urban inhabitants. In this context, the application of new technologies is very important and can aid in collecting information and predicting events, in implementing an early warning system; in training citizens for extreme weather conditions, recovery after a natural disaster, measures of mitigation, adaptation and resilience etc.

Socio-psychological-ethical-philosophical aspects

Sociological and ethical problems are also potential threats that city dwellers are facing in case of uncontrollable implementation of information and biotechnologies. In addition to social inequality, controlling data, behaviour and opinions, and loss of jobs, there are other numerous unknown issues potentially facing mankind in the future.

New technologies have opened a new chapter in the history of mankind and have already changed the world in a way that was inconceivable only several decades ago. There are numerous positive and negative effects on global development, with completely new objectives and methods of realization. What will happen next and how much the world will change in the next few decades is difficult to answer. The fact that it is difficult to control this development at global level presents a problem. As the 20th century was marked by an arms race, which is still ongoing, the 21st century will be marked by a race in digital technologies, which is as dangerous, if not even more dangerous than the arms race. The threat of atomic weapons and their development have paradoxically put armament under control. However, the race in new technologies, especially when bioengineering and artificial intelligence are in question, sets objectives that are uncertain, and in achieving them we can lose control. What will be the role of cities and their dwellers in the future? No single country has monopoly over new technologies; they are not controlled or guided even within the same country. Governments and governing structures (from state to city), science, universities, academies, experts, investors, civil society organizations etc. must realize what kind of responsibility they have and try together to find the answers to the problems that are looming in the future (Pucar, 2019).

The changes are so radical from the perspective of human history (because we see the reforming of the economic, social and cultural contexts in which we are living). Never has there been such a disbalance between possible prosperity and potential perils. The appearance of new technological discoveries, which cover many fields, such as artificial intelligence, robotics, internet, self-driving cars, 3D printers, nanotechnologies, biotechnology, scientific materials, energy storage and quantum computing will not only change the ways we work, but also the ways we live and how we interact. Although many of these technologies are still in their early phase of development, some have reached their curve point, where technologies complement each other in a fusion that will impact not only physical, but also biological and digital domains (Živanović, 2018). There is a change in paradigms in basic, social, humanistic and technical-technological fields, sciences, education, healthcare, culture and business. Behavioural ways and value systems are changing.

While a nuclear war and climate change threaten only the physical existence of mankind, radical new technologies could change its very essence; therefore, they are intertwined with the deepest human, ethical and religious beliefs. While everyone agrees that a nuclear war and environmental disasters must be avoided, the opinions on bioengineering and artificial intelligence as tools for upgrading human beings and creating new forms of life are much divided. (Harari, 2019).

Regarding the adverse effects of new technologies, intellectuals worldwide, who deal with different fields of human activity, have written volumes and published many alarming results. Humanistic thinkers, sociologists, historians, economists, scientists, engineers are sending messages in which they question the future of humanity: What will happen when computers start surpassing humans in more and more tasks and replacing them in more and more jobs? Will the number of unemployed people grow (based on some estimation 47% of jobs in the world will disappear due to automation)? What does overload of information that cannot be controlled or filtered mean, and how does it affect people, especially the young? How to solve problems of social isolation and alienation, which is becoming especially more present in families, greater privacy invasion such as recording and applications for filtering information? How to protect the population from daily control and automated surveillance and monitoring of personal information organized by centralized structures of power at global and local levels? The development of genetic and biotechnical research, as well as artificial intelligence opens up a series of moral and ethical questions, and how can they be solved?

Threats and possibilities studied by practically all professional and scientific fields concerning the future of cities range from big expectations to big apprehensions for the global future of mankind, and thereby, cities. It can be concluded that individual national countries are not the address for solving the problems that new technologies can bring. The problem of implementing the results of technological innovations must be under international supervision, at least as much as it is the case with nuclear energy. Rich countries are capable of allocating great financial means for the development of artificial intelligence, information and biotechnologies, which involves great risks, but also great profits and advantages. The race has already begun, the objective is uncertain. To prevent abuse of new technologies, it is necessary to establish ethical guidelines at global level as well as operative, implementation and control rules of these technologies.

Economic aspects

The potential consequences of implementing ICTs are not perceived in their totality. Selective implementation of these technologies in cities, or in the same city, can lead to social, economic, energy and economic inequalities and even further widen the gap between the rich and the poor.

How to solve the problems of equal opportunities for accessing ICTs and digital divide (a term that defines the gulf between those that are digitally-rich and those that are digitally-poor in the world)? How to reduce

the ever growing gap between the rich and poor cities and inhabitants? Can these complex questions regarding the future of mankind be answered?

Social inequality

The trend of rapid urban growth from the mid-20th century till the present has led to increased economic and social wealth in some places, but also to continuing poverty in others. A fifth of the world population that has 60 % of the global GDP lives in the first 600 big cities and megapolises mainly in developing countries, and they have a significant impact on global economy. It is expected that by 2025, the 600 most influential cities in the world will remain the same, but most of the urban development will take place in developing countries, especially in south-east Asia (McKinsey Global Institute, 2011). Big and very big cities do not grow the fastest, and the bulk of the urban population does not live in them. Research has shown that the fastest growing urban centers are small and medium-sized cities with less than a million inhabitants, who make 59% of the global urban population (United Nations, 2014a; United Nations,2014b). Therefore, it is important that developing countries recognize their potential and focus on developing small and medium-sized cities.

AUGMENTED REALITY(AR) VS. VIRTUAL REALITY (VR)- definitions, different areas of application, advantages and disadvantages

Augmented Reality (AR) combines the digital world with elements of the real world. It is a technology that is equally suitable for mobile devices and desktops and offers the possibility of reflecting digital components in the real world.

Virtual reality (VR) is a modernized technology in which one is given the opportunity to have a real-life experience of a virtual world that might or might not be similar to the real world. Virtual reality is based on an advanced combination of both programmed software and hardware.

What is the difference and what are the advantages and disadvantages of augmented reality and virtual reality are questions that cannot be answered in general terms? Both technologies have their advantages and disadvantages.

The distinctions between VR and AR come down to the devices they require and the experience itself: AR uses a real-world setting while VR is completely virtual. AR users can control their presence in the real world; VR users are controlled by the system (Augmented Reality, 22).

Augmented reality is the mixture of virtual reality with real life, using layers of computer generation to enable us an enhanced interaction with reality. Virtual reality, on the other hand, is a completely artificial, computer-generated simulation of a real-life experience (humavox, 2016).

Augmented reality is a live direct or indirect view of a physical, real-world environment whose elements are augmented by computer-generated sensory input such as sound, video, graphics or GPS data. Unlike virtual reality, which creates a totally artificial environment, augmented reality uses the existing environment and overlays new information on top of it (Chavan, 2016).

Advantages of Augmented Reality (AR)

- AR offers a wide range of applications that are continuously being improved.
- The technology makes it possible to increase accuracy and efficiency.
- Experience or knowledge can be shared over long distances.
- Ability to share experience with other people in real time over long distances etc.

Disadvantages of Augmented Reality (AR)

- The costs of implementing AR are comparatively high.
- A key disadvantage is the lack of user privacy.

Advantages of Virtual Reality (VR)

This technology does come with several benefits, and several areas have been positively affected by the implementation of this technology (Abhay, 2022).

- Virtual reality offers high quality visualizations that give the user a feeling of being in a different world.
- Virtual reality user can experiment with an artificial environment

Disadvantages of Virtual Reality (VR)

- Users who spend long periods of time in virtual reality can become obsessed with it, especially when you consider the possibilities it offers.

- This is further addictive to users, who tend to enjoy it more than in the real world. Thus, they spend more time with their friends in the virtual reality. This eventually leads them to become isolated from the real world.
- Escape from everyday life (escapism) is an increasingly present problem among those using VR environments and people often live in the virtual world instead of dealing with the real one.

Application: Augmented Reality (AR) in practice: In practice, augmented reality offers a wide range of possibilities. This makes it interesting for both private and business users.

Augmented reality application is written in special programming language that allow the developer to integrated animation as well as digital information in the computer program.

- Augmented reality in construction and logistics is an attractive way to increase the efficiency of employees and the business processes.
- Augmented reality is an easy way to get in touch with customers, colleagues or technicians.

There are numerous applications of VR technology in areas urban planning and architectural design. Virtual reality represents a fundamentally revolutionary way of interacting with computers. It also is a powerful new medium of expression that is still evolving and changing. It is hoped that by combining VR and the new information technology, VR can be used as a design instrument to increase creativity and as a research tool to meet the diversified information media challenges to be encountered in the 21st century (Virtual reality in architectural..., 2020).

The experience in a virtual world helps to give knowledge to urban planners, to other parties they work with and even non-expert stakeholders. The availability of various virtual and augmented reality devices enables multidisciplinary work and generates a higher involvement of stakeholders in different stages of the urban process. Because the generation of knowledge happens in an understandable way, virtual reality is able to facilitate several decision-making processes. However, there are also some disadvantages such as technological problems, the required knowledge, the costs and psychological, social and physical side effects. The empirical studies are still incomplete and not very systematic (Dessel, 2019).

Centuries ago, urban and architectural design ideas were presented through scale models and perspective drawings. If clients wanted changes, drawings and models needed to be redone. Today, using the tools available to allow clients to visit the design and to walk around in it before it is built, would benefit architects and clients tremendously.

How will VR develop in the future in urban and architectural design versus AR speaks in favor of VR. For generations, architects have used the medium of pen and paper to translate ideas into physical products. Computer technology has revolutionized architectural representation over the past decades.

A design product can be displayed on a computer from various angles with amazing visual effects. Changes are easy to make and results can be shown instantly. The interactive nature of the computer technology is an excellent teaching tool. Virtual reality promises even more. Users of virtual reality actually experience the environment created by the computer. Applying virtual reality in an architectural design studio, students can understand the spatial qualities of their own designs immediately, visualize the color and texture of materials, comprehend the major components of the HVAC system, experience the proportion of the space, and appreciate the aesthetic of the structural elements. VR will make possible the expression and construction of ideas never before dreamed possible. Design studios taught in this fashion will be very effective. Providing such VR environments at different locations and linking them together, designers can see and share information. If the system can collect data which is sent to different sites in different countries, designers would learn various design principles, methods, and processes inherited in various design cultures. Potential clients can visualize results and provide feedback instantly. Efforts to develop an interactive environment, in which design can be seen intermediately, will create a new world for the design profession to break with convention and improve quality. VR will not only change the way we communicate, it might also change the way we think (Virtual reality in architectural..., 2020).

Digital urban settlement: The parallel existence of the virtual and real world is encouraged by the development of technology and systems of communication, led to the idea of a digital city, envisioned to provide its inhabitants with access to all information. In digital city would reduce the need to be in the city and directly communicate with it, because in their homes, by a push of a button, people will have" ...everything they need. The symbiosis of these two worlds creates a new reality exemplary of the spirit of the time we live in, where a city opens up to its users, following their needs and changing together with them". (Drakulić, Velisavljević 2012).

The digital city represents a form of information space that refers to a specific physical space in the city. Digital cities cover a vast area of digital networks and programs that facilitate various aspects of social and economic life in cities. Every digital city, based on its goals, has different architectures, organizations and

services. Many cities throughout the world have already implemented „smart “technology and started with „investments into the future“.

Many cities in the world have reduced traffic jams and air pollution by applying intelligent solutions to public transportation systems. Rotterdam implemented a system for monitoring and smarter management of water supply and electricity, making it one of the first so-called "Smart Delta City"– the first city to use information in real time in order to manage systems and infrastructure that have an impact on climate change (Mirkovic, 2011)

There are no different worlds; there is the reality of everyday life intertwined with VR influencing basically all its sectors. Therefore, we can make a conclusion that the expansion of the information environment through the worldwide network implies growing interference and mutual influence of physically objective and virtual realities comprising the reality of our everyday life and shared existence with others (Gilyazova, 2019).

We have seen that both virtual reality and augmented reality are similar in the goal of immersing the user, though both systems do this in different ways. We can expect to see many more innovative uses for both technology in the future and perhaps a fundamental way in which we communicate and work thanks to the possibilities.

OFFLINE VS. ONLINE PARTICIPATIVE PROCESSES

The concept of smart cities was created as a result of the need to speed up all processes in the city, which, among other things, include administrative and bureaucratic procedures. Since participatory planning is a form of active participation of all interest groups in the processes of adaptation of cities to new living conditions (pandemics, climate change, technological revolution, etc.), it is necessary to define its new modalities. In order to maintain the continuous engagement of stakeholders in planning and decision-making procedures beside or in spite of current conditions in the smart cities, it was necessary to define new ways of their participation. In addition, a new methodology for future alternative participation of stakeholders, which can migrate to virtual participatory platforms, was established as one of the main pillars of the smart city.

Previous public participation held and organized in the offline sphere had a lot of difficulties mainly caused by the organizational and financial problems. But, during the COVID 19 pandemic, new types of participation have been discovered, which, in addition to the obvious advantages (possibility of quick organization and animation of a large number of stakeholders in a short period of time, possibility of working "from home" with maximum comfort, reduction of transport/organizational and other costs of organizing webinars, online conferences, etc.), also imposed a number of obstacles, primarily of a technical-technological and psychological nature (Buehler et al, 2020). On the other hand, those obstacles showed less complications than in the previous offline participation modalities, and a large number of experts (Mohankumar et al, 2020), (ESPON, 2021), advocate the thesis that participation should not be exclusively realized in online spheres, but that part of the activity should be realized in live contact with experts.

Nevertheless, the necessity for a quick flow of information as well as speeding up administrative procedures led to the need for accelerated engagement of stakeholders in all phases of smart city planning. Therefore, the existing long-term procedures of public participation, with the use of new technologies, are significantly accelerated, without decreasing the quality of participation. It was enabled through online platforms (zoom, skype, teams) and social networks such as whatsapp, viber, linkedin, facebook etc.), as well as through hybrid types of involvement – simultaneous stakeholder engagement both in online and offline sphere. Following the Arnstein "participation ladder" (Arnstein, 1969) but adapted for functioning in the online sphere, full participation can be enabled in online/hybrid sphere.

On the other hand, these online/hybrid systems have obstacles also, mostly in the area of technological and psychological barriers which can be easily overcome by initial education of the participants and a sufficient number of repetitions of the process, which allows the participants to get used to new conditions and reduces their level of shame and fear.

Much more time will be needed for implementing newly adopted procedures. Also, they must be followed by the application of developed knowledge in the field of planning and social psychology as well as technical training of experts in order to improve position of online and hybrid models of participatory processes in practice and theory.

CONCLUSION

New technologies have brought big changes to cities all over the world. Individual effects of these events and their interconnectedness have changed the cultural, demographic and economic characteristics of cities, institutional capacities of local governments, man-made environments, ecosystems and the natural environment.

The development and application of new technologies has changed and greatly improved the living conditions of city dwellers, while announcing at the same time global existential threats, which no single nation can tackle on its own. Technological revolution has brought big changes in architecture, changes in the way of thinking and understanding the role of architect and the profession as a whole. The way of building has changed; new materials have been discovered with big performances that fulfill the complex formative, constructive, ecological and energy requirements. The development and implementation of Internet, computer tools, software, AutoCAD, 3D animation, numeric modeling of building performances have created new possibilities in design, but at the same time, have opened a number of questions to which we still do not have the right answers (Pucar, Lojanica, 2014).

The best opportunity for jobs growth and the economic development of cities comes from a focus on the quality and efficiency of infrastructure and services, strengthening education and health services, improving the quality and adaptability of human capital, and on reducing where possible the costs of doing business (WCR Ch-8, 2016).

Also, new technological revolution and new circumstances in human life (pandemics) have brought also new ways of participation. Common participative processes have improved and moved (partly) to the online spheres. Within these new procedures, participation became more efficient, moving towards inclusion of all potential stakeholders in participative process

New technologies are the answer to the new challenges, which span from natural phenomena, demands of the profession, investors and the influence of big capital, to social and ecological requirements. Major events on the global scene have launched many architectural projects, which have indeed become icons and landmarks of many world cities thanks to the development of technology, and before these cities did not have anything to offer from the domain of modern architecture. The most famous world architects have become international stars, initiating changes and bringing new ideas that have an impact on the face of the city, on the economic and social development. The profession often is faced with negative consequences of its actions, which sometimes are related to nature, and sometimes to the population. How to find the answers for many problems brought on by overconsumption of all resources and have an effect on sustainable development are eternal questions, not only for the architectural profession,

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TACTICAL URBANISM AND URBAN ACUPUNCTURE AS PLACE-MAKING SOLUTIONS FOR THE TIME OF AUSTERITY

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ABSTRACT

Contemporary cities face daily issues deriving from globalization such as migration, climate change, urban poverty, the commodification of culture, etc. Many of them need to focus on operational management of solving those problems while lacking financial, institutional, and other support from central governments and international organizations. That has led to the rising awareness that traditional urban planning usually does not have enough capacity to help community resilience. Therefore, citizens have been pushed to take their destiny into their own hands through engagement in localized urban interventions. Urban acupuncture are small-scale actions, mostly bottom-up projects that respond to local needs. While based on commonly informal initiatives. There is a narrative of a radical transformation in place-making. It can have a high impact on a variety of city functions like public transport, the innovative purpose of public and other urban spaces, architecture, urban design, etc.

The aim of this paper is to investigate through a collection of sources where, why, and in which form those actions happen. This article is a qualitative comparative analysis study of a few very different, yet similar urban acupuncture initiatives in order to get insight into their citizens' and other stakeholders' well-being which are feasible at times of austerity.

Keywords:

Urban acupuncture, place-making, community empowerment, small-scaled projects

WHY SMALL-SCALE SOLUTIONS NOW?

The majority of projects in cities usually are focused on medium and large-scale design projects of the urban spaces. They are created to transform entire areas in the cities. Those are expensive projects that improve the sustainability, attractiveness, and well-being of the cities in a vital manner such as coastline redevelopment projects works on ports and dealing with city transport, reconstructions of former docklands sites, and so on.

As budgetary projects take endeavours to accomplish success at the end from the initial organization starting often with architectural competitions, then creating efforts and ideas, to final design, construction, and on into post-completion management.

The current fast urbanization is a leading point of concern repeated in the New Urban Agenda in Habitat III, adopted in October 2016 (Habitat III, 2016). UN's Sustainable Development Agenda has a goal of reducing poverty and inequality by 2030 (UN, 2015). It is clear that the future of humanity is urban since more and more people live in the cities. Therefore, the urban planners' focus shifted to transforming social, economic, and environmental aspects of cities, especially in deprived areas turning them into connected, dynamic, healthy urban spaces.

Concurrent, contemporary cities have a deficit of short and quick-fix solutions concerning emerging issues that transform the urban context. Sometimes, the amplification of local urban policies can't resolve the urban communities' weakness that have been developed due to rapid changes such as climate changes, migrations, poverty, and so on.

From the perspective of cities in post-crisis, recessions, punitive politics, or in times of deadlock situation, and foreseeable disaster of imminent future crises, small-scale interventions can generate transformative results in urban mobility. Small-scale interventions are ways of approaching problems, through designs that apply minimal solutions. These solutions are mostly temporary and can easily be tested and modified, can be flexible, and can be quite low-priced, therefore they are feasible in the time of austerity (Pack, 2012; Tonkiss, 2013).

TACTICAL URBANISM

Tactical urbanism can be defined as "access that highlights the creation of small-scale interventions which are able to inspire long-term changes" (Lydon, Garcia, 2015). In "Tactical Urbanism: Short-term Action, Long-term Change" (Lydon, Garcia, 2015) talks about 5 characteristics: "A deliberate, phased approach to instigating change; An offering of local ideas for local planning challenges; Short-term commitment and realistic expectations; Low risks, with possibly a high reward; and the development of social capital between citizens, and the building of organizational capacity between public/private institutions, nonprofit/NGOs, and their constituents".

Tactical urbanism actions are sometimes temporary and non-spatial means. Tactical urbanism is often also referred to as guerrilla urbanism, pop-up urbanism, city repair, or DIY (do-it-yourself) urbanism. Those are actions that help to establish the credibility of the approach in cities in crises cases like it was New Orleans aftermath of Hurricane Katrina, in which many sections of the city were abandoned for several years (Lyndon, Garcia 2015). Tactical urbanism includes interventions in public spaces like organizing events, and the construction of mini, economic, and temporary interventions. These types of interventions can also be placed on a scale of bottom-up to top-down planning approaches. But they are all small, quick, and flexible and come from the practical problems at the site (Silva, 2016).

The tactic has the advantage of being an agile method and thus being implemented promptly and often with simple means. With fewer bureaucratic demands, these actions are aimed to trigger a chain reaction to improve quality of life, social cohesion, ecology in the city, environment, public safety, and so on. Therefore, there are many examples of implementing it in the time of austerity, however, even if there is no urge for actions like in tough times, this practice proved to be healing for cities around the world (Yassin, 2019).

URBAN ACUPUNCTURE

Urban acupuncture is a theory about urban space that merges urban design and traditional Chinese medicine acupuncture. This strategy observes cities as living structures that need intervention in particular urban spots. However, these usually small-scale sustainable projects tend to revitalize the whole entity, by treating its parts. Urban acupuncture uses technology, connections, collective knowledge, and intelligence

in order to select urban sites that need to be treated first because they have the highest potential for revitalization (Lerner, 2016).

Finnish architect and sociologist of Italian origin, Marco Casagrande opted for the opposite way of planning from the traditional one based on planned massive works. He wanted small-scale projects of local character which had a bottom-up approach stemming from the ideas and needs of the community (Casagrande, 2010). In times of limited budget, crises, and limited resources this is an effective and still quite cheap and practical way to improve things. Nowadays it is not just the theory but also the practice. It is well-known fact that the most creative city in the world, the city of Curitiba in Brazil, was restored using urban acupuncture by at that time mayor Jaime Lerner and his team (Lerner, 2016).

Jaime Lerner, while he was the mayor of Curitiba, used urban acupuncture and applied it to the street furniture at bus stops, since this was the most important issue at that time (urban furniture represents the objects that are aimed to make the streets comfortable places and it includes: street lights, benches, parking spaces for bicycles, places for feeding the dogs, flower pots, litter bins, etc.). 'By doing highly focused intercessions at certain places in the city, we can cause much larger positive effects in society (Lerner, 2009).

Urban acupuncture stresses the importance of the development of the community using small-scale intercessions in the city design. This refers to carefully devised small-scale interventions that can quite quickly release energy and cause positive commotion in society.

Casagrande views cities as heterogeneous organisms with different layers of energy that influence the citizens' actions and the development of the city. Using environmental protection in urban design, Casagrande developed the method of puncturing the urban power flow in order to create eco-sustainable urban development. Those little strategic interventions create new energy and they hit the target with the best precision. The same in the medical context, these interventions serve as the trigger of a chain reaction that helps the healing of the whole system (Casagrande, 2010).

The theory was developed at Tamkang University in Taiwan and in an independent multidisciplinary research center in ruin Academy. Casagrande (Casagrande, 2014) defines urban acupuncture as focusing on the ecological dimension of the city and urban design as the tools of urban design which use puncturing to contribute to the creation of sustainable urban development. Examples of this are the urban gardens and urban farms in Taipei. Casagrande describes urban acupuncture as the method for lifting the live energy of the city.

A lot of cities need urban acupuncture because they neglected themselves and many of them neglected their natural surroundings. Some other cities need this method since they turned a blind eye to the damage made by certain economic activities. These neglected areas are scars of the city and they are precisely the spots for urban acupuncture (Casagrande, 2014). The theory of urban acupuncture opens doors to independent and free creativity where each citizen can join in the creative process of planning and they can freely use any city space for any purpose in order to positively develop their environment (Landry, 2006).

Marco Casagrande says 'In order for a city to be restored using the urban acupuncture, organic, local knowledge is necessary. Local knowledge develops on the inner situation, the environment, and the conditions of the moment under which urban acupuncture is applied. In fact, not only local people, but many of us are capable of understanding a lot more than the obvious facts. That depends on the focus of our thoughts, i.e. the center of our thoughts. 'If we are capable of feeling with our intuition, face the truth and act accordingly, we put the energy flow in motion which is necessary to connect the outer and inner world,' (Casagrande, 2012).

More sensitive citizens, those who feel the need for sustainable cooperation with their surroundings and with nature are those citizens who are aware of the intensity of the nature destruction which is the consequence of modernization and they can help their city. This approach is more realistic and it costs less. It enables smaller changes to happen and they have great consequences for society and they benefit from the common welfare (Casagrande, 2012).

Firstly, it is important to understand and remember that the citizens give life to the city. The better the life quality in a city is, the better its citizens will be. That means that the city will start to live (Lerner, 2009). Lerner says that many cities lose battles with destructive forces and violence because they accepted the fact that the problems are so big that they cannot solve them, especially if all planned instruments and the finance are not as they should be. This is not correct because there is always something to be done; something on a small scale, hidden but very significant. 'The future represents dedication with constant innovations. We should start innovating! Nobody should be so arrogant to expect to have all the answers in advance. In order to get to the destination from the starting port, one needs constant adjustment' (Lerner 2009).

Creativity begins if one zero from the budget for sustainability gets deleted, and if two zeroes get deleted, then the realization of the dreams starts at the very moment. That is the key to urban acupuncture, a simple

and swift method that releases great energy and which causes momentary social satisfaction. Lerner claims that 'Every city can improve the quality of life for its citizens in a period of 3-4 years. He also supports the approach where urban problems turn into innovative solutions. For example, the city of Curitiba turned the old landfill into Open University about the environment. That is the school that provides citizens, politicians, and urbanists with education about the projects which cost little or nothing. 'There is no frog in the city that cannot be turned into the prince' said Lerner in his speech at the International Institute World Watch Institute in Washington D.C, USA in 2007

METHOD

The method used in this work is qualitative. It is based on interpretative research. Essentially it is the inductive comparative research of a few case studies, that were selected, for the purpose of this paper. Even though there was collected a number of small-scale projects to be analysed, only four have been selected concerning the length of the conference paper. Those cases are chosen among others according to the place and culture where they are located. It is always interesting to compare distant and different places. Hence, there are places from Taiwan (Taipei and Taoyuan cities) and Europe (Poland, Switzerland).

The comparative analysis in this paper investigates the effects that lie in the application of small-scale, inexpensive projects such as urban acupuncture and tactical urbanism is an innovative place-making tool in different places. Although small, those interventions spark positive social energy and well-being. This article contributes to the fast expanding informal urban place-making and social innovation literature by exploring the role of creative initiatives which can be used anytime and anywhere even in times of severing urban austerity because they are free of cost or low cost and they have a healing effect on society.

Table 1. Small-scale projects based on creative solutions and inexpensive actions

Small-scaled projects	1 place Taoyuan, Taiwan	2 place Taipei City, Taiwan	3 place Poznan, Poland	4 place Zermatt, Switzerland
Where the change has happened - in what kind of urban space?	Night marketplace mixed with a residential area.	all over the city at parking spots	An empty building in the city centre of Poznan. Former pain factory occupied by anarchist – the place is called Razbarat.	All over the city
Why did it happen?	This area is not planned to be night market so there is lots of garbage in the streets. There was no waste disposal site	There is not enough parking place. Plus, the parking price is expensive.	The urban poverty of certain people, but also those who disagree with the mainstream in Poland.	It is a small touristic place. Basically a village (5755) , but with a high number of tourists (2 mills. per year) since it is located at the foot of the Matterhorn the most photographed mountain in the world.
Who was the initiator of the change?	Workers of the shops gathered and organized the night market zone for garbage bin	Citizens in general. Uospace, an app developer designs that households can rent their parking place to others when they are not parking.	It was started by poor people and it was squatted in 1994, but later on it was taken by anarchists who occupied the building since 1997	Citizens voted in 1966 on a referendum to ban cars in the town. There is a train and only necessary deliveries can be done by car.

Who supported the change – what kind of organization is behind it?	桃園觀光夜市自治委員會 Taoyuan Tourist Night Market Committee	Uspace ~ internet company	It is today a branch of the Polish Anarchist Federation (Federacja Anarchistyczna) The center's longevity means that it is well supported by the city of Poznan.	The citizens were initiators and then the local government together with the state government
Who is the target group which the problem is solving?	Shops, visitors, and hose hold. Yes, there is a specific area during the night, and each shop has its own zone. No cars are allowed drive in. People throw trash in the right place to reduce mice and insects.	Car drivers and parking spot owners. Less car parking at the prohibited place. It's a new idea from 2016 so that effect is not seen obviously.	Anarchists have their place so it keeps them calmer, and some of the poor people have where to sleep, eat, and bath. Also, the building has its purpose and it serves as an alternative art place in Poznan with the opened bookstore	Citizens together with local government and tourists who obey the rules brand their small town based on building a clean, healthy environment.
What are the benefits for the community?	Clean and well-organized city. Tourists are easier and safer to shop. The residents there have nice environments.	Car drivers can pay less for parking. The owner of the parking place can have additional income. The initiative goes in the hand of the smart city image of Taipei.	Anarchists organized Zemsta vegan cafe, bookstore, and gallery run by people with an anarchistic twist. Hosts debates, workshops, concerts, and exhibitions.	Everyone = citizens, tourists, environment
Why it is an act of informal urbanism in the first place?	Taoyuan night market zone was not planned by the government. Shops gradually gathered together. To keep the place safe and clean need users and holders worked together.	The idea was such as Airbnb, a sharing economy for cars, but the owners can only release when they have space.	It comes from a local society based on democracy and the right to freedom of speech of those who do not think like a mainstream. It is needed and it does not cost much	The local people voted to ban the car in this small town, and banning does not cost (there are other forms of transport how tourists can reach Zematt by train, horses, eTaxi)
The purpose of the small-scale project & SDGs	Waste management in the city SDG12, SDG 11	Parking places in the danced city SDG 9, SDG 11	Human rights for all in the city SDG10, SDG 11	Climate change and a clean environment SDG13 & SDG 11

Picture 1. Taoyuan, night market (<https://travel.tycg.gov.tw/en/travel/attraction/1028>)



Picture 2. Taipei, Taiwan – USPACE
(<https://taiwantoday.tw/news.php?post=22294&unit=12,29,33,45>)



Picture 3. Poznan, Poland –anarchist house
(bicycle workshop) <https://www.rozbrat.org/our-activity/157-rozbrat-squat>



Picture 4. Zermatt, Switzerland
(<https://www.zermatt.ch/en/sustainability/Elektros-Autofrei-Anreise/Zermatt-is-car-free>)



CONCLUSION

Today, there is an emergence of local, community-based initiatives all over the world, aimed to revitalize their communities, spaces, cities, and neighbourhoods in order to make them more sustainable and resilient for their citizens. Tactical urbanism, or urban acupuncture, is one of the faces of that transformation in the twenty-first century.

This paper is used a simple qualitative comparative analysis of small-scaled project case studies from Taiwan and Europe. It might be better for the length of this paper for the phenomena is studies use only one case study because it is a combination of many factors in order to understand how they work together. However, in order to learn and generalize it is inevitable to compare cases and we need to find regularities.

The main conclusion of the comparison in this paper is that even though there are completely different cases compared in terms of cultural background, size of the population, and area of the cities, and in terms of solutions they found for unique problems they face it all started from the bottom-up by a small group of citizens that took and action as the initiation of solution. In all cases, if the initiatives proved to have an impact and common sense and practical notions in their actions, local governments have started to support them. Without that support, it is questionable how long those inexpensive small projects would last. For example, Poznan's anarchist house was never openly supported by the local government. However, when Rozbrat experienced two serious neo-Nazi attacks in 1996 and 2013.

The conclusion also shows, that at first temporary, no expensive interventions can have a very valuable role, not only for short-term solutions of spaces. Specific cases like those presented in this paper which are modest, cheap, and social interference can provide creative answers for experimentation and testing, for flexibility in the possible time of austerity. They can set an example to other places around the world which really struggle with more ever urban poverty, or lack of quality of life than those we chose here. Creativity can help to establish that the end results are practical and socially approved by the local community because it starts there from its needs. Just because projects are small and more reasonable than moderate landscape or architectural projects does not mean that they cannot reach high conventions.

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BUILDING SMART CITIZENS

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ABSTRACT

In recent years, the concept of smart sustainable cities has come to the fore. It is rapidly gaining momentum and worldwide attention as a promising response to the challenge of urban sustainability and the challenges posed by the environmental changes resulting from the effects of climate change. Gradually, cities are becoming 'smarter', more efficient, and more intertwined with technology. Building 'Smart Cities' has no real sense without "smart citizens" '. This paper provides a comprehensive overview of the field of smart and sustainable cities, including the cultivation of aware and active citizens. The framework proposed integrates and fuses theories in order to raise awareness and empower citizens through the democratization of technology. The main goal is to focus on real world applications of IoT in the cities and more specifically it examines the implementation of an existing platform called Smart Citizen Kit. The main goal is to create a meaningful tool for stakeholders and citizens. The main contribution of this work lies in providing new insights into guiding the development of various types of strategic planning processes of transformative change towards sustainability, as well as to stimulate and inspire future research endeavors in this direction. This study informs policymakers and planners about the opportunity of attaining important advances in sustainability by integrating the established models of sustainable urbanism and the emerging models of smart urbanism thanks to the proven role and untapped potential of data-driven technologies in catalyzing sustainable development and thus boosting sustainability benefits. Finally, the ultimate goal is to understand how the smart city landscape is shaped by citizen-based strategies, open data, empowerment and responsibility.

INTRODUCTION

The ongoing phenomenon of rapid urbanization will lead to more than 70% of the global population living in cities by the end of the 21st century (WHO 2014). This justifies the rapidly increasing interest in the “future of cities” among a wide variety of scientific fields as well as relevant stakeholders, which will be called to plan for the urban environments of the future and respond to the multiple relevant challenges.

Contemporary urban societies are confronted by numerous interdependent social, economic and spatial phenomena including:

.The evolution and change of urban policies and urban governance (Cox, 1995)

.The growth of new urban economies (McNeil & While, 2001)

.The emergence of new types of urban regeneration and revitalization (McNeil & While 2001; Hall, 2000)

.The strengthening of urban space identity and the promotion of the city as a consumer product (Evans, 2001) (Farrell, 2000)

The changes observed include the restructuring of the urban economy vis a vis new productive processes, the current financial crisis and the dominance of neoliberal political ideology, the growing influence of environmental movements (Healey, 1997), the restructuring of administrative structures as well as the proliferation of new Information Technologies and communication. These influence the design and therefore the creation of a means of recording and controlling the information concerning the sustainability of cities seems imperative.

In this context, the approach of cities as complex dynamic systems - which are called to follow new paradigms of development towards a sustainable future - seems necessary (Forrester, 1975). In European cities, risk management is directly related to the phenomenon of climate change, while hopes for growth and sustainability are focused on the development of Smart Cities strategies and their digital transformation actions.

The effects of climate change on urban areas are a critical issue for the majority of the population. The European Union is in the forefront of the global response to climate change - through a series of international initiatives (Kyoto Protocol, 2008; Green Deal 2019). Local authorities play a key role in achieving the EU's climate goals (The Covenant of Mayors, 2008) as they are called upon to implement the necessary policies and actions for the future of cities and their citizens.

The concept of Urban Resilience is directly linked to adaptation to climate change (Leichenko, 2011). The overall EU strategy regarding climate change (EU Strategy on Adaptation to Climate Change 2013) highlights the importance of supporting progress towards a “climate change resilient Europe”. At the same time, the EU is directing continuous efforts towards drawing up a Smart Cities Strategy in order to achieve urban development for metropolitan cities and their regions (EU Digital Cities Challenge, 2018; RIS3 2014-2020, 2014; Intelligent Cities Challenge, 2020). At the same time the Smart Cities Strategies stresses the importance of the development of tools that support risk management in the urban space as a crucial tool for achieving urban “resilience” and securing the future of cities.

These changes reflect a new approach to city planning which differs significantly from the one utilized until now. This calls for the development of a dynamic system that takes into account global relations, local forces and emerging trends in order to understand the functioning of contemporary cities (Scmitt 2013). The challenge is to formulate a new form of urban planning, based not only on construction but also on an agile and responsive management of urban systems to facilitate rapid and efficient decision making. The advantages offered by this type of system will play an important role in the future development of urban centers.

The end goal is to make urbanization manageable and focused on developing cities towards a sustainable prosperity, increased quality of life while also reducing the environmental impacts associated with urban centers. These characteristics are key in increasing competitiveness and encouraging innovation across urban centers. Through this approach, urban space can be shaped through a series of informed interventions and regeneration plans that take into consideration the multiple interconnected aspects. This in turn will contribute to increased “urban resilience” and support the formulation of strategies to respond to the important future challenges that will shape the future of urban centers.

FRAMEWORK DESCRIPTION

Within the aforementioned context, our research focuses on the challenges facing contemporary cities and explores the application of a tool for collecting environmental data through easy to use, open source resources. More specifically in the context of the present study, we will test an environmental sensor platform and the data recording and collecting framework. The purpose is to examine the platform in a live setting, focusing also on issues of diffusion of the platform as well as promoting DIY reproduction of the technologies involved. Furthermore, the study aims at raising the awareness of citizens regarding the urban environment and the interconnected nature of complex city systems.

Through the implementation of a reward system and collection of points, residents will install the application, creating a network for collecting data and providing rewards. Furthermore, utilizing the data collected from the platform as well as questionnaires the present proposal aims to offer the means for better understanding the necessity for evaluating and improving the urban environment as well as providing an accessible toolkit for citizens to get involved. The desired result is the empowerment of a “Smart Society” as an integral part of Smart Cities, consisting of active citizens that have access to the necessary information, the means and know-how to envision, design and implement sustainable, participatory and open communities.

The actions presented in this study and their results can be used in four important areas, which focus on fostering sustainable urban development and urban resilience. Furthermore, the research proposes a new strategy involving a technological platform accessible to both citizens and local communities. The four areas consist of:

1. Management of environmental crisis at a neighborhood level
2. Reducing health risks by reducing near earth pollutants or alerting citizens
3. Improving the quality of life by creating comfortable environmental conditions for citizens
4. Developing means to manage climate change - centered around the transformation of urban centers to Smart Cities in order to achieve high levels of living standards in a sustainable manner.

METHODOLOGY DESCRIPTION

Given the fact that cities are called to face a variety of challenges in the context of climate change as well as the fact that the manner of their response is crucial for the future of Europe, it is vital to assist citizens and other stakeholders in adopting the best practices in relation to urban sustainability and development. In this context it is important to focus on the multi level analysis of contemporary challenges faced by cities and propose a new approach that challenges our habits as residents of cities by providing information on the “health” of the urban environments in which we live.

The individual objectives that the present research seeks to achieve are summarized as follows
Strengthening and supporting the decision-making process with scientific criteria by those responsible for urban regeneration and the future of cities.
Identifying the parameters that determine the visitation of outdoor urban spaces and assessing their importance and dynamic relationships for citizens' choice to visit and stay.
Combinatorial investigation and evaluation of urban planning methods that affect the microclimate of urban areas and compensate for the effect of climate change.

The main tool for collecting data will be the Smart Citizen Platform (smartcitizen.me). It is a sensor platform developed by the IAAC (Institute for Advanced Architecture of Catalonia) within the framework of the European Horizon Program (Grant Agreement No. 689954.) The basic methodology for raising awareness of local communities will be the framework of Participatory Planning and the culture of Making. The proposed development process is structured in three distinct stages as seen below.

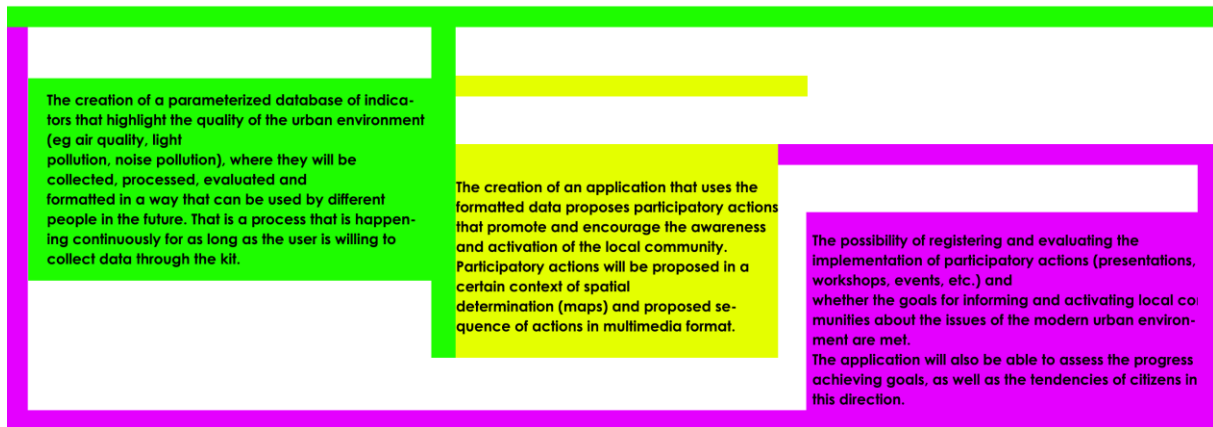


Fig.1 Process Diagram

The proposal aims to provide an accessible tool to the citizens in order to help them understand the necessity of evaluating and improving the urban environment and the critical role of technology and participatory processes in it. The desired result is the empowerment of a "Smart Society", as an integral part of Smart Cities, which consists of active citizens who have access to the necessary information, means and know-how to envision, design and implement sustainable, participatory and open communities.

The demo case focuses on engaging local residents, encouraging them to alter their energy consumption patterns. In addition, it invests in diffusion and inclusion, activating local communities based on public space (e.g. squares, markets, schools) as a common point of reference. This option allows the collaboration of multiple stakeholders (residents, professionals, families, youth, local authorities) and is a great opportunity for cultivating a paradigm shift in understanding and addressing urban issues and the climate crisis more broadly.

The purpose is not only to implement innovative, readily available and accessible equipment for data collection, but also, to collectively map the factors that lead to the burden on the ecosystem. Moreover, the proposal aims to provide scientific support through possible methods of improving the quality of the urban environment.

By using a multi-level data recording system, it is possible to collect data such as air pollution, noise pollution and light pollution. Applying state of the art techniques of analysis, presentation and informing the public, the proposed application has the ability to inform the residents about the situation in each area. The ultimate goal is to offer a facilitator for the cultivation of a new perception and culture regarding the urban context as well as the inclusion of all parties involved in its improvement strategies.

FINDINGS

In order to better understand the needs of the citizens, if and how they will use the presented service, an online questionnaire was created which was answered by a total of 103 people, 46 residents of the Municipality of Thessaloniki and 57 residents of the municipality of Athens and the wider region of Attica.

The aim was not only to collect information about their relationship with the environment they live in, but also how the environment affects them, as well as in what way they would adopt a set of sensors like the one proposed. The responses were taken into account in how the residents of a municipality would use such a tool and service and as a result their responses determined the final representation of the service by highlighting what is of value to residents.

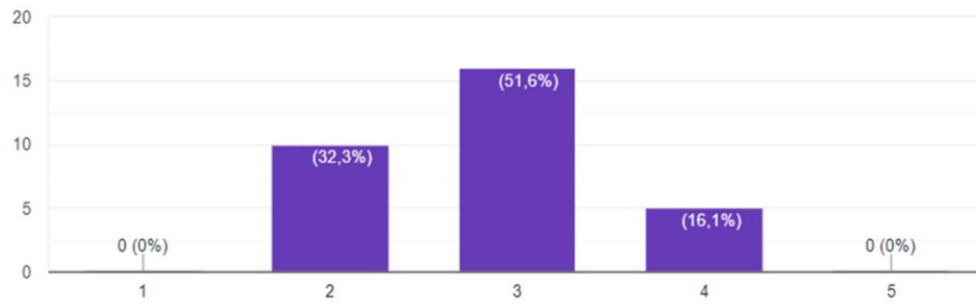
The majority of participants have a good relationship with technology, a fact that plays a significant role in the use of the object, but they are very unhappy with their environment. As the responses show the majority of the residents would like to use this tool in order to get something back from the municipality.

Based on the research, the elements that are of interest regarding the relationship of the residents and the city are the following:

- Everyone moves to the city every day, therefore they can form an opinion about the positives and negatives that exist in the image and in the configuration of the city
- Most people notice problems in the city environment which directly affects their daily life.
- The majority of those who took part are interested in the environment while recognizing how big a problem climate change is.
- A main issue is the lack of an integrated plan and strategy for dealing with these problems, while they would be willing, through a system of rewarding actions, to take part in the collection of data for the collection of data and the organization of actions for the environment.

Furthermore, the use of the questionnaire highlighted important problems in the public and urban space that one can implicitly associate with the poor quality of the environment such as nuisance, exhaust gas, lack of greenery, etc. The results as well as the questions are shown in the graphs below.

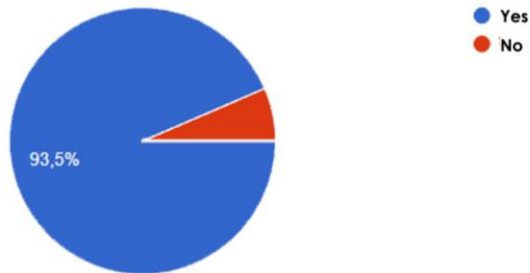
How satisfied are you with the quality of your environment?



Which of the following problems do you identify in your area?



Does the quality of the environment affect you in your daily life?



If so, positive or negative

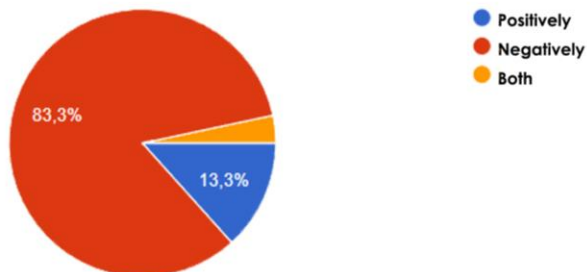
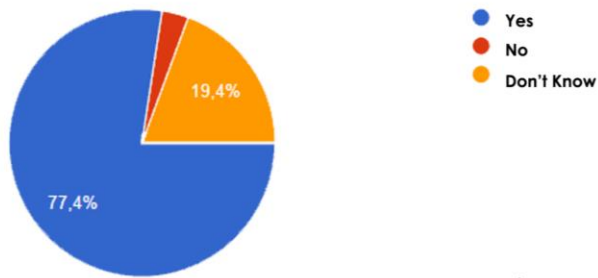
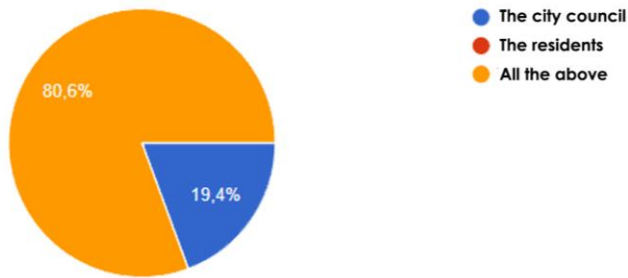


Fig.2 Questionnaires results

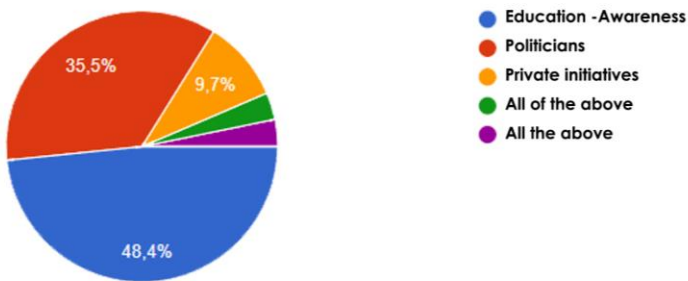
Would you participate in environmental awareness actions in your neighborhood?



Who do you think is responsible for limiting the negative effects of the environmental crisis on the city?



What do you think would help curb climate change?



Which tool do you use the most in your everyday life?

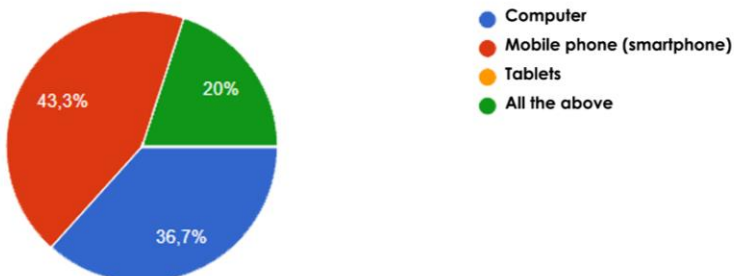
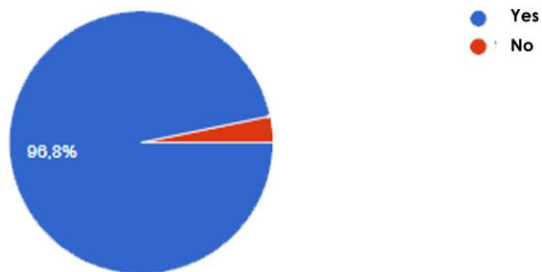


Fig.3 Questionnaires results

Would you buy it at your own expense or would you prefer to borrow it through a government agency?



Would you do it in collaboration with a retributive system in collaboration with the municipality?



What benefits would you like to get from it?

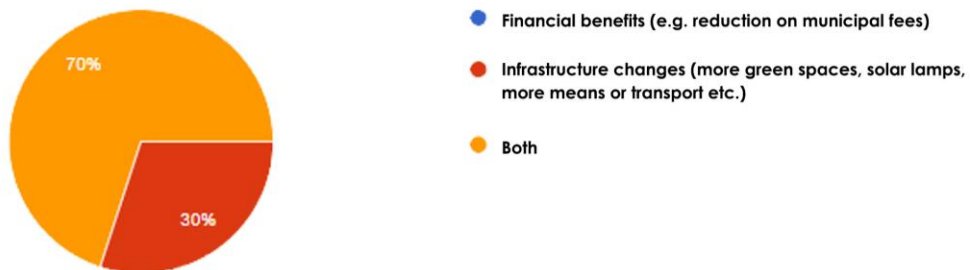
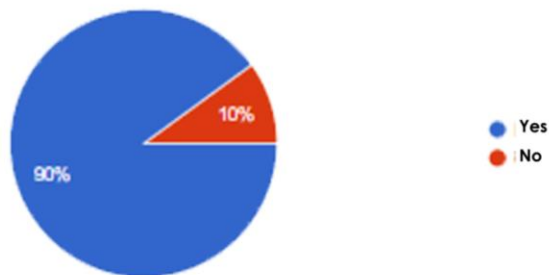
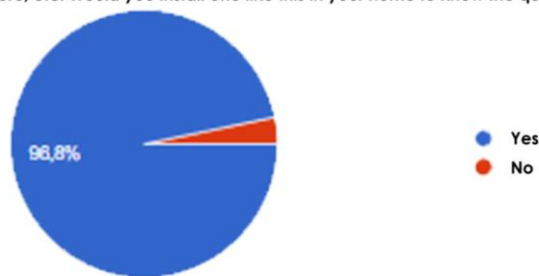


Fig. 4 Questionnaires results

Would you use an app to stay informed about the quality of your neighborhood's environment?



The smart citizen kit is a tool that measures elements found in our environment such as light pollution, noise pollution, levels of CO2 in the atmosphere, etc. Would you install one like this in your home to know the quality of the environment in your neighborhood?



If so, why?



Fig.5 Questionnaires results

The present service is based on the existing service of the kit. The significant difference is based on the questionnaire that was conducted between June and September of 2022 and it helped the further improvement of the existing platform. Moreover, in order to examine the operation of the service, a blueprint of the basic process was created. To create the blueprint, the model of Bitner, Ostrom and Morgan (2008) was followed, which is divided into five distinct sections as shown below.

The purpose was both to create a service which helps the citizens to properly use the equipment with assistance provided in real time, but also the cultivation of the feeling of inclusion and responsibility through distance guidance. The important difference between the existing service and the proposal is the creation of a physical point that has the role of an information point and anyone can either be informed, report a problem, or ask a question. The purpose of this is both the democratization of knowledge by giving access even to people who do not have a good relationship with technology but also for those who want to propose changes or get in touch with a support group.

In this scenario, the service provides the possibility of adopting a package of sensors to collect data for the environment of an area. More specifically, the resident of an area is given the opportunity to adopt such a set of sensors from a certain pick-up-point in the city, and then install it in an external part of his house so that it collects data that is stored on a database through Wi-Fi. Then, as long as the resident stays connected it collects information, and as a result points are being earned that could be redeemed in the municipality in various ways. At the same time, there is the option in the service if data is collected from all the residents of an apartment building, the points are multiplied according to their actions. Reward points differ as they can be redeemed differently depending on the user. Finally, the kit can be returned so that someone else can borrow it or renew his loan.

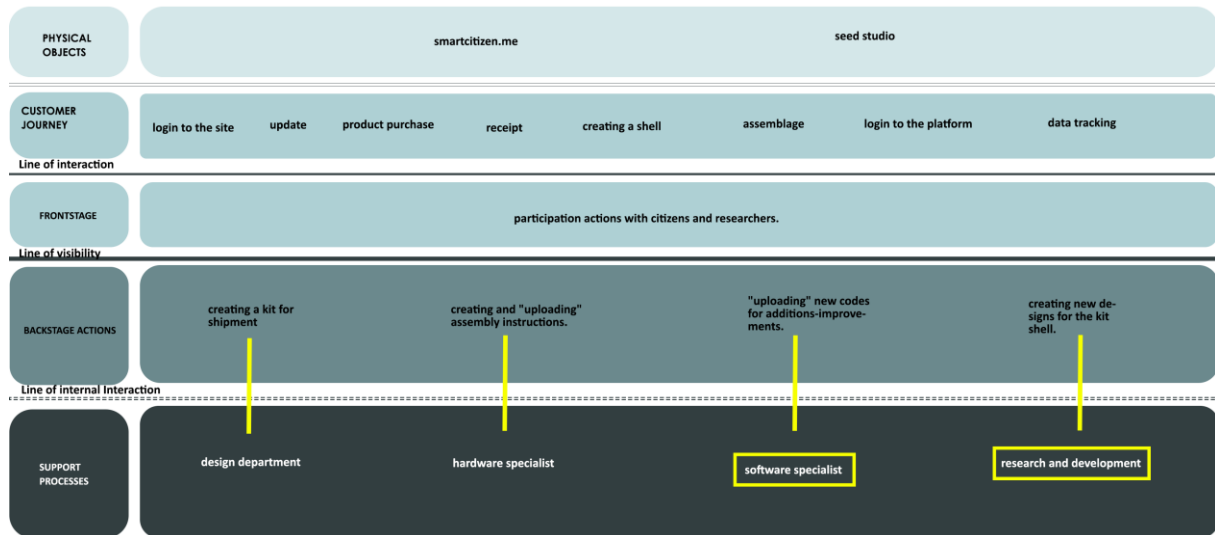


Fig. 6 Existing service blueprint

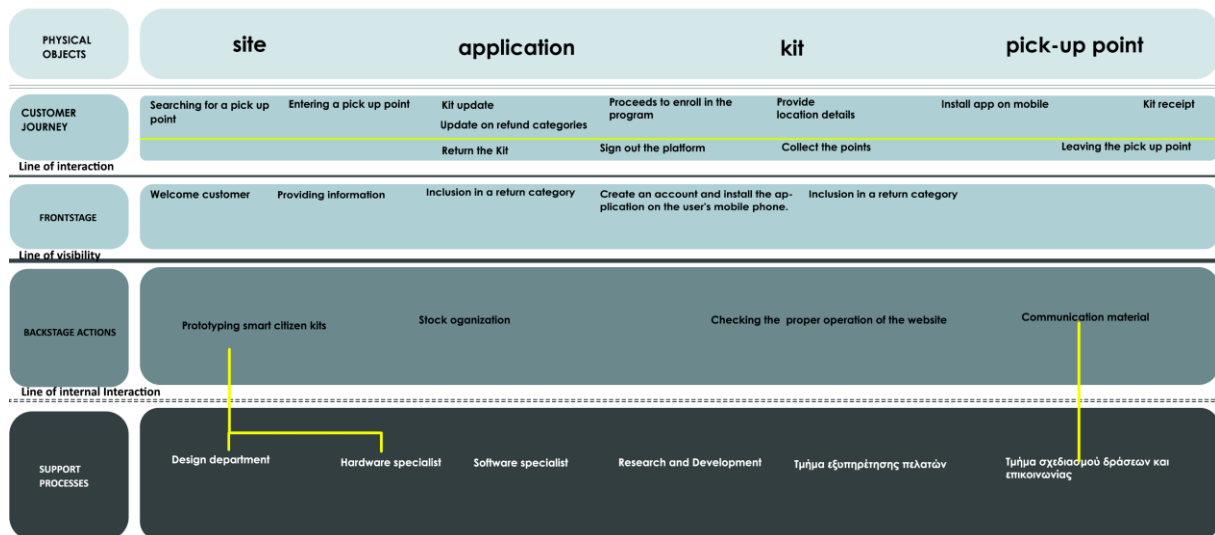


Fig. 7 Proposed service blueprint

Finally, after the questionnaires, the Smart Citizen Kits that the team had were placed in different locations of the two cities and data about the quality of the environment was collected. In the images below we see visualization for the platform as suggested by the team .

The results are imported and visualized in three-dimensional maps so that the points where there is an exacerbation of the specific phenomena can be easily understood. At the same time, users have access to more detailed data in the representation of graphs so that in the event that some action is taken, they can more accurately locate the points, time and day when the problem occurs.

The maps presented have collected data for short intervals during the period July-September as the equipment had to be transported to different points by the team. In case the user network is equipped with more kits the result will have a broader set and higher resolution of data.

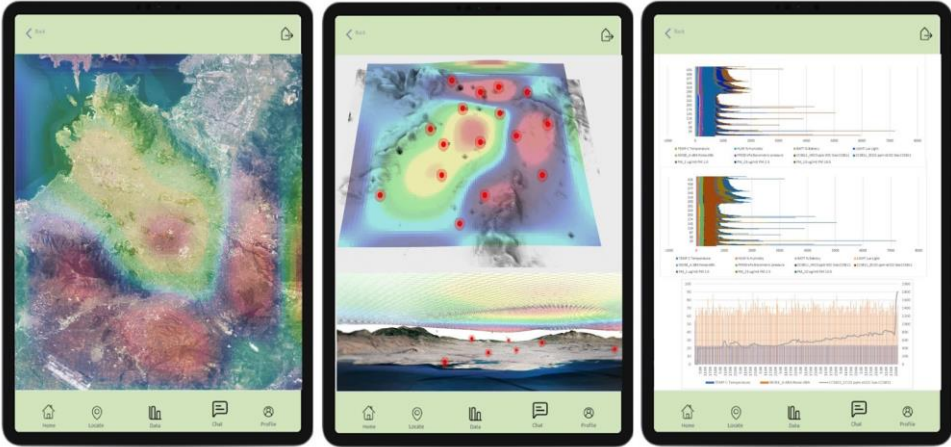


Fig.8 Air quality measurement map. Sensor data based on the urban sensor station relocation scenario (1 day recording).

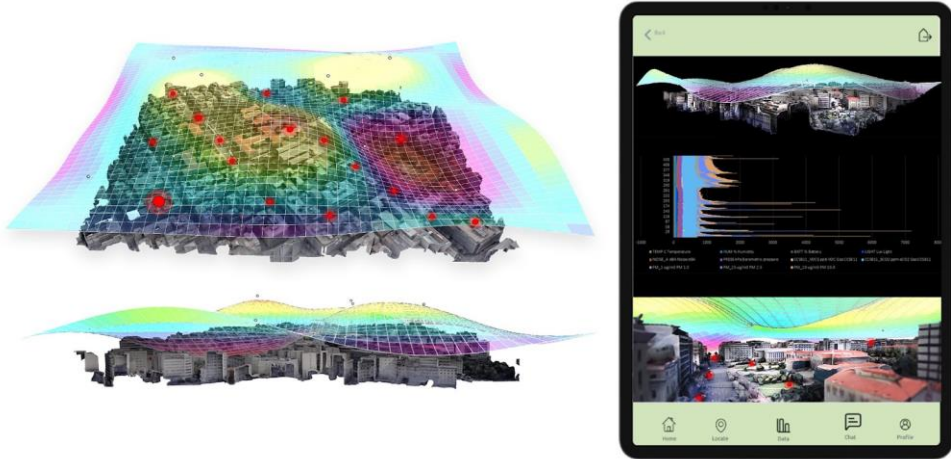


Fig.9 Map of noise measurements. Sensor data from stationary stations in building blocks in the center of Athens (30 days recording).

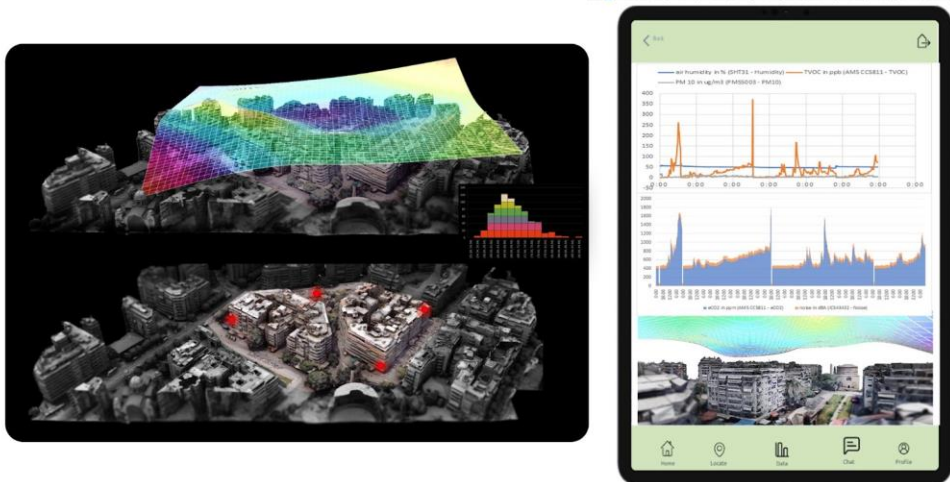


Fig. 10 Map of eCO₂ in ppm (AMS CCS811 - eCO₂) measurements. Sensor data from stationary stations in building blocks in the center of Thessaloniki (10 days recording).

CONCLUSIONS

Many questions emerge regarding the new ways and means accessible for managing the ecological crisis. Intense urbanization is a phenomenon that has concerned researchers for many decades and for many years a solution to the problem that arises has been sought. These are varied and relate to both the built environment and the public space. The accumulation of population in the cities, the continuous urban growth, the absence of nature from public spaces, the lack of inclusiveness for people with different needs, and many other problems have led to urban centers not only being unsustainable but also deterring someone from living there. It is therefore imperative to search for new ways to direct those issues.

In this context, different fields can contribute in different ways and propose new solutions. The continuous increase in complexity and the simultaneous evolution of technology leads to emergence of a need to bridge the existing built environment and the new technologies. Thus, the collaboration of all these different tools led to the creation of new terms such as smart and intelligent cities as a response to the management of the multiple levels of problems found in them. Information technologies appear as a means capable of being integrated and able to contribute in this process of renewing the existing structures and image of the city. Through various applications, new landscapes are emerging in which a solution can be sought for the biggest problem facing humanity today, the climate crisis.

A new version of the smart city is thus emerging that aims to record and collect data, alert, inform and visibly improve the daily life of millions of people living in cities. It is a new version of managing and regulating conditions in which stakeholders can research, act, raise awareness and inform the whole society.

We therefore conclude that a combination of different specialities as well as a bottom up strategy of integrating new technologies into society can offer a solution through a data recording and monitoring service related to the environment. The desired result is the empowerment of a "Smart Society", as an integral part of Smart Cities, consisting of active citizens who have access to the necessary information, means and know-how to envision, design and implement sustainable, participatory and extroverted communities.

The specific research proposal aims to raise the awareness of local communities about the quality of the urban environment. The goal for future research is to use the framework of Participatory Planning and the culture of Making as a basic methodology for raising awareness among local communities.

The tool aims to offer an accessible medium, with a high diffusion and penetration capacity, for understanding the necessity of evaluating and improving the urban environment and the critical role of technology and participatory processes in it. The desired result is the empowerment of a "Smart Society" as an integral part of Smart Cities, consisting of active citizens who have access to the necessary information, tools and expertise to envision, design and implement sustainable, participatory and extroverted communities.

The originality of the present work which is also a ground for additional research is the treatment of the issues facing the modern city, due to the rapid changes of media and services, through the activation and mobilization of civil society. This is achieved through the development of modern digital tools that can facilitate, speed up and enrich participatory actions.

In addition, this paper highlights the range of ecological issues in the urban environment through tangible metrics and invites the directly interested - that is, the citizens - to be active and cooperate in finding and implementing possible solutions to the climate crisis, starting from their own area, and with immediate tangible results as mentioned earlier.

Furthermore, in the future, through participatory workshops and actions, it invests in diffusion and inclusion, activating local communities based on the public space (e.g. squares, markets, schools) as a common point of reference. This option allows for the collaboration of multiple stakeholders (residents, professionals, families, youth, local authorities) and is a promising field for cultivating a paradigm shift in understanding and addressing urban issues about the climate crisis more broadly.

The purpose is not only to implement innovative, readily available and accessible equipment for data collection, but then for those directly interested to undertake a collective mapping of the acts that lead to the burden on the ecosystem as well as the possible methods of improving the quality of the urban environment.

Applying the best techniques of analysis and presentation and informing the public, the proposed work has the ability to inform the residents and the competent bodies about the situation in each area while at the same time acting as a field of common reference for the awareness of the residents and the organization actions to deal with them.

In conclusion, this work offers an example of how many different sciences are necessary to collaborate from service design to sensor design in order to take a small step towards improving and solving the issues affecting modern cities. As in any era, in ours too, this shift from traditional means to the cutting edge technologies can prevent dangers. However, progress is inevitable and it is up to the users as well as the creators to take a stand in order to bridge the gap between the two worlds, the digital and the physical, so that a sustainable, inclusive and viable future for all emerges in their wake.

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HOUSING COMPLEX – AN ALTERNATIVE PENAL APPROACH

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ABSTRACT

The architectural design of prisons is inextricably linked to the mental health of prisoners and their behavioral development during the imprisonment. This paper presents an architectural experimental model that aims to discuss the spatial perspective of current penal practices and suggest new alternative penal spatial strategies. Through the analysis and study of the prison as a spatial environment, the authors suggest new processes to achieve optimal re-education results.

The first part of the paper focuses on the psychological impact of imprisonment on inmates and analyzes the psychological effects of prisoners in terms of the restricted mobility, thus the particular living conditions caused by the incarcerated life. The second part correlates the spatial characteristics of prisons with the evolution of various conceptual theories regarding the success or failure of the re-education programs of minor criminals.

The proposed architectural concept is a housing complex located in a residential area in the city of Chania and has the capacity of holding approximately forty residents. Aside from implementing some common humanitarian conditions, the proposal serves as ground for studying the concept of spatial limiting and how it can encourage re-education and self-development in re-introducing the misdemeanor prisoners back to the Society. Color, materiality, typology and level of privacy constitute the parameters for the architectural proposal.

Keywords:

experimental model, alternative penal system, space psychology

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INTRODUCTION

This research was initiated in a course of architectural design during the fourth semester of the School of Architecture of the Technical University of Crete. Having been assigned to create a block of flats with extra uses as for example a gym or library, we decided to expand the nature of the project and examine how the issue of rehabilitation can be integrated. After observing the constant evolution of reformist thinking about state punishment, our goal was to experiment with a new alternative approach. The current penal system is viewed as problematic, not only because the living conditions of prisons are often considered inhumane and result in harming inmates' psychological and physical well-being, but also because it fails to re-educate prisoners back to society. Given that the effects of imprisonment are predictable and show a correlation with the quality of life within the prison (Craig Haney 2012 p7), a revision of it is deemed necessary. This revision is also a matter of space, given that the effect of space on human behavior and psychology has already been established in published research.

Current reform discussions aiming at lowering the incarceration rate tend to focus on petty criminals who present little risk to the general public or to their family. The issue is complicated since there is no distinct line which defines when a petty criminal should be restricted or not. Transferring minor offenders to alternative, open prison structures aim to avoid further cultivation of the criminal behavior of the offender in the prison, as well as their victimization by groups of aggressive criminals.

Considering there are many levels of criminal behavior, the researchers viewed designing an infrastructure, specifically for petty criminals, of great architectural interest.

THE PSYCHOLOGICAL EFFECTS OF IMPRISONMENT

Prison environment is emotionally challenging for an inmate. Prison staff members become potentially verbal or even physically abusive, while exposure to high levels of physical and sexual abuse by other inmates is common. (Craig Haney 2012 p14). Furthermore, in terms of infrastructure, most prisons are extremely degraded places that deprive prisoners of access to potentially beneficial goods and services (Craig Haney 2012 p3). Not only is the general environment of the penal institutes burdened by neglect and lack of available financial resources, but also the management of the existing space is often problematic. (Craig Haney 2012 p8). The two social extremes of penal confinement, living under conditions of intense overcrowding or, at the other end of the spectrum, being subjected to enforced isolation or solitary confinement can significantly worsen the prison experience and increase the psychological risks that prisoners deal with. (Craig Haney 2012, p12). It should be noted here that most of the criminals come from socially and economically marginalized groups and have experienced emotionally traumatic experiences. Certainly, the current types of traditional imprisonment represent a form of "re-traumatization", one that re-exposes the prisoners to the same criminogenic risk factors that they have already experienced. (Craig Haney 2012 p12).

In addition, the strict measures that rule prison lives impose on prisoners a variety of psychological adjustments aiming at easing daily life in prison and ensuring their physical and emotional survival. This process is regarded as "prisonization". (Craig Haney 2012 p4). Clemmer defines it as "the taking on in greater or less degree of the folkways, mores, customs, and general culture of the penitentiary (Clemmer, 1958, p. 299 in Craig Haney 2012 p5). For their own survival, prisoners often make an extreme effort to consolidate respect by reacting violently and harshly to establish strength and dominance (Craig Haney 2012 p5).

The prisoners' personal autonomy erodes, and they lose the ability to take initiative, use their critical thinking and organizational skills, due to their patterned daily life. (Craig Haney 2012 p5). In the case of a misdemeanor prisoner during imprisonment, this behavior may worsen in order to survive in the prevailing conditions by defending himself and becoming far more aggressive. In the case of having a family, for prisoners who are mothers the separation can have psychological consequences on them, such as depression.

For instance, incarcerated mothers cite separation from their children as one of the most difficult aspects of imprisonment. Moreover, the social stigma connected with imprisonment may lead to further disfranchisement of the family. The subsequent mental and psychological stress results in the failure of the system to re-educate prisoners back to society. Except from that, it has also been proven that imprisonment increases a person's chances of repeating a crime while the duration of imprisonment seems to worsen that possibility. (Craig Haney 2012 p7).

ALTERNATIVE APPROACHES-FIELD OF STUDY

While modern society has seemingly settled on some guidelines regarding the function of the penal system, the values that govern prison architecture still seem to be on an ongoing revision. As Rem Koolhaas notes <<*The history of prison building has become a sequence of short lived ideals that were challenged, faltered, and then failed. Near the end of the 20th century, this sequence becomes almost comic- like an accelerated movie. It has become impossible to build a prison that is not, at the moment of its completion, out of date.*>> (OMA, Bruce Mau and Rem Koolhaas, 1995, p.241)

Although there has been much trial and error, some programs for offenders have been found to cultivate the necessary living conditions in order to benefit the prisoner's well-being and reduce their chances of recidivism (Sverdlik 2012 p28). Norway is a pioneer in alternative penal infrastructures, while a common distinction is that they often simulate life outside prison.

One of the first examples of a recent alternative prison is Bastøy which was established in 1982. Bastøy sits on a small island and houses 115 prisoners. It's a prison of minimal security, with limited staff although some of the inmates have committed very serious and violent crimes. Life in the prison simulates village life, inmates live in wooden rural-like houses, and they have a communal kitchen and cultivation area. The use of natural materials is thought to bring a sense of calmness and tranquility as well as remind us of village life. The inmates live peacefully together, collaborate and depend on each other for resources. During the 38 years that the prison has been operating there has only been one attempted escape. The inmates' repetition of criminal behavior upon release has been reported at 16%, compared to the European average of around 70%.²

Another exquisite and more recent example of an alternative punitive system in Norway is the max security prison Halden Fengsel of 2010, which has over 250 inmates. Almost half of them have committed violent crimes, such as murder, rape or drug related crimes and illegal trafficking. This prison has been designed, in such a way, in order to have the appearance of a village and is located in the middle of a forest, using nature as its barriers. The cells include appliances, multiple furniture, and a private bathroom. There is a grocery store, a well-equipped music studio, a garden, a holy room, a gym, an educational room, a library, a computer room, a hall for family reunions, and many more areas. This cultivates the sense that the inmates are members of a community and helps them develop independence and a sense of freedom.

There are not many examples of infrastructures targeted only towards petty offenders, although the topic of prison decongestion is urgent. Generally, there are other measures targeted towards this problem, such as home probation or community service. Surely, however, those measures have limited applications and their implementation in real life is scarce.³ We believe that practicing a more diverse and leveled penal system can cater best to the varying criminality. Therefore, the search for functional modes of alternative imprisonment is considered beneficial.

PROPOSAL

During the architectural design class, the students were assigned to design a multi-apartment building in an 1160 sq.m. plot located in the town of Chania. The surrounding area is mostly comprised of apartment complexes but also some single family houses. Regarding the design requirements, the apartment complex should contain apartments of 35, 60, 80 and 110 sq.m. and also some communal spaces.

Having been inspired by the aforementioned alternative penal models, we decided to design a residential prison complex for misdemeanor criminals. The complex contains houses for inmates, the families of prison staff and, in some cases, also the families of inmates. It also contains a gym, a psychologist's office, a cafeteria and a crafting center, which shares the same area as the library

² https://en.wikipedia.org/wiki/Bastøy_Prison accessed on: 17/05/2022

³ <https://www.academia.edu> accessed on: 10/05/2022

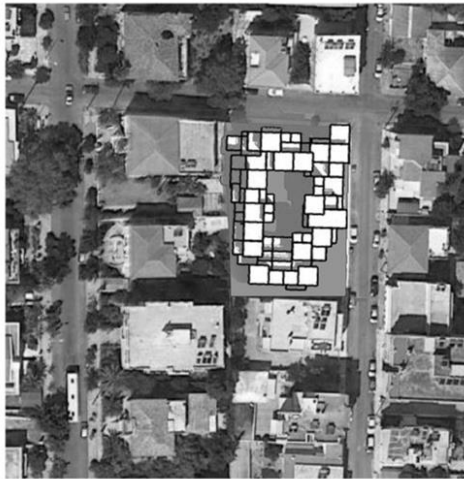


Photo 1: Masterplan- site plan

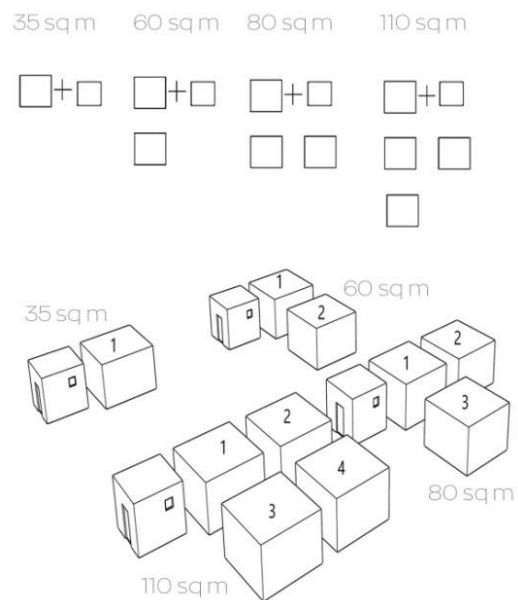


Photo 2: Different size apartments, 35- 60- 80- 110 sq.m.

In the process of forming an experimental theoretical model for alternative rehabilitation, it is important to determine the exact qualities of space which need to be studied. When comparing the everyday space of incarnated and free citizens, it becomes evident that their respective space parameters correspond to almost completely opposite values. These extremities constitute a fundamental difference between free and incarnated life and thus heavily influence the user's space experience.

Table 1. Current differences in space parameters regulating incarcerated and free life

	Imprisoned	Unrestricted
1. Space confinement	Strict	Virtually unconfined
2. Visual Interaction with surrounding space	Absent	Constant
3. Privacy	Lacking	Varying
4. Socialization	Mandatory/absent	Selective
5. Natural light	Poorly lit spaces	Luminous apartments
6. Access to services	Deficient	Wide range
7. Materiality	Hard	Soft/variety
Conclusion	Users are adapted to space	Space is adapted to users

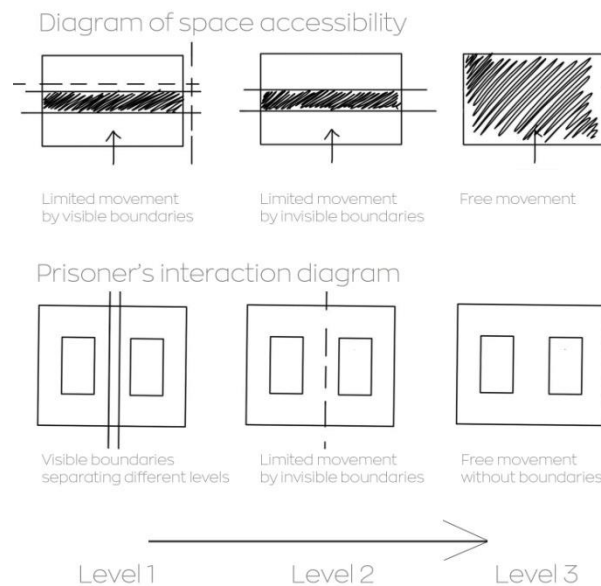


Photo 3: Diagrams explaining the design process of the three levels

We argue that this polarization disturbs normality, which is a requirement in order to create a safe environment for individual development and rehabilitation. While we do not aim to eliminate the distinction between offender and law abiding citizen, nor are we intending to have the same approach to space, we consider it useful to review these differences in order to optimally adapt them to the needs of the system.

Using the space parameters extracted above we have created a scale. We continued to quantize different levels of space freedom/restriction, depending on the individual's severity of offense. In terms of organization, the goal is to use three levels during imprisonment, thus dividing offenders into three categories. Inmates' classification into each level depends on their mental ability, their behavior inside the prison and, of course, the severity of the crime committed. When deemed appropriate, inmates have the opportunity to gradually move on to the next levels.



Photo 4: Transition diagram from incarnated life to free civilian life through the three levels

Table 2. Redefined graduation of the aforementioned space parameters between the different levels.

	Spatial confinement	Visual Interaction with surrounding space	Privacy	Natural light-openings	Socialization	Access to services	Materiality
Lvl.1	strict spatial restriction with visible confinement	Is observed by the supervisor, limited introverted view within the level	Complete privacy only during the nighttime	Openings only in one direction	Mandatory cohabitation	Equal	Variety
Lvl.2	strict spatial restriction with invisible confinement	Semi-extroverted view, can see the outdoor areas within the plot,	Varying privacy	Many openings, mainly one direction	Selective socialization with co-inmates	Equal	Variety
Lvl.3	Moderate spatial constraint within the plot	View towards both inside the plot and outside	Complete privacy	Many openings, multiple directions	selective socialization with everyone	Equal	Variety

The first level consists of two three-bedroom apartments of 60 square meters. The prisoner is strictly restricted inside the house and the shared backyard of all level one inmates. The inmate can leave their assigned area to visit common services such as a psychologist office or the library. The apartments are divided into day and night zones. See-through openings are directed towards the common yard. The openings towards the plot block the view. Specially designed transforming furniture and sliding walls allow

the graduation of privacy within the apartment, offering more privacy at night and encouraging social interaction during the day, without imposing it. The supervisor has direct eye contact with the yard from their apartment. Although the inmates cannot see them, they are aware of the supervisor's apartment.

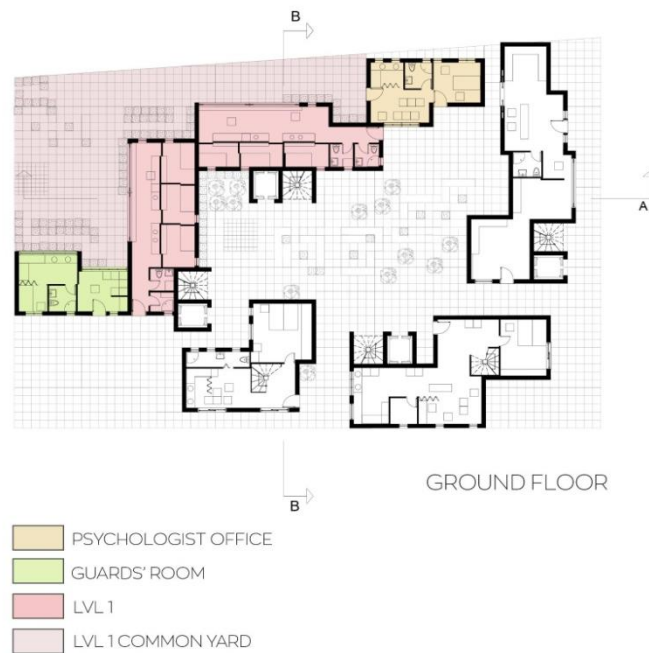


Photo 5: Level 1 areas and functions in ground floor

The second level consists of two apartments, one of 60 sq.m and one of 35 sq.m. The spatial boundaries cease to be so strict since the detainee has access to both outdoor and indoor common spaces of level two. The apartments which have more, and bigger windows provide a view to multiple directions. The division into day and night zone continues. The day zone is mostly directed towards the patio; this creates a sense of community. Contrary to the first level, all bedrooms are completely private. Specially designed furniture offer the possibility of turning the living room into a guest room.

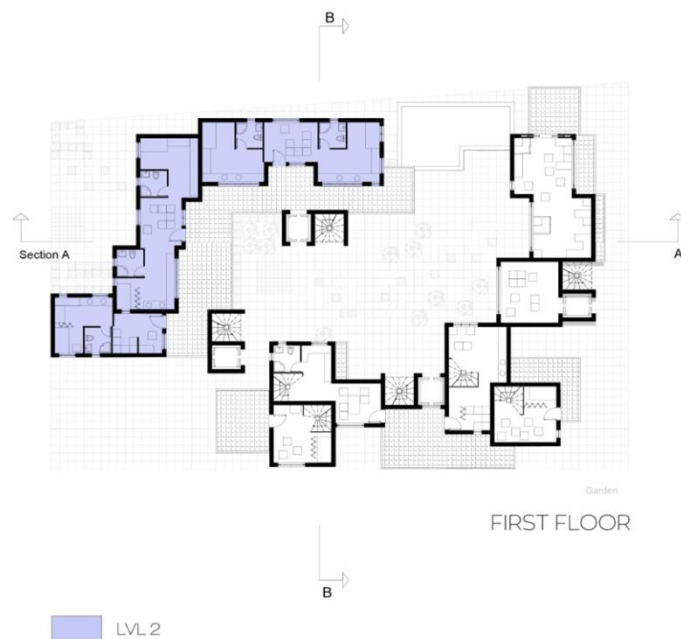


Photo 6: Level 2 areas in first floor



Photo 7: Night and day zones in level 1 and level 2

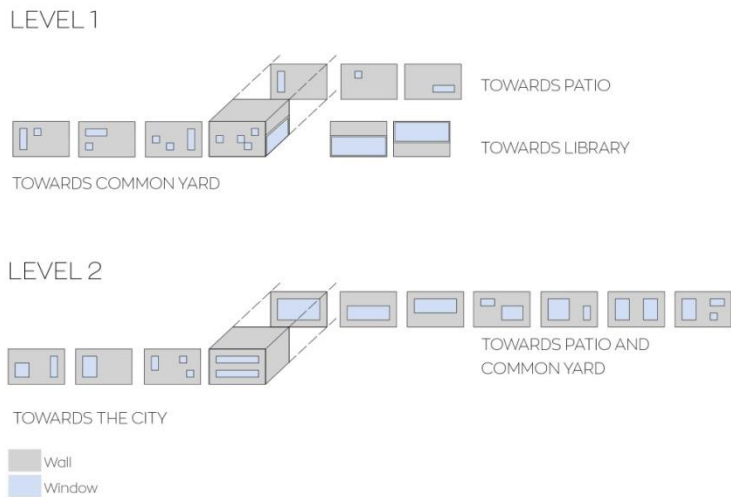


Photo 8: Window diagram in level 1 and level 2

Third level apartments do not differ from the apartments given to free citizens of the facility. The ratio of inmates to free citizens apartments is decided by the needs of the facility. The inmate has access to the entire plot and this is restricted within its boundaries. They can socialize with anyone within the plot and they are given the opportunity to host their own families.

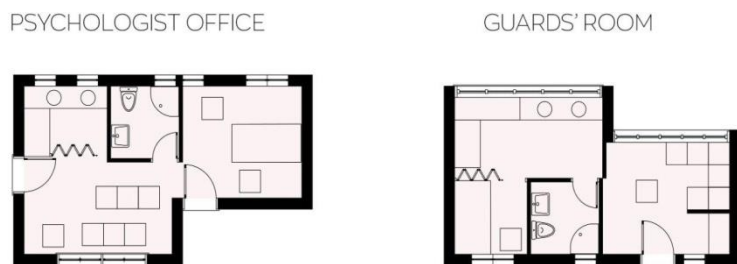


Photo 9: Plans of Psychologist office and guard's room

The psychologists' and the supervisors' houses are the only ones that differ from the typologies above. The psychologist's house has two entrances, one directly linked to the common patio and leading to the psychologists' private room and the other linked to the level one yard and leading to the psychologist's living room-office. The furniture of the living room is transformable, enabling it to serve as a session room. At the

same time, it can be divided from all other spaces in order to ensure the psychologist's privacy. The supervisor's house does not deviate much from the common typology of 35 sq.m. The only difference is that the daytime zone is directed towards the yard of the level one prisoners and the design of furniture motivates them to supervise the area while doing everyday tasks.

The rest of the services were designed with both the short-term and long-term well-being of the prisoners in mind. The gym provides the inmates with the ability to exercise, which is a habit linked to reduced rates of depression, anxiety and anger. Overall life satisfaction has been proven to be directly linked to higher levels of creativity and appreciation of beauty as well as a love of learning. In this regard, we decided to design a creative center and a library for the inmates. This will make the time spent in prison more enjoyable while the skills acquired will equip them for their return to free society.

As for the construction, each apartment is a combination of two types of modules, the smallest always has the function of the entrance while the larger one constitutes the main compartment. The cubes that make up the apartments are determined by a 0.6m x 0.6m grid. The use of this grid becomes evident not only by the dimensions of the floor plan and the section but also by the dimensions of the furniture and the openings. The patio also obeys the grid which is reflected on the tiling. The placement of the benches is introverted, encouraging small groups of socialization inside the big patio. This modeling of the space makes the considered values measurable and enables their adjustment to quantized values, thus accurately matching the needs of each level.

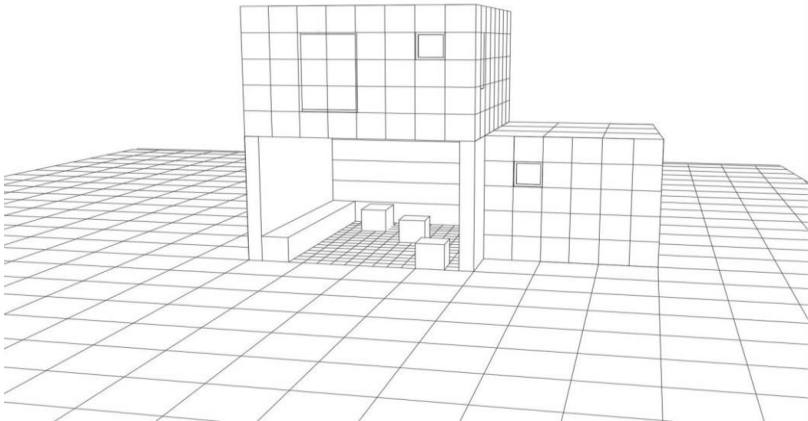


Photo 10: Example of apartment designed by subdivisions of the same grid

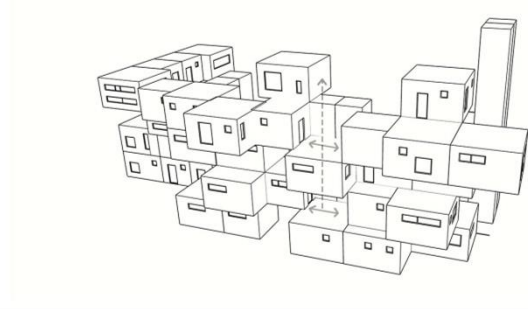
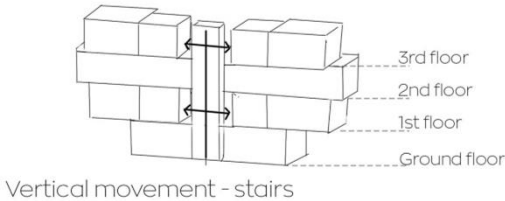


Photo 11: Vertical movement diagrams

Using cubes as a design tool facilitates prefabricated logic. Aiming at a fully prefabricated complex, a traffic system is proposed, which is constructed after the deposition of the modules and is anchored to them. The traffic is received every two levels (first floor and third) because the roofs operate as entrance halls. There are 4 vertical circulation cores (stairwells and elevators) while the level two inmates use their own core for security reasons.

The color chosen for the apartments is the Baker-Miller pink, which, after research by Alexander Schauss in 1960, has been shown to mitigate prisoner aggression and create a more productive and enjoyable daily life. (Alexander G. Schauss, 1985, p57). In particular, Alexander Schauss proposes, "Have as many pink walls in the room as possible. The best floor colors are neutral gray or dark brown. It is not necessary for white sanitary ware (eg sink, toilet, etc.) to be painted pink." (Alexander G. Schauss, 1985, p62)



Photo 12: Building plans

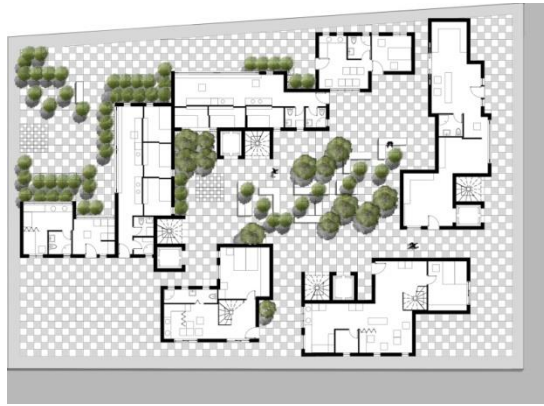


Photo 13: Garden plan

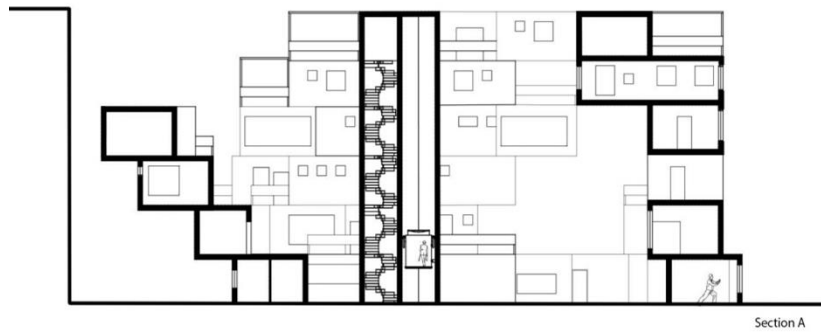


Photo 14: Section A

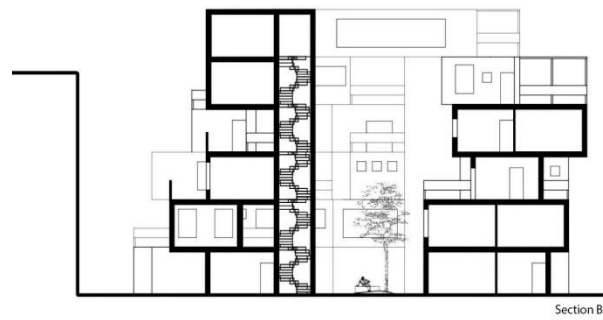


Photo 15: Section B

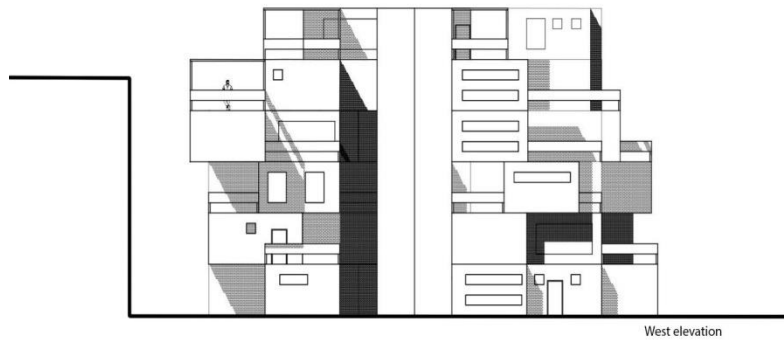


Photo 16: West elevation

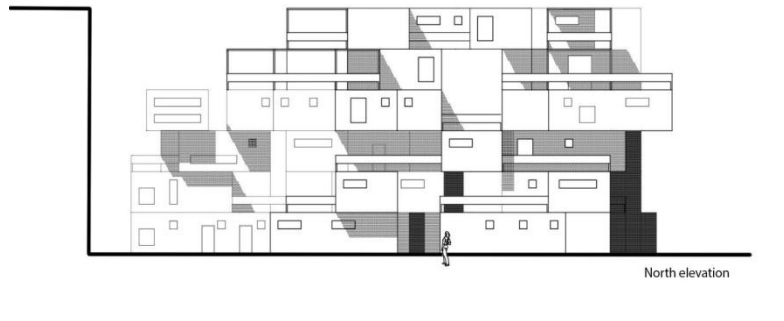


Photo 17: North elevation



Photo 18: Level 1 room rendering with Baker-Miller pink

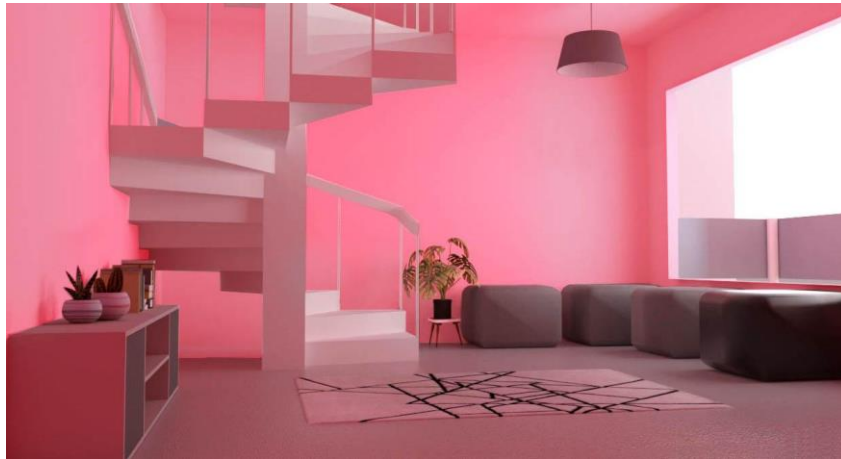


Photo 19: Level 2 room rendering with Baker-Miller pink



Photo 20: Ssupervisor's house



Photo 21: Patio

CONCLUSION-DISCUSSION

The reformation of criminals is a major issue that has always been of great social concern. Like all social problems, its solution requires an interdisciplinary approach which takes into account modern reality. It is undeniable that the modern way of imprisonment not only fails to re-educate inmates back to society but is actually psychologically damaging for the prisoners. Problematic use of space exacerbates the problem.

In our effort to explore original alternatives, we worked on the model of an apartment building because we believe it can be designed properly in order to cater to the different needs of the inmates. The main goal of the project was to achieve better re-education results while improving living conditions during imprisonment. In this attempt, the study of the differences between the everyday space of free and incarcerated citizens gives a deeper understanding of the user experience and enables the construction of a specified value system for designing.

In conclusion, we believe that encouraging the exploration of such issues in universities lays a good foundation for raising student awareness and at the same time promoting originality in research. Input of many study domains is necessary, including architecture, which can offer interesting perspectives on space design.

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NEW TECHNOLOGIES IN THE FUNCTION OF PARTICIPATORY AND EDUCATIONAL PROCESSES IN URBAN PLANNING – CHALLENGES OF COVID-19 AND THE FUTURE OF DIALOGUE

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ABSTRACT

New experiences in public participation gained during the pandemic, and in light of the growing digitalization and migration of various spheres of engagement in virtual space, indicate the need to change the paradigm engagement of planners as educators whose presence is necessary in the offline world. There are wider possibilities in overcoming the communication boundaries from a narrow space to the territory of the whole world. In addition, this leads to significant reduction of fuel consumption needed to overcome distant destinations and, consequently, reducing the carbon footprint. On the other hand, this type of communication allows relaxation of all participants who from their own homes can have a real experience of participating in the conference, lecture or seminar.

This type of dialogue also has significant negative consequences, which are reflected in increased alienation between interlocutors/participants, frequent misunderstandings and inadequate communication due to technological barriers, as well as participants inertia resulting from long exhausting conferences without real interaction.

On the examples of dialogue, education and participatory processes within the ConnectGREEN project- this paper will review the positive and negative repercussions of new mechanisms of participation and possible directions for achieving active participation and education that would be realized hybrid.

Keywords:

sustainable development, climate change, implementation of research results in the planning practice, the use of new technologies.

INTRODUCTION

Participatory and educational processes in urban planning and design have not experienced significant steps forward or transformations during the last decades of the 20th and the first decade of the 21st century. However, with the emergence of the COVID-19 pandemic, the current paradigm related to the need for active public participation and education directly related to spatial/urban/environmental planning and decision-making through lectures, public workshops, round tables, open discussions and debates requiring the physical presence of participants is changing, and new virtual space settings of participation are defined. New circumstances raise the question of continuing active participation activities in a (permanently?) changed environment and facing the obstacles caused by the global pandemic. Thus, the participatory tools and instruments used in the pre-pandemic era are changing significantly, opening new opportunities for the active participation of experts in projects of wider community importance. These opportunities are rising and will be evolved also in post-pandemic area opening the new field of research of potential possibilities for engagement of stakeholders in participation processes.

COVID-19 pandemic was having a huge impact on every aspect of human life, including public services, governance, and the well-being of citizens. In this regard, "normal" life in every aspect supposed be established soon after announcement of the pandemic, so that all of the important areas of human existence would continue working properly.

New experiences gained during the COVID-19 pandemic, supported by the growing digitalization and migration of various spheres of engagement in virtual space, indicate the need to change the paradigm engagement of planners as educators, trainers and mediators whose presence is necessary in the offline world. Having that in mind they can achieve wider and more adequate possibilities in overcoming the communication boundaries from a narrow space to the territory of the whole world. In addition, this leads to lowering GHG emission and production of CO₂ and, consequently, reducing the carbon footprint through significant reduction of fuel consumption needed to overcome distant destinations. On the other hand, this type of communication allows relaxation of all participants who from their own homes can have a real experience of participating in the conference, lecture or seminar.

However, this type of dialogue also has significant negative consequences, which are reflected in increased alienation between interlocutors/participants, frequent misunderstandings and inadequate communication due to technological barriers, as well as participants' inertia resulting from long exhausting conferences without real interaction. This type of communication, in addition to the obvious advantages (possibility of quick organization and animation of a large number of stakeholders in a short period of time, possibility of working "from home" with maximum comfort, reduction of transport/organizational and other costs of organizing webinars, online conferences, etc.), imposes a number of obstacles, primarily of a technical-technological and psychological nature. (Buehler, et al, 2020) (Beyea et al, 2009)

On the examples of dialogue, education and participatory processes within the ConnectGREEN project-Restoring and managing ecological corridors in mountains as the green infrastructure in the Danube basin, this paper will review the positive and negative repercussions of new mechanisms of participation and possible directions for achieving active participation and education that would be realized hybrid.

POSSIBILITIES FOR PUBLIC PARTICIPATION IN THE COVID-19 ERA – education, trainings, workshops

Participatory processes which were legally established in the pre-pandemic era in spatial, urban and environmental planning have been seriously transformed during the global outbreak of coronavirus disease COVID-19 in 2020 (WHO). These circumstances had huge impact on every aspect of human life, including public services, governance, and the well-being of citizens. The life once considered "normal" got the new dimension, and all of its aspects, including important areas of human existence had the demand to continue working properly, despite the global pandemic.

Existing forms of communication, types of engagement and active offline participation have been disabled due to lockdowns, curfews, real pandemic threats, as well as fear and discomfort and other psychological barriers of the citizens. Due to all of these obstacles, participative process had to go through serious changes in order to maintain quality communication between interest groups.

Participation was not the only form of stakeholders' engagement that had to undergo changes. On the other hand, education at all age levels, the continuation of courses, training, lectures, classes in all educational institutions were also threatened by the pandemic and new ways had to be found to continue working in new circumstances.

New virtual participatory approaches through different types of engagement have entered new chapter in the history of public participation, with the aim to improve existing practice and procedures and adapt them to the demands of pandemic era, with the huge impact and help from technological achievements.

With the aim to maintain the perpetual engagement of stakeholders in planning and decision-making procedures, it was necessary to define new ways of their participation. Through the planetary experiences of different experts during 2020, it was determined that newly created conditions of physical distancing demand use of online (internet) tools/platforms and work in smaller groups, by combining different communication channels.

Having that in mind, it was necessary to define new methodological procedures for future alternative types of participation, which could easily convert to virtual participatory platforms.

Also, these new modalities of participation should necessarily follow previously adopted Arnstein "participation ladder" (Arnstein, 1969) with the clear steps needed for enabling full and adequate participation. These steps include:

- information - using tools such as social networks – Facebook, Instagram, LinkedIn, Whatsapp, Viber, webinars, newsletters, 3D visualizations, blog articles, etc.
- consultations - online surveys, questionnaires, focus groups, telephone surveys and trend research, supported by online platforms such as Zoom, Teams, Skype etc.
- inclusion - video conferences, online voting, use of email communication in order to engage stakeholders more often
- collaboration - distribution of documents via emails and other types of communications, creation of spaces for discussion and conversations on online platforms, conversations in groups and 1 on 1, tools for 3d mapping, virtual whiteboards to ensure cooperation on the Internet
- empowerment - support for the formation of a unique opinion, which was reached by using the means of virtual reality (Mohankumar, et al. 2020)

This type of engagement considers only online modalities of communication, without actual offline contact between different stakeholders` groups or relation teacher/professor – students.

A large number of experts (Mohankumar et.al 2020), (Buehler et al, 2020), (Pantic, et al, 2021), (Buheji et al, 2020) (Thoeneick, 2021) proposed the thesis that participation should not be exclusively realized in online spheres, (having in mind that the pandemic will eventually stop) but that part of the activity should be realized in live contact with experts. However, the uncertainty caused by frequent quarantines and complete bans (lockdowns, curfews) on movement/contacts between people suggested the necessity of rapid mobility and a higher degree of adaptation to the organization of the engagement of experts, in which the base, for now, should be online forms of communication, through social networks, the organization of webinars and videos conferences, emails, newsletters, online lectures etc.

Each of the mentioned types of engagement has its own obstacles, which can be overcome to a greater or lesser extent.

This type of communication, in addition to the obvious advantages (possibility of quick organization and animation of a large number of stakeholders in a short period of time, overcoming territorial barriers, possibility of working "from home" with maximum comfort, reduction of transport/organizational and other costs of organizing webinars, online conferences, etc.), imposes a number of obstacles, primarily of a technical-technological and psychological nature (Buehler et al, 2020).

This primarily refers to evident technological and educational limitations, as well as problems encountered by participants in interactive processes, which relate to initial shyness in communication, discomfort, inability to clearly express opinions via Internet technology, and others. Special barriers were faced by people in older age categories who were insufficiently educated in terms of technology and/or did not easily grasp new ways of communicating via Internet.

In the case of workshops, online round tables and other forms of active engagement of stakeholders, the biggest problem is certainly (in addition to the inability to quickly adapt to technological innovations and psychological barriers) other technical obstacles such as poor internet connection, inadequate technological equipment of users, unstable internet connection, etc..

A similar situation occurred in the relationship between educators (professors, teachers) and students on the faculties and universities related to the urban/spatial/environmental planning all over the world. COVID-19 pandemic has disrupted teaching in a variety of institutions. It has tested the readiness of academic institutions to deal with such abrupt crisis. Online learning has become the main method of instruction during the pandemic. The period of transition from offline to online methods of education was short and the instructions for education were not clear enough, or it was difficult to get used to the new circumstances.

Students and teachers have also gone through similar problems as the participants in the processes of urban planning, since a significant part of them had technical difficulties, as well as psychological barriers to the implementation of the new concept of education (Almahasees et al, 2021) (Kulal et al, 2020) (Li and Lalani, 2020). At the same time, efficiency of such education showed less effective than face-to-face learning and teaching. Faculty and students all over the world concluded that online learning challenges lie in adapting to online education, especially for deaf and hard of hearing students, lack of interaction and motivation, technical and Internet issues, data privacy, and security. They also agreed on the advantages of online learning. The benefits were mainly self-learning, low costs, convenience, and flexibility. Even though online learning works as a temporary alternative due to COVID-19, it could not substitute face-to-face learning. The study recommends that blended learning would help in providing a rigorous learning environment. (Almahasees et al, 2021).

IMPLEMENTATION OF THE NEW PARTICIPATION METHODS WITHIN INTERNATIONAL PROJECTS AND EDUCATION

Institute of Architecture and Urban & Spatial planning of Serbia - IAUS, in the period 2018-2021. year, as part of the international INTERREG project from the Danube transnational calls, "ConnectGREEN" (<https://www.facebook.com/connectgreensrbija>) "Management and restoration of ecological corridors as green infrastructure in the Danube Basin", (ConnectGREEN (DTP 072-2.3)- Restoring and managing ecological corridors in mountains as the green infrastructure in the Danube basin "), conducted a series of lectures and interactive workshops and online trainings, round tables and discussions with different age-group stakeholders, from students to experts in different subjects. The project was initiated by WWF Ro (World wildlife fund, Romania) with the aim of determining the migratory corridors of large carnivores and enabling better connectivity and reducing mortality rates of these species by building overhead crossings (eco-ducts or green bridges).

This project served as pilot project of COVID-19 based public participation in Serbia, because its realization demanded constant involvement of stakeholders in all the implementation phases. In the first year of project implementation, public participation was held offline, with the active participation of thirty-six representatives of the relevant stakeholders in Serbia, including the representatives of: four ministries of the Republic of Serbia, NGOs, public enterprises and academic institutions. On three different points (tables) mediators from IAUS were discussing with the groups of ten people about different topics. Representatives were discussing proposed methodologies via world-café participation model and round table discussions, as well as through direct communication with the project leader and team members. After the workshops, participants were engaged via e mail on different subjects.

After the announcement of pandemic of coronavirus disease COVID-19 in early March 2020, project team had to reorganize the participation procedure, strictly following the Arnstein "participation ladder" but adapted for functioning in the online sphere. This fast transition from offline to online sphere was caused by the project obligations which demanded two more organized workshops with the representatives from different institutions,

Information about the new circumstances and work within the project in pandemic were distributed via e-mail, project's web page, as well as newsletters. Participants in the previous workshops were semi-interested in the new way of communication, mostly because of the lack of technical knowledge in working with new technology, as well as sense of discomfort with the communication through internet and different types of conference calls (such as ZOOM, Teams, Skype etc.). Before the online workshops, all the relevant materials and documents on the elaborated subject were distributed to the participants.

Initial communication started via e mail in order to form focus groups for future virtual workshops and round tables. Direct involvement and questioning was initiated through video conference (ZOOM platform) using new technologies of online voting on subject that needed to be queried.

Discussions were realized through unified participation in the same channel of communication, and after experts were divided in several groups depending on the subject of the discussion, and later on brought back again in a single online conference room for defining common conclusions.

In the online sphere, workshops and roundtables had less participants due to technical illiteracy and disability to quickly learn new technologies, as well as psychological barriers which decreased the number of active participants on the second held workshop.

On the third organized workshop (Photo 1), held several months after the second, experts/stakeholders got used to the new circumstances and had better response to the online workshop and round table than on the previous one. Experts overcome the psychological barrier and developed skills for public speaking in front

of the cameras. Also, participants showed more enthusiasm in answering the questions related to the project, which brought better results of the overall discussion and better participation process in the project.

On the other hand, outbreak of COVID-19 also affected organization of the workshops and lectures for the students. Educational workshops represent a type of participative planning that involves organization in several stages, namely: previous education of the group whose opinion is being considered, implementation of the workshop on a specific, selected group of participants and presentation of the most significant research results to the participants. Workshops can be conducted on groups of residents of different ages, educational profile, level of competence, etc.

Online education methods of engagement (Photo 2), as other type of public participation – were also held within project ConnectGREEN.. Team members of the project held lectures online for the students of the Faculty of Architecture of the University of Belgrade, within the subject "Trends in urban infrastructure", and in the master's studies and at the Metropolitan University, Faculty of Applied Ecology - FUTURA, in the subject "Risk Management in environment" at the master's studies. In the aforementioned lectures, the students took an active part in the exchange of opinions, concretization of the problem, consideration of possible scenarios and adequate planning and project solutions. In the conditions of the pandemic, the lectures were held online, however, this did not contribute to a decrease in student engagement, but encouraged them to take a more agile approach in interactive discussions of the observed issue. There were evident obstacles in the implementation of such engagement of students primarily due to the level of (un)familiarity with technology, psychological obstacles in active participation in decision-making in changed circumstances, as well as generalized problems that arose due to the impossibility of continuously holding the workshop due to technical obstacles (interruption of the Internet connection, image delays, etc.), enabling equality in time for expressing individual views, etc. However, despite everything, the workshops were successfully held. As a result of this active participation, the students created a large number of video works for the purpose of promoting and disseminating the results of the project, which had significant success in the international framework.

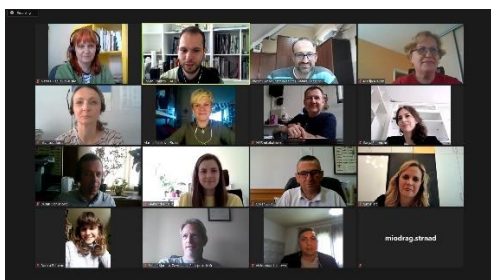


Photo 1. ConnectGREEN online workshops and round tables with experts

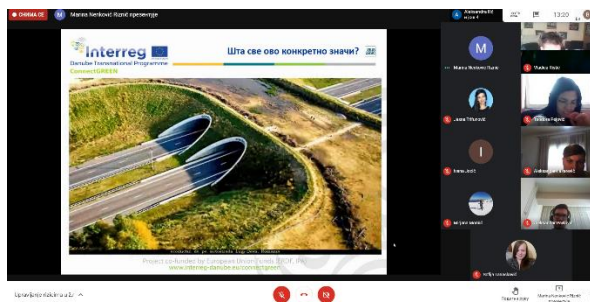


Photo 2. ConnectGREEN online workshops with the students (source: Authors)

CONCLUSION

Participation practice in the pre-pandemic times in spatial, urban and environmental planning process has gone through significant changes not only in terms of migration from offline to online spheres, but also with establishment of new, improved technics and methods that needed to be introduced in order to maintain more or less similar and adequate stakeholders` involvement. Transition from old habits to "new normal" were hard, having in mind small amount of time and level of experts` preparedness for new circumstances. Pandemic surroundings have raised questions of possibilities for continuing active participation activities in a (permanently?) changed environment and defining new, hybrid ways of engaging stakeholders in participatory planning activities.

New, adapted and improved participatory tools and instruments were introduced, opening new opportunities for the active participation of experts in projects of wider community importance, and on the different parts of the world, making territorial distance no longer an obstacle for stakeholders` involvement. Potentials for further improvements are now officially revealed through new directions for the development of the participatory process, based on the old matrixes

ConnectGREEN project and its` experiences on the new public participation processes can be used as an adequate polygon for newly established practice, with all the presented obstacles and advantages.

Taking into account the results of research carried out at one international project, and later verified at

several different international projects, congresses, lectures etc held online during pandemic in 2020, 2021 and 2022., it can be concluded that the best ways of participation are also those that are not oriented exclusively to online or offline mechanisms.

Namely, hybrid forms of participation proved to be the most effective, especially in the post-pandemic era, since they enable overcoming of the communication boundaries from a narrow space to the territory of the whole world. In addition, this leads to significant reduction of fuel consumption needed to overcome distant destinations and, consequently, reducing the carbon footprint. On the other hand, this type of communication allows relaxation of all participants who from their own homes can have a real experience of participating in the conference, lecture or seminar, and that is why it represents future participation in the newly established world setting.

ACKNOWLEDGEMENTS

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BIOPHILIC PATTERN AND APPEARANCE OF LEPENSKI VIR HABITATS

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ABSTRACT

Some of the best strategies for biophilic design are natural forms and patterns. Ivy (*Hedera helix*) is an evergreen creeping plant whose leaf was chosen as a pattern for the biophilic design of the ground plane of Lepenski Vir habitats.

Lepenski Vir is the prehistoric archaeological site on the Danube in Djerdap, Serbia (about 8,000 years old). Its discovery includes the remains of habitat floors.

This appearance of these habitats is based on the answer to the question: 'Why did they build habitats in this manner?' The sun and solar radiation are very important for understanding the purpose of the architecture of Lepenski Vir. The remains of the architecture of Lepenski Vir are the remains of the energy-efficient architecture, which the author has written about before.

In biophilic design, the golden angle of $\varphi=137.507764\dots^\circ$ (golden ratio in a circle) is related to the evolutionary tendency of optimal light capture for maximal photosynthetic activity. This appearance starts with an approximate golden angle construction. Finally, we get the shape of the Lepenski Vir habitat which includes a golden angle, an equilateral triangle 360 in size and a dug square – as one of the possible habitat models of Lepenski Vir.

Key words:

biophilic design, Lepenski Vir habitats, golden angle, ivy (Hedera helix)

BACKGROUND

The biophilic pattern could be the role model for one of the possible habitat models of Lepenski Vir. This paper explains the construction of that habitat model. It should be noted that this is not a reconstruction of any specific individual habitat at Lepenski Vir, but a model according to which those houses built. The final appearance of the Lepenski Vir habitat in the ending has a pyramidal shape embedded in the land.

Biophilia has recently become attractive for application in architecture. There are many definitions of biophilia, but it is certainly not just integrating plants into buildings and houses. Several strategies are paramount in biophilic design in architecture. Some of them are natural forms and natural patterns according to Brazilian architect Sami Meira. 'Hierarchically organized relationships in nature are based on the Fibonacci sequence and the golden ratio as mathematical patterns. (...) if we apply this to a circle this ratio is the golden angle (about 137.5°). This is the approximate angle in the leaves, where sunlight is most efficiently used.' [7]

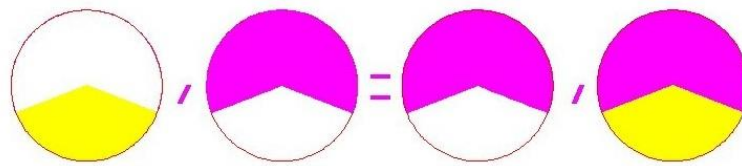


Photo 1. The golden ratio in a circle – the golden angle: $\varphi \approx 137.5^\circ$

This paper shows, step by step, how it was possible to build Lepenski Vir habitats. The appearance of their habitats is based on the answer to the question: 'Why did they build habitats like that?' The sun and solar radiation are very important for understanding the purpose of the architecture of Lepenski Vir. The remains of the architecture on Lepenski Vir are the remains of energy-efficient architecture, which the author has written about before. [10]

SOMETHING ABOUT BIOPHILIA

The theory of biophilia was given by the American biologist Edward O. Wilson in the book 'Biophilia' in 1984 [16]. The idea of biophilic design in architecture arose a little earlier: according to the idea of the Serbian physicist and engineer Branko Lalović, published in Serbian in his book 'The Essential Sun' in 1982, he wrote: 'The basic principle of passive use of solar energy is that the house is built in such a way that it behaves like a flower, like a tulip or a daisy, i.e. that it opens and turns towards the sun, when it is there, and that it is protected by closing when the external conditions are unfavorable.' [4]

The leaves are also very important. They are structured for optimal light capture for maximal photosynthetic activity due to adaptation and survival. 'Our simulations confirmed previous results by showing that the golden angle of 137.5° is indeed optimal for light capture and that morphological traits can influence the light capture curve.' [15] Also, the situation is similar with phyllotaxis: the arrangement of leaves on a stalk. 'What is the root cause of phyllotaxis? The answer is simple. It turns out that this is the type of arrangement of leaves that achieves the maximum influx of solar energy into plants.' [20]

In energy efficiency, for example, HVAC engineers estimate conduction heat loads in winter due to the influence of different intensities of solar radiation on the walls of the room, which are oriented towards individual parts of the world with the addition of Zs. [17] The angle of 135°, which includes orientation of S, SE and SW walls, has Zs = -0.05. This angle is an approximate value of the golden angle. Also, this angle was recently included in the author's project Neolepenism house [11, 12].

The leaves have eccentric design mainly due to capturing sunlight for photosynthesis. In the other hand, the sun gives light and heat from different directions. It is important for the thermal stability of the house. That is why the house should have similar design to the leaf, i.e. it should be eccentric. [9]

Ivy (*Hedera helix*) is the evergreen creeper plant and its leaf was chosen as a pattern for the biophilic design of the ground plane of Lepenski Vir habitats. 'In the flora of Djerdap, relics, endemic, rare and endangered dendro and zest flora varieties are of particular importance. The presence of Tertiary relics in the area of the National Park Djerdap (including ivy) indicates its characteristic relict character.' [1]

Ivy is a Tertiary relic – a survivor from the Tertiary period in geology. It is usually a hardy, sun-loving plant. It's generally considered as a weed plant. Since ivy is a weed plant, humans are familiar with its resilience and flexibility. These properties are important for adaptation and survival. When it encounters an obstacle, it crawls over it and crosses it. Ivy, as very old biological species, is constantly present in the human environment. That is why people know ivy and its property well. Ivy (as well as some other creeper plants) symbolizes fertility and eternity life in some myths and civilizations [16, 23, 25 and 26].

The sun gives us not only light, but also heat. Ivy leaves always find their way to sunlight and survive. This is the idea why the author uses ivy leaf in the construction of the habitat floors. In this appearance of Lepenski Vir habitat, the biophilic pattern and the golden angle were used in the construction, not only as a decoration, but also have a function in achieving thermal stability. An ivy leaf is presented on Photo 2. Its veins have the specific design that can serve as a pattern for the biophilic design of the ground plane of Lepenski Vir habitats. Most of the leaf faces the Sun and therefore makes the most efficient use of sunlight. If you look at Photo 2, you can recognize the golden angle (or something very close to it).



Photo 2. An ivy leaf (*Hedera helix*), its veins and the place of golden angle

BASIC INFORMATION ABOUT THE PREHISTORIC ARCHAEOLOGICAL SITE OF LEPENSKI VIR

Lepenski Vir was discovered in the 1960s. It's settled on the right, Serbian side of the Danube in Djerdap, 15 km upstream from Donji Milanovac or about 160 km downstream from Belgrade. Djerdap UNESCO Global Geopark, because it contains the Lepenski Vir archaeological site, is included in Global Geopark Network in 2020 [2].

The person deserving the greatest merit for the discovery of Lepenski Vir was Dragoslav Srejić, an archaeologist, whose book 'Lepenski Vir – a new prehistoric culture in the Danube region', published in 1969 by SKZ, is the main source of information about this culture [24]. The site is estimated to be about 8,000 years old.

Due to construction of the Djerdap 1 hydroelectric power plant, the original location was submerged, the level of the Danube rose by about 12 m, while the current location was moved by about 150 m, but the original position was maintained. Nowadays, Lepenski Vir is a museum, in a new location.

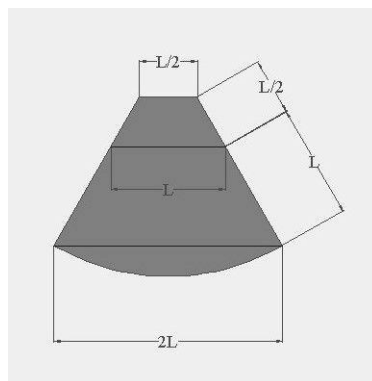


Photo 3. Basis of the Lepenski Vir habitat according to D. Srejić [24]

Only bases of the houses, made from a hardened material resembling concrete, are preserved. The hearth of stone blocks was incorporated in the floor at the entrance of the house as an active heating system. The

third dimension has not been preserved because it was constructed of perishable materials (such as wood, leather, mud...). We can only assume what those houses looked like. The architecture is characterized by houses with the base shaped like a truncated circular sector, with the convex side turned to the river, i.e. sunrise. This shape may also be called a convex trapeze (see Photo 3). The back side is significantly smaller, while the front side is shaped as a circular arch. Lateral sides are inclined. [24]

Many, including D. Srejšović himself, wondered: How did these houses look in reality? Almost nobody asked: What was the point of such construction and why were these houses built like that? [10]

WHY WERE THE LEPENSKI VIR HABITATS BUILT IN THIS MANNER?

The remains of the Lepenski Vir's architecture (about 8,000 years old) indicate to recognizable measures aimed at increasing energy efficiency in buildings implemented in the design and construction of habitats and settlements at this site, which the author has written about before. [10]

In winter time, conduction heat losses were reduced by compact envelope, drying of walls and improvement of thermal insulation properties of materials used for walls by application of solar radiation, which is why favourable orientation was used. Ventilation heat losses were minimized by the favourable aerodynamic shape, orientation, and digging (in the earth). The choice of the location, steep hinterland, orientation, digging and vegetal surroundings enable pleasant living conditions in summer. Energy 'production' (heat and light gains from solar radiation) and energy 'demand' (walls need to be dried in the morning after dew) are well-aligned, which is reflected in the choice of orientation. Outside daily temperatures are the lowest before sunrise. That's why the demands for heating and drying are the greatest in the morning. Then the incidence angles from the Sun are favourable for the morning heating up. Good energy harmonization is achieved due to the predominantly eastward orientation of houses, i.e. towards the river. [10]

In this moment we should mention the words of Serbian archaeologist D. Srejšović and Russian mathematician S. Kovalevskaya: 'Due to the distinct non-historical nature of the architecture of Lepenski Vir, it is tempting to explain the uniqueness of its forms by the specific features of the terrain and space, i.e. natural environment. The connection between architecture and the environment is really obvious. (...) The architecture of Lepenski Vir has something very mathematical in it, i.e. in all its forms the presence of concrete length and certain numbers (...) is felt and corresponds only with the morphology of the city of the far future (...) The architecture of Lepenski Vir just reads its environment, translates its intricate, condensed content into easy-to-understand language...' [24]. 'Note: the content, ideas and concepts are primary, and the form and formulas are secondary' [21].

The role of the Sun and solar radiation at the site is very important to understand the purpose of the architecture of Lepenski Vir. We may conclude, based on the remains of the architecture, that the purpose of such construction was to ensure comfortable conditions in them, taking into consideration energy efficiency in buildings. The remains of architecture in Lepenski Vir are the remains of an energy-efficient architecture [10].

OBJECTIVES; DESIGNING ONE OF THE POSSIBLE HABITAT MODELS OF LEPENSKI VIR

Having in mind the above, the aim is designing one of the possible habitat models of Lepenski Vir. It will be developed in several steps (phases) and starts from a horizontal base-line at the entrance with an initial measure of 360. Digging in the earth behind the base-line and backfilling in front of it are included in all steps for foundation. After building the foundation, we can continue with construction of the skeleton. Further, the methods of construction of the Lepenski Vir habitat will be presented.

METHODS; STEP 1: AN APPROXIMATE GOLDEN ANGLE CONSTRUCTION

The first step is an approximate golden angle construction. In geometry, an exact construction is not possible. However, using approximate proportions, a golden angle construction can be reported with high accuracy that is acceptable in construction of habitat.

The golden angle is $\varphi = 137.507764...^\circ = 2.3999632... \text{ rad.}$

Then the angle is: $\varphi/2 = 68.753882...^\circ = 1.199905038... \text{ rad.}$

The trigonometric tangent function $\varphi/2$ is $\tan(\varphi/2) = 2.5720116082...$

The firstly, we can construct right-angled triangle with legs 18 and 7 which has $\tan(\alpha)$ – the relation of opposite and adjacent leg. This number $18/7=180/70=2.5714285714\dots$ is approximate value of $\tan(\varphi/2)=2.5720116082\dots$. If we compare tangents of these angles ($\varphi/2$ and α), the relative error for tangent is $0.000226685\dots < 0.025\% = 0.25\text{‰}$. Recalculating this for the angles, the error is less than 0.063‰ ! The right-angled triangle with legs 180 and 70 contains half of golden angle with error less than 0.1‰ (See Photo 4 – red colour triangle). The golden angle was got as double right-angled triangle with legs measure 18 and 7. This construction was possible in prehistory. It's a golden angle with very high precision for building house: the error is about 0.1‰ .

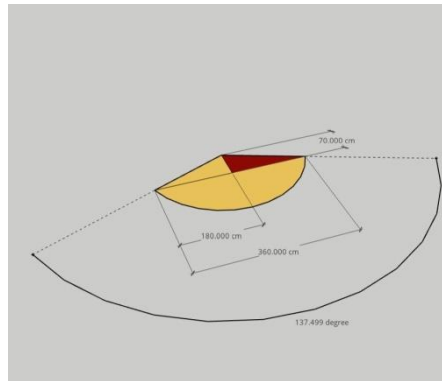


Photo 4. Step 1: An approximate golden angle construction

STEP 2: FURTHER BUILDING OF THE FOUNDATION

Now we have a base-line dimension of 360. If we dig the soil behind the base-line and fill with it in front, we can get the horizontal foundation. The arch of the golden angle is part of the front part of the basis. The part of basis behind the base-line can be obtained if we construct equilateral triangles in two rows. The first row has equilateral triangles 180 in size; the second row there has equilateral triangles 90 in size. With such a construction, we can obtain the point of the orthocentre of a horizontal equilateral triangle measuring 360. Comparing this with the basis by D. Srejović (compare Photos 3 and 5), the front side is more convex. The construction starts from the base-line and from the inside, as D. Srejović suggested [24].

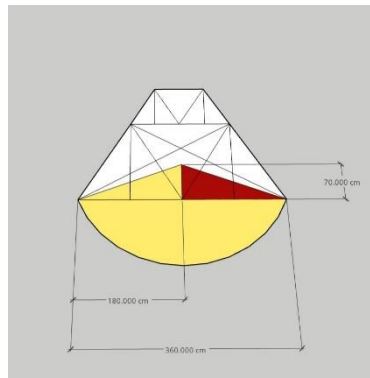


Photo 5. Step 2: Further building of the foundation

STEP 3: THE AUXILIARY VERTICAL STICK

In this moment we are ready to install the auxiliary vertical stick. It prepares the third dimension of the Lepenski Vir habitat. This step can also be done after the fourth step. The height of this stick is the height of the habitat. The bottom of the stick is in the centre of the golden angle. This stick is strictly vertical. The height of this stick is obtained so that the top of stick is also the top of inclined equilateral triangle 360 in size. This inclined equilateral triangle includes the base-line of the foundation.

The height of the stick could be calculated by applying Pythagoreans Theorem, but it could also be obtained geometrically: if the sticks of this inclined equilateral triangle 360 in size are tilted to the strictly vertical stick from the centre of the golden angle that is higher than necessary. Using Pythagorean Theorem, the height of this vertical stick is approximately 304 in dimension (exactly 303.80915...) with the relative error

of about 0.7‰ (see Photo 6). If we don't use Pythagorean Theorem, the apex is where the top of inclined equilateral triangle 360 in size touch the auxiliary vertical stick from the golden angle centre.

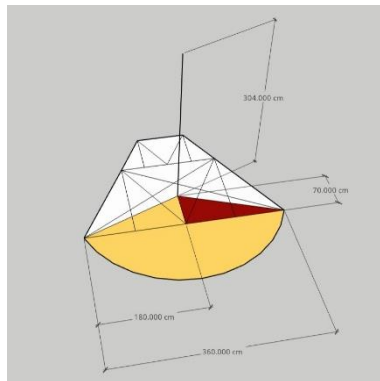


Photo 6. Step 3: The auxiliary vertical stick from the golden angle centre

STEP 4: DIGGING IN THE GROUND AND THE BACKSIDES

All steps of building the foundation of the habitat are followed by digging the earth behind the base-line and fill it in front, while the landscape and the slope of the ground are also included in this shape and appearance. The settlement has a steep hinterland.

D. Srejšović stated that the back side of habitat was dug in the ground up to 1 m (the House 34, [24]). Therefore, the author assumes that the back side is a dug square 90 in size (like a quarter of 360) and that it was a part of the habitat. Photo 7 shows how the foundation is dug into the ground. The reader can see the foundation, the slope of the ground, the dug backside as a square, the place of the hearth (black colour) and the auxiliary vertical stick.

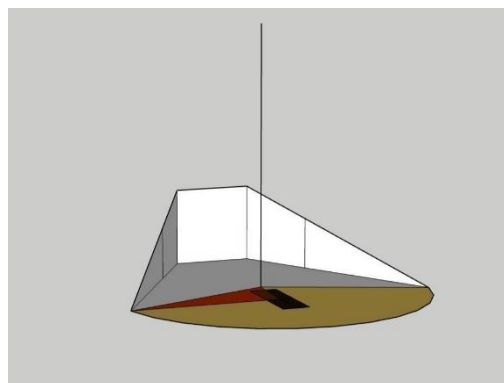


Photo 7. Step 4: Digging in the ground and the backsides

The preserved rectangular hearth is proof that the right-angled triangle was known before. Although the right-angle is not visible in the foundation of the structure of the preserved house floor, it exists in the form of a hearth. The hearth and the dug square in the background are rectangular parts of this biophilic appearance of the Lepenski Vir habitats. In this way, a square 90 in size and an equilateral triangle 360 in size, as ideal geometric figures, are included in the construction of **this** model. Also, measure 360 was used in geometry on Lepenski Vir.

The square 90 in size could be constructed with deviations because the Lepenski Vir site is located in a steep hinterland. Deviations are possible in the construction of individual habitats in relation to the slope of the terrain and include deviations in shape and size.

STEP 5: THE FIRST PART OF THE SKELETON

The next steps comprise construction of the third dimension of the Lepenski Vir habitat. The first next step is a skeleton construction of three sticks. The apex of that is the top of the strictly vertical stick from the golden angle centre from step 3. The two sticks 360 in size are at front and are the part of inclined equilateral triangle 360 in size that includes the base-line. The third stick has its bottom in the orthocentre of the horizontal equilateral triangle 360 in size. The orthocentre is obtained as the intersection of the heights of

the already partially constructed equilateral horizontal triangle, which did not need to be constructed completely. The apex of third stick is the top of the auxiliary vertical stick (See Photos 7 and 8).

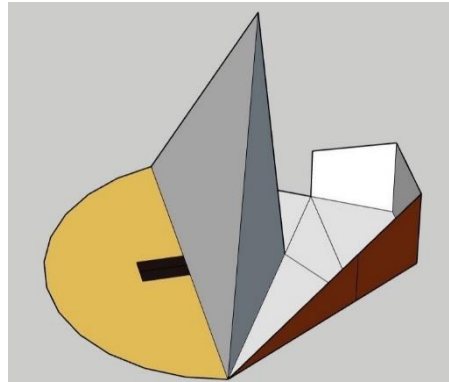


Photo 8. Step 5: The first part of the skeleton

The auxiliary vertical stick could be removed in this step after the construction of the first part of the skeleton or later, due to obtaining more free space in the interior of the habitat. This first part of the skeleton is stronger than the vertical stick skeleton. It has a pyramid shape, can hold more weights and is better from a static point of view.

Architect Predrag Pedja Ristić also had the reconstruction of the Lepenski Vir habitat [22]. His reconstruction did not include the construction of the golden angle. There is no time for further details at this point, but the construction presented in this paper is quite different.

STEP 6: THE SECOND PART OF THE SKELETON

The second part of the skeleton was made of sticks from the apex. It is the starting point for lateral edges of the pyramid-shaped skeleton. The endpoints of these lateral edges are characteristic points on the ground. That's why the back side is dug out like a square. The second part of the skeleton is behind the base-line 360 in size and contains the first part of the skeleton (See Photo 9). The front view of the second part of the skeleton is equilateral triangle 360 in size.

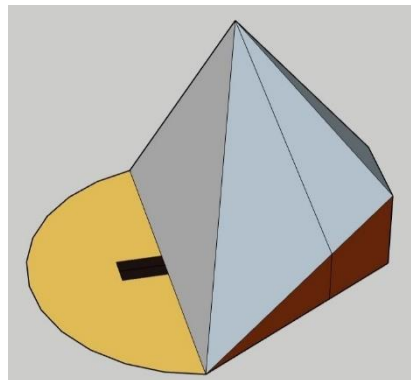


Photo 9. Step 6: The second part of the skeleton

STEP 7: THE THIRD PART OF THE SKELETON

The third part of the skeleton can be obtained by connecting the top of the habitat with the arc of the previously constructed golden angle from step 1. This top is the apex of the upright cone or pyramid. These rods can be at 15° arc spacing. We can consider that the base-line is the diameter of the auxiliary semicircle with $180^\circ = 3 \times 60^\circ$. After that, it is easy to construct the angles of 15° . In this way, it is possible to obtain deviations from this model which include the arc of golden angle. Also, it is possible to get a basis more similar to the basis by D. Srejović, which is less convex. The author considers that his model must include the arc of golden angle. The entrance to the habitat is 60° and it is without sticks at the entrance (See Photo 10).

Near the entrance is a place for a fireplace (black color). The hearth intersects the base-line. There is no roof over the hearth. Now, the view of front side is also pyramidal, but very close to coned form.

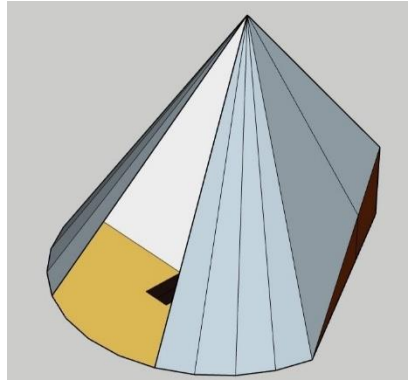


Photo 10. Step 7: The third part of the skeleton

FINDINGS; STEP 8: FINAL APPEARANCE ONE OF THE POSSIBLE HABITAT MODELS OF LEPENSKI VIR

The final appearance of Lepenski Vir habitat could be obtained by carefully removing the auxiliary vertical stick (if not removed in step 5) and the stick from the orthocentre of the unfinished horizontal equilateral triangle 360 in size (See Photos 6, 7 and 8). It enables better functionality of the hearth and increases usability of the living space.

Photos 11, 12 and 13 show the final appearance one of the possible habitat models of Lepenski Vir. The final front view is on Photo 11, the top view is on Photo 12 and the back view of Lepenski Vir habitat is on Photo 13.

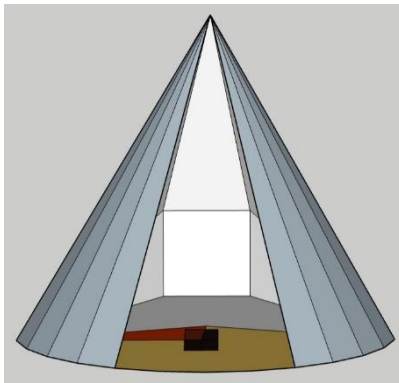


Photo 11. Step 8: The front view

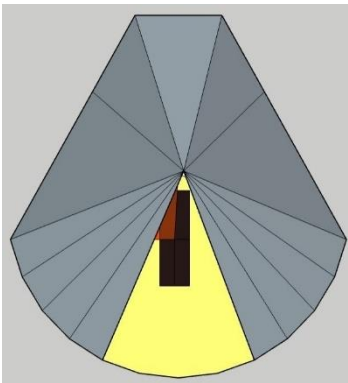


Photo 12. Step 8: The top view

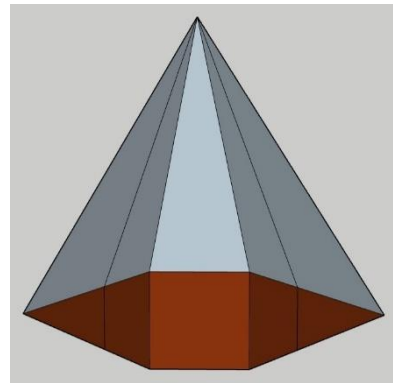


Photo 13. Step 8: The back view

The sticks in the apex can be secured with rope and netting (see Photos 14 and 15) which insure a strong construction. Photo 14 and detail of the apex on Photo 15 presents how it is possible to construct the top of the Lepenski Vir habitat. These two photos are from the National museum in Požarevac (Serbia), where archaeologist Dragan Jacanović materialized prehistoric building techniques. This construction presents the construction of a hearth in Stone Age. A similar technique could be used to construction Lepenski Vir habitat.



Photo 14. Example: the four sticks



Photo 15. Detail of the apex

DISCUSSION; DEVIATION FROM THIS MODEL

These last two photos explain why the preserved front arc side of the Lepenski Vir habitat is less convex than the basis of D. Srejšović and the model from the author. If the basis is less convex, than is easier to obtain and construct the skeleton of this habitat.

With the modified and less convex author's model, the hearth is closer to the entrance and performs a better function. The hearth then works better because it uses a similar principle (as Frank Lloyd Wright) that the heater should be placed under the window. [6] This deviation allows combustion products to escape directly into the atmosphere. The dug back side increases the thermo stability of the habitat and depends on the slope and configuration of the ground.

APPROACHES OF OTHER ARCHITECTS TO THIS TOPIC

The golden ratio was known in ancient Greece. In the Second book of 'Elements' by Euclid (≈325 BC–≈265 BC) 'Continuous division' was mentioned [5]. Later, in Roman age, Vitruvius (80 BC–15 BC) used the anthropomorphic pattern in the Third book on Architecture [3, 18]. At the end of the 15th century and in the first decade of the 16th century, Luca Pacioli (1445–1517) called this relationship 'Di divina proportione' and tried to find its application in architecture. Based on this, Leonardo da Vinci (1452–1519) made a drawing of the 'Vitruvian man' at the end of the 15th century.

Andrea Palladio (1508–1580) was an Italian Renaissance architect. He wrote *The Four Books on Architecture*, published in Venice in 1570 [14]. Palladio's work, based on a detailed study of classical Roman architecture, gives the city of Vicenza (Veneto, Italy) its unique appearance and was included as the UNESCO World Heritage site in 1994 [2]. Palladio was well known in the past by the application of the golden ratio in architecture, especially in the ratio of length to width, and he created the 'Theory of Proportion in Architecture' [13].

Very important for this topic is Frank Lloyd Wright (1867-1959), an American architect. His approach was 'Organic architecture' as a philosophy of architecture that promotes harmony between human habitation and the natural world. Wright is known for adapting the house to the natural environment. Observed from the thermal aspect of construction, the 'Solar semicircle' and 'Prairie houses' stand out from Wright's oeuvre, while a significant theoretical contribution was made by the consideration by the so-called 'Usonian houses'. [8] Frank Lloyd Wright's 20th century architecture was inscribed on the UNESCO World Heritage Site in 2019 [2]. Wright introduced to architecture the principle that heaters must be under windows [6]. A similar principle was used at Lepenski Vir that the hearth was near the entrance. In this model, there is no roof over the hearth (see Photo 12). Combustion products can go directly into the atmosphere without a chimney.

Next is Richard Buckminster Fuller (1895-1983), an American architect, mathematician and inventor. Fuller's most famous invention, the geodesic dome, is related to the field of architecture. The structure of this dome consists of triangles joined together to form a spherical shape (i.e. the shape of a ball or hemisphere). [8, 22] Fuller's certain prior knowledge of mathematics and statics, used for the geodesic dome, enables this construction of Lepenski Vir habitat.

All their approaches are important for this biophilic pattern and appearance of the Lepenski Vir habitats.

CONCLUSION

In this paper, the author presents one of the possible habitat models of Lepenski Vir as the appearance of these houses. This is not a reconstruction of a specific individual habitat of Lepenski Vir but each habitat is a variant of this model depending on the terrain configuration. The resulting appearance is based on the answers to the questions: 'What was the point of such construction and why did they build habitats like that?'

The bases of houses indicate about applied measures of energy efficiency the sense of which may be grasped only when observed within natural (geographic, meteorological, vegetal, and astronomic) surroundings. It was energy-efficient architecture, which the author has written about before. The role of the Sun and solar radiation on the site is very important to understand the purpose of the architecture of Lepenski Vir. That is the reason why the author uses the biophilic pattern and the golden angle in this construction of the Lepenski Vir habitat.

The paper further explains the importance of biophilia and the reasons for its application in architecture. The correct use of solar energy increases the thermal stability of the habitat, and the golden angle and its approximate construction are of great importance. An ivy leaf (*Hedera helix*) was chosen as a pattern for the biophilic design of the ground plane of Lepenski Vir habitats. The house should have a similar design to the leaf, because leaves use the solar energy for photosynthesis and phyllotaxis.

After a brief introduction to the prehistoric archaeological site of Lepenski Vir and the specific reasons why they built habitats in this manner, the author continues with proposal – step by step – how to design one of the possible habitat models of Lepenski Vir. The final appearance of this model includes a pyramidal form, a golden angle, an equilateral triangle 360 in size, a dug square 90 in size and digging in the ground. In this way, a square and an equilateral triangle, as an ideal geometric figures, are included in the construction of this model. Also, the size 360 was used in the geometry of the Lepenski Vir habitat. Materialized prehistoric construction technique in the National museum in Požarevac by D. Jacanović indicates the possibility of such construction.

The deviation of the actual construction from this model depends on the specific location on the site. These deviations enable a better function of the hearth, greater static stability and increase the usability of the interior space.

Approaches to the architecture of Palladio, Wright, Fuller and others are important for this biophilic pattern and appearance of the Lepenski Vir habitat.

The author thinks that his model can facilitate reconstruction of these habitats in practice. Materialization of the author's model awaits its realization. The habitat envelop is assumed to be made of light materials. The architecture of Lepenski Vir was the architecture of the golden angle. This archaeological site is very important for understanding of sustainable development on the planet in the light of energy efficiency in buildings and architecture, saving of energy from fossil fuels for heating and air conditioning of buildings, reduction of greenhouse gas emissions, and prevention of effects of climate changes and global warming in the contemporary age.

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**FRAGILITY AS RESILIENCE:
DESIGNING THE BALANCE OF THE NATURAL AND BUILT ON THE EXAMPLE OF AN OPEN
COMPETITION FOR THE WIDER AREA OF THE HIPPODROME IN BELGRADE**

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ABSTRACT

In a global and local context today, it is difficult to recognize let alone to design a sensitive balance between natural and built, which will enable further development of human activities while developing awareness of the importance of preserving nature, its processes and balance. We must regulate the indisputable pressure to build new capacities of urban tissue with strategies that intertwine built and unbuilt, manmade and natural, into a single mechanism of interaction.

The design concept, which puts the fragility of the named balance in the foreground, enables the spatial-program scenarios of life in cities to be placed in an interdependent relationship with the nature so that the concept of built structure does not rest on the strength of architectural form or technological solution. As a testing ground for studying these issues, we take the winning competition proposal of the urban-architectural competition for the area of the Hippodrome. The competition site belongs to the wider spatial area "Topčider", an especially significant and authentic space since it unites the city's natural, historical and cultural heritage. The competition proposal examines the possibilities for the development of the interconnectedness of nature and the city through the concept of fragility.

Keywords:

fragility, resilience, natural and built, balance, connection.

INTRODUCTION

"Let them be helpless like children, because weakness is a great thing, and strength is nothing. When a man is just born, he is weak and flexible. When he dies, he is hard and insensitive. When a tree is growing, it's tender and pliant. But when it's dry and hard, it dies. Hardness and strength are death's companions. Pliancy and weakness are expressions of the freshness of being. Because what has hardened will never win."¹

Andrei Tarkovsky *Stalker*

Toward the end of the last century, a series of events confirm the synchronization of efforts to improve people's lives and preserve the environment. In June 1992, at The United Nations Conference on Environment and Development (UNCED), also known as the 'Earth Summit', that was held in Rio de Janeiro, more than 178 countries adopted the Rio Declaration on Environment and Development, and the Statement of principles for the Sustainable Management of Forests (Agenda 21), a comprehensive plan of actions to build a global partnership for sustainable development.

In New York, in September 2015, the 2030 Agenda for Sustainable Development was adopted which shows a joint effort to perceive the planet as a whole and to consider both human and non-human agencies responsible for the prosperity of both, people and the planet. The 2030 Agenda for Sustainable Development (Agenda 2030) has a special focus on 'leave no one behind or to secure global commitment to improve the lives of the most vulnerable among us. However, new reports show the fragility of millions of "people caught in crisis".²

In times of pandemic, with the emergence of a new global health crisis that leaves nobody unaffected, we are more than ever aware of the fragility of both humanity and the planet. Relations between people, places, and events are challenged in completely new ways in times of pandemic, and we need new strategies to redefine them. A tangle of successive crises like COVID-19, serial of (local) armed conflicts, and climate change, demands a new multidimensional perspective on the fragility of life and life in fragile contexts.

Tools are needed to frame social and natural complexity, fluidity, interchangeability, and connectedness. In architectural design, we need an ever-renewing set of notions and concepts that include and acknowledge complex socio-material interdependencies.

¹ <https://www.goodreads.com/quotes/314315-let-everything-that-s-been-planned-come-true-let-them-believe>

² <https://odi.org/en/publications/sdg-progress-fragility-crisis-and-leaving-no-one-behind/>

FRAGMENTATION, JOINTS, and WEAKNESSES



Photo 1. Competition entry: A view of the smoothing the context and content of wider area of the Hippodrome

The spatial scope of the competition for the Wider area of the Hippodrome in Belgrade encompasses a complex set of natural and built conditions. The relationship between the parts and the whole of this complex set is perhaps the most important and at the same time the most sensitive point of its further development.

The goal of the competition, as stated in the documentation, is to affirm the potential of the location, in accordance with "spatial restrictions, planning and security directions and development trends"³. The area includes the location of the former Jugopetrol in Radnička Street, the Beograd Hippodrome complex with accompanying facilities, as well as the Sugar Factory complex in Radnička Street. The total area of the area covered by the competition is about 54.6 hectares. The aim of the competition is to present investigations of extreme heterogeneity of the site and research the possibilities for making "a recognizable urban-architectural solution adequate to the importance of the location that corresponds with the wider environment."⁴

The Hippodrome area together with two nearby industrial zones made of the old petroleum industry complex "Jugopetrol" and the old sugar factory "Fabrika šećera" belongs to the Belgrade district Topčider. Topčider represents an extremely valuable and authentic resource as it gathers natural, historical, and cultural heritage throughout the historical epochs of the city. The competition location gains particular importance due to its position between the two biggest natural resources of the city: the park and forest Košutnjak and the river Sava peninsula called Ada Ciganlija. The balance between built tissue and nature

³ https://www.ekapija.com/tenderi/2017/05/12/tCsh_1683552_KonkursnaDokumentacija.pdf

⁴ https://www.ekapija.com/tenderi/2017/05/12/tCsh_1683552_KonkursnaDokumentacija.pdf

becomes the key issue for the future of this particular part of an old European city under severe transformations, but of any contemporary city in general, today.

Therefore, making always new connections between heterogeneous and juxtapositioned parts, resources, agents, structures and events, but through flexible and weak connections, becomes a new possibility for the resilience of the whole. "We must thus make connections, ever more connections." as John Rajchman suggests, naming one of the defining principles of Deleuze's thought. Our task is to always make connections, since they are not already given, Rajchman says⁵.

One of the main challenges of the competition location was to deal with traffic infrastructure representing part of the artery collecting flows from all areas of the city and highways connecting Belgrade regionally and internationally. Newly built large scale bridge over the Ada is part of the mentioned traffic artery so as many of differently elevated traffic lines surrounding and intersecting location in order to enable flows between city center and periphery. Due to the high number of interconnections and types of traffic within the location, the dominant impression is the fragmentary character of its parts that causes disorientation of users and disables pedestrian flows and understanding of the site in its full ambient potential. But this fragmentariness spreads like a field, its incompleteness and indeterminacy open up the possibility for establishing mechanisms of relation, external connections, and the emergence of new composite properties.

External relations of parts allow that parts can be "added, subtracted, and recombined with one another ad infinitum without ever creating or destroying an organic unity".⁶ This model of relations Deleuze and Guattari call "fragmentary whole"⁷ in the book *What is Philosophy?* When parts that make an assemblage are "not pieces of a jigsaw puzzle," but like a "dry-stone wall, and everything holds together only along diverging lines"⁸, they are open to evolving, to making new assemblages, with new properties, as long as there are new interactions, rehearsed through part's capacities.

Without connecting elements or mechanisms of relation and establishing connections, the system becomes less resistant to the ever-changing influencing factors of the context. On the other hand, the diversity of elements/parts that determine the functioning but also the potential of the site expands the field of possibilities for external relations of parts and thus, the organization of always new assemblies. In the design process, through the concept of fragility, we develop consciousness of the fragility of the nature/culture balance, by constructing sets of connections and interrelations, open-ended relation mechanisms, not finite objects or strong forms.

"In contrast to organic unities, for Deleuze and Guattari, assemblages are more like machines, defined solely by their external relations of composition, mixture, and aggregation. In other words, an assemblage is a multiplicity, neither a part nor a whole"⁹

Therefore, we seek to introduce a new set of relations envisioned as an assemblage of the already-built factories and new programmatic and landscape solutions that would make a new set of properties of the site as a whole. Moreover, by interconnecting fragmented parts of the site, this new structure enables flows between the two abovementioned areas of Košutnjak and Ada Ciganlija and in the city as a whole. Through this attempt, the project examines a new set of relations between the city center and the periphery by introducing a multiplicity of things, guided by two continuous recreation-sports-culture programmatic spines allowed by continuous paths and repetition of unbiased constructive and infrastructural frames.

Deleuze and Guattari think about the multiplicity of things coming together over time that constitutes any action, instead of unitary essential things. So they say in *A Thousand Plateaus* (1987): "there are no individual statements, only statement-producing machinic assemblages".¹⁰

⁵ Rajchman, John (2000), *The Deleuze Connections*, MIT Press, pp 4

⁶ Nail, Thomas (2017), *What is an Assemblage?*, SubStance, Volume 46, Number 1, 2017 (Issue 142), pp. 23

⁷ Deleuze; Guattari (1994), *What is Philosophy?*, Columbia University Press, pp 16

⁸ Ibid, pp 23

⁹ Nail, Thomas (2017), *What is an Assemblage?*, SubStance, Volume 46, Number 1, 2017 (Issue 142), pp. 23

¹⁰ Deleuze; Guattari (2008). *A Thousand Plateaus: Capitalism and Schizophrenia*. Continuum, pp36

"In a book, as in all things, there are lines of articulation or segmentarity, strata and territories; but also lines of flight, movements of deterritorialization and destratification. Comparative rates of flow on these lines produce phenomena of relative slowness and viscosity, or, on the contrary, constitutes an assemblage. A book is an assemblage of this kind, and as such is unattributable. It is a multiplicity.¹¹

Thus, the base of the proposal relates to the flows: pedestrian ones, green flows, and flows of proposed programmatic solutions. Intertwining of those flows/lines enables physical, programmatic, and ambient continuity of dispersed parts as they either interconnect parts of the traffic infrastructure or elevate over it at the place where the infrastructure divides the location. Two paths enable connection to each part of the location by pedestrian and bicycle flows.

The first path goes over the highway in order to directly reach the biggest Belgrade natural and recreational area of Ada Ciganlija. Afterwards, the path gathers users throughout reconstructed old industrial complex of The Sugar Factory that hosts cultural programs. Passing The Sugar Factory, the path shortly joins with second flow and enters old Hippodrome area as light landscape structure made of sequence of pavilions crossing the local river.

The second path gathers parts of old petroleum company Jugopetrol and Hippodrome facilities. Its entry part is envisioned as a large platform gathering pedestrian flows from the central square and Radnička street that leads users throughout central open street gallery made of sport and recreation facilities and hotel. Afterword the second path is elevated above the tramline in order to enable users to reach Hippodrome center and public tribune. The second path joins the first one making a loupe around the whole hippodrome area and at the same time connecting users with the Košutnjak.

The greenery is an integral part of both paths as it enables continuity of natural areas, supports already existing parks within the location and assures sun protection throughout pedestrian and bicycle flows as well as in facades treatment.

The important element of the proposal is open public space in the central area between two paths that regulates relation between two industrial zones of Jugopetrol and The Sugar Factory, the first being totally reinvented while the second is kept reconstructed. Here the priority is to enable the collective space that can respond to the massive gatherings and public events. Thus physical treatment of the center is envisioned as a void offering a flexible capacity to the potential activities and events.

The program of horsemanship activity - up to now treated in a way hermetically - would be opened toward wider publics by introduction of paths that lead users independently from the particular purpose of visiting the horse race. Big new tribune enlarges toward the public program by cascades in the background and finally dissolute into the green amphitheater.

In this way, a new auditorium with big capacity that relays on natural topography of the location is shared and equipped with secondary facilities assuring efficiency and activation of surrounding housing areas.

By relying on existing city connections and their further stratification, the proposal attempts to improve flows, join natural areas, and emerge new properties of the site and new event possibilities, making an assemblage of s own, but at the same time making a connecting mechanism/joint for the city as a whole.

¹¹ Ibid, (3-4)

CONCEPT of FRAGILITY in architectural design_ WEAK ASSEMBLAGES

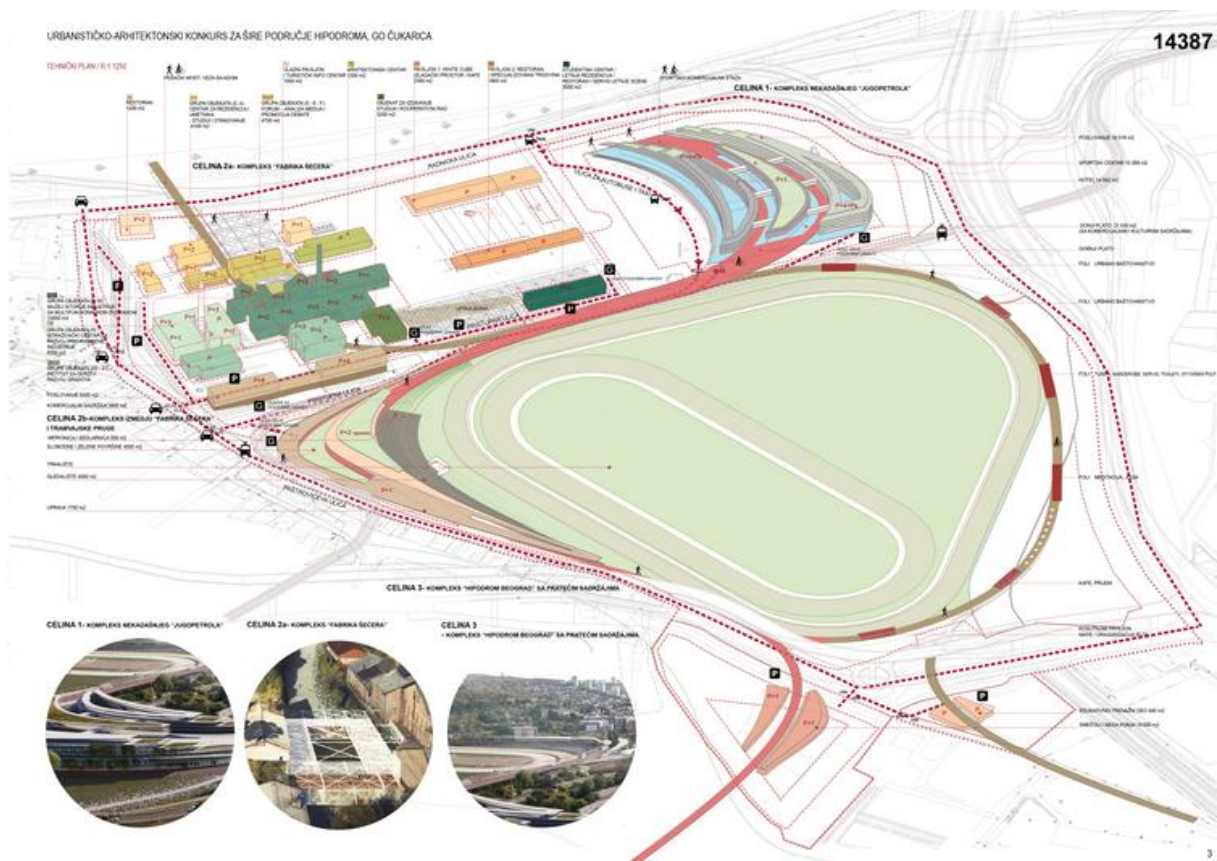


Photo 2. Competition entry: Scheme of path's and program's fluidity, interchangeability, and connectedness

Architect Kengo Kuma influenced by a destructive tsunami off the Pacific coast, formulates an interesting theory of architecture - through its weakness. Kuma dissolves the perception of the solidity of architecture in his experiments by breaking down the strength of architectural form, through the segmentation of the building material. Thoughtful treatment of the material through tracing its weak points, their joints as mechanisms of relations, and ways of their disintegration and reintegration, makes Kuma's architecture "disappear", or "be erased".

Kuma's ambition to erase architecture refers to the permeation of nature and culture to that extent so that new properties are born from their external relation, in other words, to make an assemblage of nature-culture emerge. In that way, architecture loses its solidity in interdependencies. Kuma makes weak joints of parts to make a resistant whole.

The key topic of the Wider area of the Hippodrome in Belgrade project is the relationship between parts and the whole, which is precisely the subject of assemblage theory. Key to assemblage theory is the relationship between part and whole.

If we join the parts together but in such a way that their assembly cannot be reduced to any of the individual parts, so that there is something more than the simple sum of the parts, their union creates something that does not exist in the elements separated by themselves.

Some agglomerations of parts are just simple collections, they are not assemblies, because they do not have new, special properties, properties that are not found only in parts. In order to create an assemblage, parts must interact with one another, in a way to the assemblage gets properties on its own, properties that are irreducible to the properties of the parts. Assemblages in this version can be applied to social and natural contexts by the words of Manuel de Landa. So, assemblage is a whole that is irreducible and decomposable.

The concept of assemblage was set by Deleuze precisely in relation to the concept of totality of Hegel, precisely like a counterpart.¹² Deleuze conceptualizes this term through the difference in the relationship of parts within the whole. Relationships of interiority are relations that constitute the terms of the relationship by the very fact that they are related. Their characteristics and identity are defined by the relationships themselves. They do not exist without relationships, they cannot be separated because when they are separated they are not the same as they were in the relationship. So, totality has emergence properties but is not decomposable. It is the sameness, an inseparable whole.

Smoothing over the differences in the definition of the concepts of assemblage by Deleuze and Gattari in the book *A Thousand Plateaus*, Manuel de Landa sets up his own theory of assemblage¹³. For him, the assemblage is a novelty because it also has the property of decomposition. Relations in which it is possible to separate the whole into separate parts he calls: the relationship of exteriority. The relationship of exteriority means that the parts retain their own identity in relations so that they can be pulled out of one assemblage and plugged in in another assemblage. They are not fused into the assemblage.

But in those external relations of the parts, new properties emerge, so the emergent property is a property of a whole that arises from the constant interactions between its parts. The parts must interact and exercise their capacities and must be actual, emergent properties disappear without that exercise. So, apart from that, they do not exist in separate parts without interaction, emergent properties are imminent in the parts. When component parts stop interacting, emergent properties disappear. They are not transcendent, not beyond the parts but in the interaction of the parts. Another important feature of the assemblage is decomposability.

The difference between capacities and properties is crucial for De Landa's interpretation of Deleuze's notion of assembly. The parts have their properties that are permanent and do not depend on the interaction, but the interaction is rehearsed capacity, specific to that interaction. On the counterpart, in Hegelian wholeness the parts have no properties without interactions, in Hegelian totality properties of parts themselves are defined by interactions, which would make relationships of interiority: relationships that do constitute the identity of the parts.¹⁴

"The general logic of assemblages implies the rejection of unity in favor of multiplicity, and the rejection of essence in favor of events"¹⁵, Deleuze describes as their invention of the concept of the assemblage in *A Thousand Plateaus*. The general logic of the competition entry, therefore, was to recognize capacities for new relations of all component parts of the existing site, and to rehearse their interaction in order to make always new connections, first of all, physical and then programmatic and ambient continuity.

The landscape path creates a connection between the natural surroundings and the event space on particular site. It is building a "bridge" over Radnička Street to establish a direct connection with Ada Ciganlija and naturally accepts the flow of people from that already well-developed city picnic area. Since the capacities of Ada are already small compared to the interest of the users, we saw the expansion and spilling of this content on, and over, the subject location as a natural need. By creating this physical connection, the complex of the former "Sugar Factory" achieves a new level of accessibility. In addition to users coming from the picnic area, the footbridge from the future shopping center "Ada Mall" flows onto the pedestrian overpass, so the planned cultural content becomes maximally exposed to all groups of users, especially those who did not specifically go to the cultural content. We consider this type of indirect and collateral connections to be particularly valuable for all types of non-commercial programs that are essential for the development of society and the city but are slowly suffocating under the pressure of consumer models of modern life. We consider the approach of cultural contents to the segment of entertainment, recreation and hospitality-tourism programs as the only possible sustainable concept for the development of culture.

The landscape path passes at the level above the grounds of the old factory, but at the level of the entrance to the new cultural facilities of the reconstructed complex. Furthermore, it creates extensions to the public space (platforms, squares, tribunes) that activate free and green space. The goal of this opening is to achieve

¹² Deleuze, Parnet (1987). *Dialogues*. Columbia University Press,

¹³ DeLanda (2006). *A New Philosophy of Society: Assemblage Theory and Social Complexity*. Continuum

¹⁴ DeLanda (2006). *A New Philosophy of Society: Assemblage Theory and Social Complexity*. Continuum

¹⁵ Nail, Thomas (2017), What is an Assemblage?, *SubStance*, Volume 46, Number 1, 2017 (Issue 142)

an environment that can support the public life in the city and the social interaction of groups of people who are usually separated or rarely in contact, with minimal intervention (temporary structures and landscaping). We see the landscape path as a catalyst for new connections between social groups through activities that are common to all: being in nature, in the square, or the agora where there are always possibilities for new events (cafes and pavilions with flexible purposes).¹⁶

Connecting Ada Ciganlija via the old factory complex and further along the green belt between the racetrack and the traffic loop, the landscape path ends at the south-eastern edge of the Hippodrome, where it connects with another sports-commercial flow, allowing users to make circle at the location and return to Ada via the sports and recreational path. With the other branches that separate from the meeting point of the two mentioned paths, it is possible to continue to the south of the site across the plot on which the supporting facilities of the Hippodrome complex are located, and towards Košutnjak in the direction of a future possible path that will create a connection with the sports facilities of the Košutnjak park.

The second flow is enabled by the structure that is developed from the outskirts of the former "Jugopetrol" facility, through the sports and recreational path to the Hippodrome complex. This second flow is a combined structure that again unites elements of landscaping and manifolds belonging to the "Jugopetrol" and the "Hipodrom" sites. The path enters the facilities on both mentioned microunits and forms extensions - plateaus - in contact with the facilities. So it can be said that the second flow actually consists of a path-platform that climbs from the square in front of/next to the new facility of the "Jugopetrol" unit at an elevation above the ground (elevation 85m above sea level) that bridges the tram route (which remains at an elevation below the projected path-platform) and in this way achieves continuity between the north-west and south-east parts of the competition area, which were completely separated by the tram route until now.

Enchantment of relational capacities of the site, was executed both externally and internally, making connections between all existing spatial fragments on one level that unites all movements from all peripheral directions toward the site, as well as movements between all contents of all interior parts of the site in question.

¹⁶ The landscape path is, above all, an intervention from the domain of landscape design, which along the course, from time to time, has temporary structures that change purpose, such as multi-purpose pavilions in the park (folie) where equipment can be sheltered, a temporary event/workshop can be organized or basic facilities can be provided for recreational area, without disturbing the natural environment.

CONCLUSION



Photo 3. Competition entry: Multiplicity of events by week space-program joints

Multiplicity that opens up for events, as a general logic of a project, was questioned through every aspect of the design from programmatic to infrastructural and constructive. Multiplicity of flows of people, events, and space was examined. The first flow is opened by the construction of a landscape path, which connects the north-west with the southeast of the site, and the second flow is opened by a sports-recreational path that makes an arc from the north-east to the south-west edge of the competition area.

The planned new structure of the "Jugopetrol" - "Hippodrome" flow gathers all the built and un-built elements of the context and introduces them into an assemblage that can make relations to elements of the existing infrastructure in terms of its dimensions. By introducing a system that is of the same scale (size) as the form of the bridge with its associated approaches, a dialogue with the context is realized and not a separation from it or its negation.

The mentioned assemblage consists of new facilities on the units "Jugopetrol" and "Hipodrom", a sports-commercial track/plateau that connects them and provides access to the field on both units; as well as greenery, which is an integral part of this system, because without the continuity of the natural fabric, the basic idea of connecting all found elements of the context, among which Nature is the most important, would be violated. The greenery that follows the structure of the sports-commercial track and the facilities on both units, in addition to continuing the natural environment, achieves an important result in the field of sustainability of the structure. It provides natural protection from the sun along the track and on the facades of the buildings, while on the entire "Hippodrome" the existing old greenery becomes the basic parameter for the perforation of the sports-commercial path. In this way, the flow of people and events is achieved, but smoothly, so that natural heritage is emphasized, and opened toward a network of paths that enable its more active use.

The character of new built tissue of "Jugopetrol"- "Hipodrom" connection is therefore fluid following the functional determinants of the requested programs. The main facility of the "Hippodrome" complex is

determined by the geometry of the new, significantly enlarged tribune (which integrates the protected objects of the royal tribunes and the grand tribune), which also enables significant capacities for parking and service spaces in the slope between the tribunes and the tracks. At the highest elevation of the plateau, the basic programme of the "Hippodrome" is expanded with mix use and commercial programs, located on an extended platform that arises from the sports and recreational path. In this way, the sports program is opened and popularized to a wider group of users, who did not know much about equestrian sports, nor did they come specifically for it.

These collateral effects of making always new connections, new relations, that are rehearsed capacities of existing parts of the context, we find as project content. Collateral effects are weak in structure, they are fragile as they exist only while a relation is actual. This approach, which always recognizes the relational capacities of all existing parts of the context, respecting their heterogeneity and autonomy, and tracing possibilities for weak joins, would be an open-ended model that can survive all controllable or collateral events in the city development.

Fragile movements of connections, and connecting manifolds of landscape and buildings, achieve sustainability of the whole. In the new event scenario, this location must not repeat the existing errors of program isolation and non-activation, due to which the physical structure is devastated, and the programs die.

"Flexibility and softness are the embodiment of life. That which has become hard shall not triumph."

Andrei Tarkovsky *Stalker*¹⁷

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¹⁷ <https://www.imdb.com/title/tt0079944/characters/nm0435289>

INTERIORITY AS A CONCEPTUAL APPARATUS – THE RELATIONSHIP BETWEEN INTERIOR, ARCHITECTURE AND URBAN

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ABSTRACT

The subject of this paper is the research of interiority as a concept that occupies an increasingly important place in the contemporary discourse of the history and theory of interior design.

Interiority is explored through its historical and parallel development in relation to the concept of the interior, from which its basic meaning as the subjective life of the individual in the interior is derived. The paper presupposes additional and derived meanings that represent the interior as a state and phenomenon, inherent to the interior, which can be produced. In this way, the interior enables the potential overcoming of the boundaries of interior design as a discipline and presupposes new correlations with architecture and urbanism. Theoretical models of interiority research are presented through a comparative analysis of the works of three authors who problematize the issue of interior from different aspects: Peter Eisenman - architect and theorist of architecture, Charles Rice, historian of architecture and interior and Richard Sennett urban sociologist.

The term "conceptual apparatus" was introduced in this paper in order to research and encompass the theoretical and practical aspects of interior design as a discipline in order to conceptually define and produce interiority.

Keywords:

interiority, conceptual apparatus, architectural interiority, household formation, urban interiority

INTRODUCTION

Interiority as a term and as a concept in the last ten years occupies a significant place in the discourse of the emerging history and theory of the interior discipline. The issue of interior design as a theoretical, practical and pedagogical discipline is positioned in relation to the issue of architecture as a discipline. Suzie Attwill in search of an answer to the questions "what is an interior?" (in theory), "what is interior design?" (in pedagogy) and "who is an interior designer?" (in practice) at the beginning of the 21st century, believes that architecture was a creative, we would add and a formal, restriction to establish the interior as a separate profession during the 20th century, adding that architecture is changing in terms of structure and that the division "inside" and "from the outside" cannot be seen as a given. (Attwill 2007 : 11) Vlad Ionescu raises the question of the "architectural status" of the interior, underlining that in the history of architecture there is a dominant view that the interior is a special aspect of architectural design, but at the same time there are a number of studies documenting that the identity of the interior as a discipline developed separately from the structure of the architectural object. (Ionescu 2018 : 33)

We understand the practices of architecture and interior design in an expanded sense, as disciplines that are constantly re-examining their boundaries. We believe that interior design practice today is in the same position that sculpture was in when Rosalind Krauss wrote the essay "Sculpture in an Expanded Field" (1979).¹ Kraus recorded the moment when the sculpture examines its scale and relationships of its own internal and external spaces and what is inherent in the discipline itself in relation to architecture, the city, the landscape. Interior practice observed in this way becomes an "expanded field" of examining one's own potential and nature beyond the limits set by the architectural space - it becomes urban, ephemeral and interdisciplinary, while what is inherent in the discipline itself, the concept of "interiority" in the newly established framework brings and acquires new determinants.

In the thematic framework set in such a way as to connect the interior with the urban space in the context of interiority, a multidisciplinary approach is necessary that includes urban, architectural and interior theoretical and artistic-practical research, as well as research into the concept of interiority and its meanings in the humanistic disciplines from which it originates to artistic discipline, architecture and interior, in which it is implemented.

If we accept the definition of interiority offered by the "Oxford English Dictionary" as "qualitative characteristics of the interior", that is, the qualitative characteristics that "being inside" implies, we can understand its use and operationalization in the theory as something that is inherent in the interior and qualitative aspects of interior, defined as interior space, which is traditionally the primary subject of study in this discipline. Also, we can hypothesize that the qualitative characteristics of the interior are to some extent a consequence of the quantitative characteristics of the interior, that is, the formal characteristics of the interior that we can translate into certain design methods, procedures and strategies of the interior as a practice. Design strategies defined in this way should serve to find formal elements and their relationships in order to produce interiority. The production of interiority in this way does not have to be related to the interior of the architectural object, but can be produced and belong to the urban space. The superposition of theoretical and practical research and the simultaneous production of interiority hints at the possibility of establishing interiority as a specific pedagogical practice.

THE RELATIONSHIP BETWEEN INTERIOR AND INTERIORITY. ETYMOLOGY.

The previously offered definition of interiority as a "qualitative characteristic of the inside" or a qualitative characteristic of "being inside" also implies additional derived meanings. The concept of interiority historically developed in parallel with the emergence and transformations of the interior as a concept and phenomenon. Charles Rice, theoretician and historian of architecture in his book *The Emergence of the Interior: Architecture, Modernity, Domesticity* (2007) analyzes the creation of the interior through a comparative analysis of the linguistic development of the term offered in the "Oxford English Dictionary" and the manifestations of those linguistic and semantic transformations of the term through examples from the history and theory of architecture, art and literature. Rice records the use of the word interior in the late fourteenth century in the simple sense of the inner separated from the outer, or the spiritual and inner nature of the soul. At the beginning of the nineteenth century, the term interior acquired "architectural status" as the meaning of the interior of an object or room, with Rice particularly emphasizing the context of its artistic effects - as an artistic construction that covers the interior space within architecture. The second and simultaneous meaning of the term implies a picture of the representation of the interior of the

¹ Rosalind Krauss, "Sculpture in the Expanded Field", October 8, (Cambridge: October 8: MIT Press for The Institute for Architecture and Urban Studies, 1979)

object or room, that is, a picture that will provide that artistic effect of the interior as a specific object of design. Also, there was a third meaning in circulation, which in the theatre implies a two-dimensional background or a set that shows the interior of a building or room (scenography, mise-en-scène). Rice follows a similar semantic change in the French "intériour", which manifests itself through the "separation" of the interior from the interior space of architecture in the work of architects Charles Percier and Pierre Fontaine² and their book from 1801, *Recueil de décorations intérieures*, as well as through usage in the German language in the early nineteenth century. Rice finds the first use of the term interior in relation to the household in the portfolio, from 1807, of Thomas Hope,³ a British architect. The interior thus emerges as a physical three-dimensional space, but also as a picture. This "doubleness" of interior meaning, which Rice sees as crucial, implies an interdependence between image and space, neither of which is primary. The mentioned "duplicity" arises as a new phenomenon of the 19th century and as a consequence of the beginnings of modern housing. In this way, the interior emerges as a new "topos" of subjective interiority and frames the newly articulated and widespread desire for privacy and comfort, for the consolidation of gendered, familiar and established roles in the everyday life of the family and opens the way to the breakthrough of the consumerist culture that defined acceptable domesticated arrangements that have demonstrated acceptable norms as well as practices of self-representation in the context of domesticated life. (Rice 2007: 2-11) This characterization of the domesticated interior has shown a certain stability up to the present day. With the development of domesticated life and interior, interiority is understood on the one hand as the subjectivity of the individual (inhabitant of the domesticated interior) and defines cognitive, emotional, i.e. psychological and philosophical "matter", and on the other hand it refers to the physical interior of the object and the defined spatial conditions of the interior.

THEORETICAL MODELS - RESEARCH INTO INTERIORITY PRACTICES

The theoretical models of interiority research are presented through a comparative analysis of the works of three authors who problematize the issue of interiority from different aspects: Peter Eisenman - architect and theoretician of architecture, Charles Rice, historian of architecture and interiors, and Richard Sennett, urban sociologist.

THE INTERIORITY OF PETER EISENMAN'S ARCHITECTURE

The concept of architectural interiority is introduced into the discourse of architecture by Peter Eisenmann in the book *Diagram Diaries* (1999), which represents a sort of chronicle of his design-philosophy documenting the close connection between architectural practice and theoretical work from the earliest projects to the late nineties. The book testifies to a certain continuity and importance of diagrams in the history of architecture, but primarily the importance of diagrams as a tool in the work of this architect. Diagrams in Eisenman's work represent a theoretical and critical method of research (critical practice), but at the same time a tool that enables and represents a record of the design-process of architectural interiority.

Eisenmann distinguishes between three types of diagrams:

1. "diagrams of anteriority", which represent records of previously accumulated knowledge about architecture that is represented through diagrams. Eisenman suggests that the question of the diagram can be asked in the context of the historical tradition of architecture starting from the Renaissance to the modern movement in architecture. (Eisenmann 1999 : 36-43)

² Charles Percier (1764 Paris - 1838 Paris) and Pierre Fontaine (1762, Pontoise, France - 1853 Paris), French architects and interior designers who carried out a number of projects during the reign of Napoleon I and developed the so-called Imperial style in interior design, which was written about in the book "Recueil de décorations intérieures" in 1801.

³ Thomas Hope (1769 - 1831) British architect and author of the book "Household Furniture and Interior Decoration" from 1807.

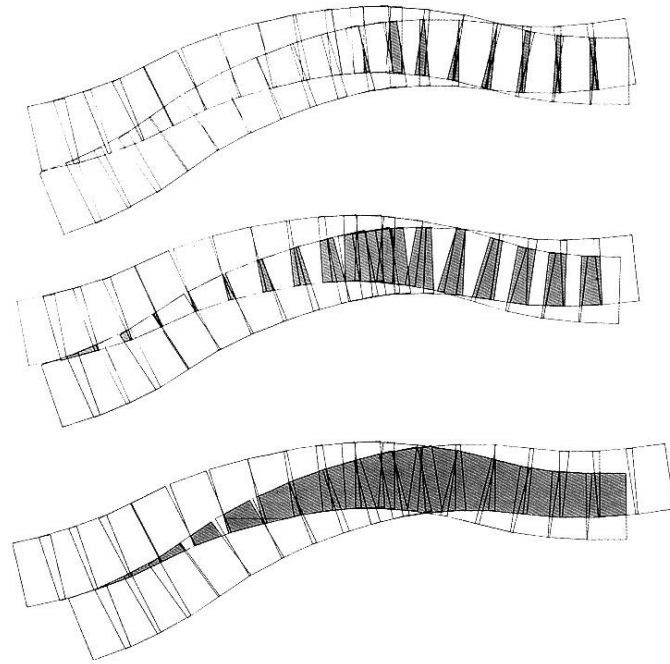


Photo 1. Peter Eisenman. Shifting Repetition, Aronoff Center, Interiority: Grids.
Source: Eisenmann, Peter. *Diagram Diaries*. London: Thames & Hudson, 1999, 54.

2. "diagrams of interiority" represent the process of research and the record of the process of finding the relationship between a specific building and its inherent architectural interiority in a series of projects that were created from 1966-1983. The interiority of architecture and interiority diagrams represent a special subject of research in this work, and we will deal with them in the rest of the text, outside of the proposed classification. (Eisenmann 1999: 49-93)

3. "exteriority diagrams" served to develop a series of Eisenman projects from the late 1970s to the 1990s based on intentions that are external to the architectural object itself, unlike "interiority diagrams". Underlining the evolution of diagrams of exteriority in his work, but also their specific importance within certain architectural strategies, Eisenman analyzes successive periods and revises some of the most characteristic processes such as scaling, superposition, extrusion and embossing, folding, transformation and grafting, then spatial relations - between, interspace, blur, and language components like text and trace. (Eisenmann 1999: 164-209)

The interiority of architecture and diagrams of interiority as its record are of particular importance for the subject of research because as theoretical and practical models, they are included in what we previously defined as the conceptual apparatus of interiority.

Eisenman, analyzing the work of Rudolph Wittkower⁴ and Colin Rowe,⁵ observes that through diagrams they dealt with the articulation of formal principles in architecture and that the result of these research is the architectural form as a stable and a priori state, he begins the questioning of the (formal) form in architecture using diagrams. Eisenman "displaces" the notion of form from the traditionally assumed necessary relations with function, meaning and aesthetics, without at the same time denying the existence of these conditions. The act of displacement is crucial in the development of Eisenman's diagrammatic process and differs from Rowe's and Whitcover's understanding of the formal, but also from the understanding of form within the Modern Movement, which implied that form follows function. Formally, the interiority of architecture is viewed differently from a stable set of forms and suggests possibilities for its conceptual, critical diagramming, as well as the possibilities of diagramming the previously existing instabilities of this interiority. (Photo 1)

In the context of research into the interiority of architecture, the diagram had multiple roles, on the one hand, it was a way of searching and designing the design process, on the other hand, it was an indicator of

⁴ Rudolf Wittkower (1901-1971), a British historian of art and architecture, especially dealt with the history of Renaissance and Baroque architecture and art.

⁵ Colin Rowe (1920-1999), British-American historian, critic, theorist and professor of architecture.

a logical and rational process, which according to Eisenman is more connected to the architectural process, and finally, it explained the results of the process. The diagram simultaneously finds and explains the singular relationships between the interiority of architecture and a specific object, in this case ten of Eisenman's experimental houses that were created in the period 1966 to 1983.

THE EMERGENCE OF THE DOMESTICATED INTERIOR OF CHARLES RICE AND THE RELATIONSHIP WITH THE THEORY OF ARCHITECTURE

Charles Rice, whose work is discussed previously, the emergence of domesticated interior linked to special conditions that enabled its conceptualization in the 19th century. Rice relied heavily on the work of Walter Benjamin⁶ and his unfinished work on the history of modernity, i.e. the history of the 19th century *The Arcade Project*, in which Benjamin set the interior as a kind of "topos" of modernity, as a special place through which it can be understood problems of modernity in western culture.

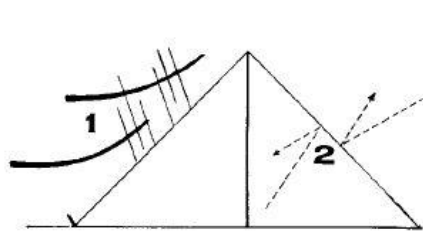
"For the private individual, the place of dwelling is for the first time opposed to the place of work. The former constitutes itself as the interior. Its complement is the office. The private individual, who in the office has to deal with reality, needs the domestic interior to sustain him in his illusions. This necessity is all the more pressing since he has no intention of allowing his commercial considerations to impinge on social ones. In the formation of his private environment, both are kept out. From this arise the phantasmagorias of the interior - which, for the private man, represents the universe. In the interior, he brings together the far away and the long ago. His living room is a box in the theater of the world." (Benjamin 1999: 8-9)

Through a series of vignettes, Benjamin examines the question of the interior as a problem of modernity, through the idea of enclosure, closure, whereby the interior becomes a thing that absolutely surrounds the body and being, a space in which "traces" are left. In one of his famous sentences, he says "to dwell means to leave traces". (Benjamin 1999: 8) According to Benjamin, the interior becomes a kind of compensation, because as he claims, the inhabitants of the interior of the 19th century left traces in it due to the anonymity of the city and the impossibility of leaving traces on the hard surfaces of the developing metropolis.

In a lecture held in 2012 at the AA School of Architecture in London, Rice talks about the relationship between domesticated interior and the theory and practice of architecture, arguing that the interior is constantly present in architectural culture and a constant problem within architecture. Rice claims that the domesticated interior, as a framework of life, presides over a kind of encounter with architecture and that it always comes before and provides a framework for the encounter. (Rice 2012)

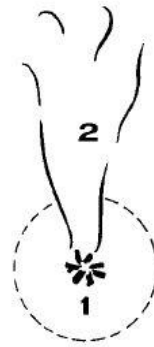
On the other hand, Rice problematizes the relationship between architectural theory and the interior through the theory of four fundamental elements of architecture: *the heart* (derived from the idea of a primitive hut), *the roof*, *the enclosure*, and *the mound*. of the German architect and theoretician Gottfried Semper from 1851. Of the four mentioned elements, Semper particularly emphasized the idea of *enclosure*. In a kind of construction of the myth about the origin of architecture, he explains that enclosure was provided through textiles, soft things woven from cloth and wicker, and that the idea of enclosure conceptually preceded the idea of a *frame*. Rice claims that such an argument could be made precisely thanks to the emerging concept of the domesticated interior in the 19th century, which can be loaded into the proposed theory, thus confirming Rice's claim that the domesticated comes before the architecture that frames the enclosure. The structural support of the architecture is opposed by the soft textile fence of the presumed mythical interior. The interior is understood as something separate and within the architecture, as such, through Semper's theory, it requires a primary position in the central theoretical discourse of the architecture of the 19th century.

⁶ Walter Benjamin (1892 - 1940) German intellectual of Jewish origin, philosopher, cultural theorist, sociologist, literary critic, translator and essayist.



Environmental behaviour of a tent.

1. Tent membrane deflects wind and excludes rain
2. Reflects most radiation, retaining internal heat, excluding solar heat, maintaining privacy



Environmental conditions around a camp fire.

1. Zone of radiant heat and light
2. Downwind trail of warmed air and smoke

Photo 2. Reyner Banham, Two Types of Space Organization, illustration,

Source: Banham, Reyner. *The architecture of the well-tempered environment*. London: The Architectural Press, 1969, 18-19.

Rice contrasts Semper's fundamental myth about the origin of architecture with Rayner Banham's⁷ myth from 1969, published in the book *The architecture of the well-tempered environment*, which assumes different versions of boundaries and the creation of spatial conditions. Banham assumes two possibilities for the mythical tribe's behavior in relation to wood as a material and source of energy that exists in its environment. The first implies that the mythical tribe collected material from the environment and began to build permanent tent-like structures. In this model, Banham recognizes the development of great civilizations up to the present day, those that have shaped world architecture and demonstratively relied on the construction of massive buildings to fulfil their existential needs, both physical and psychological. Such cultures that organize their environment by means of massive structures tend to visualize a space that is bounded by walls, floors and ceilings, assuming already defined relations of architecture and interior. In contrast to these societies, Banham hypothesizes a mythical tribe that did not build permanent structures but grouped its activities around a central focus - a source of water, the shade of a tree, a fire, or a great teacher - that inhabited a space whose outer boundaries were vague, adjustable in relation to functional needs, and often irregular. It is this second version of the myth that conveys the idea of enclosure and enclosure as an atmosphere that gathers and creates different social and political possibilities, more mobile and nomadic, closely related to environmental conditions. (Banham 1969: 18-28) The proposed alternative version of the myth of the origin of architecture assumes new potentials for researching the concepts of interior and interiority in relation to external space through connection with the concepts of territory, atmosphere, spatial gradation, as emerging concepts in contemporary architectural discourse. (Photo 2)

URBAN INTERIORITY BY RICHARD SENNETT

Urban sociologist Richard Sennett⁸ problematizes the relationship between interior and interiority through the relationship between physical space and subjectivity, giving a new look at the idea of domesticated interior through a lecture held as part of an architecture symposium at Harvard entitled "Interior Matters". Sennett's research is related to the relationship between internal and external space (interior and exterior space) in relation to the subjective, offering a new reading of what he calls the "standard standpoint". During the 15th and 16th centuries, the interior space was not differentiated, people slept and dined in the same rooms, there was no private room where people could have an intimate life, stating that according to Lawrence Stone,⁹ even sexuality was not private experience in such interior. The next phase in the standard point of view is linked to the 18th century and the European bourgeoisie through the emergence of a new type of interior in which there is a segregation of functions, especially the separation of sleep from other activities, thus creating a space that is not intended for the public or visitors. This kind of private space, as

⁷ Peter Reyner Banham, (1922-1988) British critic, theorist and professor of architecture.

⁸ Richard Sennett (1943 -), American urban sociologist

⁹ Lawrence Stone (1919-1999) English historian of the early modern era, his research is related to the history of family life.

we saw with Benjamin and Rice, allowed the development of a free subjectivity within the confines of a private domesticated space. Interiority, according to this point of view, is related to the familiar, domesticated and interior space that becomes a space of openness, honesty, a space in which its inhabitants show what they really are - in the physical sense and in the sense of intimate behavior.

To this point of view, Sennett contrasts the claims of Georg Simmel¹⁰ presented in the essay *Metropolis and Mental Life* from 1903. Analyzing the shopping street *Potsdamer Platz* in Berlin, Simmel posits what Sennett calls "street theory." Simmel claims that there is excessive physical stimulation on the street and that the behavior of people in such an environment corresponds to what he calls "blasé". On the one hand, this behavior creates a certain "mask" that articulates rational behavior and manifests it as a certain indifference and neutrality towards the outside, on the other hand, "behind the mask" subjective feelings are expressed when they are exposed to the external stimulation of the street. Sennett calls this division in perception "the urban point of view of interiority", i.e., "urban subjectivity" which is related to external, city, urban conditions. (Sennett 2017: 13) Sennett elaborates this thesis of subjectivity and intimacy by comparing the relationship between the domesticated interior and the urban space in relation to the position of women in Muslim cultures, arguing that the space of the interior can become a "space of the tyranny of intimacy", while the street represents a space of anonymity and the freedom associated with it. The segment states a conversation with a woman from Cairo who wears a burqa: "do you know what going out on the street allows me, as long as I'm covered, to become free from my mother and children". (Sennett 2017: 14)

Moving to the European context, the question arises as to what kind of interiority and subjectivity people get outside the space of the interior. Sennett sets an illustration of "being alone in a public space" through the example of Edgar Degas' painting "Absinthe"¹¹ which, apart from being an example of "urban subjectivity", also opens the question of how privacy affects public space and public interior and its furnishing through table transformations as pieces of furniture. In the 18th century, pubs were equipped with long communal tables, while in the 19th century, long tables were gradually replaced by smaller and individual tables that are more receptive to an individual's stay. In this context, Sennett criticizes the "tacit consensus of urban planners and urban designers" in accepting the ideology of contemporary urban strategies and designs that advocate the importance of community, its strengthening and building in public spaces in the "Jane Jacobs - feel good with your neighbour" sensibility.¹² Such an ideology is blind to the aspects of urban interiority that imply the possibility of free "cruising of the observer" and unhindered "self-reflection" of the individual in the public space in order to temporarily free himself from the constraints of the intimacy of the domesticated interior. Sennett proposes an expanded meaning of interiority that belongs to the individual who produces subjectivity, regardless of whether it is external space as urban space or internal space as interior. This kind of understanding of interiority implies revising urban design practices and opening them up to new typologies of urban interiority spaces.

¹⁰ Georg Simmel (1858-1918) German sociologist, philosopher and critic.

¹¹ Edgar Degas (1834-1917) French Impressionist painter, work "L'Absinthe" or according to the original name "Dans un Café" from 1875-76.

¹² Jane Jacobs (1916-2006) American-Canadian journalist, theorist and author in the fields of urban studies, sociology and economics in the book "Death and Life of Great American Cities" sums up the thesis of urban renewal through the reactivation of the neighbourhood and the traditional urban block as the main physical element and guarantor of social cohesion. Džejn Džejkobs, *Smrt i život velikih američkih gradova*, prevod Minja Janković (Novi Sad: Mediteran Publishing, 2011)

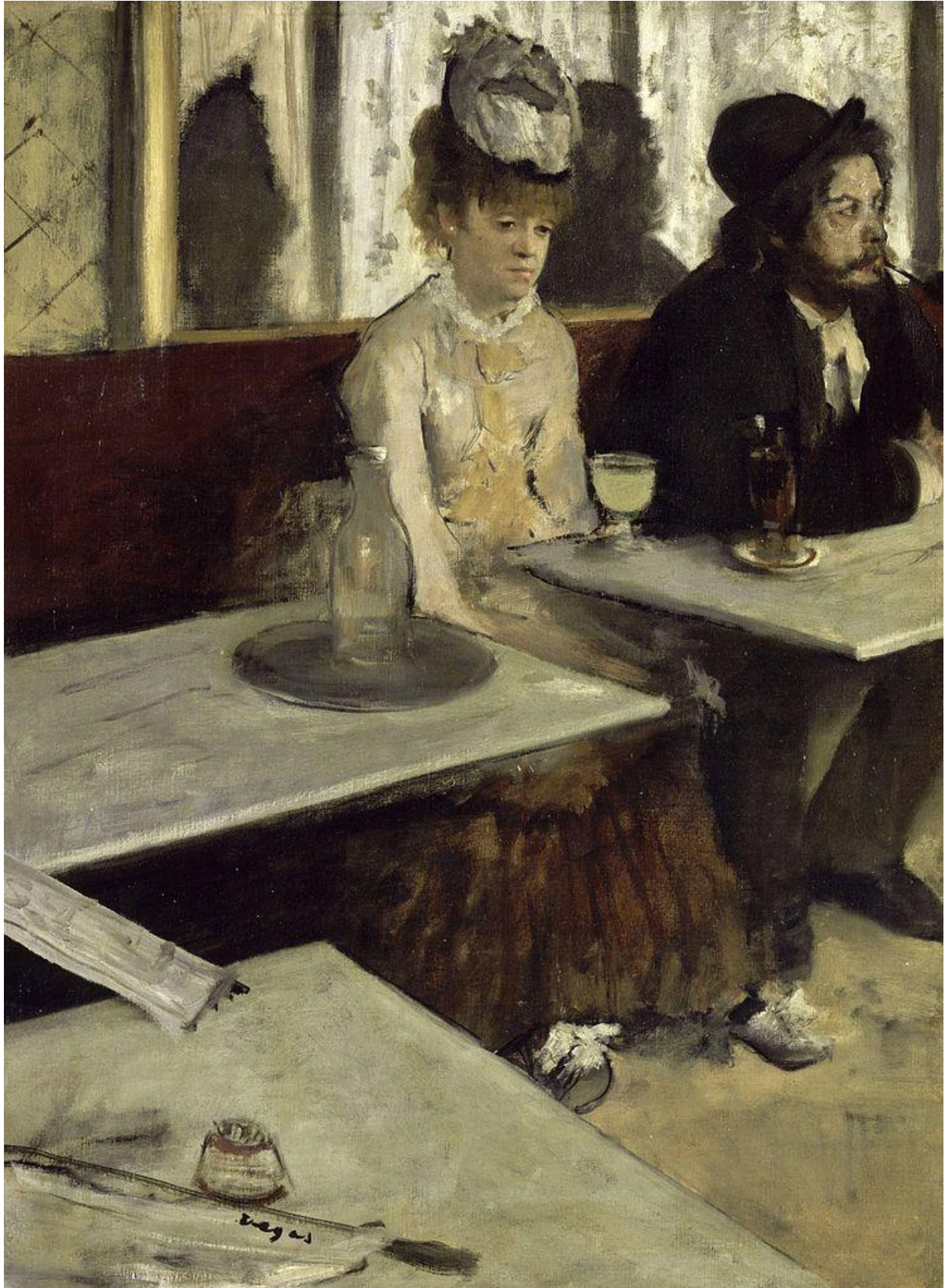


Photo 3. Edgar Degas, Absinthe, 1875–1876, oil on canvas,
Source: http://art-degas.com/degas_1870_80.html, accessed: 26.9.2022.

CONCLUDING CONSIDERATIONS

Based on the presented conceptual, theoretical and practical models that make up the conceptual apparatus of interiority, we can conclude that the structure, determination and division into outside and inside (objects, spaces and beings) cannot be set as a given and a static phenomenon. In a theoretical sense, the usual meaning, cognitive and topological position, appearance and need for a border are examined in relation to scale and subjective perception. Interiority, initially defined as the state and nature of the inner space, gets an expanded meaning that includes a series of quantitative and qualitative aspects and meanings of "being inside" that represent subjectivity in all its dimensions. We conclude that interiority is deeply determined by the outside-inside relationship in a broader sense and on multiple levels of "existential space" simultaneously, which we can also consider as levels of interiority. It is determined by spatial components, elements of architecture in a material and immaterial sense.

The indicated connection of the interior with the urban space in the context of interiority is the basis for further research in that direction. In this sense, the work hints at the necessity of a multidisciplinary approach that includes urban, architectural and interior theoretical and artistic-practical research, as well as further research into the concept of interiority and its meanings in the social humanistic disciplines from which it originates and the artistic disciplines - architecture and interior in which it is implemented.

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SCENIC FUNCTION OF PARTIZAN SQUARE – TOWN SQUARE IN UZICE

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ABSTRACT

The text problematizes the scenic function of the Partisan Square (Užice) in the context of the space in which it is located and during the ideology and history in which it was created. The subject of the research are various newspaper articles collected in a document called "Appendix or Book before the book", as well as other reports and texts. Partisan Square was built in the period from 1958-1961. yr. and is considered to be a unique phenomenon in Yugoslav architecture. The architecture of the square will be analyzed through the prism the attitude of citizens towards it then and now. Through this analysis, it will be possible to draw a conclusion why the architecture of the square has changed and what is the role and importance of the scenic function of square. The aim of the paper is to point out the use of public space, as a place from where various means, similar to those on the stage, communicate or send messages to the population. The paper examines the architectural elements of the space, from which it can be concluded what was the primary role of the square and in what way it was placed to the public.

INTRODUCTION

The paper will analyze Partisan Square in Užice through the prism of stage function. If we observe the city and its specific parts, we can recognize them as spaces from which a certain message is transmitted or sent. Placed elements, symbols, artistry of those spaces were designed in a similar way as the scene. In this sense, the work will try to interpret what are the scenic elements of the square, how they interact with each other, and in what way they communicate with the users of the space. In many cases, the scenic function of architecture is subordinated to the political situation, that is, to the ruling regime, which educates and talks about its ideology through symbols and elements.

The 1950s and 1960s were marked by the reconstruction and construction of new buildings in the state that was destroyed by the war. Apartments were built for those who were left without them during the war, while in parallel with this, industry grew stronger, so industrial and commercial facilities appeared. The priority was the administrative buildings that were supposed to be the seat of the newly formed socialist government. Some of the more significant buildings that were built in this period are public buildings such as the SIV building, the Central Committee building, the "Yugoslavia" hotel, etc.

An important project from this period is the Partisan Square in Užice, the work of the author Stanko Mandić, created in the period from 1958 to 1961. Architect Mihajlo Mitrović describes this project in the following words: "The Partisan Square in Užice was one of the most representative achievements by which Yugoslavia was presented to the world and by which the world recognized Yugoslavia." (Mitrović 2014:8)



Photo 1. Partisan Square in Užice,
Register of modern architecture and urbanism in Serbia 1945-1900, Društvo arhitekata Beograda – Docomoma Srbija,
Beograd 2018. pg. 239, collection of Miloš Jurišić

After the end of the war, Užice was one of the first cities in Serbia to start working on an urban plan. In the spring of 1945, conceptual sketches of the urban solution were made. That task was given to them by the Ministry of Construction of Serbia, Department for Settlement and Landscaping, arch. Ružica Ilić and arch. Miladin Prljević. Later, arch. Ružica Ilić took over all the work. On January 19, 1955, the People's Committee of the city municipality accepted the urban planning and regulatory solution for the inner city center of Užice, which was designed by the architect Ružica Ilić. At the session of the People's Committee of the municipality, held on April 9, 1957, the People's Committee of the municipality, on the proposal of the Council for Communal Affairs, rejected the submitted city plan project. Then the work on the regulatory plan was done by a group of experts: arch. Stanko Mandić, arch. Bratislav Stojanović, arch. Dragoljub Jovanović, arch. Milorad Pantović, arch. Ilija Mičić and arch. Mića Radovanović. Soon the arch. Stanko Mandić remained alone at a time when intensive work was being done on the elaborations for the construction of the square. By decision of the People's Committee of the municipality of Titovo Užice, on November 1, 1958,

the project of arch. Stanko Mandić was adopted and the implementation began.

The conceptual project covers the area between Serdar Mičić Street (from the newly designed Slanuška Street to Birčaninova), Birčaninova, Strahinjića Bana, Uremovački Potok (to the newly designed Slanuška Street) and the newly designed Slanuška Street, through the former Artillery Circle. The projected contents of the building that made up the square included: 330 apartments, a city department store, an exhibition hall, bars, a city tavern, a cinema, a branch of the National Bank, the Memorial House (theatre, library with premises for social organizations) and the Command Division building. The free space of the Square consisted of a pedestrian area, lawns and a memorial park in connection with the Memorial House. The dominant motif of the Square and the entire city area was supposed to be the Josip Broz Tito Monument, placed in a prominent place of the square, as a standing figure 4.75 meters high, the work of Professor Fran Krnišić, a sculptor from Zagreb. (Nacionalne radna grupa 2003: 1-9)



Photo 2. Partisan Square in Užice,
<https://aas.org.rs/mihailo-mitrovic-intervju/>, July 2022.

HISTORY OF UŽICE SQUARES

Užice formed its urban physiognomy at the end of the 19th century. Unlike other cities in Serbia at the time, Užice had a large number of specialized market spaces that would eventually turn into squares. On the city plan from 1891, there were five open public spaces. Markets were in operation only one day a week so these spaces were in reality city squares. The most important of these markets was the "Grain Market", at the head of which was the building of the Užice municipality. All the most important manifestations were held in this area, political party gatherings, town fairs, etc. (Jovanović 2012:4)

The construction of a new square on the old site of the Grain Market encouraged many conflicting views. The probable reason for this is that in the historical record the most important square must have been Saint Sava Square. In terms of its urban and historical values and content, it has remained so. The new square was created after the Second World War. The square was designed to meet the purpose of a ceremonial stage for political and party needs. The construction of the square and the reconstruction of the city was understood as the imposition of the values and power of the socialist society. Such actions caused the awareness among the citizens that something is changing in the spirit of the city. The construction of public space on a monumental scale suppressed the old values and spaces of their existence. St. Sava Square remained in its place, while the new square relied on the urban structure of the public space. (Milivojević 2011:/12-13)

The task of the Partisan Square was also to preserve the memory of the tragic events in the Second World War when the Republic of Užice was a free place in Europe, governed by Nazism. The first beginnings of the new government were organized in the Republic of Užice. In light of this, the square was not only a city public space, but also a memorial space. (Lazović 2011:/13)

CREATION OF THE PARTISAN SQUARE

The construction of Partisan Square began with the residential building on the south side on May 6, 1958. In order to approach the execution of the task as effectively as possible, the People's Committee of the Municipality of Titovo Užice formed the Committee for the Construction of the Square on October 31, 1958. As the work expanded and accelerated, the same body later made a decision to establish the Directorate for Square Construction. This Directorate operated as part of the People's Committee of the municipality. After this decision of the Board, the Directorate for the construction of the Square started its work on August 1, 1960. Local companies as well as companies from all over Yugoslavia participated in the construction of the square. From May 1958 to the beginning of June 1961, 2,014,929 effective working hours were spent on the construction of the Memorial Square. In the area where the square was built, 70 residential buildings inhabited by 121 apartment users, 405 family members and 51 business premises, were demolished. Due to the lack of time and the fixed deadline for the completion of all works on the square, the main projects could not all be completely finished before the construction of the building began, so it was decided to entrust the construction of the projects to a group of experts from Belgrade, who are headed by the chief designer, arch. Stanko Mandić, worked on the project in parallel with the execution of the works. All projects and details were handled by the design office of the construction company "Zlatibor" from Užice, which the People's Committee of the municipality designated as the contractor on September 23, 1958. Since the board was not able to fully ensure the relocation of tenants and the clearing of the land, the construction of the Square went on in parallel with this in stages. (Lazović 2011:/13)

Since July 1961, Partizana Square has housed a monument to President Josip Broz Tito, the work of Zagreb sculptor Fran Kršinić, while the floor mosaic contains a plan of the old Užice market. On the building on the south side of Partizan Square, there is the "Partisan Monument", made in mosaic by the painter Marinko Benzon. The north side of the Partisan Square is closed by the Memorial House, which houses the National Theater and the building of social organizations. (Poznanović /:5)



Photo 3. The unveiling of the monument in 1961,
<https://infoera.rs/2021/07/12/otvaranje-trga-pre-60-godina-najvece-uzicko-slavlje>, July 2022.

Partisan Square was opened at the celebration of two decades since the beginning of the Uprising in Yugoslavia. This manifestation was one of the largest in the former Yugoslavia, and was held on July 3, 1961. Josip Broz Tito spoke at the event, and about 200,000 people, 24 foreign ambassadors and chargé d'affaires from 15 countries attended. The celebration was followed by 200 journalists, and it was filmed by American and English television.¹

¹ <https://www.politika.rs/sr/clanak/330918/Srbija/Trg-partizana-nestao-u-prevodu>, July 2022.

JOSIP BROZ TITO MONUMENT

During his life, Josip Broz Tito collaborated with artists from different spheres. The way in which Tito's figure will be presented through different types of artworks, how it will look and what message it will send to the public was carefully chosen so that the later use of that "symbol" would become a recognizable part and an important content of the ruling ideology. Only a small number of artists had the privilege of making their contribution and immortalizing the image of Josip Broz Tito. The largest monument to Josip Broz Tito (bigger than the one in Kumrovac) was the work of the Zagreb sculptor Fran Kršinić, which stood in the city center, on the town square, for thirty years.

When he talks about the process of creation of Tito's monument, F. Kršinić says the following: "I made about thirty, maybe fifty sketches." The topic was the Uprising, the task: to cover the topic in one figure. The only possible figure on this topic was - Tito. I understood - such a figure must be given in only one form. I remember the words that were once spoken: Tito is a rock. In one breath, in one block, like a solid rock, massive, calm and at the same time no gesture, no movement, only dignity, determination, monolithic..."(1961 : 4) According to the author of the monument, the inspiration for the work came from a single word Josip Broz Tito often used in his speeches, and that was monolithicity. (Manojlović Pintar 2014:275) The forces of the political regime created their own landscape with such images that glorifies and supports the wider image of the ruling class. With such images, the forces of the political regime created their own landscape that glorifies and supports the wider image of the ruling class.



Photo 4. Modeling of monuments in the studio of sculptor Fran Kršinić, January 1959, Ciganović A. (2013) *Izgradnja Tga partizana u Užicu: Između ideje savremenosti i nesavremenosti*, Izgradnja 67, pg. 495

In June 1961, during the commemoration of the 20th anniversary of the uprising, the monument to the supreme leader was unveiled by Aleksandar Ranković, the then vice president of the Republic. It is interesting to note that at this time in socialist Yugoslavia there was only one other monument to Josip Broz Tito, and that was the sculpture of Josip Broz Tito, the work of sculptor Antun Augustinčić, unveiled in Kumrovac in honor of the Second Congress of Croatia, on November 21, 1958. (Manojlović Pintar 2014:273) Until August 1991, the monument was a recognizable feature of the city of Užice, a common picture from a postcard, an unavoidable "detail" of every event that took place on the town square.

After the collapse of the former SFRY, the monument to Josip Broz Tito, from being an object of admiration, becomes a symbol of a time that should be forgotten and a regime that must be overthrown.² The leaders of the opposition parties called for the demolition of the monument, but it was removed from the town square by the socialists from the convocation of the town assembly at the time on the recommendation of the National Assembly of the Republic of Serbia. The removal of the monument took three days with the help of cranes, cables, cranes and people. "It is better that we move this monument in such a dignified way, so that it does not happen to it like many monuments to some other figures in Europe," explained Milorad Iskrin, the then president of the Executive Council of the Municipal Assembly.³



Photo 5. Removing the Josip Broz Tito Monument,
<https://www.blic.rs/vesti/srbija/titovo-uzice-u-punom-sjaju-marsalov-bronzani-kip-vracaju-na-trg-uzicu/343x90k>, July 2022.

The monument was moved to the courtyard of the Užice museum, and at the end of 2013, the councilors of the city assembly rejected by a majority vote the initiative of Subnor (supported by 4,477 signatures of Užice residents) that the bronze monument of Josip Broz Tito be returned to the square.⁴ In an interview from 2014, when asked whether the statue of Tito should be returned to the square, arch. Mihajlo Mitrović says the following:
"Burning books, demolishing and removing monuments are the highest anti-civilization crime. The famous platitude of the Polish satirist Jirži Lec, who says: "When you demolish monuments, save their plinths!" The honorable and intelligent people of Užice listened to Lec and preserved the plinth. This says it all!"⁵ Since the city assembly on the occasion of the mentioned initiative at the session held on 24.12.2013. made a negative decision the monument is still located in the courtyard of the National Museum.⁶

² <http://www.nin.co.rs/arhiva/2389/2389b.html>, July 2022.

³ Ibidem

⁴ <https://www.politika.rs/sr/clanak/330918/Srbija/Trg-partizana-nestao-u-prevodu>, July 2022.

⁵ <http://aas.org.rs/mihailo-mitrovic-intervju/>, July 2022.

⁶ Ibidem



Photo 6. Josip Broz Tito Monument in the courtyard of the National Museum, Užice, <https://www.danas.rs/vesti/drustvo/dan-mladosti-obezezen-u-uzicu/>, July 2022.

PARTISAN SQUARE AS THE STAGE OF THE SPECTACLE

Scena (Greek) 1. stage; the part of the stage where the play is performed. (Mala enciklopedija prosveta 1986:536) Observed in a figurative sense, public parts of the city possess certain scenic elements that are used in the service of the ruling political elite and represent places of conveying messages, places of events, places of (sub)memories, etc.

In the process of characterizing the modern city, an important place is occupied by the relationship between the physical structure of the built environment, the scenic nature of the object and urban spaces, and the spectacle and spatial shaping of scenic events. Thus, the spectacle represents one of the most important areas of life and an important factor in the character of a modern city. (Dadić Dinulović 2010: I-88)

When we look at the city space as a public scene, accessible to everyone and inevitably involved in the daily life of citizens, we get a convenient platform for communication, that is, a transmitter of the regime's message and ideology in real time and space. Guy Debord in the book "The Society of the Spectacle", in the section "Management of space", speaking about the way in which capitalist society uses urban planning, says the following: "Urbanism, city planning, is a method by which capitalism takes control over the entire natural and human environment. Following the logic of complete domination, capitalism can, and now must, reshape the entire space into its own decor." (Debor 2003:45)

During socialist Yugoslavia, there was a special committee at SUBNOR called the Committee for Marking Historical Monuments of People's Revolution and Uprisings. The aforementioned committee decides to erect a monument to Josip Broz Tito in Užice, given its importance to the people. The mere erection of the monument should have been of sufficient importance to mark the two decades since the uprising. Taking into account that this celebration had a central character in Yugoslavia, it had to be calculated that a large number of people (about 200,000) would attend this ceremony. Due to this need, the problem arises whether the existing square can accommodate the mentioned number of people. It turned out that it couldn't be done, so the idea came up to demolish the Wheat Market and its surroundings and to design the Partisan Square in order to install a monument to Josip Broz Tito. (Cvijović 2011:19)

According to Tatjana Dadić-Dinulović, the designed city is based on a heightened sense of aesthetics and the spectacularization of architecture, which becomes a basic marketing tool. (Dadić Dinulović 2010: I-90) The opening ceremony of Partisan Square was well organized and promoted in various ways. This event was attended by many state and political leaders, as well as ambassadors from 24 countries. Representatives of international veterans' organizations - the World Federation of Ex-Combatants, the International Federation of Participants in the Resistance Movement and the International Confederation of Prisoners of War - arrived in Užice on special buses. All these personalities and events were followed by 200 domestic and foreign journalists. Among the 43 foreign journalists for foreign newspapers and radio stations, there were correspondents from major agencies: AFP, TACC, United Press, New China News Agency, as well as correspondents from French Le Monde and Moscow Pravda, while three foreign television companies

followed the events in the city, the independent British television network ITV, Fox and Tele-News, a US company.

Publishing houses also took part in promoting this event. The tourist association of the region printed a tourist guide so that visitors could discover the interesting things of the Užice region, this was the first tourist-propaganda material published in western Serbia. A series of postage stamps dedicated to Užice and a series of matches were also issued, while Fabrika duvana Sarajevo launched a new package of Titovo Užice cigarettes for this occasion.



Photo 7. Series of postage stamps, Yugoslavia 1961,
<http://frame.goglasi.com/frame?eid=91303922&q=%20U%C5%BDICE>, April 2016.

The telegraphic agency of the new Yugoslavia - TANJUG, published a daily information bulletin in Užice, which for that occasion had a special name - Special Bulletin. The impressions of many famous people who visited Užice and the square at that time speak of the power he left on the observers. (Nacionalne radna grupa 2003: 1-9)

When we analyze the entire composition of the projected square, we see that it is shaped as a unique scene by using the same material as the finishing element. The designer opted for stone as the basic material that was used not only in the paving of the plateau, but this concept is extended to the facades of the National Theater building and the telecommunications center. The main plateau of the square, the building of the National Theater and the monument to Josip Broz Tito are especially united by their visual unity. Likewise, in terms of visual language, the monument and the square form an inseparable whole that we can observe as a scene. This choice of material once again sends a message about the strength and solidity of the ruling regime.

It is necessary to point out the importance of the relationship between the plastic and the background on which it is projected. Regularly distributed relief non-reflective tiles were chosen as the choice of stone for the panel wall of the National Theater. During the reflection of light rays, the light is scattered and broken on the plane, in this way there is no reflective surface that would compete with the sculpture. In this way, the billboard wall represents the ideal background for the monument to Josip Broz Tito. The proportions for the construction of the monument to Josip Broz Tito are harmonized with the built image of the same, so the figure of the president symbolically represents an image of free life and peace. The dynamism in the representation of the character of Josip Broz Tito ceases over time and his strength is enhanced by static poses that were supposed to reflect strength and steadfastness. (Manojlović Pintar 2014:274)

On the other hand, the architect does not use a particularly pronounced high pedestal in order to increase the dominance of the monument, but uses the highest part of the square as a monument pedestal. The figure is supported on the floor of the square by its own bronze foot, above a cascade decorated in abstract schematism and alternation of red and white marble stone, as well as black Goliath schist. The sculpture was placed on the left side in the intersection of the diagonals divided by the golden section and in the axis of the vertical break and the theatrical wall canvas. (Ciganovic 2013:495) The sculpture is placed in such a way that it spans the space, it encompasses the plateau opposite the traditional scheme where the liberator is in the central part of the composition. This shows Josip Broz Tito not only as someone who is dominant in his presence, but also as someone who is close and equal to the people.

In an architectural sense, Trg partizana is shaped according to the proportions of the monuments, which places them in an organic connection. When the architect of the square S. Mandić talks about the monument to Josip Broz Tito on the square, he says the following: "The monument to Marshal Tito in the square as a certain sculptural motif - which requires certain spatial and visual distances for a favorable experience of its plastic values and as a sign of appropriate piety over time, will also be one of benchmarks in finding the spaciousness and size of the square." (Mandić 1959)

CONCLUSION

During the time of the former Yugoslavia, only three squares were considered complete and artistically shaped, the Revolution Square in Ljubljana, the Square in Velenje and the Partisan Square in Užice.⁷ In the period of the 50s and 60s of the 20th century, Užice developed rapidly and tended towards modernization. The city was moving in the direction of modernization, although its inhabitants were not yet ready for such progress. The urban complex of Partizan Square is significant in terms of portraying the image of a regime where different elements of the modernization of the city were used in a certain area. When we look at Trg Partizana, we notice that this square is not in proportion to the needs of the city and the number of its population. Until 1941, Užice had only 8,000 inhabitants. (Milivojević 2011:/12-13) According to the census of the SFRY from 1961, Užice had 46,658 inhabitants, which indicates once again that the proportions of the square were adapted only to the manifestation of the jubilee, and not to the needs of the local population. (Gabeljšek 1994:/)



Photo 8. Shepherd of the sheep on Partizan Square,
<https://www.flickr.com/photos/igoyugo/5701467590/in/album-72157626677212548/>, July 2022.

Each space sends a message and communicates with its users. When we talk about the city space, we can see it as a public presentation of knowledge and power that should educate, animate, ennoble, etc. "The design and system of architectural properties of buildings, the establishment of artistic and architectural language, as well as the urban position of the building, determine the value of the city environment and build a clear language of social and perceptive communication in the city." (Dadić Dinulović 2010: I-90)

Partisan Square is specific in many ways, starting with the composition, the placement of elements in the urban planning solution, the use of materials through the meaning and creation of its individual parts. From the previous text, we see that the monument to Josip Broz Tito was the main actor of the Partisan Square and the starting point from which the square was created, which together with the buildings that surround it form an inseparable whole. All elements of the square were designed to be suitable parts of the scene whose primary role would be to emphasize the importance of the monument. The monument to Josip Broz Tito was placed as the one who rules over everything that happens in that area. Placing the monument as the central actor of the square ignores its memorial character. Kršinić's monument becomes a key identification point of the entire area.

When we analyze the positioning of the monument in relation to the other elements of the square, we can see the designer's effort to make all the elements point to the monument and be at its service. This intervention is particularly noticeable in the design of the National Theater building, whose main facade is oriented towards the open space of the square and which is a kind of stage for the monument. In addition to the aforementioned panel wall, which is located behind the monument, when the monument is viewed from the frontal side, another intervention was made in the lower part of the theater building. When looking at the columns on the theater building, it can be concluded that one column is "missing", that is, that the columns are reduced towards the center of the composition.

⁷ <https://aas.org.rs/mihailo-mitrovic-intervju/>, July 2022.



Photo 9. National Theater of Užice,
<http://www.westsrbia.org/katalog/narodno-pozoriste/>, July 2022.

The pillar that would be among the six existing ones would be located exactly in the direction of the monument to Josip Broz Tito. Thus, in a symbolic sense, we can interpret the monument to Josip Broz Tito as the central pillar and support of the building and the square. This intervention can also be seen in the sketch of the architect Stanko Mandić, who by dragging the axes shows the Josip Broz Monument as the central point of the Partisan Square, so we conclude that the complete regulation of the square is adapted to the monument.

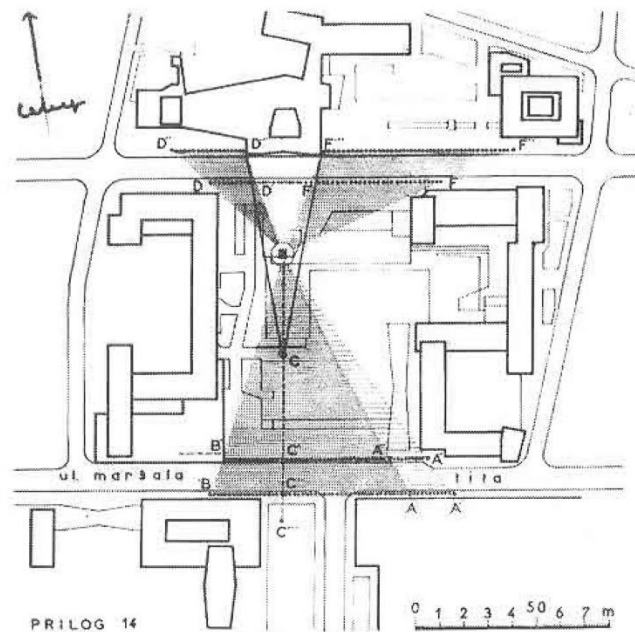


Photo 10. Study of the location of the monument by Stanko Mandić,
 Milivojević D. (2013), „Iz istorije nastanka Trga partizana u Užicu” *Izgradnja*, Udruženje inženjera građevinarstva, geotehnike, arhitekture i urbanista „Izgradnja”, Beograd, 67, pg. 325

Squares have another important component, which is the exception from exclusivity. They are a public space, intended for all social classes and interest groups, they are an integral part of the life of all citizens. Squares are everyday places of passage, but also places where gatherings, street events and other manifestations take place. "Street events are an integral part of the urban scenography for which the city is a material for creation, a participant and a space that speaks, and not just a simple decor." (Dadić Dinulović 2010: I-91)

When we talk about Partizan Square, even though it is a city square, it is a square that does not invite activity, interaction, neither today nor during its creation. On the frontal side of the square is the main city street, which in the SFRY was called, like other main streets in other cities, Maršala Tita Street.⁸ This street was an introduction to all that Trg partizana represented. When we look at the monument to Josip Broz Tito, its position is not centrally oriented on the plateau of the square, but is located on 2/3 of its surface. Two sets of long stairs lead to the monument, which in a solemn and monumental way lead to the figure of the marshal. The size of this space, which represents the "anteroom" for the monument, seems to give the visitor time to prepare for the ceremony of joining the sculpture, but on the other hand, it also reminds him of the strength and power of the regime, putting him in a state of awe. The entire plateau is cascaded and refined with green ambient parts. All objects that are involved in the life of the population are located on the perimeter of the square and in those parts form places of various activities.

The primary role of the Partisan Square that it had at the time of its creation, to glorify the figure of Josip Broz Tito and to be his special stage, was changed over time by the removal of the monument. Therefore, the removal of the monument does not only represent a visual change, but also affects the original ideology of the creation of the square and its function. Taking into account the basic functions of the square, as a place of gathering and communication of citizens, which places them as the main actors of the square, we see that this role on Partizan Square is assigned to the monument, while it places the citizens as an audience brought to the formed stage of the ruling regime. The monumentality of the square had the function of representing the power and strength of the state, not adapting its functionality to the needs of the city.

In this sense it is interesting to mention the performance "Peace" performed by Selma Banić as part of the program "Gathered on Partizan Square" under the slogan, "No Pasaran". The artist performed this intervention precisely on Partizana Square, not far from the place where the monument to Josip Broz Tito once stood. Selma, lying on the pavement of the square, provoked different reactions from passers-by. When she talks about this performance, she says the following: "Public space is a space that should be ours, that should be used together every day in a way that benefits us, the community." I am interested in public space, not as a space of control, but as a space in which we can redefine ourselves, that is, rethink what public space would be."⁹



Photo 11. Repose of Selma Banić

<http://pasaz.rs/mirovanje-selme-banich-u-interakciji-sa-uzickim-osnovcima/>, July 2022.

The creation of the identity of a public space is not only determined by the purpose given to it by its visual representation, but also by the way in which the users of the space communicate with it, as well as by their personal experience of it. Thus, each space is characterized by a set of different identities that form its

⁸ <https://www.politika.rs/scc/clanak/6005/%D0%A2%D0%B8%D1%82%D0%BE%D0%B2-%D0%B3%D1%80%D0%B0%D0%B4->, July 2022.

⁹ <http://pasaz.rs/mirovanje-selme-banich-u-interakciji-sa-uzickim-osnovcima/>, July 2022.

character. Squeres, like scenes, offer a large number of "pictures" that are left to the beholder to evaluate and evaluate. The creation of a new architectural and urban structure of the city, which at that time bore Tito's name, shows that the reshaping of space was another form of socialist projects that defined new forms of society.

The goal of the work was to point out the use of public space, specifically the square, as a place from which to communicate or send a message to the population using different means similar to those on stage. We can conclude that the scenography of the square completely fulfilled the purpose foreseen by the original idea of the intention and need for the creation of the square. The square is subordinated to the glorification of the figure of Josip Broz Tito and represents his own tribute. Today, the square seems to be looking for its main actor, a symbol, an accent of the space or a point of recognition. This problem is still not solved. Most of the proposals for solving the problem refer to the return of the Josip Broz Tito monument to its original place or the placement of some other monument unit in this position. This public space, which may or may not have its own program, can still communicate, that is, be a means of communication, but the question arises in what way and what message should it send today? The removal of the only monument to Josip Broz Tito from the public area of the square left behind an empty space for the new society, which did not find a new symbol to replace the previous one. Partizan Square is similar to other architectural and urban planning units, so the conclusions derived from this example can be useful in any future analysis of a similar topic.

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URBAN REGENERATION OF IVO LOLE RIBARA STREET IN KRAGUJEVAC AS A STRUCTURE THAT SHAPES URBANITY OF MODERN CITY – Teaching-Educational Research

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ABSTRACT

The text problematizes the role of the ambient whole of Ivo Lola Ribara Street (Kragujevac) where its potential is recognized through the aspect of historical values of architectural heritage, important urban position within the old town, possible renewal of buildings through revival of old crafts.

The subject of the research are selected objects within the core of the city of Kragujevac. Teaching-educational research refers to finding proposals and content that would contribute to better use of space through design proposals, but also solving the urban structure in accordance with the changing needs of the population. The aim of this paper is to determine which facilities within the location represent areas of development potential of the city, through greater opportunities than those currently activated.

Critical analysis and parallel observation of the condition of the buildings in 1971 and 2021, in the span of fifty years, shows the intensive and rapid devastation of the buildings in Ivo Lole Ribara Street. This previously conducted analysis becomes the basis for proposed solutions formed as part of the synthesis of two courses - Urban Design and Typology and Art Elements of Traditional Architecture at the Master's Academic Studies of the Department of Interior Architecture, Faculty of Philology and Arts in Kragujevac.

INTRODUCTION

The zone of craft facilities in the former Cara Nikola Street (Ivo Lola Ribara) was dedicated to the development and preservation of crafts in the period from the end of the 19th century to the second half of the 20th century. The ambient whole, which belongs to the old town core of Kragujevac, was selected as the subject of analysis in light of the potential of the structure, which aesthetically, functionally and actively shapes the city's urbanity. Through the research, the potential of the aspect of the *historicity* of the whole is explored, through the application of the methodology of *integrative conservation*,¹ which is based on the recognition of the use value and the adequate use of the cultural heritage. (Jokilehto 2006 : 1) Through the paper the buildings in the subject zone will be viewed and analyzed through the potential use of interior space, the building, the facade, but also the space of the street of which it is an integral part. In order to form an authentic whole, the concept of *historicity* is also viewed as a time span from the period of creation of the ambient whole to the present day. (Jokilehto 1985 : 5-11) (Ротер Благојевић и Николић 2012 : 223)

The economic life of Kragujevac in the second half of the 19th century cannot be imagined without trade and craftsmanship. Craftsmanship, trade and banking will play a major role in the formation and development of the city core - the bazaar of Kragujevac. According to Boriša Radovanović, artisans have always been considered a special layer of the town's population, they were considered the first citizens of the town whose shops were open "from early morning until sunset". Certain trades became the basis for the development of manufacturing. (Радовановић 2012: 26-27) It is often mentioned in the literature that during the first years after Kragujevac was declared the capital in 1818, the craftsmanship could not meet many of the Court's needs. Prince Miloš Obrenović was forced to invite craftsmen from Belgrade, then the center of craft work and trade, or from towns like Jagodina and Šabac. For jobs for which it was not possible to find craftsmen in Serbia, craftsmen from the neighboring Monarchy were invited. In 1836, a census of craftsmen was carried out in Serbia, which recorded that there were 336 of them in Kragujevac. Although Belgrade and Šabac had a larger number of craftsmen than the capital, the proportion of craftsmen in the total population was the highest in Kragujevac, making up 15% of the city's population. (Поповић, Вулетић, Илић 2019: 107-109) The number of craftsmen in Kragujevac according to the type of trade was considered in the hundred-year period, from 1836-1931. year and is presented in the following table. By applying the method of comparative analysis, it can be seen that the number of craftsmen has almost tripled in the observed period. In addition, observing the development of crafts, one can see the change in the socio-political system, where after the liberation from Ottoman rule, new crafts were introduced, but also the names of existing ones were changed. (мумџија у воскар - *candlemaker*, сарач у седлар - *craftsman who makes saddles and other horse equipment*, папуџија у обућар - *cobbler*). The disappearance of certain crafts, especially related to the manufacture and maintenance of weapons such as the reparer of rifles and pistols (налбантски занат) and masters of making and loading kartridges for rifles (фишеџијски занат), is noticeable, and it is also important to mention the introduction of new materials into the craft and the transition from wood processing to metal and sheet metal processing. The greatest novelty of craftsmanship can be seen through the development of masonry crafts such as masons, carpenters, builders, tinsmiths, and locksmiths. The development of food businesses such as pastry makers, butchers, and bakers is also significant. (Table 1.) (Photo 1.)

The question of preserving the authenticity of the ambient whole of Ivo Lola Ribara Street was considered in the earlier research of the author of this work through two considered periods: from the creation of the whole to 1971, which roughly covers a period of one hundred years and the second period from 1971 to 2021, a period of fifty year. The time periods that were specifically considered are 1937 and 1971. In 1937, it was issued "Construction regulations for the city of Kragujevac" („Грађевински правилник за град Крагујевац“) within which the relations between urbanism (street), architecture (object) and interior, i.e. public and private space, especially on the ground floor of the object, were specifically regulated. In 1971, the Institute for the Protection of Cultural Monuments issued the "Elaborate on the Old City Architecture of Kragujevac" („Еlaborат о старој градској архитектури Крагујевца“) in which all important trade and craft facilities within the core of the city of Kragujevac are represented. This study did not contain attachments that would show the original condition of the objects, the detailed history of the object, as well as proposals for further reconstruction. In the future, the Institute for the Protection of Cultural Monuments

¹ Conservation theory and practice, during the second half of the 20th century, in addition to individual buildings and complexes, interest extends to the spatial and ambient units of cities. Integrative conservation as a concept is defined in the *European Charter on Architectural Heritage* (Council of Europe, 1975). In the same year, the *Amsterdam Declaration* elaborated ten principles related to the protection and revitalization of urban and rural areas.

Table 1. Comparative analysis of the development of crafts in Kragujevac in the period of one century (1836-1931). *Number of craftsmen in Kragujevac by type of trade in 1836* (table on the left), source: Поповић, Вулетић, Илић 2019: Р. Поповић, А. Вулетић, П. Илић, *Престони Крагујевац*, Друштво историчара Шумадије: Крагујевац, 109. *Craftsmanship in Kragujevac in 1931* (table on the right), source: *Југословенски дневник*, 1931. год. бр. 96, 35.

#	Врста заната / Type of Craft	Број занатлија / Number of Craftsmans	#	Врста заната / Type of Craft	Број мајстора / Number of Master Craftsmans	Број радника / Number of Workers
1.	Терзијски / Tailor of civilian clothes	85	1.	Грађевинарски / Builder	14	4
2.	Механџијски / Innkeeper	72	2.	Зидар. Тесачки / Mason	25	12
3.	Ђурџијски / Furrier	46	3.	Часовничарски / Watchmaker	10	8
4.	Мутавџијски / Knitter	20	4.	Димничарски / Chimney sweeper	2	6
5.	Абаџијски / Tailor of national clothes - folk costumes	19	5.	Лимарски / Whitesmith	12	22
6.	Папуџијски / Cobbler	18	6.	Ковачки II / Blacksmith	25	10
7.	Болтаџијски / Trader of imported luxury and industrial goods	13	7.	Абаџијски / Tailor of national clothes - folk costumes	30	57
8.	Берберски / Barber	11	8.	Колар-качарски / Woodworkers, a craftsman who makes horse and ox carts out of wood	15	11
9.	Кујунџијски / Silversmith	8	9.	Браварски / Locksmith	20	36
10.	Мумџијски / Candlemaker	7	10.	Ђурџијски / Furrier	8	4
11.	Бојаџијски / Textile dyer	7	11.	Кројачки / Tailor	26	48
12.	Туфегџијски / Gunsmith	6	12.	Поткивачки / Farrier	12	8
13.	Грнчарски / Potter	6	13.	Обућарски / Shoemaker	31	68
14.	Сарачки / A craftsman who makes saddles and other horse equipment	5	14.	Пекарски / Baker	65	52
15.	Табачки / Tanner	4	15.	Берберски / Barber	35	42
16.	Налбантски / Repairer of rifles and pistols	3	16.	Опанчарски / A craftsman who is engaged in hand-made footwear, primarily "opanak"	54	65
17.	Фишеџијски / Masters of making and loading cartridges for rifles	2	17.	Седларски / Saddler	4	10
18.	Чутурџијски / Wooden flasks maker	2	18.	Столарски / Carpenter	18	34
19.	Дуванџијски / Tobacconist	2	19.	Ковачки I / Blacksmith	16	11
Укупно / SUM		336	20.	Воскарски / Candlemaker	6	3
			21.	Лончарски / Metal pot maker	3	2
			22.	Месар-кобасичарски / Butcher	75	52
			23.	Посластичарски / Pastry maker	15	12
			24.	Фотографски / Photograpr	4	6
			25.	Бојаџијски / Textile dyer	9	2
			Укупно / SUM		534	585

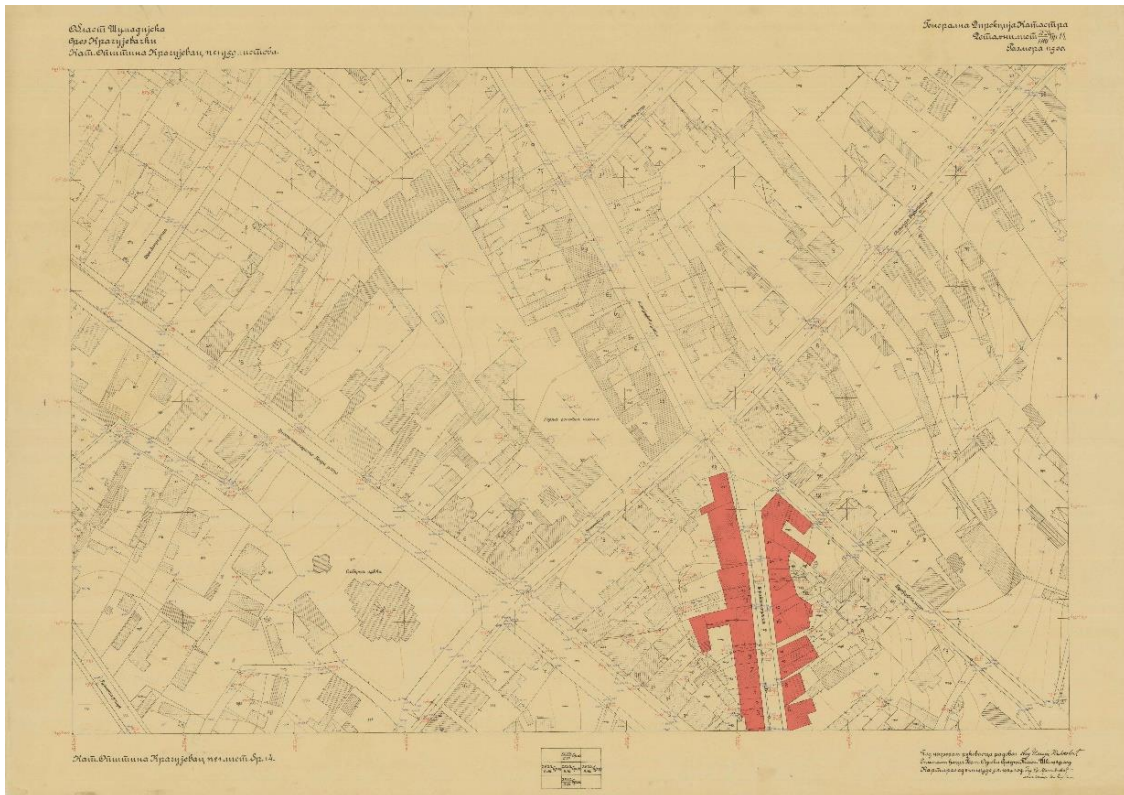


Photo 1. Srez Kragujevački, General Directorate of Cadastre, 1928-1929. (former Cara Nikola street that is Ivo Lole Ribara street is indicated in red), source: PE Urbanism Kragujevac

did not form a detailed proposal for regulations that would regulate the protection of these buildings. Through the mentioned research, the authors concluded that in another, closer to us and shorter time period, 1971-2021, a drastic degradation of the buildings took place, which in most cases does not allow returning to the original state. The authors are of the opinion that it is still possible to recognize and to a greater extent preserve the quality of the ambient whole of Ivo Lola Ribara Street by returning it to its original purposes, modernizing craftsmanship, re-reading and applying the recommendations from the analyzed "Building Regulations for the City of Kragujevac" from 1937 on the integral understanding the relationship between interior design, architecture and urbanism.

PEDAGOGICAL AND EDUCATIONAL RESEARCH - CONCEPT

During the academic year 2020/2021 at the Faculty of Philology and Arts of the University of Kragujevac as part of the Master's academic studies Interior Architecture, during the winter and summer semesters, on the subjects *Typology and Fine Elements of Traditional Architecture* and *Urban Design*, led by PhD Bojana Pašajlić, assistant professor and Natalija Bogdanović, assistant professor, was realized synthesis project according to the principles of an integral understanding of the relationship between interior, architecture and urbanism, through the application of *integrative conservation* methodology. The aim of the teaching program was to point out the specific values of the architectural heritage of Kragujevac, as well as to introduce students to this typology of heritage through a concrete example, so that through a proposal for the revitalization of the building and the ambient whole, followed by the presentation of crafts, they could improve and enrich their knowledge and approaches to the preservation of architectural heritage and contemporary design within the old city core.

For the purposes of attending this program, the lecturers provided a previously prepared set of materials consisting of archival material (location shots and plans from different time periods), photo documentation, excerpts from periodicals related to the commercial and craft aspect of the research, and recommended reading. During the two-semester course, which consisted of lectures and exercises, data collection in the field and documentation analysis, students were introduced to the modern methodological approach to research and valorization of architectural heritage in general and the city of Kragujevac, as well as problems and methods of defining the potential and possibilities of regeneration of architectural heritage in accordance with modern needs, comparative analyzes of the advantages and disadvantages of different possibilities and approaches to protection and presentation in our country and in the world.

As part of this first phase of course work, students, through literature, field research and data analysis in the documentation of the Institute for the Protection of Cultural Monuments of the City of Kragujevac, became better acquainted with the historical, morphological, socio-economic development and importance of Ivo Lola Ribara Street within the core Kragujevac. The trade shop of Aleksa J. Obradović, the Grand Hotel "Gušić", the tavern "Šumadija" were recognized as significant objects and catalysts of development, but also that the street, as evidenced by the "Elaborate on the Old City Architecture of Kragujevac" from 1971, has preserved its commercial craft character. Almost every building belonged to one craft workshop, which was only disturbed in the period from 1971-2021. Craft contents are mostly replaced by catering and commercial contents.

On the basis of previously researched material by the subject professors, the thematic framework was set through the idea of modernizing the craft, which is followed through two lines - scientific-research and artistic-design. Initially, a list of crafts that were present in Kragujevac was formed, shown in *Table 1*, which students chose according to their own affinities (depending on the area of the selected objects, students chose 2 or 3 crafts). The second step involved the preparation of unique databases for each student individually in relation to the selected crafts, which included the selection of relevant materials - photo documentation, periodicals (from which separates were extracted - ads, illustrations, photo materials), project and technical documentation. Special attention is focused on the idea of bringing students closer to the visual identity of the building, the interior, the crafts and the products of craft production. Through advertising systems both on the facade of the buildings, through the idea of shop windows, where the relationship between the interior and the street is viewed, and through advertisements in periodicals, which are were primarily of a textual and descriptive character, thus establishing an important bond between the textual and the visual, where the visual is created by reading or materializing the textual, which due to the ephemerality of craft objects remains the only testimony. The approach is based on the collection of data and its orientation and selection of *contextual knowledge*. The starting point is the selection of topics that allow a comprehensive picture of the individual craft, practice and production, as well as the geographical, historical and social context and place of the craft workshop.

The question of the revival of craftsmanship in the context of the construction of modern culture occupies an increasingly important place in the literature. Christopher Frayling writes that craftsmanship is

definitely in the air, as an idea ripe to be "reclaimed", "reassessed" and "redefined". (Frayling 2011: 8) Andrea Peach conducts a comparative analysis of the craft revival in the 1970s and today through three aspects: the support and constraints of cultural policy, conceptual changes in the ideology of fine arts, and socio-economic factors, concluding that specific economic, social and environmental concerns such as the impact of mass production and economic recession, dissatisfaction with consumerism, the desire to return to a simpler life, nostalgia and growing environmental awareness, factors that each period shares. With a focus on the promotion of craft skills and their benefit to industry, it can be argued that the current political interest in craft is driven more by economic expediency than any wider social or cultural benefits that craft could bring. Creators, according to this author, are increasingly adopting a polymorphic approach to creative practice, integrating technology and tradition while negating the boundaries that previously distinguished artist and craftsman. The current craft revival can therefore be described as one that simultaneously embraces and rejects information technology. where the Internet is recognized as a tool for building craft communities and relationships that would otherwise not be possible and that are vital to the revival of modern craftsmanship. (Peach 2013: 7-12) Colin Campbell argues that the humanities should explicitly recognize the existence of consumers who engage in "craft consumption", and talks about the perspective of a postmodern society in which craft consumption is not only the dominant form of consumption but becomes the main way of individual self-expression. Campbell "craft consumers" recognized as the main bearers of financial and cultural capital. (Campbell 2005: 23,41)

The connection between crafts, interiors, architecture and urban design is based on the fact that crafts that are transmitted as Cultural Heritage exhibit tangible (material) and intangible dimensions. Intangible dimensions refer to technical knowledge, as well as to the socio-historical content of the communities and regions in which it is located and practiced, or was practiced. Crafts are part of the history and economic life of the regions and communities in which they flourish. The tangible dimension refers to craft items and products, materials and tools, as well as natural resources, then built workshops and work space. The tangible, or material, aspect of craft heritage is evident in their practice, where materials are transformed with the help of tools, but also skills and knowledge. (Zabulis, Meghini, Partarakis et al. 2020: 1-2)

We can define modern society as a society with a particularly pronounced need for consumerism, as well as a special type of consumerism, 'craft consumption', which Campbell talks about. In this sense, craft and trade buildings, as the most widespread types of building in the 19th and 20th centuries, have a special importance because they were frequented by a large number of people. The visual identity of an object based on tradition and authenticity in modern society is extremely important because it affects not only economic progress but also the formation of an authentic urban environment. The beginning of the 21st century represents a period of accelerated development in various fields, so accordingly it is necessary to find the right way through which this type of building, i.e. a part of the architectural heritage, could be properly used as a place of transmission or preservation of tradition and preserved as such for future generations.

Contemporary trends in the field of planning increasingly focus on the integration of the principles of integrative protection and conservation and regeneration of the historical core of cities, whereby heritage (material and immaterial) is used as a generative and dynamic tool for the revival of cities, where the strategies of branding and cultural tourism single out in particular in order to establish a relationship between the urban space, the representation of the city and the formation of identity. (Радосављевић, Ђорђевић, Ђукић и др. 2021: 242-243). In the contemporary practice of regeneration of historical cores, the practices of integrative conservation are more dominant in the sense of preserving rare and authentic entities, objects and crafts, through process of musealization in their original form such as in Barcelona, Bologna, Edinburgh and Madrid.² In Serbia, this practice is also represented within real city spaces (Tešnar in Valjevo) or museum installations (part of the permanent exhibition called "Old Town Street", Museum of Vojvodina in Novi Sad).³

² <https://rutadelsemblematics.cat/emblematics-magazine-informatiu-dels-establiments-emblematics-de-barcelona.html>, accessed 22.9.2022.

³ <https://www.muzejvojvodine.org.rs/lat/stara-gradska-ulica/>, accessed 22.9.2022.

Libro 1 Establecimientos Centenarios by Diseños Cavallanti - Issuu, accessed 22.9.2022.



Photo 2. The right side of Ivo Lola Ribara street, viewed from the "Šumadija" tavern towards the shop building of Aleksa Obradović with marked objects where the possibilities of modernizing crafts are explored with contents in the following order - *kafedžinica* (innkeeper), *pekarnica* (bakery) and a pottery shop, author Magdalena Stojadinović

In accordance with all the aforementioned when it comes to craft objects, we can distinguish two forms of purpose of craft buildings as transmitters of heritage.

- The first form would refer to the identity of the building itself and the history associated with it. With this principle, the architecture of the building, but also other elements that accompany it (openings, ornamentation, positioning of advertising material, placement of the original names and history of the initial trades on the buildings themselves, etc.) would be the bearers of the traditional core of the city.
- Another form of heritage transfer within craft facilities would refer to what is currently being marketed within the facility itself, regardless of whether it is directly related to the original purpose and identity. In this case, the ground floor of the building, which has gone through transitions and lost its initial identity, due to its position within the core of the city, serves as a space for the presentation of heritage and traditional culture through various products of the local population.

Contemporary society increasingly recognizes that, in addition to the necessary functionality, a craft object must also possess authenticity, which is reflected both in the assortment and design of the products themselves, as well as in their marketing, in the advertising segment and branding, as well as in the visual identity of the object itself, i.e. the space in which the product is placed. Visual saturation with different information and messages, as well as the age of "mass" and global in the 21st century turns modern man towards the search for authenticity and a return to traditional values. This aspiration is reflected in various fields where the tradition and culture of the place seeks to be reflected in the daily life of the individual.

Presenting the tradition and culture of the place can be done through craft and catering establishments in several ways.

- An independent craft facility, presenting one type of authentic product;
- An independent craft facility, presenting a large number of different authentic traditional products (Concept Store);
- An architectural whole within the city that has a number of trade and craft buildings that as a whole convey the tradition and authenticity of the place.

In the following work, a respectable example of work from the first generation of master's students (2020/2021) who took courses under this program will be presented. Three examples of the modernization of crafts and the formation of separate independent craft buildings within Ivo Lola Ribara Street will be presented, as research into the possibility of forming an authentic ambient whole. All three objects belong to the second type of use of craft objects as transmitters of heritage.

MODERNIZATION OF CRAFT

Pottery craft

Pottery, the art of making earthenware and decorative items, was first mentioned in Kragujevac when 16 guilds were founded in 1823 by order of Prince Miloš Obrenović. According to the incomplete list from 1836 (Table 1), there were 6 potters in Kragujevac. During the 19th century, they were also mentioned as potters. The sale of foreign goods had a negative impact on the development of pottery. Seven potters were registered in 1904, in *Putovođa* (1925), three were registered in 1931 and five in 1951. According to Stefanović, in the first three decades of the 20th century in the city worked Jovan Panić, Milan J. Tošić, Milan Đurić-Veljković, Milovan Đorđević, Đorđe Stanojević, Vlajko Jančić, Dragomir Milosavljević, Zarija Minic, Dragomir Đorđević, Đorđe Stojanović, Panta Vasiljević, Aleksandar Jančić, Petar Živković and Panta

Stefanović. In the middle and end of the 20th century, in Kragujevac craftsmen from Pirot were potters Aleksandar Manojlović, David Mančić and Jovan Jovanović and Ratko Spasić. The products of Kragujevac potters were made on the wheel and glazed: pots, jugs, testes, flasks, kegs, jugs, vases, handles, pans, bowls, plates, mugs, coffee cups with trays, salt shakers, oil pans, censers, candlesticks, ashtrays, pots, as well as decorative items made in miniature that were also used as children's toys. Today, a smaller range of products by Pirot and Nis craftman (censers and candle holders, clay pots) are selling at the Kragujevac market. (Стефановић 2013: 97-98)



Photo 3. Pottery shop of Milan D. Debljovića - The owner in the picture (third from the left), Source: <http://www.facebook.com/photo/?fbid=2559762784287130&set=g.121127684708841>, accessed: 22.9.2022.

As the entire work on the subject is based on the formation of a base of *contextual knowledge*, from the analyzed text a part of the assortment that pottery shops in Kragujevac had was selected as a starting point for the conceptual design, which is also supported by photo documentation. In the case of the discussed *pottery shop of Milan Debljović*, it is evident that the assortment was the key bearer of the visual identity of the craft shop.



Photo 4. Presentation of the display of the products of the potter Milan D. Debljović, Source: <http://www.facebook.com/photo/?fbid=10221768542938170&set=g.121127684708841> accessed: 22.9.2022.

The building that was chosen for the revitalization of the craft of the pottery shop is located in the lower half of Ivo Lola Ribara street, viewed from the "Šumadija" tavern towards the building of Aleksa Obranović's trade shop, for the reason that it shares formal characteristics with the *pottery shop of Milan Debljović* in the sense that it is a ground floor building with narrow street front and almost identical division and distribution of facade openings. The basic starting point of the work is the idea of presenting the tangible and intangible aspects of the pottery craft, so that in addition to the idea of presenting the products of craft production, the tools and the production process itself are presented, where the space of creation becomes a space of knowledge exchange. (Photo 3,4)

Given that the modern urban context of Ivo Lola Ribara street does not allow the extension of the sales area to the street, i.e. the interior to the exterior, by the principle of inversion, the exterior is drawn into the interior by forming the sales gallery zone as the first unit of the pottery shop, which draws the visitor into the building. The materialization of the interior is subordinated to the aesthetics of the product. The publicness of the interior contents was solved by leveling the space. The cascaded platform is both unifying and an element that diversifies the use of the space by the depth of the building. By placing the workshop as an integral part of the pottery shop, the user is given the opportunity to participate in the creation of craft products, which gives the pottery workshop a cultural and educational character. (Photo 5)

Baking craft

Bakeries were opened in Kragujevac in the first half of the 19th century. The bread that was previously sold in the Kragujevac taverns (*mehane* and *ekmedžinice*) did not satisfy the discerning customers as well as the princes and courtiers, for whom bread rolls were delivered from Belgrade and Zemun. In the mid-1930s, according to the prince's will, innkeepers (*ekmedžije*) from Požarevac came to the capital of Kragujevac, who produced better quality bread. (Поповић, Вулетић, Илић 2019: 124) The first bakery in Kragujevac was opened in 1838 by the Prussian Eduard Heine, who introduced modern bread and pastry production technology. When the decree on guilds was passed in 1847, there were already 12 bakeries in the town, and the first bakers bought flour from Banat. The bread guild was established in the 1950s, with private bakeries in this period who were fully meeting the needs of the population. The most important bakeries at the end of the 19th century are the bakeries of Nedeljko Spirić, Petar Anđelković, Serafim Đorđević, and Milivoj Tomić. In the period from 1925 to the beginning of the Second World War, the number of bakeries almost doubled from 50 to 94 bakeries, where the largest number of bakeries was in the Palilula region. (Радовановић 1996: 162) According to *Putovođa* (1925), the number of bakery shops is 54. In 1936, the first bakery cooperative was founded. In 1937, as part of a special article of the "Construction Regulations for the City of Kragujevac", norms for the work, functioning, and fulfillment of the technical conditions of bakeries were specifically regulated. After the Second World War, in 1948, the bakeries were nationalized and merged into the "State Mill Company". In the mid-60s, three bakery companies "Žitoprodukt", "Klas" and "Ishrana" operated in Kragujevac, of which "Žitoprodukt" has survived to this day. Today, there are over 40 bakeries in Kragujevac. (Стефановић 2013: 315)

The starting point for the development of the conceptual design of the bakery is the analysis of the advertising system of advertising and photo documentation of *pekarnice Trifuna Ćuka* (Trifun Ćuk's bakery) in Kragujevac. Trifun Ćuk's bakery was opened in 1935, in the period of the union of bakers and the parallel establishment of legislation and normative regulation of crafts at the level of the city of Kragujevac.⁴ According to the ad published in *Javnom mnenju* (1937), no. 2 on page 4 states the following:

"The new and modern luxury bakery of Trifun Ćuk in Drinčićeva 6, Kragujevac, produces all kinds of bread as well as other luxury pastries, namely: burek, sandwiches, kaisers, butter buns, salty buns, milk scones, rye and potato bread, pastries for social celebrations and festivities can be had in this bakery at a very solid price". (Photo 6)

A year later, they improve their production, so in *Odjeku Šumadije* (1938), issue 11 on page 4 the following is stated:

"The first hygienic modern machine bakery of Trifun Ćuk in Kragujevac Drinčićeva 6 makes all kinds of bread and pastries with the technically most perfect machines in the world, this is to say to the valued citizens that every order of bread is delivered on time by special cars to the consumer's home". (Photo 7,8)

⁴ Општинске новине, бр.5, 1935, стр. 3.

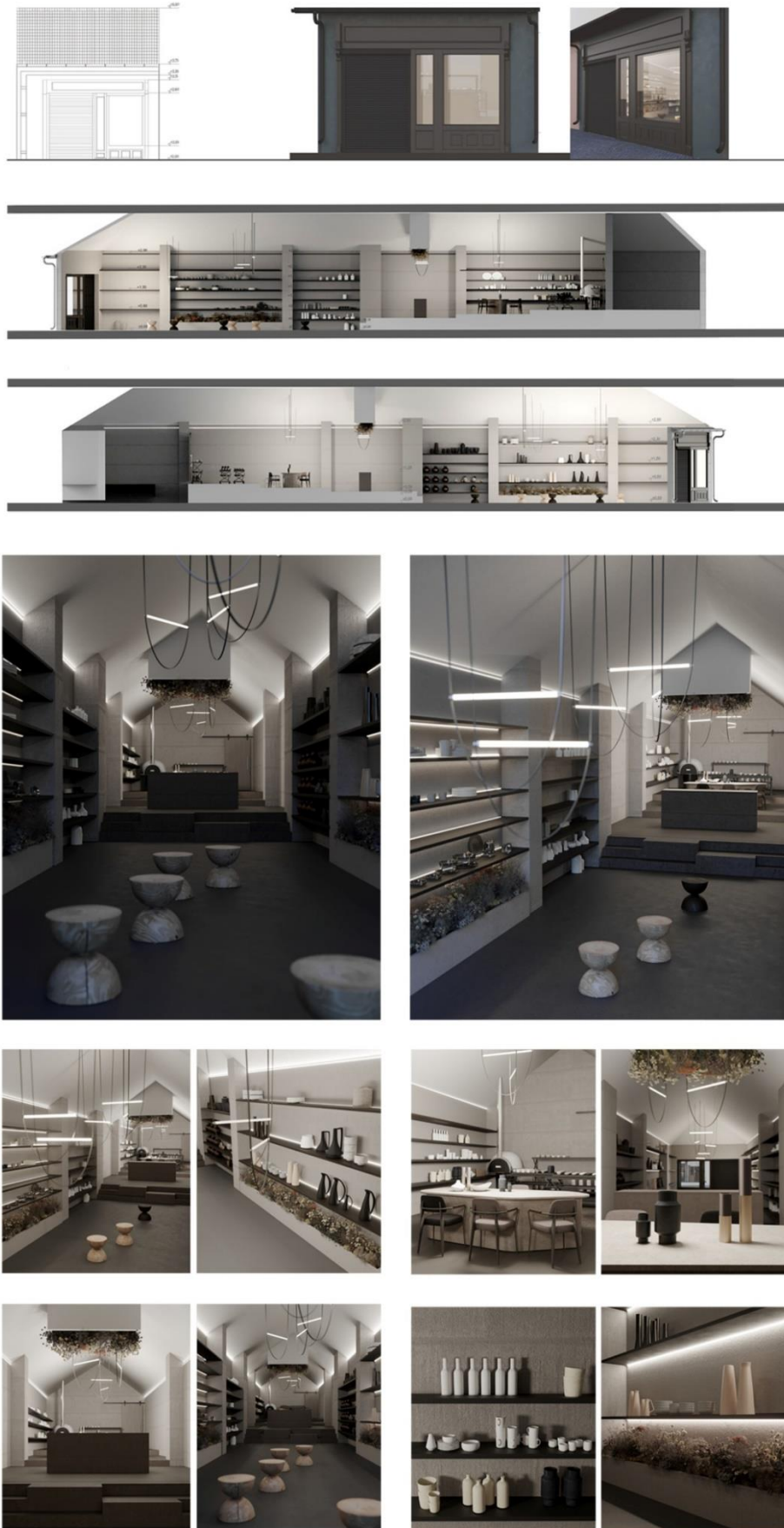


Photo 5. Conceptual solution of the pottery shop, author Magdalena Stojadinović



Photo 6. Advertisement for Trifun Ćuka's bakery, source: Јавно мњење, бр. 2, 1937, стр. 4.



Photo 7. Advertisement for Trifun Ćuka's bakery, source: Одјек Шумадије, бр. 11, 1938, стр. 4.



Photo 8. *Peкарница Trifuna Ćuka* at Drinčićeva 6 in Kragujevac, source: Private collection of Dejan Lekić

Viewed from Aleksa Obradović's shop towards the "Šumadija" tavern, the ground-floor building that was chosen for the revitalization of the bakery trade is located in the upper half of Ivo Lola Ribara Street, above the pottery shop. The basic elements from which the concept of the bakery is drawn are the "Civil Code for the City of Kragujevac" from 1937, from which it can be read that the main elements of the interior, both for hygienic and aesthetic reasons, were white paint and ceramic tiles, as stated in article 49 paragraph 7 of this regulation:

"The store must be accessible to consumers. The wall in the store must be painted with white grease paint or covered with ceramic tiles at a height of 1.80 m from the floor".⁵

According to the regulation, the structure of bakery buildings consisted of a shop, a workshop, a furnace, a warehouse and sometimes an apartment for workers located within the building. The proposed conceptual solution relies on the recommendations from this rulebook, the production and sale of bakery products is unified, so that the bakery contains a service-sales area and a workshop area.

Also, the archaic name of *pekarnica* was adopted, which was characteristic of the beginning of the 20th century and the flourishing of the bakery trade, which can be seen in the example of *pekarnica Trifuna Ćuka* (Trifun Ćuk's bakery). The interior design of catering and craft facilities in the late 19th and early 20th centuries was approached so that the applied interior and furniture elements were made of quality materials and in accordance with world trends and norms in the given historical period. Wood was the leading element in the design and was used not only as a structural element but also for decorative purposes. In this period, the development of the furniture brand "Thonet" also began, so the famous "Thonet" chairs in various forms can be seen in a large number of interiors and parts of the exterior space. The most visible connection of the use of the same material and style appeared on the carpentry that was used on the facades of the buildings and wooden elements on the furniture and interior coverings. The connection between the new project's interior and the past is also reflected in the application of the mentioned "Thonet" chairs, whereby redesigned models are used in the project: *No14 Vienna*, *NoB9 Le Corbusier* and a *round bar stool*, in order to better fit into the modern interior. The final finishes of the chairs are in the natural color of the wood in combination with white. (Photo 9)

Taverns craft (kafedžije)

Three years after the declaration of Kragujevac as the capital, in 1921, the number of innkeepers in the town was sufficient for the establishment of a innkeepers guild (*mehandžije*). Food, drink and accommodation services provided by innkeepers in Kragujevac were increasingly in demand. In addition to housing people, they provided space and food for traveling horses. Apart from innkeepers, taverns are also mentioned in Kragujevac at that time, but much less often. Unlike the innkeepers, the taverns did not receive guests at the inn. In the sources, for example, Kosta Leporović and Tasa Hadži Popović are mentioned as tavern owners in Kragujevac. In most cases, taverns were listed in the same section as innkeepers in the lists of crafts. (Поповић, Вулетић, Илић 2019: 120-121) According to the census of craftsman from 1836 in Kragujevac, the number of craftsman in the innkeeper craft was 76, while as we can conclude from the census from 1931, it shows innkeeper and taverns are transformed into catering services, i.e. *kafane*.⁶ At the beginning of Ivo Lola Ribara street, opposite from Aleksa Obradović's trade store, in the last decade of the 19th century, the *kafana Zadruga* was opened, which worked until the end of the Second World War. During half a century of its existence, it was a tavern of small merchants and craftsmen. According to Borisa Radovanović's research, various societies gathered in the tavern, including political parties for holding meetings, gatherings and propagating political programs, as well as the owners of other taverns in Kragujevac. Given that it was located in the busiest part of the town, parties were organized during state and religious holidays and it was always full of people. After the war, the tavern was sold and in its place was opened the pastry shop "Pionir", which was already demolished in 1957 after the modernist reconstruction of Kragujevac and the department store "Pionir" was built in its place. (Радовановић 2012: 181-182) At the opposite end of street, the *Šumadija kafana* was built at the end of the 19th century. What characterizes this old tavern is the courtyard, which was paved with Turkish cobblestones. The tavern also operated during the Second World War, and after nationalization it was merged with the city catering company called "Šumadija (Радовановић 2012: 173-174)

⁵ Грађевински правилник за град Крагујевац, *Општинске новине*, бр. 60, 1937, стр. 14.

⁶ For more details about the taverns of old Kragujevac, see: Радовановић, Б. (2012). *Кафане старог Крагујевца - прилози друштвеној историји града*, Бориша Радовановић, Крагујевац, 2012.

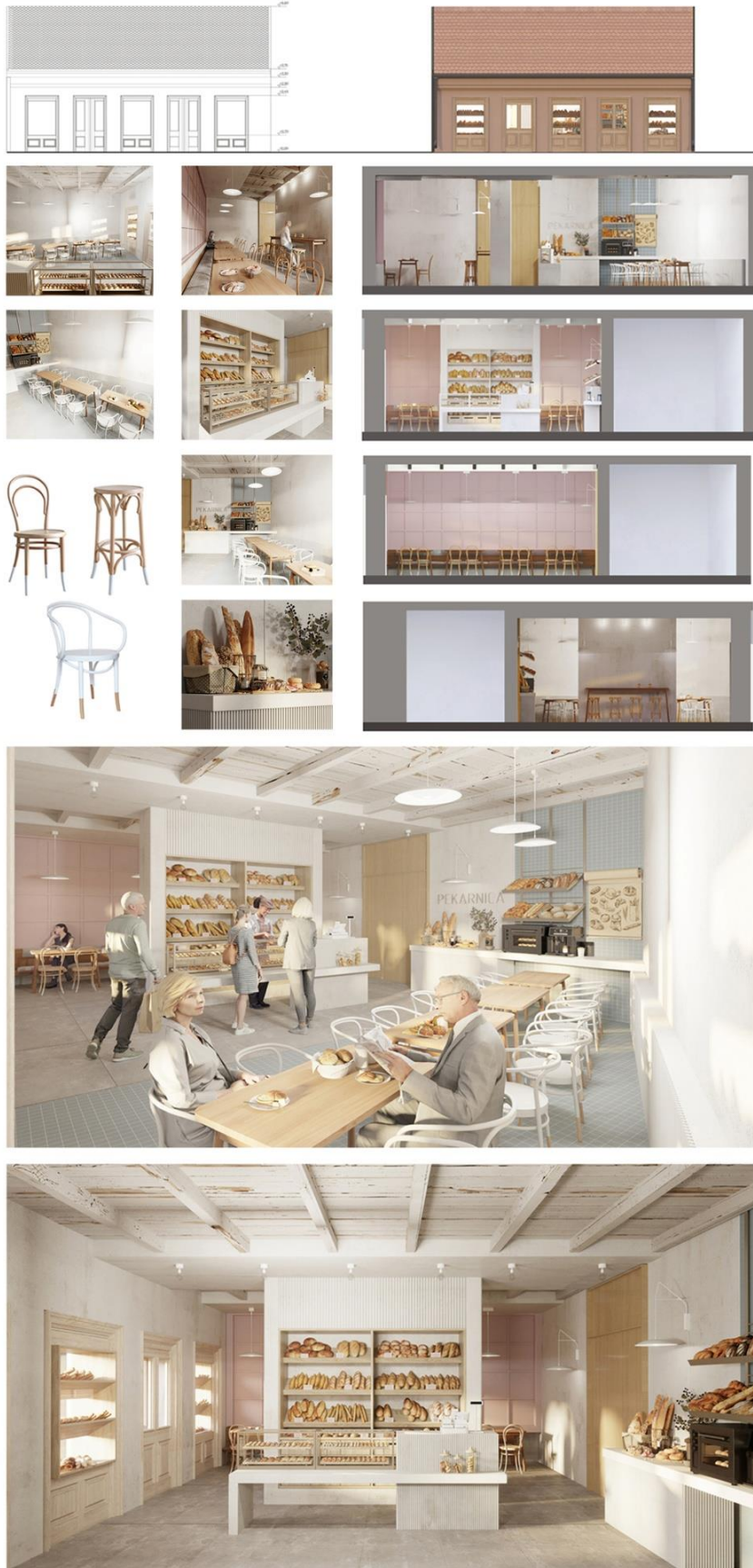


Photo 9. Conceptual solution of the *pekarnice* (bakery), author Magdalena Stojadinović

The building, which was adopted for the modernization of the cafe trade, is the first in a series of observed street fronts of Ivo Lola Ribara Street, in continuation of the pottery and bakery shop. As in the case of the bakery, the archaic name *kafedžinica* was adopted. The building consists of a ground floor and an upper floor, with an attached yard, which can be accessed both from the building and from the street. Cafes, coffee shops, especially taverns, are facilities that have shown a certain resistance over time, the possibility of survival in its original form, but also the possibility of modernization and development of new typologies of catering establishments such as cafeterias, cafe-bars, etc. Throughout all periods, the fact is that these are key city gathering places has remained. An important characteristic of catering establishments is the connection between the interior and the exterior, that is, the connection between the contents and the street. In this context, the courtyard, as in the case of the "Šumadija" tavern, and then the Ivo Lola Ribara street itself become the central motif of the intervention and extension of the *kafedžinica*'s contents in the form of a green net, a parasite that forms a porch, scaffolding, an object of ephemeral character - a summer garden, and then it grows into a linear structure that is programmed in relation to the purposes of buildings along Ivo Lola Ribara Street. (Photo 10) The green color was assigned to the grid structure, taken as a motive for connecting contemporary design with traditional values in architecture, a color that is characteristic of the facades of buildings from the beginning of the 20th century in Kragujevac.

INSTEAD OF A CONCLUSION - URBAN DESIGN AS A FRAMEWORK FOR CONNECTING SHAPE AND PURPOSE

Urban design should form a connection, networking between all relevant specialties and activities, objective and subjective aspects of the urban life of Ivo Lola Ribara street in a physical and usable form - enabling the establishment of continuity between past and present, social and cultural context, time of origin and history of development. The proposed grid structure is placed centrally along the longitudinal axis of Ivo Lola Ribara Street, with its characteristics, meaning and symbolism, it has individual and social significance, which influences and transforms the cultural standard of the environment. Transverse *arms* extending from the central *spine* activate the left and right blocks, i.e. the inner block courtyards through the passageways. Stations with the following purposes were formed along the linear structure, viewed from the former "Šumadija" tavern towards the trade shop building of Aleksa Obradović:

1. URBAN UNIT OF "ZELENGORA" - With the exception of the old fountain, all elements from the site are removed. Through the urban furniture set along the length of the street, it is planned to place benches and trash cans according to the disposition shown in the graphic attachment.

2. SPATIAL INSTALLATION - The installation "Rays" is designed as a single unit of urban furniture whose main elements are information panels and lighting.

3. URBAN GARDEN - The current condition of the aesthetically unbalanced summer gardens of the cafe disturbs the appearance of the pedestrian zone. In addition, the summer gardens are positioned so that in certain zones they prevent logical movement on the pedestrian promenade. As an appropriate response to that problem, a unique summer garden is being formed within the urban zone. Green color positioned as a segment of the installation - urban furniture that includes the inner courtyard of the tavern (*kafedžinica*) building is applied in order to emphasize the connection between past and present, as a response to the treatment of traditional architectural values in contemporary design and architecture.

4. OPEN AIR CINEMA "PIONIR" - The starting idea when solving and blocking the inner courtyard of the cinema is an answer to the problem of meeting the needs of users when using the facilities through different weather conditions. The structures that make up the inner courtyard building are formed of metal pipes and plates in the seating area. Blue color dominates in the segment of the summer garden of the open air cinema (Pionir), created in the period of modernism. This color emphasizes the form and structure of this part of the installation and connects the concept of the same with the period of modernism in which the basic colors were in use. On the other hand, this shade of blue is used in the processing of stocks and doors in traditional Serbian houses from the end of the 19th and the beginning of the 20th century, which is another type of connecting tradition and culture through different epochs.

5. POLYGON FOR CHILDREN AND ADULTS - A playground for children is being formed to activate the inner courtyard. Here, in addition to the segments for children's play, there is also a line seat for adults.

6. BUS STOP "PIONIR" - The segment related to the conceptual design of the bus stop, it is made as redesign of the existing layout of the station with modernized content.

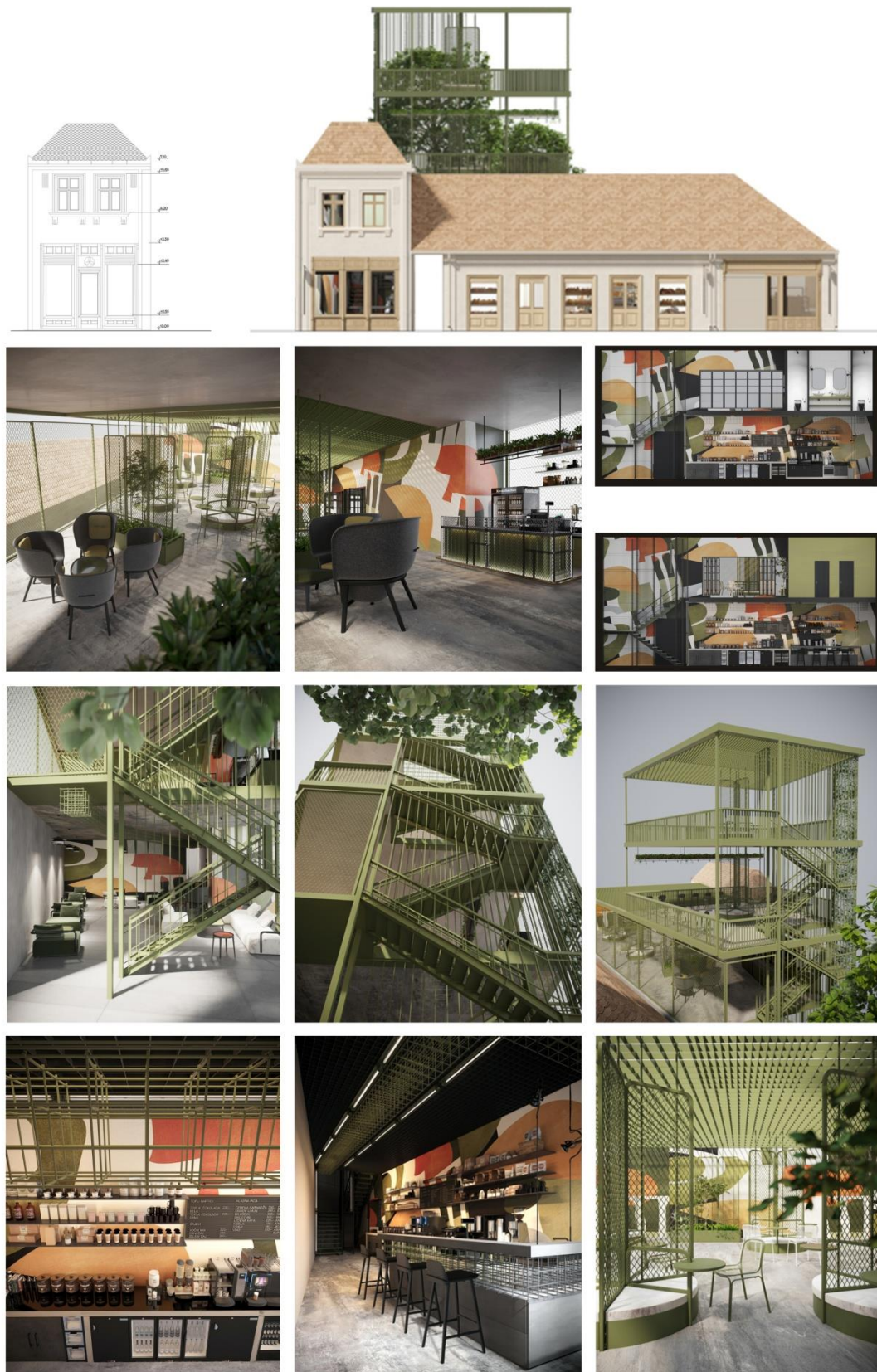


Photo 10. Conceptual solution of kafedžinica, author Magdalena Stojadinović

The formed structure aims to network and connect traditional and locally specific phenomena and contents with contemporary ones. Individual stations are made up of objects and proposed craft contents that program the network, while the network enables the networking of activities, but also the possibility of familiarizing visitors with contents that are extensions of the interior. The basic idea is to erase the border between interior and exterior - interior, buildings and street, whereby the intervention, the networking of activities along the street creates a unique whole in which different activities - crafts, trade, catering, rest - will intertwine in everyday experience.



Photo 11. Grid structure, author Magdalena Stojadinović

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RIVER BLOCK AND WALK ZENICA

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ABSTRACT

The site in the vicinity of the river Bosna on the southern entrance to Zenica is planned to become a Business, Tourism and Recreational Zone, which is expected to feature diverse and sustainable facilities and amenities for many different types of users. The intention of the Contracting Authority behind announcing the tender procedure was to obtain spatial planning visions of a complex that is to become the backbone of economic development in the future. Any intervention into the urban fabric requires a careful approach, one that takes into account the preservation of urban identity, the continuity of urban forms and due consideration of the urban context. In our opinion, the new physical structure that is to become a part of the project site should incorporate new elements that will be structurally similar to the characteristic element of the immediate surroundings but also of the broader area; in other words, it should be created based on an existing form selected in the relevant urban context. The existing context of the surrounding family houses, with their loose structure, is not suited in terms of their morphological characteristics for meeting the requirements of the facilities planned at the project site, which is why we have opted to look for a form existing further out in the broader surroundings. The one that we decided to select is an important element of the identity of Zenica - the functionalist megastructures in the town centre ("architecture in nature"). When it comes to the relationship between new physical structures and the river, we advocate the "river in the city" concept. This is an idea that involves an urban development process where the river and its banks become the axis of composition and an urban space in their own right - a place where people meet and communicate, one that is completely accepted by the citizens and other users. Two longitudinal structures positioned opposite the river reconcile two seemingly contradictory concepts: development in stages and uniformity in design of the urban unit. Concentration of areas which are going to be built-up leaves plenty of space for green areas, intended for various outdoor activities in contact with the river. Functional structures on the right bank of the river Bosna are suited for the kind of facilities that are envisaged in the spatial plan for the business, tourism and recreational zone. On the left bank of the river, as a complement to the facilities envisaged by the spatial plan, we propose that residential facilities be built.

Keywords:

urban identity, continuity of urban form, urban context, "river in the city"

ABOUT THE CITY

Zenica is a city that owes its identity and its developed urban frameworks primarily to so-called heavy industry. The Zenica Ironworks complex is situated at the northern entrance to the city and accounts for a large portion of its urban area. Employing such a large workforce, the ironworks required the creation of an entire physical, developmental and administrative system. Thanks to the fact that the town authorities had recognized that professional knowledge and experts are required for good-quality urbanisation, steadfast development and successful construction suited to the needs of the citizens, it was precisely in Zenica that great names of architecture and urban design made some of their most significant achievements. The greatest contribution in terms of interventions on the General Urban Plan of Zenica was given by Academician Juraj Neidhardt, whose main idea for the city's development is still very clearly visible in the urban development and architectural matrix of the city.

The city's development trajectory prior to the adoption of the Urban Development Plan in 1950 was in the direction of continuous growth and population increase, for which good-quality public facilities had to be provided. Events occurring over the last 30 years have left their mark on demographic, economic, social and physical characteristics of the city.

ABOUT THE TRANSITION

Transition from the industrial society, which was based on the man and the machine, to a knowledge-based post-industrial society, was something that many cities found too challenging, and ultimately failed at. Instead of products, focus has shifted to selling services. Some cities have succeeded in this at the price of social stratification, while others suffered a collapse. The closing down of factories that hired large numbers of workers and that served as the base element for the development of the city's identity had repercussions in all aspects of life.

There are different approaches to urban regeneration of post-industrial cities, in which context special emphasis is given to tourism and culture, with a view to making the city more attractive and to draw in investments. The experiences of once strong industrial cities have shown that the problem cannot be solved unless reindustrialization based on renewable energy sources and clean energy be attempted.

Zenica, too, has had its share of transition-related problems. The generator of development, Zenica Ironworks - just like all the other accompanying heavy industry facilities and the activities of exploitation of natural resources - faded slowly, ending mostly in complete collapse, apart from a few exceptions that managed to stay in operation, but only in a fraction of their former performance. Attempts to change the economic situation have not been made yet, at least not any that would be more significant than just a few individual interventions and some logistically incomplete business zones. As a result, these shortcomings that affect the quality of living in the city eventually multiplied. City government is currently attempting to by-pass the transition-related problems by reserving space and creating the spatial plan prerequisites for a post-industrial society, laying the foundations for sustainable development.

ABOUT A SUSTAINABLE CITY

The Leipzig Charter ¹ on Sustainable European Cities is a document drafted by EU member countries that strongly supports the European sustainable development strategy that equally accounts for all dimensions of sustainable development: economic prosperity, social balance and a healthy environment. The following strategic actions are included in the integrated urban development policy, which is greatly important for the strengthening of competitiveness of European cities:

- Housing and providing high-quality public spaces,
- Modernization of infrastructure networks and improvement of energy efficiency, and
- Promotion of efficient and accessible public transport.

Creating and providing functional and well-designed urban spaces, architectural elements and services is a task that needs to be tackled by the government and local authorities. In order for this task to be implemented, cities need a sufficient scope of action and sound financing that will ensure future stability, in the long-run.

ABOUT THE TENDERING PROCEDURE

City of Zenica is plagued by problems with available spatial resources for development, because the locations owned by the city government are diminishing. One such location is envisaged at the southern entrance to the city, where there is a large undeveloped stretch at the banks of the river Bosna, which has been envisaged as a “business, tourist and recreational zone” and where the city expects development of diverse, vibrant and sustainable facilities and amenities intended for many different types of users. The intention of the Contracting Authority behind announcing the tender procedure was ² to obtain spatial planning visions that will best reconcile the need to construct economic-development targeting facilities at this location, but such that will be supplemented by other complementary functions, including residential facilities, in addition to the facilities that are already envisaged in the City of Zenica Spatial Plan. ³ The objective is to get a spatial complex that will serve as a single unit, especially in the light of a lack of spatial resources; such a spatial unit that would be the foundation for future economic development.

ABOUT THE LOCATION

Geostrategic position of the project site is at the side of the M 17 main road and its direct connection with the highway (corridor Vc) makes it unique and supreme compared to other locations in the city's urban area, which are predominantly intended for business. (Figure 1) The size of this zone, a total of 31 hectares, is sufficient to accommodate very different thematic and functional units, which, being concentrated at a highly potent area, have many prerequisites for development and successful functioning. The intention of the City of Zenica is for the business, tourism and recreational zone to be affirmed as the generator of development the scope of activities and capacities of which will attract a large number of economic operators and businesses and, proportionally with that, a large number of visitors and employees. The project site is 5 km away from the city centre. The site is currently used as agricultural land, mainly a meadow and arable land.

ABOUT THE IDENTITY

By exploring the urban identity of the broader area surrounding the project site, we can see that the urban structure of Zenica has a clear matrix that reflects the characteristics of the following clearly delineated urban areas - morphological units:

- Megastructures of the Zenica Ironworks complex at the northern entrance to the city,
- Megastructures of multi-apartment facilities and all other facilities (other than residential ones), which reflect the functionalist doctrine, and
- loosely scattered family houses.

Another element of the city's urban identity is the interweaving of physical structures and nature (Bosna river and green spaces), which is embedded in the collective memory of the city. The relationship between physical structures and the river can be characterized as a “city by the river” in the area of the industrial complex and the loosely scattered houses, but also as a “city on the river” in the area of the functionalist downtown structures. What we believe to be missing is the “river in the city” concept.

ABOUT THE SELECTION OF THE PHYSICAL AND FUNCTIONAL STRUCTURE

Any intervention into the urban fabric requires a careful approach, one that takes into account the preservation of urban identity, the continuity of urban forms and due consideration of the urban context. ⁴ In our opinion, the new physical structure that is to become a part of the project site should incorporate new elements that will be structurally similar to the characteristic element of the immediate surroundings but also of the broader area; in other words, it should be created based on an existing form selected in the relevant urban context. The existing context of the surrounding family houses, with their loose structure, is not suited in terms of their morphological characteristics for meeting the requirements of the facilities planned at the project site, which is why we have opted to look for a form existing further out in the broader surroundings. The one that we decided to select is an important element of the identity of Zenica - the functionalist megastructures in the town centre (“architecture in nature”).

When it comes to the relationship between new physical structures and the river, we advocate the “river in

the city” concept. (Figure 2) This is an idea that involves an urban development process where the river and its banks become the axis of composition and an urban space in their own right - a place where people meet and communicate, one that is completely accepted by the citizens and other users. Two longitudinal structures positioned opposite the river reconcile two seemingly contradictory concepts: development in stages and uniformity in design of the urban unit. Concentration of areas which are going to be built-up leaves plenty of space for green areas, intended for various outdoor activities in contact with the river. Functional structures on the right bank of the river Bosna are suited for the kind of facilities that are envisaged in the spatial plan for the business, tourism and recreational zone and intended for many different types of users. On the left bank of the river, as a complement to the facilities envisaged by the spatial plan, we propose that residential facilities be built. (Figure 3, 4)

ABOUT THE TRAFFIC AND PARKING AREAS

Traffic connections of newly planned facilities with the agglomeration are via the M 17 main road, the local road on the left riverbank and the Sarajevo-Šamac railroad. Business, tourist and recreational facilities situated on the right riverbank have two points of access to the M 17 main road, and the roundabout at the south-eastern section of M 17 enables direct connection to the highway, which is part of the corridor Vc and, via a bridge (which is currently being constructed) to the settlements on the left bank. Residential facilities situated on the left bank will be connected to the local road via the planned rail underpass. Parking areas will be on the underground levels of the planned physical structures and in the part of the protective green areas alongside the roads that pass through the zone. The vicinity of the railway provides the possibility of the city railway system contributing to better public transport.

Pedestrian pathways which could, in accordance with special regulations, serve as both roadways and pedestrian pathways in a part of the route, enable the connection of all facilities in the zone. Special emphasis is on the walkways along both riverbanks. One of the two pedestrian bridges can carry bicycle traffic as well, directing it to the centre of the urban agglomeration.

CONCLUSION

At the southern entrance to the city, a large undeveloped stretch at the banks of the river Bosna has been envisaged as a “business, tourist and recreational zone,” where the city expects development of diverse, vibrant and sustainable facilities and amenities intended for many different types of users. The intention of the Contracting Authority behind announcing the tender procedure was to obtain a complex that is to become the backbone of economic development in the future. When it comes to the relationship between new physical structures and the river, the tender proposal advocates the “river in the city” concept. This is an idea that involves an urban development process where the river and its banks become the axis of composition of the project area. Two longitudinal structures positioned opposite the river reconcile two seemingly different concepts: development in stages and uniformity in design of the relevant urban unit. The concept of the areas which are going to be built-up leaves plenty of space for green areas, intended for various outdoor activities in contact with the river. Functional structures on the right bank of the river Bosna are suited for the kind of facilities that are envisaged in the spatial plan for the business, tourism and recreational zone. On the left bank of the river, as a complement to other facilities, we propose that residential facilities be built.

ATTACHMENTS

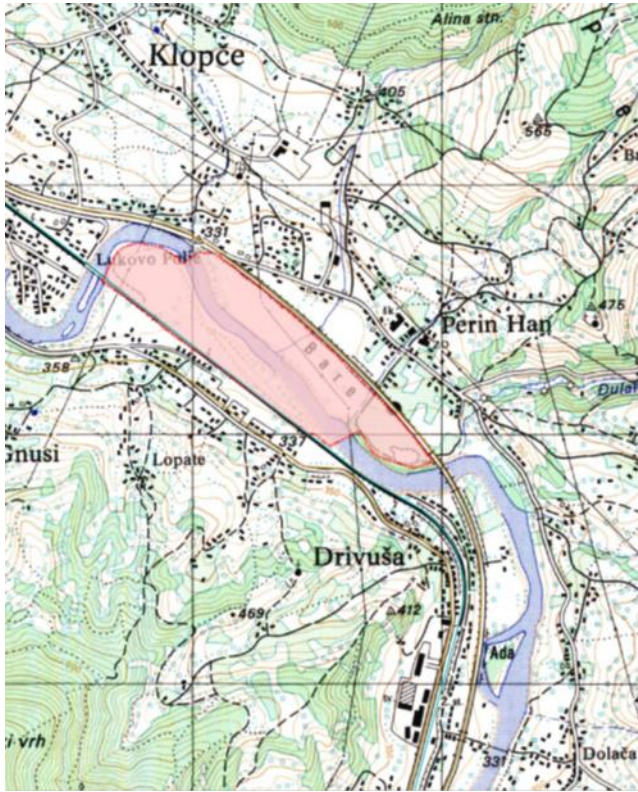


Figure 1: Zenica river block – the situation

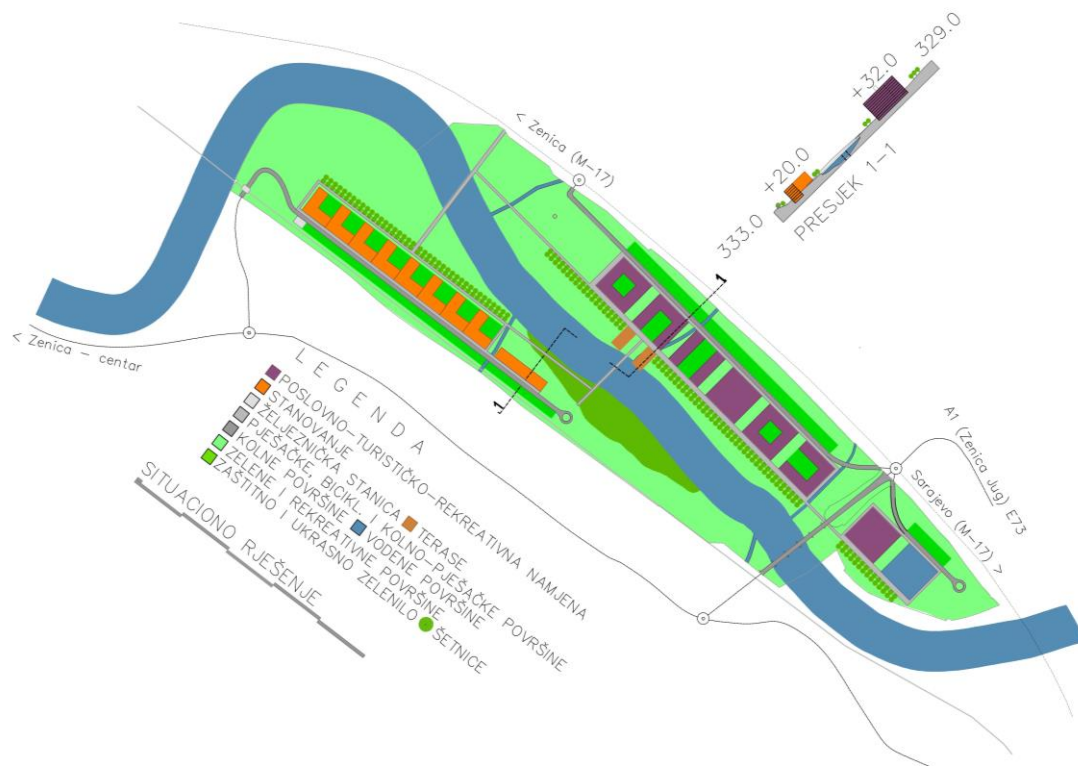


Figure 2: Zenica river block – urban solution

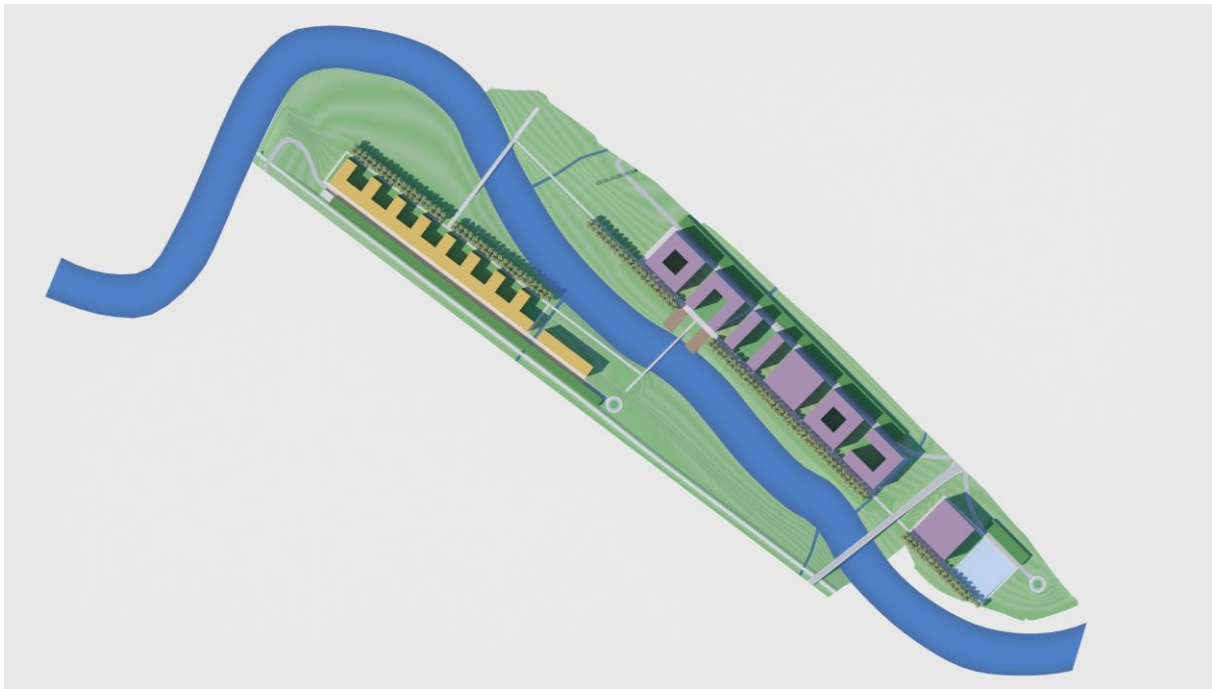


Figure 3: Zenica river block – axonometry

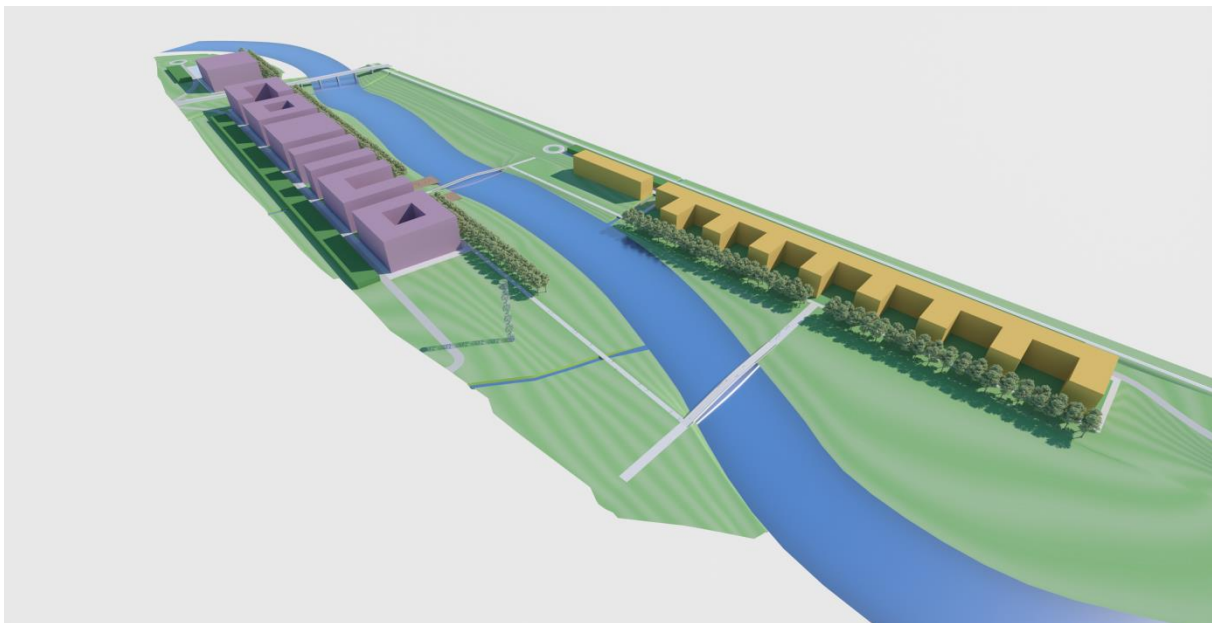


Figure 4: Zenica river block – perspective

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IN SEARCH OF THE IDENTITY OF STRUGA – PRESERVING OR RESETTling THE URBAN MEMORY

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ABSTRACT

Each city offers a complex level of understanding with its own combination of social, political, economic and environmental issues. The most creative solutions in building urban space come from research of the personal and collective needs of people and their relationship with natural and built environments. Each individual city contains an internal solution for its future development opportunities. The growth of settlements and cities inevitably raises the question of the connection between urban life and nature.

Many cities and towns in RNM face the problem of defining and understanding the term "identity". That, can represent a problem, or a challenge for concrete action in city. This is especially evident in the cities after the post-transition period in RNM, which face urban, sociological, demographic and political changes. At the same time, they encounter aesthetic and identity crises through which they lose their spirit, and thus the human perception of their own city changes, and in that way the memory of the city is lost. Example for this is the city of Struga.

The subject of this paper is the study of the historical development of Struga through research of the historical records and plans and contemporary socio-economic and urban aspects, while the aim is to answer the question of whether the identity of the city of Struga can be preserved by the memory of its urban spaces and architectural objects.

Struga is a typical example of how a small lake town faces all these challenges. Changing with the natural course of events over hundreds of years, the city evolves through the changes that settle in and which provide weight and memory and thus the city functions over time. However, the whole set of the shifts causes an "urban revolution" - through spatial-urban, demographic and social changes, which disturb dynamically the city. In this way, the identity of the city is lost, and thus the mutual relationship of the inhabitants with their city.

Keywords:

aesthetics, public space, small town, urban identity, urban memory.

Introduction

Each city offers a complex level of understanding with its own combination of social, political, economic and environmental issues. The most creative solutions in building urban space come from researching the personal and collective needs of people and their relationship with natural and built environments.

Nowadays, we are increasingly faced with the question: "Up to which border is a city still a city, and beyond what border does it become a new phenomenon?" In this new phenomenon of personality, self-awareness and memory, will they find their mutual relations or will they get lost in the size of the city space? On one hand, this is a problem, and on the other hand, it is a challenge for concrete action in cities. All this comes to the fore in the post-transitional cities. At the same time, they encounter aesthetic and identity crises through which they lose their spirit, and thus people's perception of their own city changes, and in this way the memory of the city is lost.

The town of Struga is a typical example of how a small lake town faces all these challenges. Changing with the natural course of events over hundreds of years, the city evolves through changes that settle in and provide weight and memory, and in this way the city functions over time. However, the whole set of above-mentioned shifts are now causing an '*urban revolution*' - over a spatial-urbanistic changes, demographic and social changes, which disturb dynamically the city. In this way, the identity of the city is lost, and thus the mutual relationship of the inhabitants with their city. With these changes/, can Struga grow into a new, bigger city? Robert Stern, believes that "we do not need new cities, we need to reuse and make better use of our existing urban environments. We have to create and preserve these cities" (Stern, 2003).



Photo 1. – The city of Struga

Theoretical framework: City identity - questions and directions

The identity of the city of Struga represents the relationship between the city itself and its inhabitants. That relationship is referred to by using the terms '*City identity*' and '*place identity*'. Both terms explain important dimensions of the relationship between the city (place) and people (residents).

From a sociological aspect, '*city identity*' represents the unique symbolic face of the city - what marks it and what makes it recognizable? The identity of a city can be defined as a set of unique features and characteristics that ensure a permanent recognition of a city in comparison with other cities, by which it differs from them and is recognized as special. According to Relph, the identity of a city consists of physical-material and immaterial features, and as its constituent parts of the physical appearance of the city are the natural and built environment of the city while the immaterial features represent the activities of citizens that are carried out in that environment. (Relph, 1976)

From the current state of the city of Struga and according to the explanations about the city's identity, it follows that Struga is facing a problem regarding the definition and understanding of the term '*identity*'. This is due to increased demographic growth resulting in uncontrolled urban growth of the city. In order to define the conditions and causes of the problem, and how to solve them, several questions should be examined:

- Does the city of Struga have its own symbols and what is it famous for?
- Are there more internal ambiguities and disagreements about the city's identity in Struga?
- What is the image of the city from the point of view of its own residents and of the residents of other cities?
- Does and to what extent the "spirit" of the city represents potential for development?
- How to regenerate the collective memory of the city's inhabitants?

The identity of the city has been dealt with by many researchers from several disciplines, each with a special approach within their profession. Among the most important researchers who deals with city identity, is Kevin Lynch who in his book "The Image of the City" explains the term '*mental image*' of the city. According to him, every city identity has two sides, one is internal and the other is external. The internal side represents identity as a self-perception and experience of the city's citizens themselves. The external side represents the image of the city - the representation, the perception of all other people who do not live in the city (Lynch, 1960).

Bogdan Bogdanović says: "Each city simultaneously carries visible and invisible, two cities. This ancient Platonic fiction is still valid today as '*mutatis mutandis*' (necessary changes, Latin trans.) For a city to be a real city, to be one and indivisible, it must paradoxically be two. It always has to carry within itself city-right and city-left, city-masculine and city-feminine. It must be both invisible and visible at the same time, and at every moment express itself as a tangible reality and as an intangible narrative, as a city-instructions for use and as a city - a story - about a city" (Bogdanovic, 2011:45).

Struga has within a story of the inner two cities, both physically - due to the division by the river, and culturally and sociologically - due to the multicultural character that is intertwined in the everyday life of the citizens. Gradually, Struga is losing this profit, but this is also a challenge - how can this characteristic survive and how can the cultural revitalization of, what has been lost, begin?

The image of the city, according to Lynch, analytically consists of three parts, which empirically always appear together - identity, structure and meaning. Therefore, '*identity*' is the individuality, the uniqueness of the city and everything that allows it to differ from other cities; "*structure*" is the spatial relationship between objects and observers; and '*meaning*' is what the image signifies for the viewer in a practical or emotional sense.

"Weaker natural processes can transform an ancient landscape or social changes can cause bizarre dislocations. In the midst of these events, people remember the past and imagine the future." (Lynch, *ibid*). According to Lynch, the city is a combination of states of mind, emotions, mentality, collective memory, traditions and the world, which is intertwined in the past and present of the city, but also in its future development.

Struga: in-between recollection and culture

When considering history and recollection in a small town, in this case Struga, important concepts are the related terms 'cultural memory' and 'collective memory'. '*Cultural memory*' is a collective understanding of the past viewed from a certain socio-cultural context. '*Collective memory*' is the cultural memory of the community, as a defining element of its identity. The term '*collective memory*' was introduced by Maurice Halbwachs, a French sociologist and philosopher, based on the thesis that memory can be connected not only to the individual but also to the entire community or society, as well as the context in which they operate (Halbwachs, 1980).

Recollections in general and cultural memory are topics that primarily belong to the fields of social and cultural psychology and can be directly related to architectural discourse and interest in heritage and the past. One of the essential dimensions of collective memory is spatial, urban history that gives importance to the past and heritage. Like social and cultural contexts and interpretations of the past, cultural memory is also changeable. The French historian Pierre Nora introduced the concept of '*places of memory*' - (French: '*Les Lieux de Mémoire*') as places and assets of material, but also immaterial culture, where cultural memory crystallizes, including architectural objects and spaces. Nora sees history as a reconstruction of the past and its representation, while he understands recollections as a phenomenon subject to influences and plural in nature, which forms a bond between the past and the present.

The position of the principles derived from the local and vernacular in the architecture of Struga as an expression of cultural memory, its places of memory as well as the active construction of the vision and significance of the past are the subject of this work. Also, two locations will be analysed, which represent important historical and cultural features of the city, which will help to find out and evoke the spirit of the place:

1. The old bazaar in Struga

2. River 'Crn Drim', in and through the city

As a starting point, it can be said that the city of Struga is constructed from several urban and natural memory carriers. Using these carriers of cultural memory, an insight is made into the present and past meanings associated with urban spaces and places. It should include historical facts and collective memory, even urban myths and subjective memories that together create narratives that identify the city. Such is the example with folk songs where is sung about the Struga Bazaar:

“Што ми е мило ем драго, на Струга дуќан да имам”

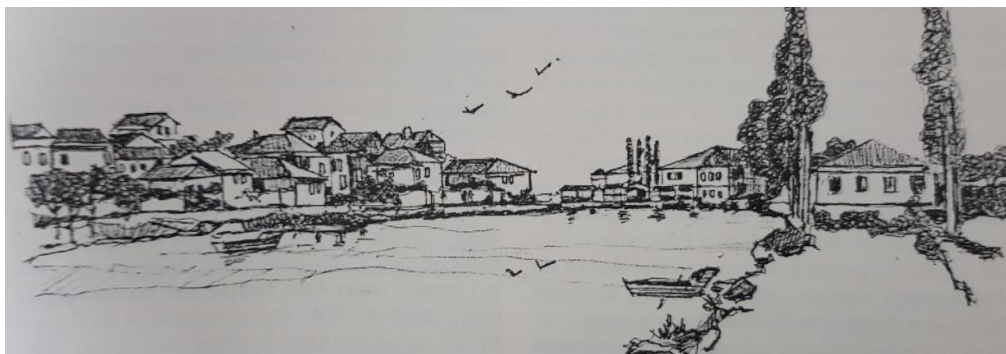
“I am very happy and glad to have a store in Struga”

In the historical memory of the city remains that it is a lake city with a lake landscape character, which is the most significant feature. The city is located at the outlet of Lake Ohrid, the formation of the Crn Drim river is an inseparable element and symbol of the city. What is remained in the collective memory is that, regardless of the fact that the city is located on a lake, Struga is still the city of the Drim River.

The town of Struga is a characteristic town with a lake landscape dominated by the Crn Drim river with crystal-clear water that divides the town into two parts: the bazaar with craft shops (shops), now many of them have been reoriented to other activities, and the monastery of St. Virgin Mary in the village of Kališta, in the immediate vicinity of the city, on the lake shore itself.

Struga is one of the cities with the oldest tradition in RNM. Part of the city and its morphological urban structure, which is present today as a cultural-historical and architectural heritage, dates from the 18th and 19th centuries, although there are records that the city was continuously formed and upgraded during an older period, in the 16th and 17th centuries, during which many places - cities in Macedonia achieved the greatest development, recorded by many travel writers of that time. As the main noticeable difference in historical records, is stated that Struga with its urban morphological structure is a characteristic new place formed by newcomers - the Ottomans, on a flat and fertile ground, while the city of Ohrid, as a place of natives, developed in the suburbs on a steep terrain and below the fortress - Varoš to the shore of the lake.

Archaeological artifacts in this region indicate the existence of prehistoric dwellings on stilts where the life of the natives was formed, just as in Ohrid, Kostur and other places in Macedonia, which were located next to lake surfaces. Their formation is the result of a very simple cause - the lakes were rich in fish, and the environment had fertile soil that enabled the existential development and survival of the lake habitat.



Picture 2 – Idyllic landscape painting of the town of Struga, around 1890 (source: Mulickovski, 2002)

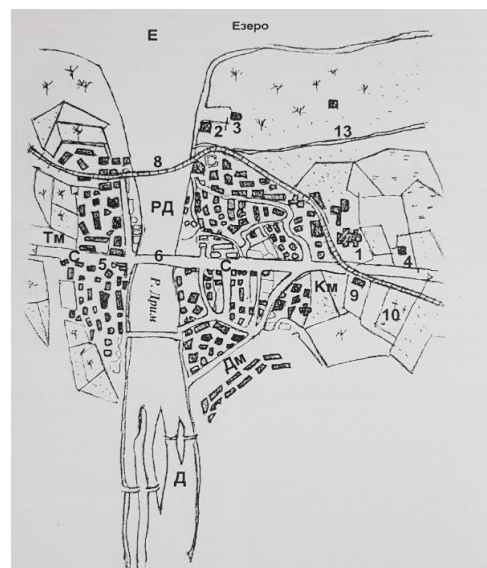
Anna Komnene in the work "Alexiad" mentions that in the 11th century - "Struga is a city of 100 bridges". Also, it is known that today's location of the place that the Ottomans formed on the right bank of the Drim (mouth of the Drim) was not the location of old Struga. It is assumed that the old settlement was located a few kilometers southwest of the present one, next to the lake itself. Also, it is noted that the old town was called - Drimeni with a square and palaces on pillars (Mulickovski, 2002).

In the part about the description of Struga, the travel writer Evlij Čelebi in 1668 mentions the Veliki Saraj in the middle of this town, which was built on a large wooden bridge with 12 arches, 150 meters long. On that wooden bridge was built the castle "Eminagata" with a wooden gate erected in the middle, which is closed every evening. Small stilt bridges with anchored bridges and wooden boats (chuns) for fishing on the lake were recorded, distant - fishing facilities and facilities on stilts near the St. Virgin Mary in the village Kalistha.

The processes of settlement formation in that period, with similar natural-geographical conditions, can also be observed in Venice, which was formed in the 12th century by refugees from Padua, who were looking for a hiding place from intruders from the mainland. Fleeing from the enemy, they moved, took shelter and formed a new settlement on the surrounding islands where there was shallow water of the Adriatic Sea. Comparing the urbo-morphological features of both cities, many similarities are observed, the main feature being that the city with the river - channels are deeply intertwined in the urban fabric (pic.3, 4).



Picture 3 - Map of Venice in 12th century



Picture 4 - Map of Struga in 19th century

The location of today's Struga settlement is assumed to date from the 14th to the 15th century when, with the arrival of the Ottomans, a new settlement was formed for the colonial population. Evlija Celebija talks about the "picture of the Struga Cadillac". "At that time, there were 300 roofed houses, with hard-built one- and two-story houses with gardens and vineyards. There were also 40 shops, but there were no empty ones. The population engaged in fishing and agriculture, worked on the surrounding farms with orchards, meadows, etc."¹. The original a Turkish 'maalo' (settlement) that was formed on the right bank of the Crn Drim river, until the end of the 19th century and the First World War did not change much and the urban morphological structure was expanded with new buildings - houses. The most characteristic element was the port for lake fishing boats.

Arch. Petar Muličkovski gives his description of the city and the river Drim: "As places in Macedonia that have their most striking characteristic, Ohrid and Struga have an "image" as iconic places, with a pronounced and specific "city spirit" - "Genius locy", full of localities and features with the oldest cultivated historical tradition of residential life, a place with its specific lake characteristic. The existence of the lake, since prehistoric times, left an authentic mark of the cultivated region in its architectural and urban morphological structure" (Mulickovski, *ibid*: 154)

Ohrid and Struga have their own physiognomy that differs from other places in Macedonia. They have a lake image and soul. Despite the fact that they have a recognizable spiritual image from many centuries of existence, today they have lost their physical image and can hardly be recognized, but there are numerous fragments in them that indicate their spiritual identity.

Architect and philosopher Juhani Palasmaa talks about these time problems faced by cities, in particular Struga: "Each city has its own resonance that depends on the model and shape of its streets, architectural

¹ "Seyahatname Evliya Celebi", (Turkish translation. "Пагописи на Евлија Челебија"), Archive of RNM, 1670

style and materials. Our cities have lost their resonance. The wide, open space of modern streets does not reflect sound, and the echo is absorbed and censored in the interior of today's buildings. Recorded music in shopping centers and public places eliminates the possibility of capturing the acoustic volume of the space...Objects and cities are instruments and museums of time. They enable us to see and understand the passage of history and to participate in cycles of time that transcend individual life" (Pallasmaa, 2012:55).

The city of Struga had its own echo, which reverberated during the market days, but also from the sounds of the bazaar. Today, the '*city frequency*' has been displaced and instead of pleasant city sounds - city echo, noise dominates in every part of the city.



Picture 5 – The mouth of the river Crn Drim



Picture 6 – Struga's city museum



Picture 7 – A fragment of the old core of the city



Picture 8 – Street in the old city center

In addition to the above-mentioned characteristics of Struga, there are other semantic marks of the past, which make it specific. Unfortunately today, few of them have been preserved, and they can be mentioned as a time machine with pictures and frames of numerous old documents - photographs of the past. The elements of the past are the old town residential houses, with narrow streets of Struga in the central city area, which actually preserved the Old Struga Bazaar.



Picture 9 – Old bazaar in Struga, 19th century



Picture 10 – Characteristic shops in the bazaar

Bridges on the Drim River are a mark of Struga's heritage. They evoke the memory of the old bridges and the natural river bed, which with the old original wooden boats maintain the authentic image of the city. Existing architectural structures, as Pallasmaa emphasizes, serve as significant means of memory in three different ways: first, they materialize the flow of time and protect it from oblivion by making it visible, second, they concretize memory through the preservation and projection of memory and finally, they stimulate us and inspire both recollection and imagination.



Picture 11 – A bridge on the river Crn Drim



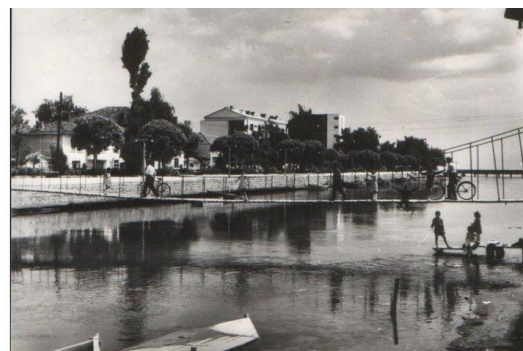
Picture 12 – Fishing boats on the riverfront

Where are the spacious eel fishing grounds at the mouth of the river in the lower part of the city lost and left behind in the past? And while we seek to remember our past, the eels store that memory in their code during their journey to spawn from Struga to the Saragota Sea, and then the young eels return to Struga. Gone are the dalyans with their wide and flooded reed plantations and stilted wooden structures, with stilt-covered utilitarian buildings.

Milan Kundera points: "There is a secret connection between slowness and memory, between speed and forgetting...The degree of slowness is directly proportional to the intensity of memory, the degree of speed is directly proportional to the intensity of forgetting" (Kundera, 1966:39). Contemporary expansion processes in Struga are proportional to the intensity of forgetting and undefined urban changes, which should take place in a peaceful, successive development. According to Pallasmaa: "With the astonishing growth of the speed of time and with the constant acceleration of our experiential reality, today we are seriously threatened by a general cultural amnesia. In today's fast-paced life, we are only able to notice, but not to remember" (Pallasmaa, 2017:24). The hanging idyllic suspension bridge (pic.14), which represents an organic bridge of the natural wonders of the river, has been replaced with concrete bridges over the river, which today is regulated as the Amsterdam or Petrograd canal in the middle of the city.



Picture 13 – Former wilderness on the Crn Drim river



Picture 14 – Suspension bridge over the river

Today, a city clock - TOWER does not exist, not even as an idea, as many cities are proud of their old city clocks. There is no longer even a wooden bridge with shops, with which Struga could be compared to the bridges in Venice (Ponte di Rialto) or Ponte Vecchio, on the Arno River in Florence, Italy. But there is not even a single palace on stilts as a restaurant or as a museum of the type of the former great palace-saraj of the aforementioned Eminagate.

There, the habitat was formed on the principle of mutual relationship and cohabitation with the natural environment, where built urban morphological structures - such as residential houses with wooden bridges, remote houses and other objects were in overall ecological and spatial harmony with the

environment. These features have disappeared today. Overpopulation - demographic expansion has taken its toll. Even the fishing stock, which used to be sufficient for a small number of the population, meeting the needs of the settlement, does not exist nowadays. There are fewer and fewer fish of the endemic species of whitefish and trout, and one day even the eel will completely disappear from the endemic fauna of the lake and river.

Struga through the transition to globalisation

Today, Struga is a multi-ethnic city with a rich culture and tradition, which in post-socialism and post-transition is trying to overcome the old problems of earlier periods on its own and at the same time to be ready for the new time that is coming: integration, connection, communication with the neighborhood and in the European Union. For this purpose, local authorities have a great desire to attract domestic and foreign capital that will contribute to the growth of the city. On the other hand, private capital aims to increase its profits.

During the functioning of the SFRY, the city of Struga had a socialist planned economic development. On the one hand, as a tourist town, it was intended for vacation of workers in so called workers' vacation areas and camps, and on the other hand, as an industrial town, where in that part of the town were active factories with a non-polluting character.

In the transition period, when R.Macedonia became an independent state, the city of Struga recorded stagnation in its development. Privatization of social capital began and as a result, part of the factories are privatized, some are broken up into smaller plants, and a certain part collapses. Within the tourist capacities, it is evident that the number of tourists is decreasing due to the specific purpose of vacationing in Struga, and with that some of the workers' resorts are closing, some of them are being privatized. However, in that period they cannot offer the requested tourist service. The result of this transition is an increase in the unemployment of the population, which turned from economic resistance into a political problem. In that period, the population began to emigrate massively in search of work in Western European countries.

Today, the Municipality of Struga is one of 80 municipalities, which as a local unit functions in the system of state decentralization both at the national and local level. Struga, in the third decade since the independence of R. of Macedonia, FYROM, and today's Republic of North Macedonia, is at a crossroad. Which direction should he choosen, and which can he chose?

With uncontrolled construction, expansion and population growth in the surrounding villages, the problem of urbanization and environmental pollution arises. Apart from investing in industry, private capital is also starting to invest in tourism and hospitality. Since Struga has favorable natural characteristics for the development of lake and mountain tourism, the "building conquest" of the surrounding mountains begins. From the tourist and economic aspect, this situation is positive, however, unplanned financing and construction of tourist facilities, as well as the struggle for the economic profit of investors, contributes to the reduction of the efficiency of tourist capacities and offers.

The municipality of Struga is today a desirable tourist destination. Lake-recreational tourism is the most developed type of tourism in the Municipality and has the most favorable conditions for further development and promotion. The development of tourism in Struga until independence moved with different dynamic, and after independence, with the transformation of society, tourism in our country stagnated and had a tendency to decrease. In the period from 2015-2019, a positive trend can be observed in terms of attendance and the number of overnight stays in the municipality, which is due to the political stability in the Region, but in the last few years, due to the more frequent global economic and political problems, as well as the emergence of the COVID-19 pandemic, tourism parameters have visibly changed (tab.1).

Number of tourists in Struga Municipality	2019		2020		2021	
	Foreign	Domestic	Foreign	Domestic	Foreign	Domestic
	54.034	52.372	7.554	54.930	13.830	49.697
Total	106.406		62.484		63.527	

Table 1 – statistical data on the number of tourists in Struga Municipality (source: SSO-RNM)

Conclusion - Challenges for preserving or losing city identity

Nowadays, the urban area of Struga is a complex mosaic, which reflects all the ways and needs of the citizens and the changes that take place every day with great speed. Therefrom, the form of the city of Struga is distorted every day and contributes to the uncontrolled expansion and even "swallowing up" earlier suburban villages, which are now physically part of Struga, and on the other hand, according to their essence and organization, function as villages. This directly affects the change of the city's identity.

Changes that come from the economy and politics certainly affect the urban functioning of the city. New technological processes and globalization certainly have a big impact. If they are included in the urbanization process in a planned way, they contribute to future development, but in Struga they are only integrated into the overall urban disturbance.

According to chronicles and legends, we remember that a large fair was held in Struga, where around 40-50,000 visitors gathered and which lasted for ten days, during which trading took place in hundreds of shops and conversations were held in different languages. One of the central trades in the economic life of the city in the past was silversmith, and there were also blacksmiths, rope makers, potters, etc. Today, the bazaar is losing its distinctive crafts, and the city's architecture is disappearing every day. The city is increasingly suffocated by new buildings, so the danger of remaining only in old photos becomes more and more real. Bondruk constructions can still be seen on old buildings, which leave a special artistic impression, and although they look strange, they still persistently defy the test of time.



Picture 15 – Old and new forms of dwelling in Struga

Experts believe that in a period of 20 years, more than 80% of the old core was completely destroyed. By means of permits for additions and upgrades of the buildings located on the first line in the city bazaar, as well as next to the quay of the Crn Drim river, the city landscape and the silhouettes and looks of the two main symbols of the city are being systematically destroyed. Every investor wants to get as much space for construction as possible, and thus profit, but the local government should put it in the legal framework by means of a detailed plan. Therefore, this is too worrisome and local authorities in cooperation with museum institutions are taking measures for adequate protection and preservation.

Spaces where the elements of tradition are emphasized increase the collective memory, they carry identity within themselves, and also influence group identification, which must first of all be protected, revitalized and urbanized. This can be achieved with the introduction of new urban values, which will enable new symbols in the area and will be a continuation and complement of the historical development of life in Struga.

Nostalgic reminiscence of good times and good places, according to Bogdanović, translated into Struga, inevitably refers to the artistic treasure that the city has in its optimal amount for the greatness and wisdom of survival. "It also means discovering oneself in the mirror called the city." (Bogrdanovic, *ibid*: 54)

According to prof. Mako, today's approach to aesthetics opens up questions related to its sociological, political, ethical, religious, psychological and symbolic participation within the framework of a complex understanding of the spirit of the times and architecture (Mako, 2005). Of course, it is impossible to summarize all these aspects of the work in one analysis, but surely their values are reflected through each other. In the case of Struga, demographic aspects are dominantly intertwined with religious aspects - Orthodox and Muslim, in influencing the current process of functioning of the city.

The vernacular heritage can be taken as a form in the architectural design of the city with the multicultural tradition of Struga to be a continuous course of functioning of the city directed towards a

modern way of life and preservation of its own city identity. Therefore, the revitalization of city places, memory has an essential role as a basis for remembering space. Such objects become integrated with our identity. Through interventions in architecture, we can reflect and materialize ideas and images that we have preserved in Struga's past. This allows us to structure, understand and remember the flow of reality, and thus to recognize and remember who we are as residents of a certain city in the continuity of culture and time.

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INFLUENCE OF CULTURAL TRENDS AND POPULATION MIGRATION ON CHANGE OF THE TRADITIONAL ARCHITECTURAL EXPRESSION OF RESIDENTIAL ARCHITECTURE

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ABSTRACT

This paper presents a part of wider research regarding the transformations of the traditional architectural expression of residential architecture under the influence of cultural trends and population migrations. The research is based on the analysis of the transformation of the spatial-functional organization, as well as structural and architectural characteristics of vernacular architecture in relation to social-cultural trends. The aim of this particular paper is to define the newly formed cultural patterns that have an impact on the changes in the architectural expression of the traditional Serbian house of the Moravian-style. The focus of this study is on the street facade, as an element that represents the contact zone between the private life of users and the public sphere. Through comparative analysis of traditional and contemporary forms of street facades of residential architecture, the study results provide conclusions about the principles of transformation of architectural values of vernacular architecture under newly formed cultural patterns. This type of analysis, with emphasis on architectural expression, introduces a new kind of interpretation of population migrations and their reflections on vernacular residential architecture. This study could improve knowledge about the impact of migration on the formation of cross-cultural patterns that (re)shape the architectural values of space.

INTRODUCTION

The growth of global culture has resulted in the impact of various cultural currents in the modern era. In places where there is a higher volume of migration, changes in communication codes and architectural design are more obvious. These changes are the result of transcultural processes of idea exchange and cultural patterning. In areas where there is a higher volume of population mobility as determined by population censuses, the sociological phenomena of intercultural migration have the most obvious effects on the shape of space (Penev & Predojević-Despić, 2012). Cultures do not exist in closed systems but rather are a part of a larger network of national cultures and their customs. Cultural affiliation is distinct from territorial and ethnic affiliation. People's propensity for migration gave rise to a number of subcultures and their artistic outgrowths. The idea of the intrinsic diversity and complexity of modern society is the foundation for the theoretical perspective of transculturality (Welsch, 1999). This includes a vast number of cultures and ways of life that are intertwined and shape one another. Today's cultures are more interconnected than ever, thanks to population mobility, making transculturation a common occurrence. In contrast, Gideon (Gideon, 1969) refers to playboy architecture when he discusses the passing of architectural trends and criticizes modernist movement architects. His insight of how giving in to the pressures of contemporary society results in saturation the phrase "death or metamorphosis" is very restrictive; instead of asking whether a particular architectural action will vanish or change into something new, one can ask whether new traditions will emerge. According to Ljubenov and Roter-Blagojevic (Ljubenov and Roter-Blagojević, 2016), new traditions of vernacular components in construction are still alive in the form of integral parts that make up a home, despite the fact that vernacular architecture is disappearing and the number of buildings is declining in comparison to contemporary architecture. The relationship between traditional architecture and contemporary architecture is the primary focus of this paper's structure, which is more specifically concerned with the architectural principles that underlie vernacular architecture and how they are altered in the setting of contemporary architecture. By establishing a theoretical notion that links the architectural discourse with psychoanalysis, the transformation of the traditional Moravian home is explained through the alteration of the architectural communication codes under the effect of transculturation. The research draws conclusions about the alteration of the way of interpreting the representation of the residents' values in accordance with the change in the social context through a comparative analysis of the characteristics of the traditional Moravian-style house in Serbia and the modern transformations of its original form. The research's significance is seen in how the house's exterior highlights the unconscious in the superego's architectural representation. The investigation of population migrations in relation to the regions where Moravian-style houses have presently influenced the decision to define the spatial framework and to choose the case study (Photo 1). By examining the Moravian-style home's architecture in Serbia and the perception of it as a traditional "native house" from the organizational concept on the levels of an urban setting and house plan. Furthermore, the analysis of the house from the aspect of building structure and construction techniques, as well as design characteristics, is established a relationship to the metamorphosis of single-family housing in the region of eastern Serbia in the contemporary context.

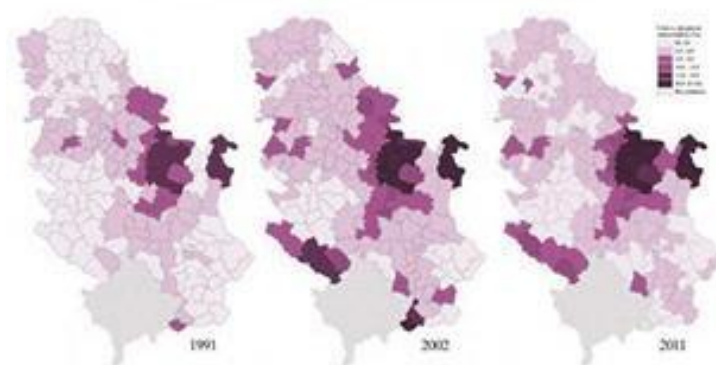


Photo 1. Penev and Predojević-Despić, Spatial aspects of emigration from Serbia. Three "hot" emigration zones, graphic representation of population migrations, 2012

There are two different interpretations of the word "native house". One may argue that the single-family home is the initial type of dwelling that gave rise to later metamorphosed varieties. The idea of a native dwelling, on the other hand, might refer to a personal level even if it is strongly tied to the notion indicated earlier. More specifically, the personal level represents the sense of community within a place that has its

sociocultural norms and customs that are passed down from generation to generation, continuing unconsciously as vernacular, while with changes, it transforms folk architecture into contemporary architecture.

VERNACULAR ARCHITECTURE

Vernacular architecture includes people's dwellings and other structures. Their environment and available resources are usually built by the owner or the community, using traditional technologies. All forms of vernacular architecture are built to meet specific needs, by the values, economies, and lifestyles of the cultures that produce them

Pol Oliver (Paul Oliver)

Determining the meaning of the vernacular architecture phenomenon in contemporary architecture, in the beginning, is paramount to defining elements of tradition that refer to vernacular architecture and its metaphor in a contemporary socio-cultural context. *In the Encyclopedia of vernacular architecture of the world* (Oliver, 1997), Paul Oliver has defined vernacular architecture as an autochthonous element of the landscape that was built to meet the needs and in accordance with the values, economies and ways of living of the culture that produces them. This essay will draw on Paul Ricoeur's (Ricoeur, 2004) theory of metaphor to discuss the ideas of metaphor and reference.

To comprehend the reference metaphor in every aspect of human behaviour, the author of *Rules of Metaphor* (Ricoeur, 2004) identified the techniques to use metaphor and reference and explained them. Using the aforementioned linguistic theory, the term "reference" will be employed in this work to characterize the perception of the existence of deeper levels and the builder's intents. His idea is that reference can be studied on two levels: hermeneutic and semantic. Because it allows for the comparison of grammar and syntax as well as style or mode of expression in both written and spoken form, the linguistic analogy of vernacular construction and dialect is important. The vernacular architectural language is a term that refers to built items (houses) that are specific to a location and that speak the local or regional dialect. A vernacular is a result of the local inhabitants of a place. The forms and meanings connected with architecture are consequently intrinsic to the local population, as are the traditions and rituals that produce them. The site has importance because of vernacular architecture because it is connected to the region where it is produced. Folk architecture is directly impacted by cultural trends, which causes a gradual transition and retention of the original forms in a setting of isolation, fostering the local population and values (Dayaratne, 2020). In a less remote setting, the inheritance of traits that identify both the people and the origins of cultural values influences the transformation of a vernacular building.

THEORETICAL BACKGROUND: CONCEPTUALISATION

Building on the skeletal remains of their forebears, humans in early civilizations first came up with the idea of a multi-period city. The tradition that has been accumulated cuts through the superficial layers of recently developed cultural and social norms. *Tabula scripta*, an urban landscape that continuously rewrites its memories as it ages, is the antithesis of the modernist *tabula rasa* (Jencks and Silver, 2013). Every product of the evolution of architectural expression codes has roots in the conventional components of traditional architecture. Vernacular architecture as a fundamental component of building culture vanishes, but its spatial qualities and ways of conceptualizing space are still present in folk building culture (Mandrapa, 2016). Every product of the evolution of architectural expression codes has roots in the conventional components of traditional architecture. Vernacular architecture as a fundamental component of building culture vanishes, but its spatial qualities and ways of conceptualizing space are still present in folk building culture (Asquith and Vellinga, 2006). Building facades are interfaces where vernacular architectural expression is most prominent in modern architecture. The analysis of the folk architecture facade components, perceived as contemporary residential architecture beneath the layers of developed cultural and social standards, is the main goal of this paper.

The theoretical framework this study develops establishes a link between vernacular architecture and the id/subconscious. The id, along with the ego and super-ego, is one of the three components of the personality structure, according to the psychoanalytic theory of personality. It stands in for the original instance of the personality, which due to its instinctive nature is unaware of time, logic, and morality, and in which time and space do not exist (Freud, 1923). Sigmund Freud identified the id as an ancient region and the source of innate energies whose only purpose is to provide immediate and total satisfaction (Photo 2). The ego, or "I" part of the mind, is the personality's conscious component. This level of the personality acquires knowledge of the outside physical and social worlds by reasoned facts gleaned from the senses, memory,

and thought. The conscious component of the personality, known as the ego, recalls, assesses, plans, reacts, and behaves in the physical and social context. Unlike the id, the ego acts according to the concept of truth; impulses cannot be indulged for enjoyment. The super-ego, which stands for conscience and morality, is the third component of the psyche. The moral and normative principles that make up this system have a significant role in regulating conduct. The final stage of personality development, this layer, is a byproduct. This layer of personality, which is the last to develop, is a product of living in a certain social environment. The construction of vernacular architecture has a connection to the subconscious, which is the foundation of all upcoming superstructures. This project will expand our understanding of the symbolic allusions made by vernacular architectural elements in contemporary architecture. By considering traditional architecture to be primitive in comparison to the id, it is assumed that modern architecture is essentially a superego that has been overemphasized in appearance but is unable to escape from its core and the id.

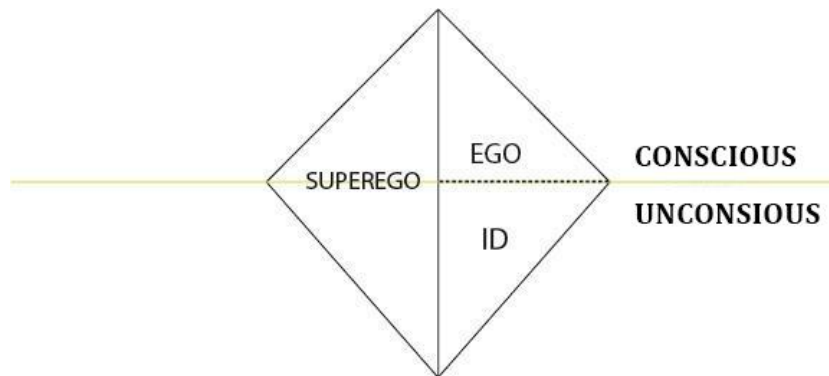


Photo 2. Graphic representation of the three parts of the personality

THEORETICAL BACKGROUND: CONTEXTUALIZATION

Vernacular architecture, its appearance in the Moravian-style house, according to Aleksandar Deroko's research (Deroko, 1974), is noticeable in parts of eastern Serbia (Photo 3).



Photo 3. Graphic representation of the three parts of the personality

Why does a house need to be attractive? Intending to dissect the ancestral home and its ornamental components, this question was the main focus of the exhibition “A Beautiful House”, shown in 2022 at the Ethnographic Museum in Belgrade. People transmit their distinctiveness, particularity, and exceptionality to the community through aesthetic manifestations (Lepa Kuća, 2022). Individualistic interpretations of widely accepted artistic expressions ensure a balance between acceptable variations and contrasted extreme departures from the norm within the established group. Whether or not it is adorned, every home expresses a family narrative meant for the community as a whole and establishes the family's place within the greater

traditional community. The main research question in this paper is based on the assumption that through the mentioned type of interaction with others, the primary concept of existence has been moved from the level of material survival to the level of social life.

MORAVIAN HOUSE

The fundamental designs and construction techniques used to build rural homes in Serbia during the 18th and 19th centuries were influenced by a number of factors, including the availability of building materials, the local political, social, and economic climate, and the ethnic makeup of the populace (Pestic Maksimovic, 2014). Both the types and forms of dwellings, as well as the aforementioned qualities, have evolved over time. It is feasible to follow this cultural phenomenon's development via more than two centuries of literature that are full of lifestyle changes.

The space of the house of the Moravian-style and the evolution of the spatial plan are illustrated by the progression that went from a rudimentary shelter to a functionally expanded totality (Photo 4). Based on the construction process and the materials used, we can distinguish a wide variety of house types in Serbia. In the forested parts of western Serbia, from Šumadija to the eastern districts, all the way to the Rtanj mountain, a log house, or “talpara”, was a typical place of habitation. A “bondručara” (Bundwerk-house), is found in locations with a dearth of huge trees but an abundance of bushes and round logs (Findrick, 1985). This typology's main structural component is a light timber frame filled with appropriate material. According to Pavlović et al. (1987), Moravian-style homes are most prevalent in Pomoravlje, Eastern Serbia, Kosovo, and Metohija. In terms of size, the house developed from the simplest den and one-room log during the Turkish era to a two-room structure. Spatially, the home evolved from the most basic den and one-room log in the Turkish period to a two-room dwelling in the second quarter of the 19th century. In the middle of the 19th century, the house developed into a three-room house, and towards the end of the 19th century into a four-room house.

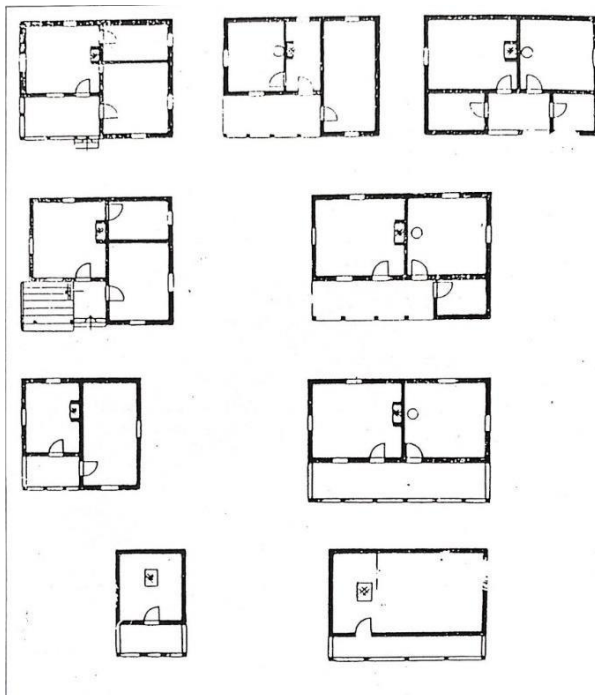


Photo 4. Diagrammatic representation of the development of the house plan, B. Kojić, *Village architecture and ruralism*

The Moravian house plan evolved over the course of the 19th century, starting with two tranquil rooms and eventually expanding to three. When considering living space, utilitarianism came first. The room had a fire blazing in the middle, and there was always a low round table and three-legged half-chairs near the fire. The Moravian-style home included an arched beam that was carefully positioned on the porch. This architectural form later underwent development and now includes ornamental arcaded arches on the porch (Photos 5 and 6). The transformation of the porch's finishing from a strictly functional beam feature to a decorative arcade highlights the necessity to improve the living space's aesthetics and shift from a solely

practical way of thinking to take the space's quality and aesthetic qualities into consideration. Most of the time, when something vanishes, something new emerges with an entirely new perception of worth and purpose (Baudrillard and Nouvel, 2002). Arches were used to decorate the exterior and are therefore seen as an unneeded feature. However, since the earliest cave shelters were discovered, people have needed to decorate their homes. In architecture and urban planning, more than in other fields, the observer plays a more vital role when it comes to the visual impression of transformation. Sensory effects that are present during the dynamic process of encounter with an object or urban setting weigh down perception. Architecture or user requirements, which are the carriers of the capacity for changing perceived value, can influence how a space is experienced (Mako, 2017).

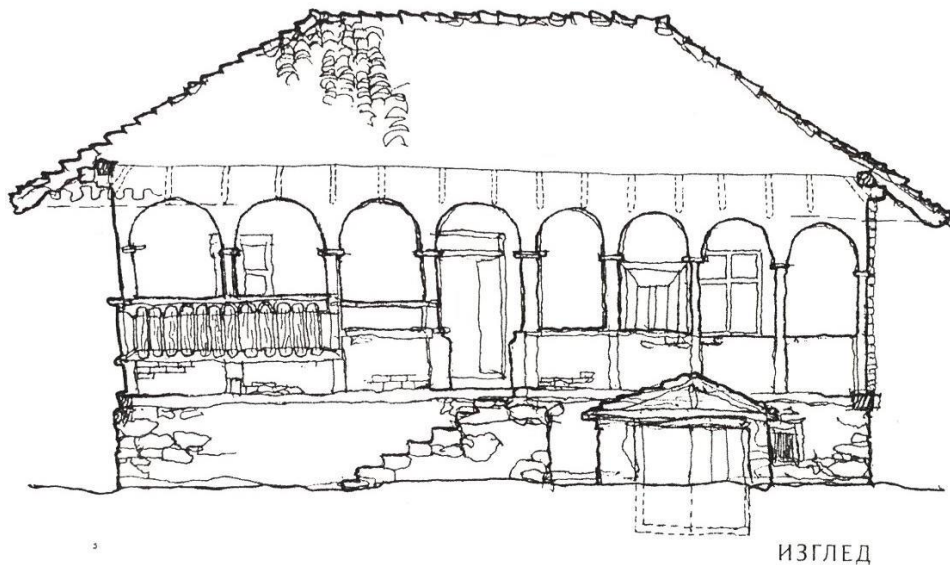


Photo 5. Pešić Maksimović, N. Moravian House of Serbia, 2014



Photo 6. Photo presented at the exhibition "Beautiful house" (Lepa kuća, 2022)

The privacy levels of the space are defined by the position of the house on the property. Small towns developed their own visual identities either consciously (in accordance with the Central European urbanism of the nineteenth century) or unconsciously (in accordance with the requirements and knowledge of the settlers). The street front and profile of the street are essential in consideration of the appearance (Dopudja, Rakonjac and Gadzic, 2019). In both the past and the present, the street has played an equally significant role in the development of the settlement's identity (Kuzović, 2018). The facade and the layout of the house's interior spaces were significantly influenced by the urban environment and the design of the street front. Moravian-style houses take a central position on the plot that allows a yard and porch providing

a higher level of privacy for users, opposite the houses in Vojvodina situated in the contact zone of the plot and the street. The porch has the role of the main entrance to the house and is considered an open, covered space in front of the building (unheated space). The porch depicts the evolutionary step of ancient and medieval porticoes. In addition to the covered area of the entrance, the porch also represents a buffer zone between the changes in the activities taking place indoors and outdoors, i.e. a place for removing muddy clothes and wet raincoats in the rural residential architecture of Serbia (Pešić Maksimović, 2014).

The construction technology and structural characteristics of the Moravian-style house initiated the development of aesthetic values. Aleksandar Deroko, in his book *Narodno neimarstvo* (Deroko, 1968) formulates the term “bundwerk construction” as a form of timber building technique for family houses in Ester Serbia. The specific aesthetic value of “bondručara” (Bundwerk-house), a house with a structure based on wooden pillars and frames – wooden beams that were arranged partly in a lattice or diagonally over a cross, is achieved by exposing the difference between constructive elements (pillars and beams) and wall fabric filled with soil and straw (Kojić, 1941). To reduce the possibility of moisture penetrating into the living space, Bundwerk-house is usually built on several rows of roughly stacked stone, while foundation beams are placed on the crushed stone sub-walls. The rest of the house structure is wooden, while a filling between the attics is covered with wooden pebbles, straw and mud. The roof of a Moravian-style house is four-gabled, whether it is a house plan a square or a rectangle. In a house with a “doksat” (type of oriel window), the roof form is changed and becomes a special roof in the “L” shape (Photo 7). The house floor is made of mud and lime.



Photo 7. Photo of wooden frame structure of a Moravian house, (Pešić Maksimović, 2014)

The openings that appeared on the facades of **Moravian-style** houses are a significant improvement compared to the slits (“pendžeri”) which existed before. The windows number increased in proportion to the development of the number of rooms. The glass windows were technological progress that brought a better quality of life for residents. After achieving utilitarianism, window frames gain more decorative elements to match the aesthetic of the porch.

The porch and “doksat” primarily consisted of a smaller or larger number of wooden pillars with the supporting beam and the roof structure above. The introduction of a decorative arch between the pillars was not aimed at increasing the load-bearing capacity of the structural elements. The aesthetics of the house were brought before utilitarianism. The construction technique of arches depended to a great extent on the craftsman's skills (Photo 8).

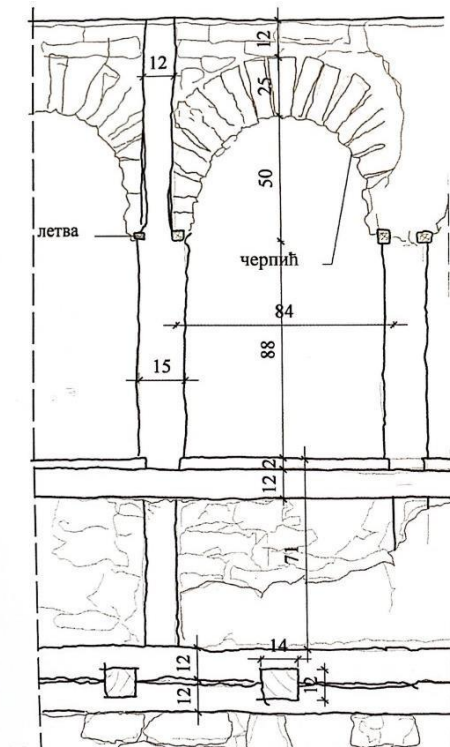


Photo 8. The construction technique for an arch on a Moravian house (Pešić Maksimović, 2014)

The street facade defines the boundary between private and public life. In vernacular architecture, the facade of the house (along with the yard and the fence) is established as a structured system of materialized meanings formed by the owners of the house. The residents of the house decorate the facade using familiar patterns and cultural codes to present the lifestyle and make the interaction between the family and its social environment. As a result, the facade of the house can also be considered as a physical space that objectively and symbolically delimits the family as the basic unit of the village to the village itself which represents the community. The facade has the role of a social space intended for communication. This form of interface translates the cultural flows into communicational patterns presenting the relationship between family and society. In other words, the house, with the landscaped yard and fence, represents not only the visual component of the residential culture but also a complex cultural system with its set of meanings, used for multi-layered communication with surroundings. Decorative elements on the Moravian house objectify complex social interactions between the family and the village community (Lepa kuća, 2022).

CONTEMPORARY ATRERNATION OF A MORAVIAN-STYLE HOUSE

The architectural values that reflect the specificities of the traditional vernacular houses in Eastern Serbia were analyzed through three Moravian-style houses built in a contemporary context. Photo 9 shows the street facades which clearly depict the transformations of the original form of the Moravian house.



Photo 9. Typical examples of contemporary alternation of residential architecture in Eastern Serbia, authors' sketches

House plan transformation is a consequence of spatial organization improvement following the contemporary lifestyle. Inevitably, there was a change in the height of the house, from one-story to two-story building. The house is developed along both the horizontal and vertical axes. The former one-room floor plan is evolved into several rooms plan, improving the possibility of different types of activities development indoors.

The position of the house on the property has remained unchanged over time, as well as the relationship between the perception of private and public life. The desire to make decorative arches, which are noticeable in recent designs of contemporary residential architecture, has been preserved. However, in addition to improving the decorativeness of the arches, residents also decorate the yard entrance gates in front of the houses. These newly formed aesthetic values can be connected with the previously mentioned form of presenting the family to the village community, i.e. presenting cultural values through the decoration of exterior – facades.

Construction technology has been transformed, modernized. The metamorphosis of structure elements and materials came with new technologies. Concrete and bricks replaced wooden structure and clay. The houses have kept the characteristic of being raised from the level of the ground in order to prevent the entry of moisture into the house.

Hence, the modernization of construction techniques and applied materials, the traditional aesthetic values presented in exterior decorativeness, as well as tendency to add rooms over time are progressively developing.

DISCUSSION AND CONCLUSION

The research presented in this paper gives insight into the transformation of cultural patterns of traditional residential architecture under the influence of cultural flow modification. Making the connection between folk architecture, psychoanalysis and the contemporary architectural context, this study shows the relationship between tradition and layers of personality, the subjective aspects of users, which shape the identity of the place. Vernacular architecture, as well as the id, represents the unconscious that the ego and superego transform; although it is impossible to hide the true nature, it is almost impossible to find an example of contemporary single-family architecture that does not have elements of the „native house“. The traditions and experiences of the past in folk architecture, as well as builders' constant desire to respond to social needs, emphasizes the humanistic aspect of architecture, as an addition to the technical-technological basis on which it develops. Through the comparative analysis of the traditional Moravian houses and their contemporary form, it is shown that lifestyle changes can lead to a metamorphosis of the design process of single-family houses. However, the study shows that the elements of tradition in vernacular residential architecture are the basis for the future stages of the development of social and cultural flows.

By reflecting on the answer to the question – Why does a house need to be attractive? – the theoretical framework of the study focuses on the facade of a Moravian house as an external representation of the lifestyle of the family that lives in it. The results of the research showed that, through the Moravian style house evolution, the introduction of the arch on the porch changed the tendency for spatial and structural rationalization in the construction process. Valuing exclusively utilitarianism was completely abandoned in the intention to explore the possibility of the exterior (facade) design of the house. The architectural expression of the porch and “doksat”, which stand out with their decorative arches, go beyond primary (basic) function. These elements, in contrast with the rest of the house, cease to be just a utilitarian part of the living space and grow into a utilitarian decorative component.

References of the id in the superego are visible beneath the all the elements that the superego tries to make its unconsciousness visible. The components of vernacular architecture such as arcaded porches and decorative window trims are also visible in contemporary forms of houses. In the contemporary architectural context, the tendency to emphasize decorative plastic on the façade, as well as access gates can be translated into the unconscious effect of decorative arcades and decorative painting on the wall.

The decoration of the entrance yard gate in addition to the unchanged tendency to emphasize the decorativeness of the street facade. This indicates the unchanged relationship of socio-cultural aspects and the importance of presentation to a wider social context with an upgrade in the understanding of multi-layered communication. Through the analysis of the traditional form of the Moravian house, afterward the analysis of house contemporary interpretations, it can be concluded that technology represents the conscious, the ego.

Therefore, the ways of implementing and relating the material and immaterial components of vernacular architecture form the essence of the "native house". Although the ornamental components themselves changed due to the change of style and taste of the inhabitants in modern villages, such a cultural pattern

remained as a special kind of heritage in the culture of living in modern rural areas and communities. Hence, the essence of the “native house” is defined by the ratio of the material and immaterial components of vernacular architecture and tradition. Although the ornamental components changed due to the lifestyle changes in modern villages, the cultural pattern is preserved as a heritage in the contemporary cultural flows in rural areas and communities. Because of the two-way connection between the family and the village community, the home must be attractive as a constant reminder that human interactions must also be beautiful and harmonious, much like the aesthetic harmony of a building. One gives value to his existence in society by developing the aesthetic dimension of the apartment (Lepa kuća, 2022). This type of communication with others transformed the concept of existence from the level of material survival to the level of social existence.

The home, along with the landscaped yard and fence, symbolizes not only a visible component of residential culture but also a complex cultural system with its own set of meanings used for multi-layered communication with others. Decorative elements of the home interior and exterior represent the objectification of the intricate social relations of the family and the local community. Cultural migrations, followed by newly formed cultural flows, lead to changes in the architectural communication codes. However, the essence of residential architecture will always have its roots in the vernacular. Despite the layers of newly formed cultural and social standards, vernacular values will continue to break through the accumulated tradition that constitutes the essence of rural architecture even in a contemporary context.

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LESSONS FROM PASSIVE SYSTEMS OF VERNACULAR ARCHITECTURE FOR CONTEMPORARY CONSTRUCTION

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ABSTRACT

Vernacular architecture (in Serbia) is characterized by a lack of technology, and therefore demands for the use of passive systems that would improve the comfort of the users of the space. The strategies on the basis of which the objects were designed, built and improved were based on several bases: geographical characteristics, the influence of the sun and wind, orientation, the function of the object, the geometry of the form in relation to the local materials and the possibility of execution - that is, the construction technologies available in a given place in the observed time. With reference to the date criteria, it is clear that the strategies directly depend on the construction location.

With industrialization come new materials - such as glass, concrete and steel. They affect different ways of execution and design, but they also bring with them higher energy consumption and requirements regarding construction technology.

The lack of non-renewable resources, the economic crisis and global warming forced us to take a step back and think about passive systems that would enable the most sustainable possible behavior of buildings in modern architecture with innovative technology, help preserve the environment, use renewable energy sources, and reduce consumption. and the financial dependence of facilities, a lower rate of embedded carbon.

This research deals with the review of literature on the subject of vernacular architecture, the knowledge that can be extracted from it and passive systems in construction - in order to establish the basic points of energy saving (maintenance) and passive systems (principles) on the basis of which it is possible to further learn from the historical scope. architecture and construction for a green future.

INTRODUCTION

In recent years, LCA (Life cycle analysis) and the concept of energy efficiency have become a dominant topic in debates about architecture and construction. In this regard, Europe sets agendas aimed at promoting the efficient use of natural resources — in many cases with reserves for only a few tens of years — and consequently adopting solutions to their main cause of depletion, the construction industry (Bellanger & Lallement, 2008). In recent decades, this problem has been shaped by the pressure caused by the exponential growth of the world's population and the consequent need to build buildings and other infrastructure.

In order to complete the above-mentioned goals - it is necessary to examine innovative ways of construction. Nevertheless, it is relevant to think about the future of construction and on the basis that its past, according to some authors, was more sustainable - and carries with it lessons for the future.

Based on the repetition and improvement of solutions over generations, vernacular architecture is a reflection of a time when people knew how to cope with the scarce resources that were available. Based on available technologies and local materials, these buildings become elements that characterize places, assimilating the "context of people and places" (Ribeiro, 2008).

In the era of globalization - which began with the industrial revolution and intensified with the modern movement - which contributes to the homogenization of cultures, and therefore their ways of building, vernacular architecture is even more cited as a key element for continuing the discussion on cultural identity and on the benefits of returning to the construction specific to the geographical location. This approach would contribute to the reduction of waste and energy consumption by using traditional techniques and local materials, developed to adapt to the specific territory and climate.

This paper aims to show that vernacular architecture can contribute to improving energy efficiency in construction. Strategies used to mitigate climate effects usually have a low-tech profile (passive operation) and are less dependent on non-renewable energy, making them suitable for application today.

HISTORICAL REVIEW - CONTEXT

In the past, due to the lack of technology capable of maximizing comfort, buildings were constructed using passive strategies. These simple and smart strategies are based only on available endogenous resources and several criteria such as: geographical characteristics; insolation; orientation; geometry; form; material, among other things. Criteria of this type have been present since man decided to build shelters to protect himself from the natural environment. Although he did not master the concept of heat energy, or he did not know the laws of thermodynamics, man had an idea of the relationship between climate, form, building material and physical well-being through his senses and empirically.

It took many generations for people, from different cultures, to empirically arrive at the creation of form and the process of construction. These approaches have their own styles and characteristics and are perfectly related to different types of climates and geographical features. Some examples are those shown in illustration 1: (a) Iran's wind towers are an example of a passive cooling system in which the trapped wind is cooled by contact with the tower walls and porous vases, or small fountains, containing water, and then the wind is distributed among several departments of the building, removing existing heat loads; (b) typical wooden houses from the Nordic countries, where forests are abundant, so this material has been used for thousands of years to help protect against summer heat and insulate against winter cold; (c) yurts, portable houses from Central Asia and Mongolia, are made of a wooden frame covered with waterproof fabric and have a high resistance to polar winter, strong winds and the heat of the plains.



Photo 1. (a) Wind tower, Iran (Gryffindor, 2008); (b) Norwegian Traditional House (PhotoXpress, 2011); (c) Mongolian Yurt (Adagio, 2007) [apply style: strand-references]

Inherent building skills were passed down within communities until the Industrial Revolution, and the great changes that followed - interrupted this evolutionary line of folk knowledge.

In the second half of the 18th century, the industrial revolution marks the beginning of a new era, with profound changes at all levels. Increasing technological progress has begun to disrupt tradition. The rural population, seeking a better life in the urban areas, began an exodus to the cities to become a workforce in the new industries. The desertification of villages led to the disappearance of knowledge and experience that had been accumulated for thousands of years. At the same time, factories proliferated and the need to accommodate a new workforce began. Workers' settlements grew in proportion to the factories and are characterized by miserable and inhuman living conditions. Apart from the high density of buildings in the settlements, these houses had almost no light or ventilation - for this reason it is often called the dark period in the history of human habitation (Goitia, 1996).

Industrialization brought new materials and technological developments such as glass, cement and steel. The increasing use of new industrial and standardized materials homogenized different approaches to construction - as well as ways of living - until then depending on the materials available at the locations. In the twentieth century, the roots with the folk past were definitely severed. At the beginning of the century, transparency, light, air and sun became the flags of the modern movement. Artists and architects promoted glass structures as ideal hygienic models in contrast to the dirty cities of the Industrial Revolution. The global proliferation of these thoughts, revolutionary and necessary, slowly began to be assimilated by different cultures. The powerful images of architecture assumed to be universal - applicable to any geography - and some mistakes in imitating architectural models began to disrupt the most traditional cultures, often the poorest, which saw in them a reflection of a better life. The inadequacy of these models in contexts different from those originally thought, led to the distortion and oblivion of the vernacular design and construction process.

Modern architecture, based on industrialized materials with low thermal resistance, especially for large glass surfaces, was very sensitive to external temperature fluctuations. Therefore, in order to provide comfort conditions indoors, natural ventilation was highly dependent. However, in 1926, the discovery of Freon and other refrigeration technologies led to the belief that thermal comfort inside buildings could be achieved solely by mechanical means. The architecture of the 20th century managed to make the interior of buildings comfortable, regardless of how unfavorable the conditions of the external environment and the construction technologies used were.

In 1973, the energy crisis showed the dependence on fossil fuels and the limitation of resources. A year earlier, the Club of Rome had published its first report entitled *The Limits to Growth* (Meadows, DL et al, 1972), gathering warnings about the need for reflection. This report was the basis for the development of the so-called "green building" concept. His topics were about the return to traditional ways of building, the use of natural materials, renewable energy and solar energy. However, the discovery of new oil wells in the following years clouded the crisis and the will to implement these ideas.

At the beginning of the second decade of the 21st century, the implementation of measures to reduce CO2 emissions and recreate sustainable architecture is urgent. At a time when society is faced with the urgent need to reduce energy costs in buildings, we should look back to strategies used in earlier times, where energy was not readily available and machines did not exist, where builders had to learn and experiment with other systems. which optimize indoor comfort.

THE CONTRIBUTION OF VERNACULAR ARCHITECTURE TO THE REDUCTION OF ENERGY USE

Vernacular architecture is characterized by the fact that it is a direct product of man's relationship with the environment, satisfying the basic need for shelter and seeking harmony with nature. These implications are reflected in regional differences in the use of local materials and techniques, the adaptation of buildings to the specific climate, family structure and its economic activity and behavior in the community. The form of the objects was obtained based on multiple constraints and guided by the optimization of the scarce resources that people had. Nothing was wasted, neglected or ignored because the communities had the empirical idea that their well-being essentially depended on balance with the environment. For these reasons, the knowledge inherent in this type of architecture should be the basis for sustainable development.

This relationship between the built and the natural environment has long been embodied in the Roman mythological concept of *Genius Loci*, which associates with each location a deity responsible for its destiny. Therefore, the choice of place for the implantation of a building or a city would be conditioned by the characteristics and temperament of that deity (Cerqueira, 2005). This concept was also highlighted by Vitruvius 2000 years ago. More pragmatically, he discussed the importance of choosing a site for construction, through the analysis of animal livers and plants from those sites, thus identifying, among other things, the quality of water and pasture and the type of soil (Vitruvio, 2006).

The importance of these generated forms for sustainable architecture is described in a diagram created by Stefan Behling, of Foster + Partners, together with Arup Engineering Consultants. This diagram shows two triangles that question the future of additive systems (adding layers, adding cost, adding sophistication) that support sustainability (Illustration 2). As an alternative to this system, the diagram presents a taxonomy of sustainability based on active systems, passive systems and architectural form – with an inversion of their importance. In the inverted triangle, primacy is restored to the architectural form, a change supported by architects and all those who defend the history of architectural typologies as elements that provide lessons of sustainability through specific conditions of evolution. However, it seems appropriate to add a new triangle to the diagram representing the past. This triangle consists of only two systems: architectural form and passive systems. This new triangle is of great importance in determining the definition of the future.

The definition of the future should seek the integration of tradition and modernity, thus establishing a hybrid system that combines intelligent materials with traditional materials and enables the exploration of new aesthetic and functional concepts. Ignoring all the knowledge and technological potential that exists today would be a mistake, when the criteria for high-performance buildings need to be achieved.

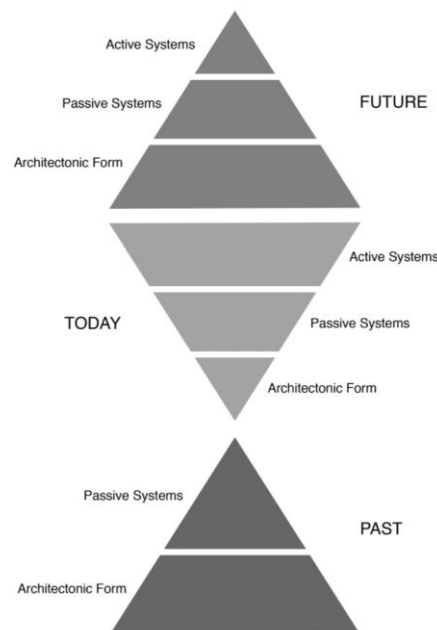


Photo 2. Behling's diagram - triangles of the present, past and future (Abalos, 2009)

Vernacular architecture, due to its multitude of types, contains a wealth of different strategies for mitigating the effects of climate. Some of these strategies relate to the discussion of energy efficiency in buildings using passive design strategies, such as:

- Adequate urban planning - the positioning of construction sites and the organization of settlements are a reflection of the various orographic, climatic, economic and social influences that residents should try to take advantage of.

An example is the city of Yazd. The streets of Yazd have an angle of 45° (NE-SW) to protect people from the warm northwesterly winds, sand and dust storms. Likewise, urban blocks are designed and built facing the same direction or at an angle of 90° to this axis (Behranfar and Nurmohammadzad, 2011). Street settlements created at this angle allow to take advantage of the wind. On streets that take advantage of the breeze, hot summer air provides a more comfortable condition when replaced by cool air (Photo 3).



Photo 3. Yazd, Iran (World Heritage Journeys)

- Promotion of natural ventilation – the aim is to encourage air circulation in the building to ensure health protection and thermal comfort, especially useful for night cooling in warm climates, without compromising security from intrusion.

However, in areas with harsh winters, the intention is to reduce heat losses through ventilation, which explains the absence of chimneys in houses built in those areas.

- To reduce solar gains in summer - in the southern regions, in order to minimize heat gains, several strategies were adopted, such as: reducing the dimensions of the openings; use of a strong thermal inertia system of the building; and using light colors to reflect excessive solar radiation. Vegetation is also often used to control solar gains and, in many cases, deciduous plants are used to act as a thermal protector of facades and create a cooling effect through evapotranspiration (Fernandes & Silva, 2007).

- To capture solar gains in winter - balconies are oriented between south and west. This quadrant is the one that receives the greatest number of sunny hours with more intense radiation during the winter. Also, one should take into account the geographical position, as well as the wind direction for the observed area.

- Thatched roofs, due to their insulating properties, are a strategy commonly used in areas with cold winters. Also relevant is the principle of low ceilings, which enables rapid heating, cooling and ventilation of the indoor air.

- The principle of commonality - common corridors, corridors, public spaces with different functions, a common fire of the settlement... encourages the saving of resources and the availability of basic conditions for life and comfort to all users with lower energy consumption.

CONCLUSION

Vernacular architecture is a paradigm of the close connection between climatic conditions, modeled pragmatically by the scarcity of resources. The passive environmental adaptation strategies present in such constructions and perfected over generations are particularly relevant to the challenges that modern construction is now facing. The application of these lessons is relevant when it is known that new buildings have high energy consumption and the need to reduce. In this sense, this paper holistically evaluates this architectural manifestation, in the light of current knowledge, with the aim of finding a scientific justification for its knowledge in order to verify and improve its application in the future.

By learning from the past, the future can harness the potential of existing technology and improve it to change the current energy paradigm. Through the optimization of these strategies, it will be possible to meet the desired standards of comfort while reducing energy consumption.

In the current context, the study of vernacular architecture is a necessity, as confirmed by several scientific publications. This type of architecture is a model of wisdom in using natural resources and adapting the building to the surrounding natural environment and therefore can be a contribution to the sustainability of buildings. New techniques are needed, but we must also keep the old ones, consolidating the knowledge that the inhabitants have accumulated for centuries, in order to better adapt to the climatic conditions, the environment and the way of life.

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CHAPTER IV

FLEXIBILITY OF WORK AND WORKPLACE POST-2020

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ABSTRACT

In extremely challenging conditions during the initial stages of the SARS-CoV-2 pandemic, with the design brief and spatial programming in flux, the existing, traditional design methods were re-examined and changed. Flexibility of a workplace had to be redefined as a concept to incorporate a variable number of users on a daily level alongside other, novel and external conditions around work and work-related activities. Future thinking methods were applied and tested through design iterations and live modelling in accordance with real life scenarios and day-to-day reality.

The research is based on an interior architecture project (workplace design typology) completed in Paris, France in 2020 that deals with the reconstruction and adaptation of a historical building in the city centre.

Keywords:

flexibility of work, workplace design, interior architecture, built environment, future thinking

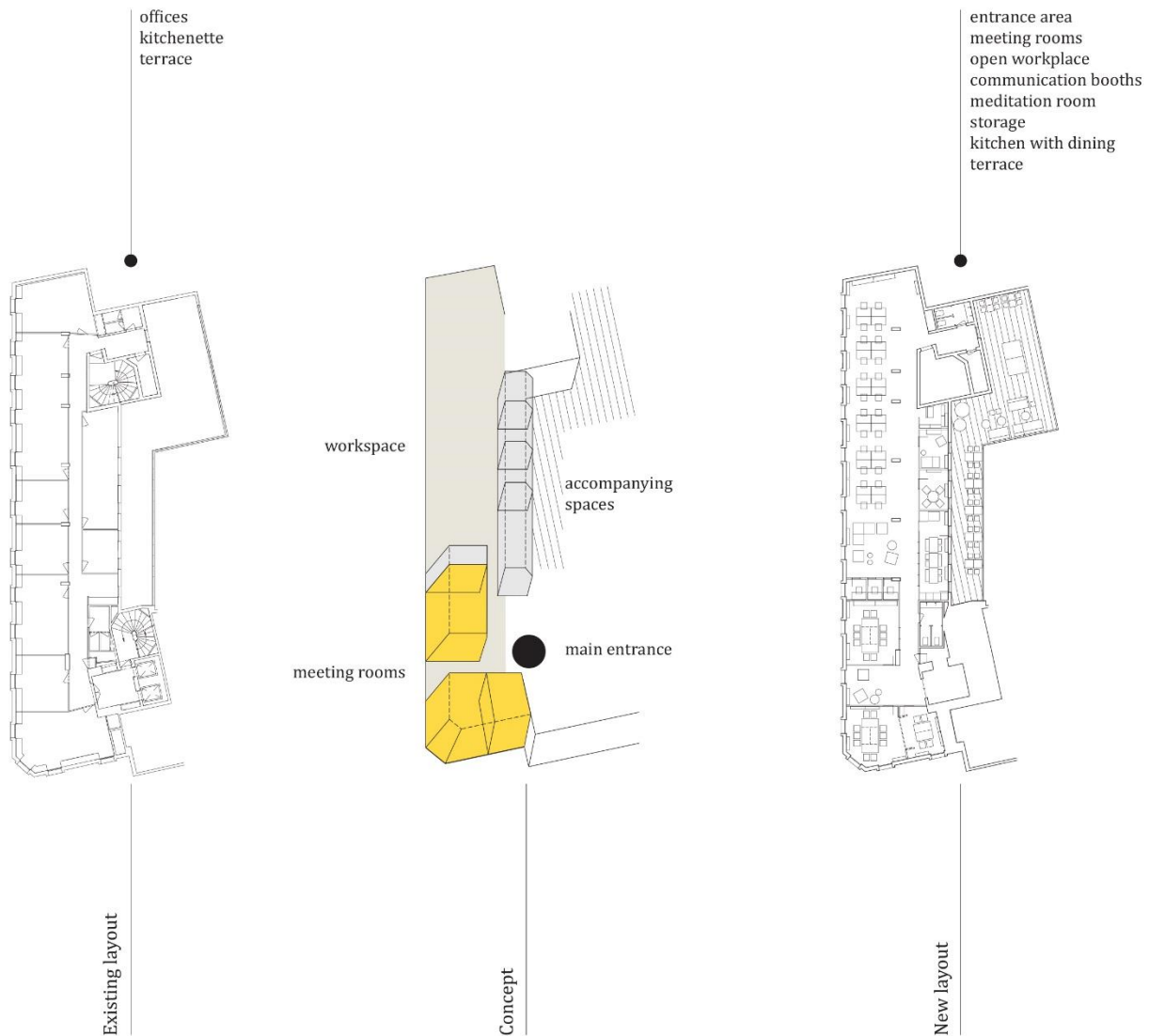
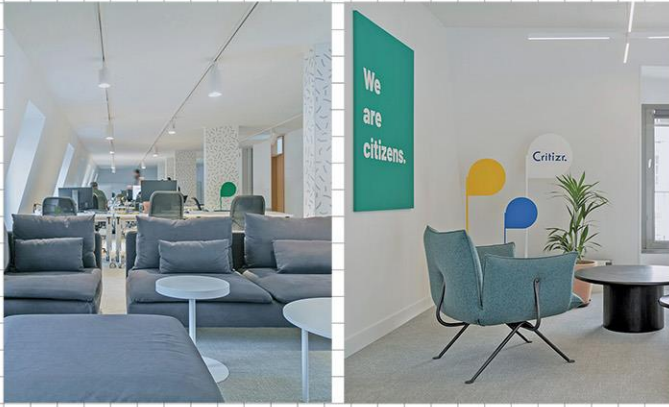


Illustration of space planning process

The spatial stimuli act as a building block in the space planning process and work as a tool for an ad-hoc change of pace in day-to-day workplace inhabitation. Using small-scale, folly-like objects alongside other context-specific pieces is a pragmatic design decision to fit the overarching project requirement — flexibility in the face of the flux. Rather than exclusively focusing on different furnish setups, the upgraded concept of flexibility envisages a change of ambience through symbolic gestures being the leading driver of an open-ended place. These gestures are meant to be subtle yet clear in their appearance. Slight shifts in light-shade balance and tone using a variety of light sources in combination with the outside environment, supplemented with follies, furnish pieces, and seemingly fixed structural elements — all play a distinct role working together in a gentle system, adding depth with transparency and reflection to a fairly confined space. In addition, simple colour accents and graphics elements are carefully applied throughout, creating obvious signals referring to distinctive areas and activities. Across the space, different low-key, mundane parts of the interior are specifically designed and crafted with utmost care to elevate the importance of user experience and appreciation for technical detail. In a way, the technical facet of the project enables a streamlined performance of each layer in the speculated scenario.



Create both an attractive and enjoyable workplace and apply elements of the company's brand.

Applied to shapes, colors, and colors from the company's brand book in a subtle and playful way by designing metal elements of different sizes and colours used as signage and mini magnetic boards, and applying custom pattern wallpaper on the columns.



Critizr — A Tech Startup Workplace in Paris

How to create a space that meets the requirements of variable number of users?

Ability of the space to adapt to changing rules of the number of users but also the company's need for expanding teams was implemented with modular and stackable furniture for both workspace and meeting rooms accompanied with flexible track lighting and movable wall providing the possibility to expand the meeting room capacity.



Create a flexible workplace that meets the dynamic needs of a tech startup.

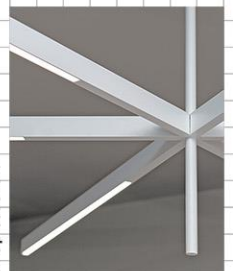
Addressing the common issue of lack of privacy in open workspaces by planning enclosed soundproof communication booths, grouped meeting rooms, a meditation room, and a closed office for focused work. A more vibrant and connected atmosphere was created by introducing custom-made partitions between the workspace, dining and meeting rooms.

The interior architecture project deals with the reconstruction and adaptation of a historical building in the Paris city center.

As the headquarter is based in Lille, the new branch in Paris was to be a company's forefront to help the recruitment of a growing team.

The quality of a workplace is of particular importance to tech startups. In accordance with the design brief, the new space should be highly flexible to enable a seamless use of the workplace considering the changing day-to-day environment.

Through all stages of the design and construction process, several topics were particularly examined.



Ensure an efficient remote construction supervision and quality control of custom designed elements production.

**THE BUILDING BETTER INITIATIVE:
ENABLING AGENCY IN SELF-CONSTRUCTION IN RURAL INDIA**

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ABSTRACT

The 'Building Better Initiative' supports dignified, durable, resilient, and safe housing, keeping in mind principles of socio-economic and environmental sustainability in rural India, where local materials, construction techniques and knowledge are diluting from common practice and being replaced by a precarious housing stock. Enabling the agency of self-constructing homeowners, the project works to substantially improve the local building ecosystem by offering both housing finance support and technical facilitation.

This initiative by Lokal Habitat Labs aims not to simply design better low-income housing units but about to increase resilience of houses already being built. The practice works to maximize agency of the homeowner and lets them inform the firm's operations, instead of the other way around. Conserving the existing housing delivery-configuration, co-producing with the lateral-kinships and local micro economies, collaborating with providers of small-finance loans, the architecture firm is expanding its conventional role to what works, encouraging incrementality, designing small upgradations and capacity building, all to facilitate better architecture instead of selling it.

The Building Better Initiative: Enabling Agency in Self-construction in Rural India

Traditionally, as in most parts of the Global South, Rural housing in India has been a user-driven process, i.e. home-owners build their own houses. Over many centuries, this has led to the development of rich vernacular architecture vocabularies across the country. They are climatically, socio-economically, environmentally and culturally appropriate building technologies. This diverse housing stock is largely self-sufficient, utilizing natural materials and resources, driven by local economies of labor and indigenous knowledge systems. Natural materials such as timber, stone, earth and bamboo have been the primary building materials due to ease of availability and low cost, complemented by generational knowledge of spatial design and construction techniques.

Today, when a homeowner takes up the project of building, or most commonly, repairing and extending their house in rural India, they have this rich pool of knowledge to derive guidance about local construction materials and techniques from. While traditional self-constructed rural housing is the epitome of agency and autonomy, over time, these materials, construction techniques and knowledge have been diluted from common practice and are replaced by ubiquitous engineered construction practices. Over the past two decades, the shift to engineered materials and construction techniques such as burnt clay bricks, cement, steel, and reinforced cement concrete has been due to standardized technology recommendations by the state, proliferation of industries and increasing availability and adoption of industrial materials. Funding for building with such materials is also easier as state and private housing banks consider them safer options. They offer speedy construction, low maintenance, and durability when used properly, while meeting the contemporary urban aspirations of a house. These aspirations are set by representation in mainstream media and television, bombardment of advertisement by cement, paint, tile companies and more. However, these materials need engineer supervision, which is expensive and scarcely available in rural areas.

Present vernacular housing takes unique forms as contemporary ingenuity is combined with traditional techniques, natural resources with industrial materials, and local skills with 'modern' aspirations. What results then in our villages is a patchwork of technologies. While the houses getting built can be incredibly resource efficient, made using locally sourced, cost effective materials and displaying aspects of circularity where materials are reused and recycled to their full potential, there is also a proliferation of houses with poor light and ventilation, water leakage, degrading structures, inefficient use of space and resources, poor incremental construction practices, and non-adherence to environmental conditions. For example, places with expansive soils see settlement of the building foundation over time. Without frequent and expensive repairs, they lead to steady deterioration of buildings, decreased asset value, and pose a potential threat to life. These trends vary highly based on socio-economic status of the families, prior experience with construction, and financial capacity. What was common in most houses was their incremental nature, built over time as per individual financial capacities, it is by definition affordable and more economically viable. When people build their homes themselves, each phase involves a great amount of improvisation and bricolage of complex strategies and calculations; and constant imagination of what a nice home might look like for them. The spaces are flexible, with uses changing as per season, even diurnally, and as per the family's unique requirements they adapt over time.

In such a scenario, it is important to understand the benefits and work towards combating challenges of the system. Working with the knowledge on the ground of the way people build their own homes, the Building Better Initiative began with the following entry points: to communicate definitive design solutions, enable local materials, empower service procurement, encourage sustainability and disaster resilience, facilitate smarter expense management and bridging skill gaps for higher effectiveness of proposed techniques and designs. Heavily derived from the data (and wisdom) gathered from rural homeowners, three designs have been developed for the central Indian context to suit the aspirational house. Each showcases opportunities for gradual upgradation, growth and expansion. Asha, fits the definition of a state-funded 25sq.m home. Umeed, has been designed on a long plot packed from three sides with a narrow street front, common in peri-urban villages. Unnati, is derived from a traditional climatically appropriate typology but accommodates contemporary demands like dining rooms and western toilets. Field work involved testing existing architectural drawings and handbooks prepared by various agencies to understand what people found relatable, what was not intimidating and easy to grasp. With our learnings we ensured that the drawings produced have local characters and uses. The designs are flexible and adapt to changing family

compositions, cows, cars, goats, bicycles, chickens, children studying on laptops, women making pickles on the terrace, farm produce that needs to be stored in the shade, building materials to be stored for future expansion, home offices, pottery workshops, and much more. Projections of spaces being adopted, altered and occupied by homeowners, each in their own way were also created with the implicit idea being to communicate sustainability, heat proofing, waterproofing and smart storage techniques. The strategy includes visual communication through handbooks for design and construction, and also sharing physical models of the designs. These can be built and assembled by the owners to explore the spaces and understand construction techniques.



While it would be ideal to take design and knowledge directly to home-owners, as they hold a major stake in the project, owners have time restrictions, and may engage with home-construction only once or twice in their lifetimes. Local kinship-based networks and small-scale economies at play make self-construction in rural India possible. To enable agency in the construction process, alongside designs, there is a guide to empower all family members to better supervise masons on site, deal with contractors, create estimates and contracts, and understand various expertise of construction workers to be hired. There are guidelines for selecting

materials & quality check, site selection & preparation, various building components, services, building in stages, home maintenance and more. Standardized palettes of locally available, adaptable solutions are easy to improvise upon by the homeowners, improving their standards of living on their own terms. The content for these handbooks was created by understanding prevalent building materials and local skill sets, and combining this with technical expertise in the region. Knowledge sharing is done with the aim of giving the homeowner material choices, and the agency to make their choices. While we as architects know what is appropriate and low cost, the choice to decide what is aspirational and favorable is left to the customer. The knowledge shared simply helps make an informed choice.

The project carries with it the humility that designs prepared may never be implemented in their full physical form, but success lies in the hope that this enables more-informed material choices, better financial planning, empowered conversations with masons, and awareness of sustainability measures. The initiative is strategized with simple aims for better placed windows, more insulated roofs, more ventilation in kitchens, minimal leaks, foundations that don't settle, sanitation systems that don't fail, and expansions that lead to stronger homes. Conserving the existing housing delivery-configuration, co-producing with the lateral-kinships and local micro economies, collaborating with providers of small-finance loans, the architecture firm is expanding its conventional role to what works, encouraging incrementality, designing small upgradations and capacity building, all to facilitate better architecture instead of selling it.





Illustrations:

1. Flexible designs that can adapt to the user's needs and requirements (by authors)
2. Working with homeowners to help them supervise better self-construction (by authors)
3. Knowledge sharing for acupuncture interventions of better building techniques and designs (by authors)



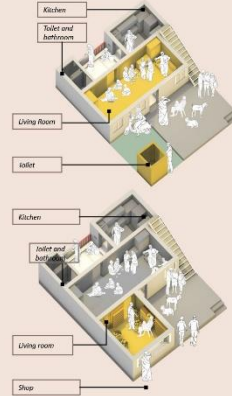
Incrementally Built Flexible Spaces Allowing Adaptation

Working with the knowledge and wisdom of the way people build their own homes in villages, three designs have been developed for the central Indian context to suit the aspirational house. Each showcases opportunities for gradual upgradation, growth and expansion.



Asha Hope

Asha, a house in just a 25sqm plot, accommodates 3 open spaces, a backyard, a covered balcony and terrace. This allows for good light and ventilation, and flexible uses.

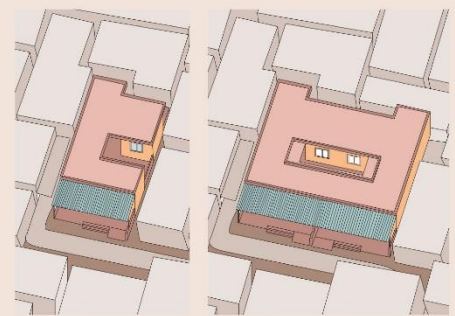
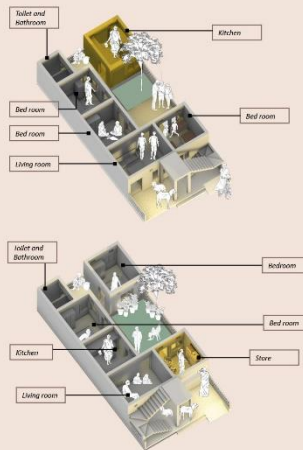
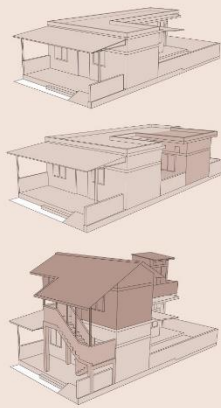


A service courtyard connecting the kitchen and bathroom. This small open space where a sink and wash area is provided, also helps a lot in keeping the house well lit, ventilated and cool in the summer! If the design of 'Asha' is mirrored, the back courtyard can be a shared larger one where two households can share the common open space.



Umeed Promise

Umeed is house designed to fit into long and narrow plot of land, adjacent to other building on all three sides except the front. Even with this constraint, the each room has ventilation and direct sunlight.

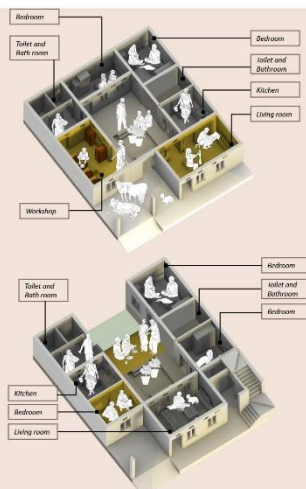
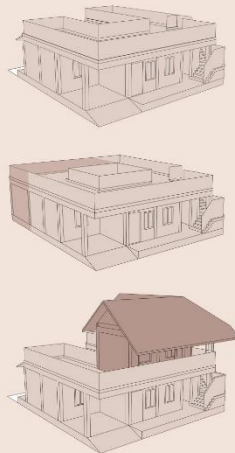


A large backyard can adapt into two smaller ones where one can split the activities. A courtyard for washing and a yard for playing are still possible when a bed room is added and be a relief in dense growth. If the neighborhood keeps growing, and neighbors keep building till the edge and higher, a small courtyard can ensure that the house does not suffocate in this chaos. Planning with your next door neighbor can allow for a larger courtyard in Umeed, that can be shared.

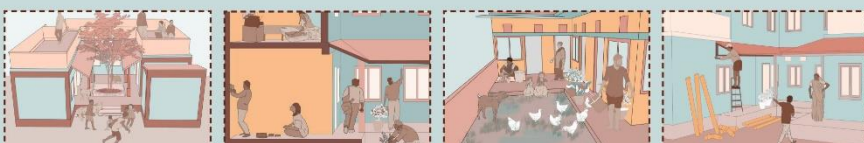


Unnati Progress

Unnati is a traditional house meeting all modern standards of living. The design has a traditional courtyard and verandah, but also an equipped kitchen, attached toilets and parking space.



Easy strategies for ventilation: Ventilators, which are simply small windows high up on the wall, are important as they let out hot air and keep the room cool with zero effort. A kitchen has high internal heat, and should ideally be detached from the main building, where living spaces are, or placed in the corner of your home with good windows and ventilation. This will ensure that the house stays cool and it is not suffocating for the cook.



Building Better Initiative



LOKAL Habitat Labs



Providing Choices Building Capacity Enabling Agency

Understanding prevalent building materials and local skill sets, and combining this with technical expertise in the region, knowledge sharing is done with the aim of giving the homeowner material choices, and the agency to make their choices.

Roofing
The type of roof should be decided based on local climatic conditions, material and skill availability and preference, if possible.

Material Options
Common roofing options include sharing roof with clay tiles or sheets, OR RCC flat roof.

Horizontal RC Beams
To increase the structural strength, add continuous horizontal reinforced concrete (RC) beams at gable, end and roof level.

Vertical Steel Reinforcement
To make the structure strong, use vertical steel reinforcement bars in wall openings within the framework.

Foundation
Founding structures are supported by 'Strip Foundations', running centrally throughout the length of all doors, without any breaks.

Material Options - Local stone, brick

Design & Width - depends on design, size of house and roof condition of site.

Lightweight Structure

- It is preferable to construct sloping roof on new floor.
- The project can also be made lighter by making it fit in brick & not a light weight grill.

Structural Grid

- On higher floors it is very important to follow the structural grid pattern in the ground floor.
- Build walls on the existing walls with same or lesser thickness of walls with same material.
- Founding structures on the new structure.
- Founding structures of more than one floor is not advisable for structural safety.

New Walls

- Remove proper brick bonding is carried out between old & new structure.
- Connect & continue all vertical reinforcement and horizontal bands.
- If the building is becoming long after horizontal expansion, provide a 4" gap between old and new structures above ground.

Foundations

- Create a foundation under the new structure, by following the same rules of site preparation, foundation and building construction.
- For horizontal connections, connect to or around existing strip footing.
- Stack plaster on existing wall then construct the same cost new walls.
- Add chimneys on new and old connection for better plaster work.

Roofing
The type of roof should be decided based on local climatic conditions, material and skill availability and preference, if possible.

Material Options
Common roofing options include, sloping roof with clay tile or sheets, OR RCC flat roof.

Slab Walls
The internal & external walls are built with the structural frame of the floor excepted.

Material Options - Bricks, concrete blocks, fly ash bricks, LCU and earth blocks.

Minimum Thickness
External walls - 9" or 115 mm width
Internal walls - 9" or 130 mm width

Foundation
RCC structures are supported by isolated footings, one for each column.

Material - RCC

Slab - Depends on design, use of local soil condition or site, these should be decided by engineer.

Lightweight Structure

- It is preferable to construct sloping roof on new floor.
- The project can also be made lighter by making it fit in brick & not a light weight grill.

Structural Grid

- Plan new to follow existing column and beams grid to reduce expansion.
- Plaster same, topcoat and avoid projections.
- Do not keep roof new connection that are rigid to concrete.
- No local expansion of more than one floor is not advisable for structural safety.

Foundations

- Stack plaster on existing wall then construct the same cost old new walls.
- Add chimneys on new and old connection for better plaster work.

Foundations

- Create a foundation under the new structure, by following the same rules of site preparation, foundation and building construction.
- Connect to or around existing strip beam.

Structural Frame

- Connection between new and old beam needs, to done with same old beam and RCC, same, using an expansion for concrete.
- If the building is becoming long after horizontal expansion, provide a 4" gap between old and new structure above ground.



Roof Materials

- Filter Slab
- Stone Tiles
- Local Clay Tiles
- Local Ash Roof
- Glass Tiles Roof
- Precast Concrete Slabs with Sloped Roof
- Precast Concrete Panel Roof
- Corrugated Galvanized Iron (CGI) Sheets

Masonry

- Masonry with burnt red brick & mortar
- Walls with CMU or 'Core' precast hollow earth blocks & mortar
- Masonry with concrete block & mortar
- Random earth wall made with treated, colored soils
- Masonry with local ground stone & mortar
- Random Rubble Masonry with local stones & mortar

Roof water-proofing and thermal insulation

- Waterproofing
- Thermal insulation
- Roofing
- Structural
- Foundation
- Walls
- Windows
- Doors
- Stairs
- Plaster
- Paint
- Interior
- Exterior
- Roofing
- Structural
- Foundation
- Walls
- Windows
- Doors
- Stairs
- Plaster
- Paint
- Interior
- Exterior



Building Better Initiative



LOKAL Habitat Labs

NEW URBAN LIVING ROOMS – FOLLOWED BY LIGHT

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ABSTRACT

Great public spaces are the living room of the city - the place where people come together to enjoy the city and each other. Public spaces make high quality life in the city possible - they form the stage and backdrop to the drama of life. Public spaces range from grand central plazas and squares, to small, local neighborhood parks.

In this work, an underground passage is taken as the theme of an urban living room. Underground passages have great potential because they are covered and can be used in all weather conditions, and also a large amount of people pass through them. Research has been done on how to make the best use of corridors and make them comfortable to use through the use of various lighting. One of the main reasons why people don't like to spend time in the underground passages is the lack of activities to keep them occupied, the poor credit rating and the dark passageways.

INTRODUCTION

Location

The "Albania" Palace is the first skyscraper in Belgrade of the capital of Serbia. It is located in the center of the city, on the corner of Kolarčeva and Knez Mihailova streets. The underground passage was named after this building.

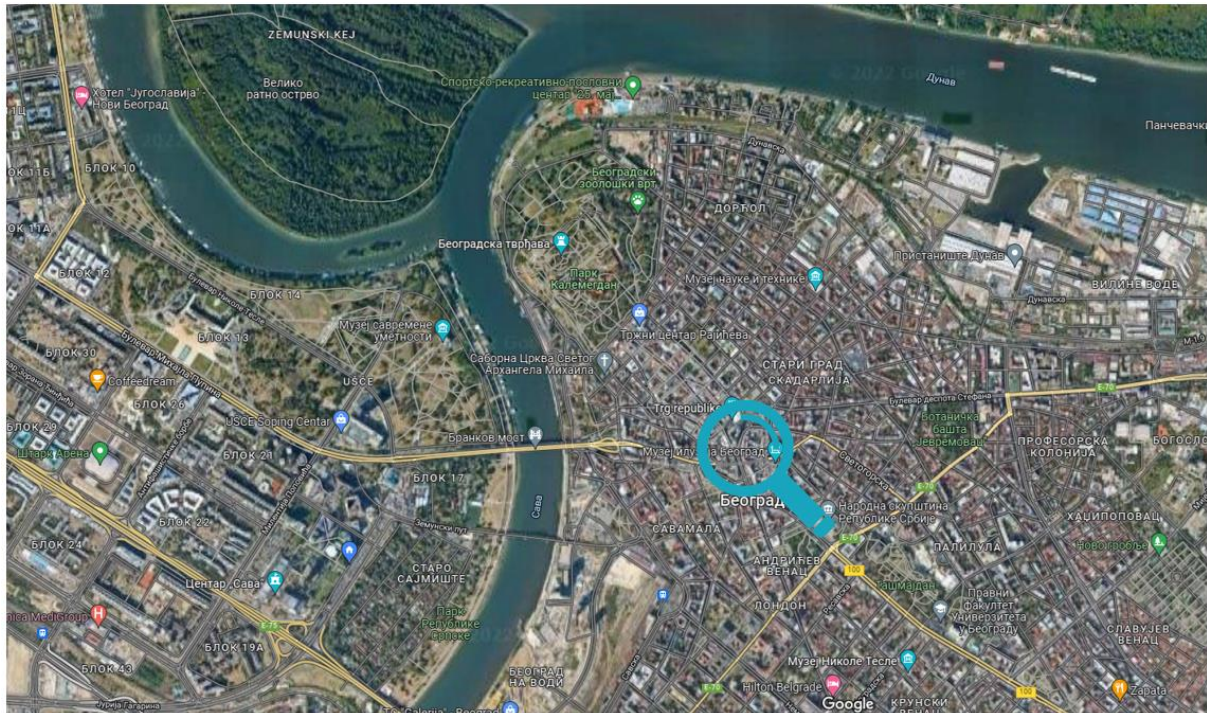


Figure 1 Location of the underground passage, Belgrade, Serbia, provided on 29.9.2022 from: <https://www.google.com/maps>

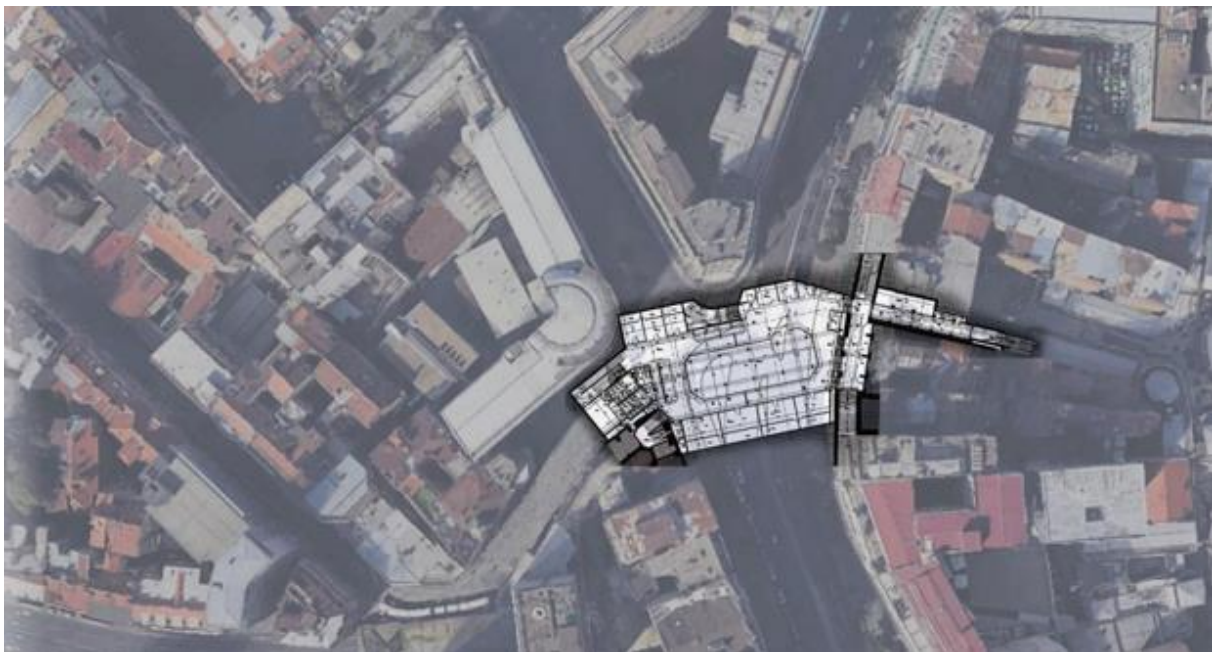


Figure 2 Narrower location of the underground passage, Belgrade, Serbia, provided on 9/29/2022 from: <https://www.google.com/maps>, refined image by the author

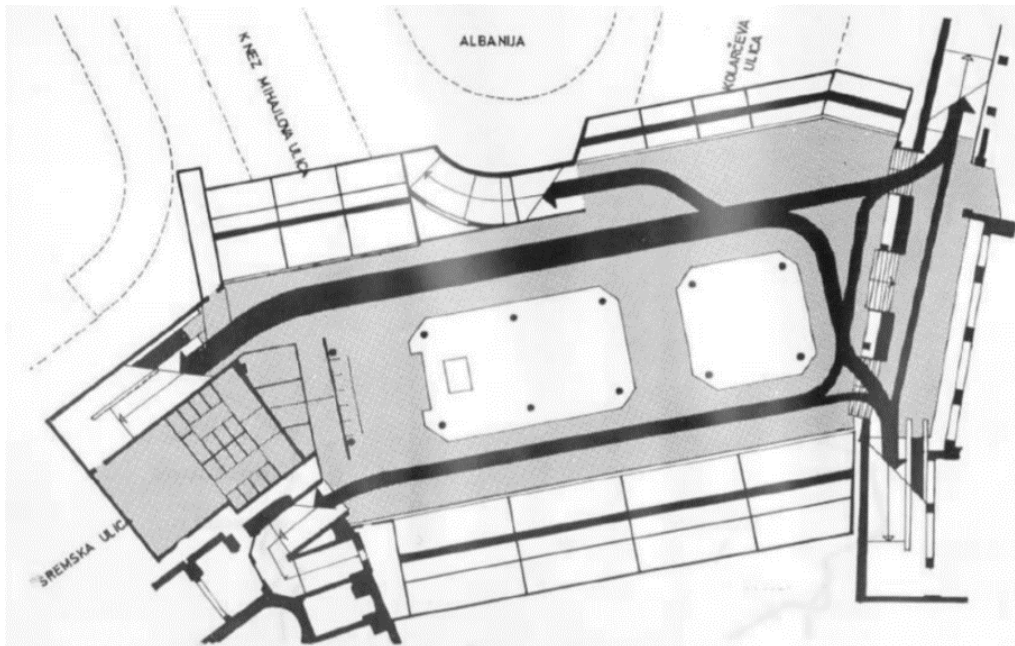


Figure 3 Trajectory of movement provided on 9/29/2022 from: <https://kaldrma.rs/silazak-u-podzemlje-kad-je-beograd-dobio-prve-prolaze-na-terazijama/>

Current situation

This passage is narrowly part of the brownfield site, it is not abandoned because people have to pass there because of the busy roads. There are also some bars that are not doing well because people don't want to stay because they feel unsafe, the lighting is bad, the credit rating is also bad. A brownfield site is land that was previously built and used to be neglected for economic or other reasons. Leaving can be: functional, legally, property, physically.

Underground passages have many possibilities for development:

- the possibility of growing plants
- sustainable solutions
- enjoy
- living room
- public paces
- high quality life
- dinamic spaces
- city center
- meeting place

Advantages of space:

- a covered place that can be used all year round
- a large number of passers- by who are not currently staying long due to the poor quality of the space
- possibility of different lighting
- a unique public place in relation to parks
- Possibility of longer stay. There are public toilets, electric power and the possibility to make catering facilities



Figure 4 picture of the underground passage, bad credit rating, provided on 9/29/2022 from: <https://www.superjoden.nl/palata-albanije-beograd-mapa.html>



Figure 5 picture of the underground passage, bad credit rating, provided on 9/29/2022 from: <https://www.novosti.rs/beograd/vesti/1031580/obnavlja-terazijski-prolaz-zavrsetku-rekonstrukcije-pothodnika-vojvode-misica-novom-beogradu-majstori-bez-predaha>



Figure 6 picture of the underground passage, bad credit rating, provided on 9/29/2022 from: <https://www.mojanekretnina.rs/nekretnine/podzemni-prolaz-lokal-8m2-d6a6bb>

NATURAL LIGHTING

The subject of the project is to bring light into the underground passage and through interesting lighting to enhance the whole picture of the location, of course with the reconstruction of the existing content. From the larger works, it is planned that the light enters through the islands on the street that separate the lanes and currently have no other function. Another way of light entering is through already existing stairwells.

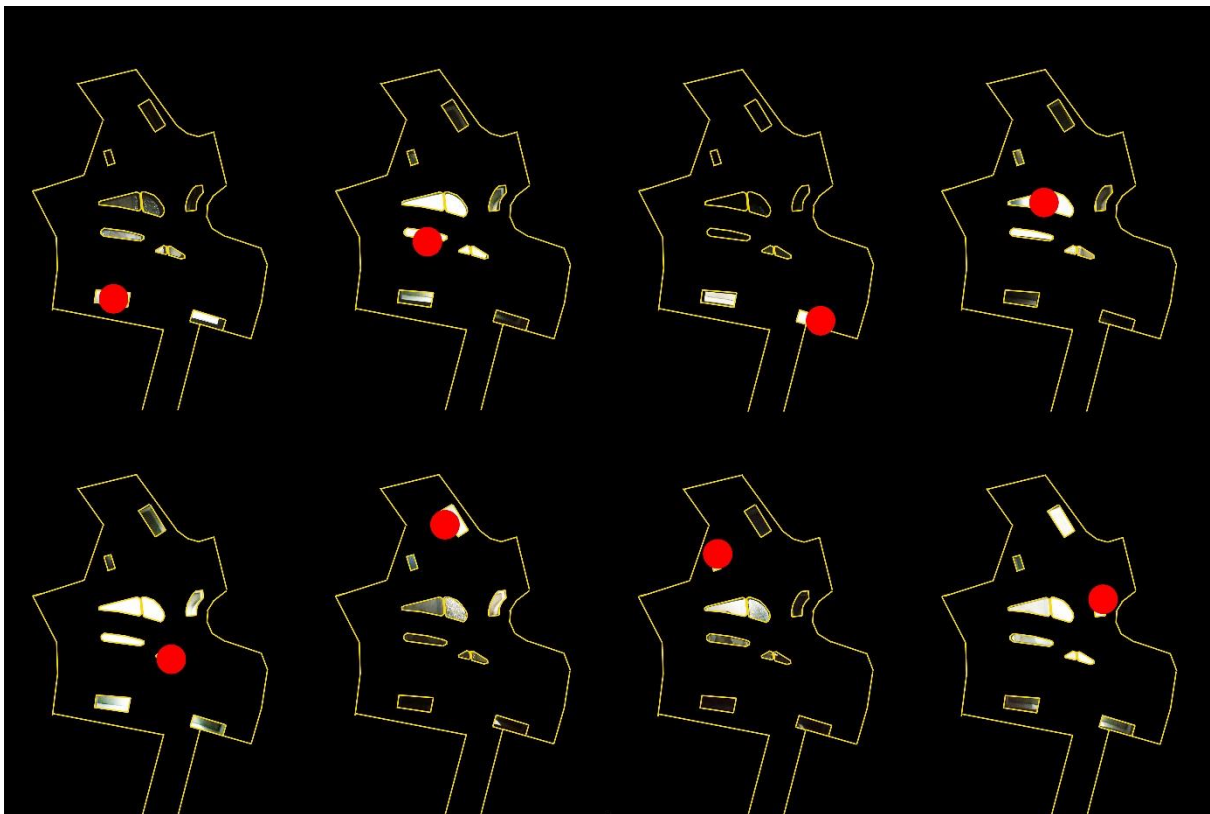


Figure 7 Entry of light into an underground passage, author's photo

The picture shows how well the passage through each of the openings is illuminated. The analysis was carried out with a mock-up and a flashlight. The red dot represents the place where the lamp is pointed and you can see which parts are bright and which are dark. For easier viewing, the image has been processed. There are five stairwells and three new ones where there were islands on the street. From the analysis, it can be seen that when all openings are taken into account, the underground passage receives enough daylight. It is even possible to grow plants in some parts.

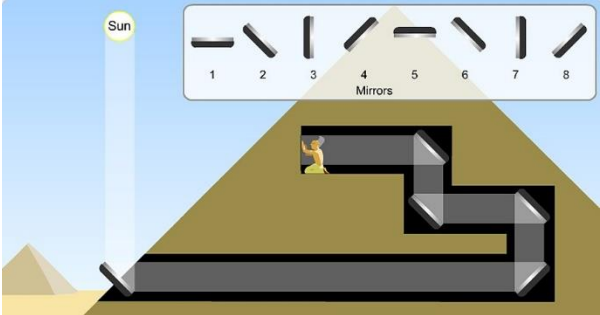


Figure 8 Example- solutions for the introduction of natural light provided on 9/29/2022 from: <https://hi-in.facebook.com/EdServAus/photos/can-you-use-a-mirror-to-find-animals-in-the-dark-of-a-rainforest-night-how-about/1118025378249591/>

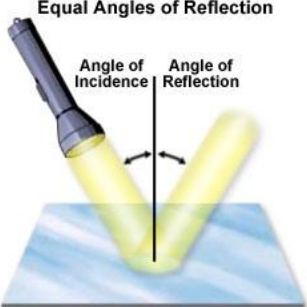


Figure 9 Angle of light reflection, provided on 9/29/2022 from: <https://www.olympus-lifescience.com/en/microscope-resource/primer/lightandcolor/reflectionintro/>

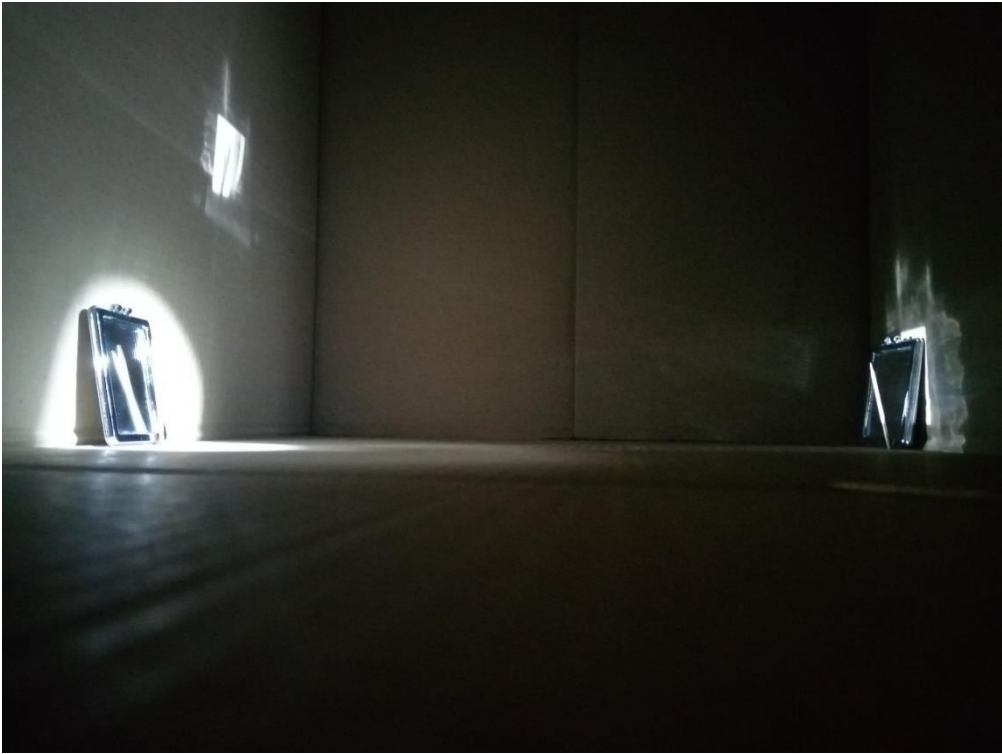
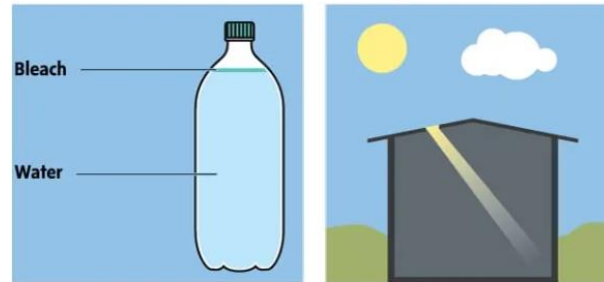


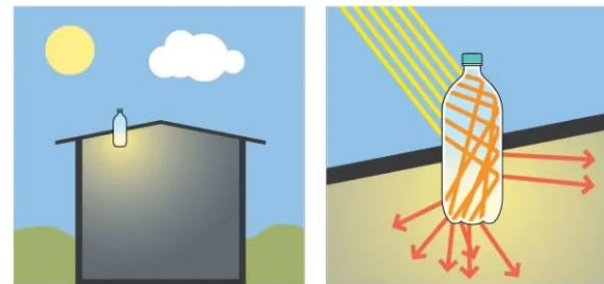
Figure 10 Analysis through the model, the amount of light that is inserted through the mirror, the author's image

Using solar bottle bulbs is an innovative way to light up homes in parts of the world where there is no electricity.



The water light bulb is simple and cheap. A 2-litre bottle is filled with clean water, plus about 10 millilitres of bleach in order to inhibit algae growth over time.

The advantage to using solar water bulbs over simply cutting holes in the roof is that sunlight shining down a hole works like a spotlight, lighting only a small area within the room.



Putting a water-filled bottle in the hole collects more light because light rays travelling through denser-than-air material such as water change direction.

Light reflected this way will bounce back and forth as it travels through the water bottle, and will spread out to light the room more evenly.

Figure 11 Explanation, provided on 9/29/2022 from: <https://visual.ly/community/Infographics/how/solar-bottle-bulbs>

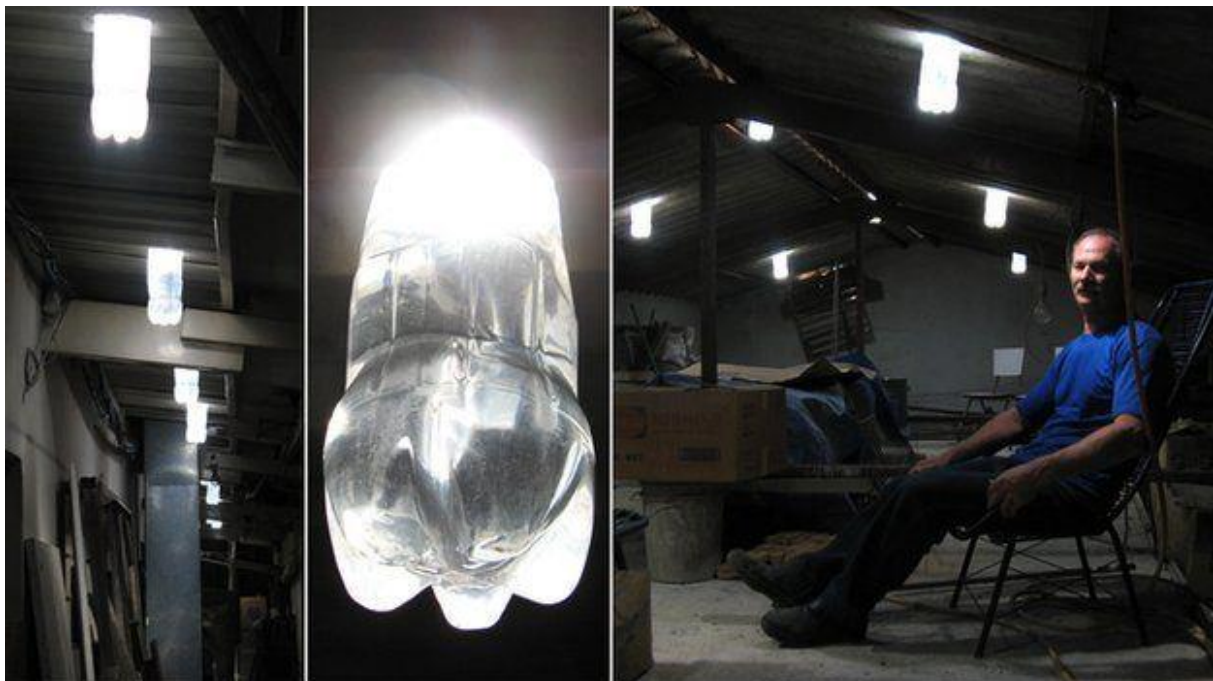


Figure 12 A way of illuminating house during the day without electricity - using nothing more than plastic bottles filled with water and a tiny bit of bleach, provided on 9/29/2022 from: <https://www.bbc.com/news/magazine-23536914>

Refraction of light through different materials

As an additional topic, situations were analyzed in which way it is possible to insert even more sunlight through stairwells and what kind of atmospheres can be created through the play of light and through materialization.

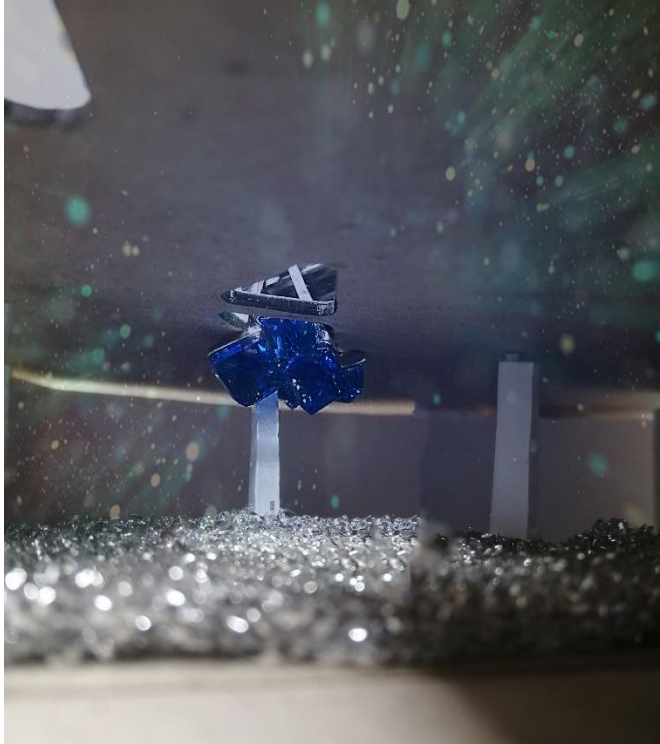


Figure 13 Refraction of light, the author's model image



Figure 14 Refraction of light, provided on 9/29/2022 from: <https://www.pinterest.com/pin/543528248773525946/>

EXAMPLES OF THE DESIGN OF UNDERGROUND SPACES

Canopies at entrances and exits need to be changed, escalators replaced, floor, wall and ceiling coverings renovated, rainwater drainage installations repaired, new lighting installed, ramps for people with disabilities and cameras installed through which the police will monitor what is happening 24 hours a day. Most important of all is that the city has a contract with a company that will maintain these passages, remove graffiti, wash and clean them so that they will not be destroyed after reconstruction as is usually the case with us.

Examples of different materializations, ways of transmitting light, interior design of space and equipment:



Figure 15, Example, provided on 9/29/2022 from: <https://inhabitat.com/delancey-underground-signs-with-arup-engineering-to-complete-feasibility-studies-for-the-low-line/ny-les-low-line-park-21/>



Figure 16, Example, provided on 9/29/2022 from: https://www.researchgate.net/figure/passagewith-stores-Figure-5-passagewithout-store-Sino-Ocean-Taikoo-Li-Chengdu-bring-in_fig2_340130904

CONCLUSION

This concept could also be applied to other projects and similar spaces such as metro stations, underground passages, corridors of buildings, parking spaces. Solutions with natural light are cheaper investments, and the space can attract a lot of users and make staying in such spaces pleasant. As soon as the stay is pleasant, it is possible to develop other activities and contents in the space, which contributes to the economy and creates profit.

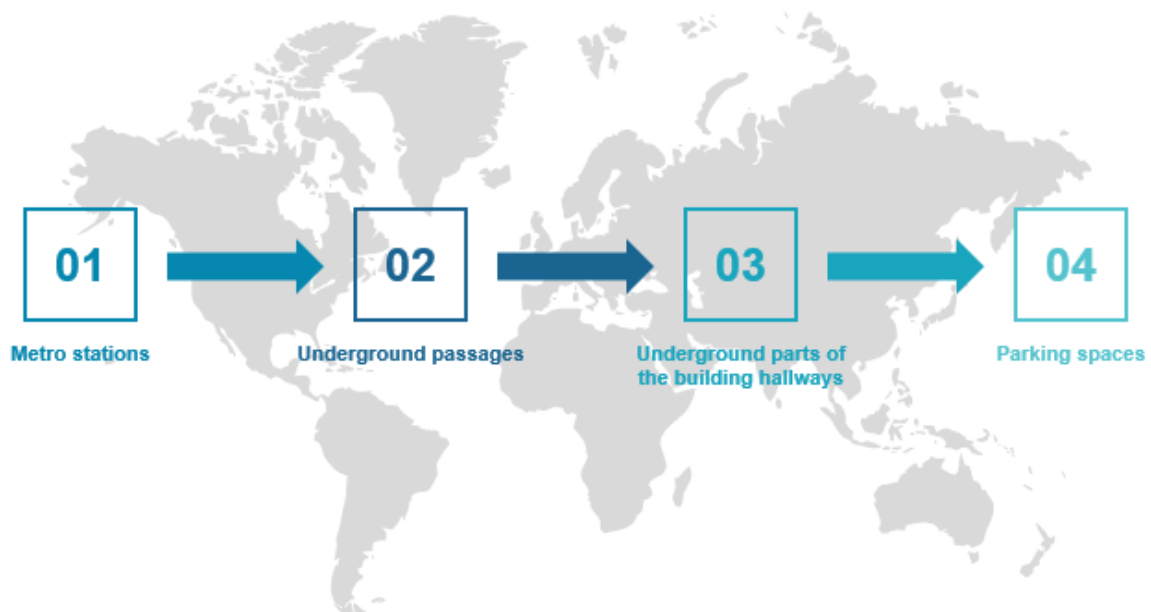
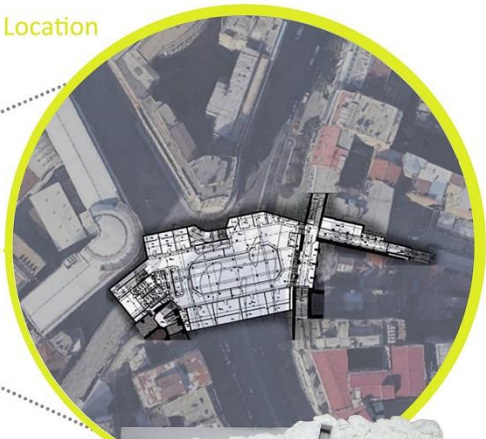
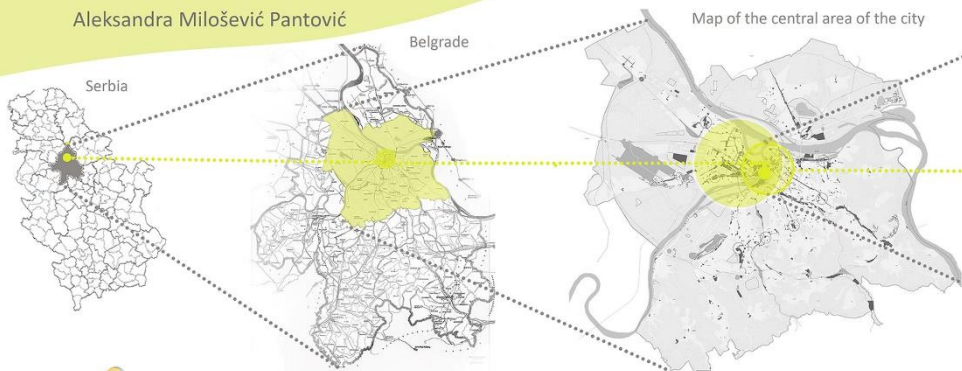
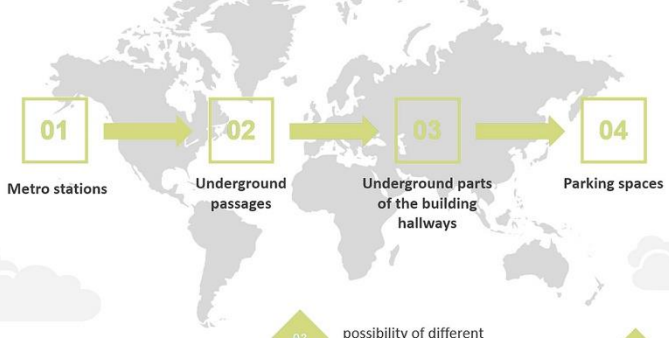


Figure 17 Same concept different places, the author's image

Location



Same concept different places



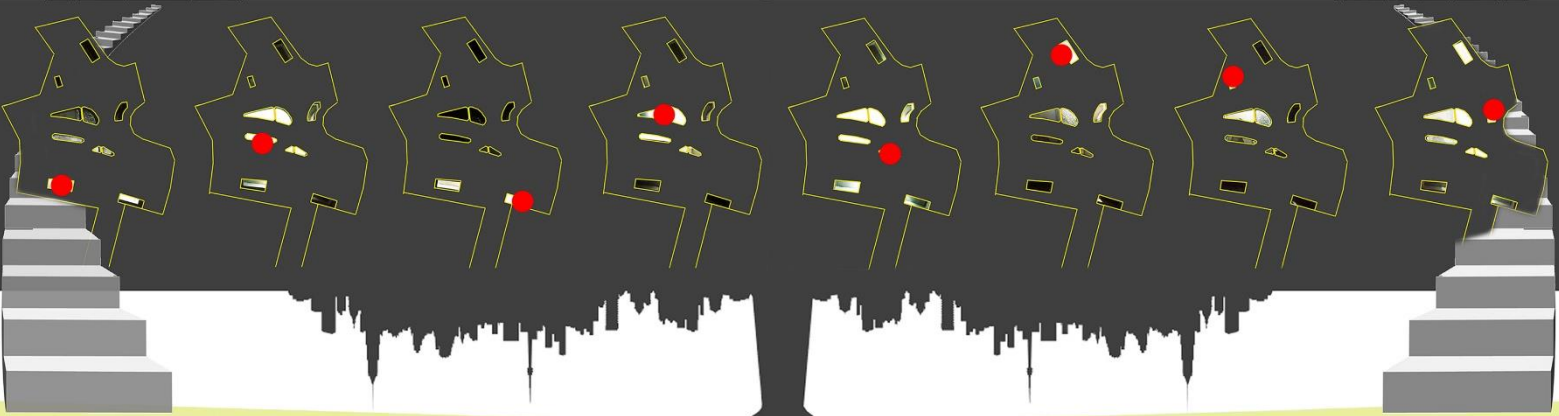
Underground passage model



Street model

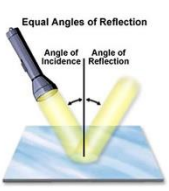
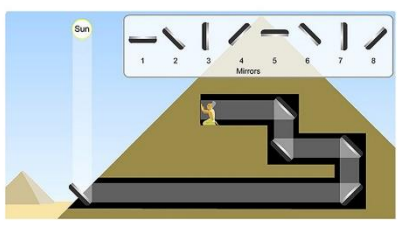
- 01 a covered place that can be used all year round
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- 03 possibility of different lighting
- 04 a unique public place in relation to parks
- 05 Possibility of longer stay. There are public toilets, electric power and the possibility to make catering facilities

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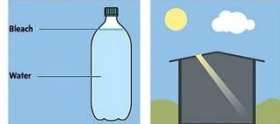


NEW URBAN LIVING ROOMS

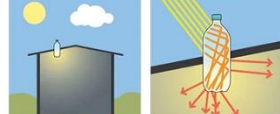
Followed by light



Using solar bottle bulbs is an innovative way to light up homes in parts of the world where there is no electricity.

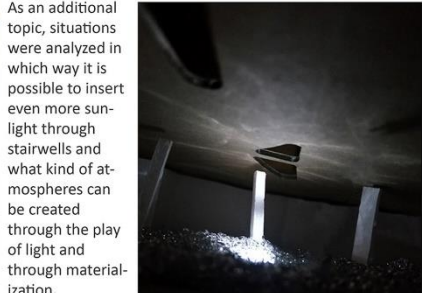
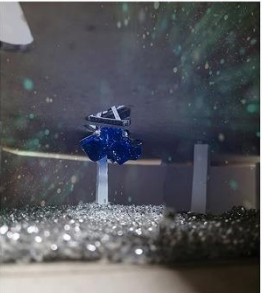


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CHAPTER V

PHILOSOPHY OF ARCHITECTURAL FIGURES

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Faculty of Architecture, University of Belgrade, Serbia

Following Lyotard's deconstruction of the opposition between the discursive and the figural, the construction "philosophy of architectural figures" would include the intention to depart from the problem of *order* between the two. If, instead of the question what is discursive in the figural or what is figural of the discursive, the question of the "whole" is asked, then the meaning of the position "between" the discourse and the figure – the discursive content and the figural materiality – would be found in what resists (discursive and/or figural) representation. Architecturally speaking, we can always talk about the conceptual materiality or the projected immateriality of architectural figures. The figure tends to elude discourse or mere representation through the philosophy of concepts. But it also insists on the simultaneous presence of the textual. The play between the materiality of language (which cannot be reduced to the phenomenological) and the certain phenomenology of the figure (which cannot be fully translated into linguistic concepts) is close to "desire" itself. More precisely, it becomes the most extreme form of desire. The idea to *speak* simultaneously about the absence of the figurative in figuration and the textual presence by the "body of words" – through a series of short sequences, that is, *figures* – is close to Lyotard's comma between the discourse and figure. By dividing or linking the two words, this comma introduces an element of "incommensurability" that seeks to insinuate the radicality that allowed the term "figure" to enter the discourse. On the other hand, placing a comma begins the deconstruction of the word figure. This is why we construct sequences with "commas" that do not aim to explain anything but to inspire philosophers to see architectural figures. At the same time, these sequences open up the possibility for the architect to assign movement to architectural figures through the body of words. The idea to use text for confirming architectural possibility of the final materiality of the architectural concept at the same time represents an opportunity for philosophy to explore the materiality of words. Invoking what cannot be represented, the figural destabilizes the boundaries of the representable, that is, the boundaries of the discursive, striving to finally merge with it.

EMOTIONS AND ARCHITECTURE

Igor Cvejić

Institute for Philosophy and Social Theory, University of Belgrade, Serbia

Emotions are sometimes thought to be subjective, and thus, mostly unrelated to the objective spatial arrangements of the environment. However, this is only partly true. Emotions are also ways a situation discloses to us, ways of “grasping” the situation: responding and interacting with whatever might affect us – emotions are enacted and coregulated in the environment. Therefore, we can only understand emotions by taking together both their situational and agentive aspects. This in turn enables us to think of environmental affect-like elements which can regulate, modify, or change our emotions. Moreover, these elements can be purposively arranged and create an (“object-like”) affective atmosphere. In this moment we are urged to think about the relations between emotions and architecture.

HEDONISM

Sanja Iguman

Institute for Philosophy and Social Theory, University of Belgrade, Serbia

Most ancient philosophical, especially ethical, theories devoted a lot of attention to the wellbeing of citizens in the ancient *polis* (πόλις), with the main goal of exploring how to achieve happiness and comfortable, meaningful life. This was mainly explained by combining two concepts – *eudaimonia* (εὐδαιμονία) – flourishing, wellbeing, a kind of happiness that entails life led, ruled and guided by reason, and *hedone* (ἡδονή) – pleasure as a goal of life and ultimate aim of philosophy. However, hedonism has often been juxtaposed with egoism, with the explanation that the only thing people desire for their own sake is pleasure.

In the consumerist and materialistic society in which we live today, selfishness is common, especially in cities – centres of human interaction in a very limited space, with limited resources, and shared goods, which even brought us to “The Tragedy of the Commons” as put by some scholars.

Therefore, the main question posed in the presentation is how to equilibrate this dichotomy of seeking and achieving one’s own pleasure, without jeopardizing others’ wellbeing in a city, that is, achieving some kind of altruistic hedonism in a specific place.

One of the first steps might be demanding a careful and delicate holistic approach to production and development of cities in order to integrate materiality of architectural forms and urban infrastructure, with immaterial social, cultural and economic events that take place in a city. These events and behaviours strongly depend on the social reality and the context in which events take place. Even though already with the urban uprising in the 1960s and 1970s scholars spoke about *just cities* and *right to cities*, it is of utmost importance to reconsider these ideas once more.

VIRTUAL OVERCOMING OF REPRESENTATIONALISM

Željko Radinković

Institute for Philosophy and Social Theory, University of Belgrade, Serbia

Virtuality is first seen as a way of overcoming the representational semantic paradigm embodied in the concept of simulation. The presentation shows that virtuality overcomes the simulative relation of signification by creating an alternative version of reality, so not fake (simulated) real objects, but true virtual objects. These are objects for which the question of the real referent, the signified, that is, real reality, does not play any role. In the context of these considerations, it is important to determine the position of the concept of fiction, because, like the virtual, the fictional world (spatially and temporally) separates itself from the criteria of the true and false "objective" world and creates its own criteria of truth that do not necessarily coincide with those of the real world. When it comes to virtuality, there is a key shift in these relations, because unlike the fictional world, in the virtual world, subject interaction with the virtual space is possible, whereby the subject's autonomy is not questioned in principle. This concept of virtuality coincides with what is called virtual reality and refers primarily to technically induced virtual worlds. The categorical shift called real virtuality is also technically conditioned, which removes the fictitious dimension from virtual reality in such a way as to introduce it into the world of real objective relations, tending to erase any difference between the actions of technical systems and reality itself.

INSTRUMENTS AS FORMS OF PERFORMANCE

Marko Ristić

Institute for Philosophy and Social Theory, University of Belgrade, Serbia

The lure of architectural phrases beginning with "form follows..." leads away from the idea of technology of form. By substituting the issue of precedence for any thought on the poetry of form, these phrases disregard the relations which make the form *follow*. To have it following anything, one ought to think form not in terms of "being an end," but "having an end." However, if this meant a simple transition from the question of formal finitude to the question of formal instrumentalism, the discourse on form would cease to be architectural. Instead, the state of "form following" presumes the material world in which form at the same time conditions and is conditioned. Thus, the question of pure instrumentality gives way to the concept of instrument, which, as a materialized method, goes beyond the issue of end. The end contained in the method necessarily yields to the phenomenal of the instrument, whereby the imagined, desired, or assumed certainty in the instrumental is faced with a multiplicity of outcomes, which are always already formal.

DRAWN TO SEE: CORPOREALITY, DESIGN AND ETHNOGRAPHY

Sara Nikolić

Institute for Philosophy and Social Theory, University of Belgrade, Serbia

Anthropology, archaeology, art, and architecture are all ways of making and all dedicated to exploring the conditions and potentials of human life. However, despite the flood of images, visual and graphic data in social sciences continue to stand in the shadow of text. Visual data often have merely a documentary function: they supplement texts, which continue to stand at the center. The hiatus or no-man's land between picture and text in the anthropological tradition raises a further question regarding the general devaluation of drawing concerning reading and writing in modern Western cultures. And while the latter's dominance is evident, this presentation will focus on a more subtle but crucial difference among tools of visual anthropology – the one between drawing and photography. While photography is a *taking*, drawing is a *making*. A photograph stops time, while a drawing encompasses it. Drawing is an activity much older than writing or architecture. It is as old as a song and possesses something that painting, sculpture, videos, and installations lack— *corporeality*. This corporeality of a drawing is often referred to as the kinesthetic sense. A secondary aim of this paper is to – by focusing on the practice of graphic anthropology – draw conclusions about possible intersections and points of collaboration between ethnography and design, architecture, and anthropology. This paper addresses the issue of the “third meaning” of a drawing by explicitly taking up the question of the practice sketching, doodling and taking field notes in the research process. Engaging with the writings of John Berger, Tim Ingold and Roland Barthes and in response to the distinct lack of drawing by anthropologists, the paper asks *what the act of drawing can tell us about what pictures want?*

THE IDEA OF MONUMENT BETWEEN BOOK AND BUILDING

Miloš Ćipranić

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While the relationship between a monument and an architectural object does not require any special explanation, because it is a very well-known thing, this is not the case with understanding the book as a monument. The book as a *monumentum* is an ancient idea. Both buildings and books can be seen as monuments, if they are not treated as objects that communicate with their observers and readers, but as traces of certain acts, that is, objects that bear witness to someone or something.

PISSING ON PALACES: ARCHITECTURE & FICTION IN SWIFT'S *GULLIVER'S TRAVELS*

Edward Djordjevic

Institute for Philosophy and Social Theory, University of Belgrade, Serbia

In a famous passage of the first voyage of Jonathan Swift's *Gulliver's Travels*, Gulliver tells us that a careless maid caused a fire in the palace of the Queen of Lilliput by reading a novel by candlelight. Gulliver duly puts out the blaze by urinating on the palace, an act that leads to his expulsion from the island (and end of Voyage I). This text first looks at the figure of palaces in Swift's writing, particularly in *Gulliver's Travels*, but also elsewhere, such as poetry and his correspondence. Further, the text considers the relationship of fiction to the figure of palaces – that is, Swift's choice of rooting the cause of the destruction of the palace in careless reading of fiction. Finally, the presentation considers more closely the ambivalence inherent to Gulliver's chosen method of 'saving' the palace from immolating fiction, considering how contemporary readers would have perceived the scene in Swift's novel, and drawing some potential political consequences from the relationships between 'palaces' and 'fiction'.

HYPEROBJECTS

Milica Božić

Institute for Philosophy and Social Theory, University of Belgrade, Serbia

The notion hyperobject was introduced by Timothy Morton, and it derives from object-oriented ontology. As examples of hyperobjects, Morton lists global warming, radiation, nuclear waste, mass production of plastics, mass data, et cetera. However, the concept of hyperobjects surpasses its original meaning and extends to various phenomena that have unperceivable consequences in large time and space scales. The concept of hyperobjects is of great importance for architecture and requires re-definition and re-position within the discipline since it introduces a system of thought for conceptualizing the design for the distant future, which is of great importance in the era of new human artifacts and new archaeology.

The two concepts shall be superposed to explore the tension between the exposed spatial and temporal layers in the landscape, and the hidden ones in hyperobjects. What is more, they may be related due to their existence in massive space and time scopes and the possibility for analysis on both macro and micro scales. The tension between landscapes and hyperobjects is trying to establish productive relations within multidisciplinary frameworks and theoretical positions.

LABYRINTH

Tamara Plećaš

Institute for Philosophy and Social Theory, University of Belgrade, Serbia

The observation that contemporary cities architecturally resemble labyrinths is hardly a novelty; on the contrary, it leads right back to the very origins of Western civilization. The Ancient Greek word λαβύρινθος designated “a large building consisting of numerous halls connected by intricate and tortuous passages” (LSJ), while philosophically, it is a sequence of convoluted questions or arguments faced within a given theoretical debate (for example, see Plato). According to legend, one of the most famous labyrinths of the Ancient world was constructed by the mythical architect and craftsman Daedalus, for King Minos of Crete. The labyrinth held captive the gluttonous beast, Minotaur, which had to be appeased through human sacrifice. Famously, the Minotaur was killed by Theseus, the future King of Athens, with the cunning help of Ariadne who provided him with thread as a means of finding his way out of the labyrinth. The myth functions as a symbolic representation of the magnificence of Crete and its palaces – labyrinths – as the very cradle of European civilization.

The labyrinth is meant to confuse, sow disorder, lead to rambling, but also to force new solutions; it is daunting and dangerous, and will easily ensnare anyone without a clear goal. It plays games with space and perception. Robert Richard points out that the labyrinth could also be a null place, a permanent interruption of space, a complete warping of a place, but also destruction and process of pure power. The labyrinth is a riddle that elicits ever new meanings, making us call (ourselves) into question, a demand to tear down established norms – therefore, a creative act. It is, thus, a symbolic language, as well as the language of both philosophy and architecture.

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AUTHOR INDEX

A

dr. sc. **Denis Ambruš**, B.Sc. Born in 1970 in Osijek, Croatia. He graduated from the Faculty of Architecture, University of Zagreb, holds a master's degree from the Faculty of Civil Engineering and Geodesy, University of Ljubljana - Interdisciplinary Postgraduate Study of Spatial and Urban Planning, and a PhD from the Faculty of Architecture, University of Belgrade. Winner of two first, second, third prizes, mention and special recognition at the Zagreb Youth Salon in urban-architectural competitions. In co-authorship with Vlatko Dusparić, he published the book *Vraćanje grada*. He is an employee of the Faculty of Civil Engineering - University of Rijeka.

B

Damjan Balkoski, born on April 25, 1994. Graduated (2015) and holds a Master's degree (2017) of urbanism at MIT University - Skopje, Faculty of Architecture in the Republic of North Macedonia. From 2017 he is enrolled in doctoral studies at the University of Belgrade, Faculty of Architecture in the department of urbanism. Since 2018 he has been working as a teaching assistant at the Faculty of Architecture at MIT University - Skopje. Till today, he has published 2 books and over 25 research and scientific papers in international and domestic journals for architecture and has participated in numerous international and domestic conferences and architectural exhibitions.

General research interests: *placemaking, sustainable development, urban design, urban morphology, urban planning*

Svetlana Batarilo, PhD, Assistant Professor at University of Belgrade - Faculty of Traffic and Transport Engineering. Her specific field of interest is urban morphology, focusing on the relationship between architecture and sociology. She participated in architectural and urban competitions, where she was awarded. She is active participant of professional scientific conferences in Serbia and abroad.

Dr Aleksa Bijelovic

A life in education and practice — making places, objects, and conditions to draw people into new relationships. Focused on creative-based and non-traditional research, decoding the links between learning, teaching, industry, and practice. Enjoys rethinking the obvious positions and values the importance of independence and integrity, the flexibility of work.

Holds an artistic doctorate in architecture from the University of Pécs, Hungary and a graduate engineer diploma in architecture from the University of Belgrade, Serbia.

Andelka Bnin-Bninski, PhD is an architect engineer, educator and curator with specializations in theory of arts and media and architectural philosophy. She is engaged in multi- and trans-disciplinary design-driven approach and acts on critical strategies and activist tactics of research in architectural practice. She is affiliated with the University of Belgrade – Faculty of Architecture and associated with laboratory Grephau in Paris and is representative for the ARENA architectural research network.

Natalija Bogdanović (Kragujevac, 1988) is an architect. She completed her bachelor and master academic studies at the Faculty of Architecture of the University of Belgrade. She is enrolled in doctoral academic studies at the Faculty of Technical Sciences of the University of Novi Sad, study programme of Architecture and Urbanism, and doctoral artistic studies at the Faculty of Applied Arts of the University of Arts in Belgrade.

She has been employed at the Faculty of Philology and Arts of the University of Kragujevac since 2014, and since 2017 as an assistant professor. Since 2019, she is a chief of the Interior Architecture study program. She participated in several national and international exhibitions, competitions and workshops. As a member of the author's team of the National Student Section of the National Performance of Serbia, she participated in the Prague Quadrennial in 2015, where Serbian artists were awarded the "Gold Medal for Establishing Dialogue". She participated in the organization of the international summer school of architecture - EASA "Reality" held in Kragujevac in 2021.

In parallel, she deals with designing in the fields of architecture and interior design, as well as different formats of artistic projects. Since 2017, she is the founder and president of the professional association "URBANIUM - Centre for Research and Sustainable Development of Architecture and Urbanism" and manager of the "Days of Architecture in Kragujevac" project. Together with architect Aleks Đurić, she leads the design practice - ADDICTED design studio. Areas of interest: Interiority as a concept of breaking disciplinary boundaries between interior, architecture and urbanism, Architecture as an expanded field of action, Modernist architecture of Yugoslavia, memorial architecture, spaces of spectacle.

Petar Bojanić, professor of philosophy, studied at the University of Belgrade and at the École des Hautes Études en Sciences Sociales (Paris), where he received his master 1997. In 2003, he received his PhD from the University of Paris X. Bojanić was director of the Institute for Philosophy and Social Theory (IFDT) at the University of Belgrade (2010-2020). He directs the Center for Ethics, Law and Applied Philosophy (CELAP) in Belgrade and the Center for Advanced Studies – South East Europe (CAS) at the University of Rijeka. He has held numerous fellowships and visiting professorships, including at the Society for Humanities at Cornell University, the Centre for Modern Thought at the University of Aberdeen, the Institute of Advanced Studies at the University of Bologna and Torino, the Institute for Advanced Studies in Bonn, etc. Bojanić's research is focused on the political philosophy, philosophy of law, architecture, phenomenology, social ontology, theory of institutions and Jewish political tradition. His book *Violence and Messianism* has been translated in seven languages. This year is published his book *In-Statuere*. Figures of Institutional Building (Vittorio Klostermann, Frankfurt am Main, 2022) and new edition of *Peter Eisenman. In Dialogue with Architects and Philosophers* (eds. P. Bojanic & V. Djokic, Mimesis International, Milano, 2018).

C

Divya Chand

Divya is an urban researcher, architect, and co-founder of Lokal Habitat Labs. Her recent research has explored inter-disciplinary, adaptive practices to enable resilience in self-constructed housing in the Indian context. In this project, she approached studying urban housing through the decision-making processes of home-owners in Indian cities and various stakeholders working with them directly to enhance their socio-technical agency. She is a fellow with the Ministry of Housing and Urban Affairs, Government of India, working on an action research project on urban water bodies and lake rejuvenation, aspects of knowledge dissemination and citizen awareness on ecosystem services and green infrastructure solutions.

Dr. **Barbara Charalambidi** is a Civil Engineer, a graduate of the Department of Civil Engineering of Democritus University of Thrace (2008), from where she completed her Master's and then her Doctoral studies, in 2016, with an Honors degree. Today she maintains her own static design studio and is an Adjunct Lecturer in the department of Architectural Technology and Construction, School of Architecture, Technical University of Crete, carrying out teaching and research work. Her research interests are in the field of computational analysis of structures and the design of restoration methods and application of reinforcement methods with composite materials. She is a member of the Technical Chamber of Greece and the American Society of Civil Engineers and a reviewer for the journals ACI Structural and Materials Journals (ACI), Journal of Materials in Civil Engineering (ASCE).

D

Nataša Danilović Hristić, PhD, Senior Research Associate

Research fields: urban planning, detailed regulations, public spaces, urban safety, architecture of fear, sustainable development. The author of over 100 scientific papers in international and national journals and international and national conferences. Participated in several national and international scientific projects. Managed and participated in more than 30 urban and spatial plans as a lead urbanist. As a co-author or author, she has won several awards and recognitions at international and domestic competitions and exhibitions.

F

Miloš Florián founded and ran the studio FLO | W_studioflorian.com. He believes software is the driving force in all architectural and urban planning stages. Inspiration comes from the diverse principles of nature reflected in the algorithmic planning processes of buildings and urban spaces. The environment is defined as a dynamic space that is increasingly shaped by artificial intelligence algorithms and new forms of interactivity related to virtualization and technologies such as big data analytics, computer simulations, advanced materials, systems and structures, 3D/4D printing, robotic systems, synthetic biology, and human coding. Algorithmic planning focuses on the paradigm shift from static to adaptive to autonomous structures that work together and with the environment and users. The studio's outputs have won numerous awards. They are presented not only through posters, videos, virtual reality, dissertations, and e-manufacturing models but also through exhibitions, symposia, and workshops with leading international studios and universities.

Jaroslava Frajova

Assistant at VŠVU / AFAD (Academy of Fine Art nad Design in Bratislava). Ph.D. student, a technician in a laboratory at the Technical University of Liberec. Studied sculpture, drawing, and painting at Akademia Sztuk Pięknych im. She studied at Władysław Strzemiński Academy of Fine Arts in Łódź and studied Textile cloths engineering at the Technical University of Liberec. She studied Fiber art at VŠVU / AFAD. Studied Textile, future fashion at Akademie der bildenden Künste Wien.

G

Ranka Gajić, PhD, Assistant professor at the Faculty of Traffic and Transport Engineering, University of Belgrade in Serbia. She has been involved, both as an associate and team leader, in drafting town planning documentation for cities in Serbia. Author of one Monograph, supplementary textbook and over 80 published conference papers. She is a vice president of the Association of Engineers of Belgrade and a member of the ISOCARP. Scope of research: urban morphology, sustainable development of cities, sustainable urban land use.

Cenk Güzelis is an architect, researcher, and media artist based in Innsbruck, Austria, currently holding a position as a University Assistant and PhD fellow at ./studio3, the Institute for Experimental Architecture, in Innsbruck University. His design projects, teaching, and research examine hybrid modes of spatiality and embodied telepresence through performative new media installations revolving around online culture, ubiquitous computing, automated cognition, post-human critique, media studies, IoT, and spatial internet.

I

Senka Ibrišimbegović was born in 1979 in Travnik, BiH. She finished her high school education in Switzerland. She is Associate Professor at the Faculty of Architecture, University of Sarajevo, where she got her engineering and doctoral degree with academic mobility programs at YU Istanbul, at MIT, Cambridge, TU Wien, Université Paris 8 and Master of Science from Università di Siena, Italy. She participated in international scientific and professional conferences, projects and exhibitions, such the one at Collateral events at 15th Venice Architecture Biennale with UTT ETH Zürich. As a member of Museum of contemporary art Ars Aevi Sarajevo since 2004, she works on implementation of architectural design by architect Renzo Piano, as well as diverse exhibition set-ups. She commissioned the exhibition of Bosnia and Herzegovina Pavilion at the 58th Venice Art Biennale. She is a member of ICOM, CIMAM, ATINER.

Lais Ioanna Margiori is a student of Architecture at the Technical University of Crete (TUC). She has completed a variety of projects in architectural and urban design. She has taken part in various architectural competitions and research projects in the subjects of Covid-19 spreading, users experience in public spaces through ICT and alternative penal approaches.

Ir **Milena Ivković** MSc Arch is a Dutch-Serbian public space designer and civic participation innovator. Her multicultural background and international work experience as a designer - from the Netherlands and the Balkans to Africa and Asia - define her experimental and unique approach to urban planning practice. Milena is a Creative Director of BLOK 74, the Office for Urban Simulations and Urban Communications, based in Rotterdam (NL). BLOK 74 develops analogue and digital tools to manage co-design processes in urban planning, focusing on place-led participation, and provides services for scientific research visualisations. She leads the Association Placemaking Western Balkans - based in Belgrade, Serbia - a non-profit organisation to help create better public spaces for everyone. The Association is applying the practice of placemaking in the South East Europe region. Milena Ivkovic is since 2022 a Executive Board Member of the Placemaking Europe Foundation in Amsterdam, NL.

K

Anna Karagianni is an Assistant Professor of Architectural Design at the School of Architecture, Technical University of Crete, focusing on smart technologies in built space. She has been involved in research and design projects in Greece, Spain, France, US, UAE, India and Japan. Anna received her Diploma in Architecture from the School of Architecture, University of Patras, a Master's Degree (MSAAD) from Graduate School of Architecture, Planning and Preservation (GSAPP) at Columbia University in the City of New York and a Ph.D. on Digital Media Strategies in Architectural Design, from School of Architecture, Technical University of Crete.

Sai Kelkar

Sai is an architect from the School of Environment and Architecture (SEA), Mumbai. She currently works at the Lokal Habitat Labs as an architect, involved in creation of handbooks and rethinking architectural visualization. She has experience working with a local architecture firm based in Vasai, where she worked on residential design and interiors and had also taken a summer internship at People Place Project, Andheri where she worked on collecting everyday stories from the neighborhood and representing them in the form of a graphic novel.

Tamara Klicek is living and working in Taiwan since 2017. She is affiliated with the National Taipei University and International Program on Urban Governance. The main interest of her research are cities in terms of creative solutions for well-being and quality in the life of contemporary cities and their empowerment in terms of urban diplomacy.

Jan Koníček is an architect, designer, and Ph.D. student at FUA TUL. In 2020, he studied architecture at the Faculty of Art and Architecture at TUL, where he completed design studios under the guidance of doc. Ing. arch. Miloš Florián, Ph.D., prof. ing.arch., acad.arch. Jiří Suchomel and Ing. Arch. Mag. by arch. Saman Saffarian. Currently, under supervisor Miloš Florián, he studies nanofiber structures and nonwoven textiles in architecture at FUA TUL.

Oungrinis Konstantinos – Alketas, Professor, Architectural Design and Innovative Architectural Technologies. Architect-Engineer, Aristotle University of Thessaloniki (AUTH) (1994). PhD in Architectural Studies and Building Technology, AUTH (2009). Visiting Research Associate, Harvard GSD (2004-2006). He has collaborated with researchers from the Harvard FAS, MIT Media Lab και MIT CSAIL. Adjunct Professor, Department of Architecture, AUTH (2006-2009). Adjunct Professor, Department of Architecture, Technical University of Crete (2008-2011). Assistant Professor, School of Architecture, TUC (2012 – today). Director of the Transformable and Intelligent Environments Laboratory (TIE Lab), School of Architecture, TUC (2011 – today). His work on dynamic, human-centered architecture involves research on kinetic structures, smart materials and responsive control systems for the creation of intelligent environments that can respond actively with 'sense' to the needs and wishes of people. His research specializes in transformable environments, activity-based design methods, time-space relationships, user-experience design, educational environments and spaces within extreme environmental conditions. He has developed two specific approaches for the successful implementation of IT in design titled Spatial Economy and Sensitive Architecture. His work has been presented and published extensively through international conferences and also through design and fabrication workshops. His thematic areas of study are interdisciplinary, rooted in the field of architecture and from there on branching out mainly into the domains of psychology, neuroscience, electrical engineering and computer science. He is the author of two books: 1) Transformations: Paradigms for Designing Transformable Spaces (2006) Harvard GSD Design and Technologies Report Series, Cambridge, MA and 2) Transformable Architecture: Movement, Adaptation, Flexibility (2011) ION Publishers, Athens. He also writes sci-fi novels. During 1995-2012 he worked in a large number of architectural design and construction projects in Greece and abroad. In 2008 he received the Europe 40 under 40 Architecture Award. Currently he holds a consultant's position at the 124|SKG Architects research and design office.

Milena Kordić, PhD, Assistant Professor at University of Belgrade - Faculty of Architecture, Department of Architecture. Her specific fields of interest include practical design as well as interior design theory, focusing on the relationship between architecture and philosophy. (*In-Between Space* (Zadužbina Andrejević, Belgrade 2012)). Active in professional competitions with a significant number of rewarded competition entries, author of several built objects and many interior designs, her work is oriented toward making new connections between theory and practice.

Aleksandar Kostić is an awarded architect and educator. He practiced architecture in Serbia and in Ireland and is now the Head of Architecture Research Group and Lecturer in Architecture at the South East Technological University (SETU) in Ireland, where he leads the team of tutors in the final year of Architectural Design Studio. He holds a doctorate from the School of Architecture at the University College Dublin (UCD) in the field of design theory. His research broadly explores intersections between philosophy and architectural design. Recently his findings were published as book chapters and articles. He is a member of the All-Ireland Architecture Research Group Steering Committee, a member of the Centre for Platonic Studies at the Department of Philosophy in Trinity College Dublin and a member of ISPA - International Society for the Philosophy of Architecture.

Mateja Kurir is a philosopher, researcher, editor, and project manager. Her research interests focus on modern and contemporary architecture and its social and political context. With a doctoral thesis on the architecture in modernity, she obtained a PhD from the Faculty of Arts, University of Ljubljana. She publishes articles focusing on the intersection between architecture and philosophy in scientific journals and other periodicals; as a member of the Radio Student, she prepared a series of radio shows *Arhitektura govori* (*Architecture Talks, 2012-13*) and *Misliti arhitekturo* (*Thinking Architecture, 2017-18*). She was visiting researcher at the Department of Architecture, KU Leuven University, Belgium (2015), and postdoc researcher at the Center for Advanced Studies, University of Rijeka, Croatia (2017). Currently, she is the manager of LINA, the European Architecture Platform. She published *Arhitektura moderne in das Unheimliche: Heidegger, Freud in Le Corbusier* (Institute of Nova Revija, 2018) and co-edited *Garden and Metaphor* (Museum of Architecture and Design, Ljubljana and Biotechnical Faculty, University of Ljubljana, 2021) with Ana Kučan. She is the editor of the monograph *O oblasti v arhitekturi* (*On Power in Architecture*, Igor Zabel Association and Maska, 2021) and author of a series of symposiums *On Power in Architecture* (organized by Igor Zabel Association, 2017–19). As the editor of *On Power in Architecture*, Kurir received the Plečnik's Medal 2022 in the field of architectural theory, criticism, and publication.

Anastasia Kyriakopoulou is an Architect, a graduate of the School of Architecture of the Technical University of Crete TUC and a member of the Technical Chamber of Greece. She holds a Master of Science in Integrated Product Design and Innovation from Aegean University, focusing on service design. She worked as a tutor in the area of digital fabrication, in the Maker Space of Athens and in IAAC, through the Erasmus + program. She has been involved in numerous research projects in Greece and abroad. Her research interests are in the areas of architectural and urban design, designing methods and the implementation of IoT in the city. Since 2019, she has been working at the Public Maker Space of Athens (Gold Award at the Education Leader Awards 2019,2021) created in the framework of the "Learning Better This Way" programme of the Municipality of Athens, implemented by TUC TIE Lab under the coordination of the Athens Partnership and with the Stavros Niarchos Foundation as exclusive donor. She has received an Erasmus + scholarship which was conducted at IAAC, her diploma thesis has been awarded as one of the thirty one best practices of Urban Design on Public Play Space (PPS) which, is a project co-funded by the Creative Europe Program of the European Union and developed by IAAC, BUas, and CLAC. She also got funded (2022) by the Region Of Crete in order to further research the implementation of IoT in the city.

L

Nora Lefa

Nora Lefa, MA, MSc, PhD is a Visual Artist and Architect. She holds a PhD by the School of Architecture, University of Sarajevo; a Master's Degree (MA), Arts et Technologie de l'Image Virtuelle from Université Paris 8 and Athens School of Fine Arts; a Master's Degree (MSc) from the National Technical University of Athens; and a degree in Architecture from the University of Patras, Greece.

She has worked for and with many renowned architects in Greece (most notably Manos Perrakis).

Her artistic and research projects have been presented in venues in Athens, Mykonos, London, New York, Paris, Zurich, Belgrade and Sarajevo. She has presented papers in several conferences and exhibitions, she organized three international conferences, she was session cheer in several conferences, and part of jury in art and architecture exhibition. Her book *Buildings Used, Human Interactions with Buildings* (co-authored with Pavlos Lefas) was published by Routledge in 2019.

Pavlos Lefas

Professor, History and Theory of Architecture, Department of Architecture, University of Patras, Greece.

He has translated into Greek and commented on Vitruvius's *De Architectura*, Athens: Plethron, 1997- 1998. His books include: *Athens, A European Capital*, Athens: Dodoni 1985 (in Greek), *The Future of Cities*, Athens: Plethron 2002 (in Greek); *Dwelling and Architecture: From Heidegger to Koolhaas*, Jovis, Berlin 2009; *Architecture. A historical Perspective*. Jovis, Berlin 2014 (English); *Desino*, Buenos Aires 2016 (Spanish); *CABP*, Beijing 2018 (Chinese); *Neraida*, Tirana 2019 (Albanian); *Buildings Used: Human Interactions With Architecture*, Routledge, Abington 2019 (with Nora Lefa).

He is a registered architect, and has won distinctions in several national and European architectural competitions.

Katarina Lončarević (1978, Kragujevac) studied at the Faculty of Applied Arts, University of Belgrade (1997-2002), gaining the title Master Designer. She completed Executive Master degree in International Business Economics & Management and HEC France, attending in Faculty of Economics and Business, University of Belgrade in period 2006-2007. She completed doctoral studies (2014-2019) at the Faculty of Applied Arts, University of Arts in Belgrade, gaining the title Doctor of Arts-Applied Arts and Design. She is the owner of *EROR architecture studio* and works as associate professor at Faculty of Applied Arts, University of Kragujevac.

Iva V. Lokas, born Šibalić in Belgrade (1995), where she graduated from the School of Design (2014) as a student of the generation and with an awarded graduation thesis. She completed the Bachelor Academic Studies in Architecture (2019) and the Master Academic Studies in Interior Architecture (2021) at the Faculty of Architecture in Belgrade. She is currently a student of Doctoral Academic Studies in Architecture and Urbanism. She begins her research work by preparing a Master's final thesis under the theme "Contemporary Spectacle - Currents of Culture" which she successfully defended with a grade 10 of 10. The focus of the research work, in doctoral studies, is defined by examining the influence of subculture on the shaping of space. She is engaged in teaching work at the University of Belgrade - Faculty of Architecture as an associate without employment (since 2018).

M

Milica Maksimovic is an interdisciplinary designer with years of professional experience in various fields of design practice. Founder and partner of independent creative practice Petokraka. Currently based in Perth, Western Australia.

Polyxeni Mantzou, architect (NTUA), MSc (ETSAM UPM), PhD (ETSAM) Post-Doc (NTUA), is a Professor of Architectural Design and New Technologies at Democritus University of Thrace, Greece. She has broad experience in graduate and postgraduate education; member of numerous PhD Committees; invited professor in ETSAM (2016-7) and the Director of the Visual, Audio-visual and Electronic Applications LAB in DUTH. Her work combines architectural projects, both edificatory and urban and the research on the use of digital media in architectural design. She has been awarded in architectural competitions; has published books and articles; has participated in national and European research projects.

Hristina Meseldžija (born Stojanović), M.Arch., was born in Belgrade in 1991, where she lives and works. She graduated from the Faculty of Architecture in Belgrade (2015), where she is currently pursuing her doctoral studies and working as a teaching assistant at the Department of Architecture (since 2017). Through her academic and practical research, she examines various roles of drawing in the architectural design process.

Thomas Mical is Professor of Architectural Theory, now living and researching in the Himalayas. He completed his professional M.Arch. from Harvard GSD and his Ph.D. From Georgia Tech. He has taught more than 50 design studios globally and has been a tenured professor in the US, Canada, Australia, and New Zealand. His work in architectural theory increasingly traces the emergence, mutation, duration, and diffusion of concepts into and across disciplines. His transdisciplinary Ph.D. students work in diverse practice-led knowledge production assemblages across the Spatial Arts.

Marija Milenković is a PhD student in architecture at University of Belgrade – Faculty of Architecture. She works as a teaching assistant at the Collage of Fine and Applied Arts in Belgrade. Her research area is energy efficiency and energy performance of buildings in Belgrade. Besides the scientific work and research, she works in practice designing and elaborating architectural projects.

Nenad B. Miloradović was born in Belgrade, Serbia. He is a mechanical engineer with almost 35 years of experience in PUC Belgrade Power Plants, as an engineer for thermal energy distribution. He published the book 'Thermal aspects of building construction' in the field of energy-efficient buildings and sustainable development in Serbian in 2009. The book's reviewers were an architect and a mechanical engineer. During 2012 he was a contributor to the 'Eco-house magazine' in the Serbian language. His paper from 'REHVA Journal', 53(5)/2016, entitled 'Lepenski Vir – the prehistoric energy-efficient architecture' was included in the bibliography of the online 'World history encyclopedia' in the article about Lepenski Vir in 2020. He was awarded by the Serbian HVAC&R Society (KGH) in 2016 and 2019 for his contribution. With his 'Neolepenism house' project, he participated in the 'OA 2020' exhibition and with his team at the 'Future Architecture Platform' in 2021.

Aleksandra Milošević Pantović is an assistant in the Department of Architecture at the Union „Nikola Tesla,, University in Belgrade, as well as a doctoral student at that University. She completed her undergraduate and master's studies at the Faculty of Architecture at the University of Belgrade. As an architect, she worked in the offices of Atelje, Teatar light, Ar Tech, and in companies that needed design knowledge, City expert, Drvo trade, Dumis, she also deals with reconstruction and interior design. She deals with research on the topic of sociology of housing and forms of housing.

Nedim Mutevelić is an architect who lives and works in Sarajevo. Educated at Faculty of Architecture in Sarajevo (2005-2011) and at Barcelona School of Architecture - ETSAB (2009-2010). Co-founder of FILTER architecture (2009), one of the most prosperous young architectural studios in Bosnia and Herzegovina (www.filter.ba) Co-founder of LIFT - spatial initiatives (2012), an non-governmental organisation that organizes lectures, exhibitions and interactive installations about urban phenomena (www.l-i-f-t.org) Elected as Steering committee member at Architects' Association in Bosnia and Herzegovina - AABH (2012). Nedim holds a master's degree in architecture and he has received a number of awards at local and international public competitions: Grand Prix Collegium Artisticum (2013), first prize in the Competition for a monument/scenography to erased citizens (2013), second prize in the International competition for the urban-architectural concept design for the Badel Site Zagreb redevelopment (2012), second prize in the Competition for Memorial 2nd of May 1992 Sarajevo (2012), first prize for the best conceptual project in International contest for the public space project - Trimo Urban Crash (2011), first prize in the Competition for Historical park of Medieval Bosnia (2009), first prize in the Competition for public space Sevdah Square (2008). He is teaching Assistant at Faculty of Architecture, University of Sarajevo from 2017.

N

Marina Nenković-Riznić, PhD, Senior Research Associate

Research fields: spatial and urban planning, methodology for SEA and EIA–multicriterial analysis and modeling approaches, resilient cities, location theory, application in GIS. The author of over 160 scientific papers in international and national journals and international and national conferences. Managed several national and international scientific projects. Participated and managed the preparation of planning, project and study documentation and SEA as a lead planner. As a co-author or author, she has won several awards and recognitions at international and domestic competitions and exhibitions.

Sanja Nikolić

Currently engaged as Research Scholar at Institute of Architecture and Urban & Spatial Planning of Serbia (IAUS), working on architectural projects, research and competitions. Second year student of PhD Program Architecture and Urbanism at University of Belgrade, Faculty of Architecture. Finished Bachelor studies at the same University in 2017 and graduated from Politecnico di Milano in 2020. Worked as an intern at ATI Project, Milan and at VMX Architects, Amsterdam. Research topics within PhD studies are based in the field of aesthetics in architecture, with the focus on the theme of aesthetic immersion in architectural and art projects.

Sotirios Ntzoufras is an Architect, a graduate of the School of Architecture of the Technical University of Crete TUC and a member of the Technical Chamber of Greece. He is a PhD candidate at the School of Architecture and Engineering TUC on the topic "Robotic swarms in architecture". He worked as a teaching assistant in the area of architectural technology, in the School's fabrication laboratory and the TUC TIE Lab and he has been involved in numerous research projects in Greece and abroad. His research interests are in the areas of architectural and structural design, transformable intelligent environments, automation systems, designing methods and digital tools for Virtual Reality Environments. Since 2017, he has been working as the manager of the Public MakerSpace of Athens (Gold Award at the Education Leader Awards 2019) created in the framework of the "Learning Better This Way" programme of the Municipality of Athens, implemented by TUC TIE Lab under the coordination of the Athens Partnership and with the Stavros Niarchos Foundation as exclusive donor. For his studies at the Technical University of Crete he has received a scholarship of excellence and has 10 publications in scientific conferences/journals and 4 awards (2 gold and 2 silver).

O

Katarina Ognjenović

Born in Šabac, 1996, graduated at University of Belgrade, Faculty of Architecture in 2020. Currently a PhD Student at Faculty of Architecture and working as architect at architectural studio: Cook-Haffner Architectural Platform. Field of interest within architecture focused on researching the appearance of an architectural object through theoretical and practical experiment.

P

Eleftheria Papadosifou studies Architecture at the Technical University of Crete (TUC) since 2017. She has taken part in architecture workshops concerning green design strategies and an architectural competition regarding the restoration and reuse of a traditional building complex. Apart from that she has taken part in research on the topic of users experience assessment in public spaces through ICT and a business competition representing a smart cities project on domestic violence.

Antonios Papamanolis is an Architectural Engineer and a member of the Hellenic Technical Chamber. He has a PhD from the school of Architecture of the University of Patras, on Digital Design Education, titled "Digital and Computational Coordinates: Towards an interpretation of the introduction of digital and computational design in architectural education". He specializes in Digital Design Education in Architecture, Digital Fabrication and Design Thinking. Besides his work as a freelance architect, he has worked at the University of Patras School of Architecture as the Prototyping Lab Administrator, as an external inspector of European Programs for the Western Greek Chambers of Commerce as well as an Adjunct Professor at the Guglielmo Marconi University of Rome. Since 2019, he is a Researcher at the Transformable Intelligent Environments Lab of the School of Architecture of the Technical University of Crete. He is also the Assistant Project Manager of the Athens Municipal Makerspace. His research focuses on the Introduction of Digital Media in Architectural Pedagogy, Maker Education, as well as the integration of Computational and Participatory Design Processes.

Phd **Bojana Pašajlić** (1990, Kragujevac) graduated from the Faculty of Philology and Arts, University of Kragujevac (2009-2013), holds a master's degree from the Faculty of Applied Arts, University of Arts in Belgrade (2013-2014) with master project "Art Center - Adaptation and Reconstruction of the Military Technical Institute in Kragujevac" and Phd from the Faculty of Technical Sciences, University of Novi Sad in 2020, with doctoral dissertation "Trade buildings created from the turn of the XIX to the first part of XX centuries in Kragujevac - identity and role of the media". Since 2021 she works as assistant professor at Faculty of Applied Arts, University of Kragujevac, Department of Interior architecture, teaching a group of courses in the field of Stylistic Architecture.

During the past years, she was a participant in numerous collective exhibitions in the country and abroad. She is involved in scientific research in the field of architectural history and philosophy. The main framework of her theoretical research is History of architecture in 20th century, architectural heritage and cultural heritage, especially in the area of Kragujevac. She is engaged in independent practice in the field of interior architecture and design.

Nevena Petrović, Master of Architecture [1997, Arandjelovac, Serbia], graduated in 2021 at the University of Belgrade – Faculty of Architecture. During her studies, she participated in numerous exhibitions of the most successful student works. She participates in numerous architectural competitions and exhibitions. She directs special attention to research in the preservation of architectural heritage, as well as its preservation and revitalization. She is the participant of the *Art Project H3O2 Vol. 1* and co-author (with Miloš Stojković Minić and Dušan Stipić Dudwarszky) of the *Art Project H3O2 Vol. 2*.

dr. **Mila Pucar**, dia, Principal Research Fellow

Expertise: climate change, bioclimatic planning and design, development of cities, energy efficiency in building, passive solar architecture. Research fields: bioclimatic planning and design, implementation of renewable energy sources in planning and design, energy efficiency in building, passive solar architecture, environmental protection, studies of public participation in environmental processes, architectural design and urban planning and tutorial work and publishing, new methodological modules for establishing resilient cities, sustainable urban development, teaching and co-mentoring at PhD studies. Participated in scientific research projects as a team member or project manager, 7 international monographs and 32 national monographs and published more than 293 papers in the international and national journals and conferences, 17 technical solutions. As inventor and co-inventor she was granted fifteen patents, 25 evaluation studies, 15 key-note papers and other lectures on invitation. She has worked in projects, programs, preliminary and detailed projects, investment programs, regulatory and general plans, urban design projects etc.

R

Ivana M. Rakonjac, born in Belgrade, graduated from the University of Belgrade – Faculty of Architecture, got B.Arch., M.Arch. and a Ph.D. degree in the field of Architectural Design and Contemporary Architecture (2016). Employed at the same faculty at the Department of Architecture as an Assistant Professor. Her work is oriented toward making connections between theory, scientific research and practice. She has published numerous papers in publications, scientific conference proceedings, as well as several articles in an internationally rated journal. As an author and a member of the team, she designed numerous architectural projects – multiple completed interiors, as well as several built buildings and open public spaces. She regularly participates in national and international architectural exhibitions. She is a founder of Meteor studio – architectural practice in a field of architectural, interior, lighting design, and urban planning.

S

Sanja Simonović Alfirević, PhD, Senior Research Associate

Research fields: architectural and urban planning, theory of architecture, visual arts, habitology, energy efficiency. The author of over 100 scientific papers in international and national journals and international and national conferences. Participated and managed several national and international scientific projects. As a co-author or author, she has won several awards and recognitions at international and domestic competitions and exhibitions.

Shweta Sundar

Shweta is an architect and urban planner, hailing from Mumbai, India. She is the co-founder of Lokal Habitat Labs, an architecture and urban research do-tank, based in India. Her experience and interests lie in low-income housing, production of spatial informalities, community infrastructure development and housing in rural areas, and building with natural materials. Shweta graduated as an architect in 2017 from School of Planning and Architecture (SPA), New Delhi, and is currently pursuing her Master of Urban and Regional Planning at University of California, Los Angeles.

Igor Svetel graduated from the Faculty of Architecture at the University of Belgrade. During the studies he started to be interested in applying computers in architectural design. In 1987 he was one of the team members who developed the GIMS Expert, a computer system for designing prefabricated buildings. During the 90's, he has developed numerous experimental programs for computer assisted architectural design with the emphasis on modelling the design process. From the middle of 2000, he focused his attention on BIM technology and led two technological development projects with the topic of using BIM technologies in architectural design. Now, he is the member of the subcommittee for standards KS U442, Information modelling of objects – BIM. He is the author of numerous papers in domestic and foreign publications.

Nebojša Stefanović, PhD, Senior Research Associate

Research fields: spatial and urban planning, implementation, urban safety, methodology for spatial plans for special purpose areas. The author of over 100 scientific papers in international and national journals and international and national conferences. Participated in several national and international scientific projects. Managed and participated in more than 30 spatial and urban plans as a lead planner. As a co-author or author, he has won several awards and recognitions at international and domestic competitions and exhibitions.

Dušan Stipić Dudwarszky, MA of Fine Arts (1996, Belgrade, Serbia), enrolled in bachelor academic studies at the Faculty of Fine Arts in Belgrade in 2013, after completing the second year of art high school. He is currently in his fifth year of PhD art studies at the Faculty of Fine Arts in Belgrade, under the mentorship of prof. Vesna Knežević and Prof. Zdravko Joksimović. He is a scholarship recipient of the Ministry of Education, Science and Technological Development for research in the field of art on PhD studies for years 2020, 2021 and 2022. In 2018, Zepter Museum included two of his artworks from the series "Byzantine Quotes - Antispaces" in its collection. From 2021, these artworks have been represented in the permanent exhibition of the Zepter Museum. He is a member of the Association of Fine Artists of Serbia since 2019. His works from the field of art theory were published in the Review of the Faculty of Fine Arts. In his artistic poetics, he deals with the phenomenon of the Sacrament and its contemporary artistic appearance-truth, as well as with the theoretically analytical relationship of spiritualization as an artistic process of individual maturation. The basis of his philosophical and artistic interest is the contemporary appearance of the iconographic Christian form - icons in context of the new situation of Christian reality.

Miloš Stojković Minić, Master of Architecture [1992, Čuprija, Serbia], graduated in 2016 at the University of Belgrade – Faculty of Architecture. At the same faculty he is a student of the Doctoral Academic Studies of Architecture and Urbanism. In addition to the development of professional practice and teaching experience, he is also engaged in scientific research work related to the topic of water in architecture – Aquitecture. He is employed as a teaching assistant at the University of Belgrade – Faculty of Architecture, Department of Architecture. He regularly and very successfully participates in architectural competitions, workshops, art and architecture exhibitions and conferences in the country and abroad. He is the founder of the *Atrio* group for architectural and artistic operational practice and the creator of the original *H3O2 art project & workshop* concept, he is also the founder of the *MIST Arh* architectural studio.

Miodrag Šuvaković publishes under the name Miško Šuvaković. He received his PhD from the Faculty of Fine Arts at the University of Art in Belgrade in 1993.

He has been professor of applied aesthetics, Faculty of Music in Belgrade (1996-2015). Šuvaković is professor of applied aesthetics & theory of art and media, Faculty for Media and Communications, Belgrade. He is member of Slovenian Society of Aesthetics. He is former president of the Society for Aesthetics of Architecture and Visual Arts Serbia.

He was president of the IAA (International Association for Aesthetics – 1919-2022). He has published or edited 50 books in Serbian, Slovenian, Croatian and English, among them:

_PAS TOUT _- _Fragments on art, culture, politics, poetics and _art theory 1994-1974 _ (Buffalo, 1994), 2001; _Impossible Histories – Historical Avant-gardes, Neo-avant-gardes, and Post-avant-gardes in Yugoslavia, 1918-1991_ (co-editor with _Dubravka Đurić, Cambridge MA 2003, 2006), _Pojmovnik suvremene _umjetnosti _ [Concepts of Contemporary Art] _ (Zagreb, Ghent, 2005), _Epistemology of Art – Critical design for procedures and platforms of contemporary art education _ (Belgrade, Wien, Erme, Antwerp, 2008), _Clandestine Histories of the OHO Group_ (Ljubljana, 2009), _Neo-Aesthetic Theory. Complexity and Complicity Must Be Defended, _ (Wien, 2017).

T

Dr **Giannis Tsaras**, Architect, MSc, PhD, Associative Professor, department of Architectural Technology and Construction, School of Architecture, Technical University of Crete (TUC).

He completed his studies in Aristotle University of Thessaloniki (AUTH), got his master in ETSAB in UPC Barcelona, and his PhD title in Architecture Design in AUTH.

He is a co-founder of the architectural studio extrude architects, designing private projects and winning several prizes in international and national competitions. Since 2013 he has been collaborating with various architectural firms, as a senior project architect in design and construction of special buildings.

He has taught as a Lecturer in Aristotle University of Thessaloniki, Democritus University of Thrace and Bahcesehir University of Istanbul, in designing and technology studios.

Katarina Taranović (1989), Master of Architecture. She completed her Bachelor and Master studies at the Faculty of Architecture, University of Belgrade in 2013, and has been enrolled in doctoral academic studies at the same university since 2019. She works as an architect and collaborates with multiple architectural bureaus. In previous years, she has participated in several different architectural workshops and competitions. Currently, she is involved in the design of multiple buildings and their interiors.

Theofanis Tasis is teaching Contemporary Practical Philosophy at the Alpen-Adria Universität and is a visiting Professor at the University of St. Gallen. His areas of specialization include Political and Moral Philosophy, New Media Philosophy and Transhumanism. His monograph *Castoriadis, a philosophy of autonomy* published in Greece by Eurasia Publications won the Kaftantzogleio Prize of the University of Athens in 2008 and is now in its second edition. His book *Digital Humanism: The iconistic subject and artificial intelligence* published by Armos Publications (2019) explores the notion of a digital humanism as an alternative to the challenges presented by transhumanism and artificial intelligence is now in its third edition and was shortlisted for the National Book Award in Greece. In *Politics of Bios II: The care of the self in the iconistic society* published by Armos Publications (2017) the second part of a planned trilogy and now in its third edition he explores Philosophy as an art of living in regard to New Media. The first part *Politics of Bios: On Irony* published by Eurasia Publications (2012) examines the relation of the private and public sphere in terms of the body and human senses and the political and ethical function of irony. It won the Kaftantzogleio Prize of the University of Athens in 2013. His latest book *Philosophy of Human Enhancement* published by Armos Publications (2021) discusses the desirability and the political and ethical consequences of human enhancement criticizing Transhumanism and Technological Posthumanism as ideologies. He has also translated and edited books by Martin Heidegger, John Stewart Mill, Alexander Nehamas and Roberto Unger into greek. Theofanis Tasis is a member of the Humanistische Akademie Berlin and the Greek Philosophical Society.

Maria Terzaki is a student of Architecture in Technical University of Crete. She has take part in architectural, urban planning and urban design projects.

V

Snežana Vesnić, PhD, is an architect, Assistant Professor at the Faculty of Architecture, University of Belgrade, and founding partner of the architectural studio Neorhitekti and Theta Bureau, Belgrade. Vesnić's projects have garnered numerous awards, such as two nominations for the Mies van der Rohe Award (Villa Pavlović, 2009 and Textil Užice, 2019). Her current project is the kinetic structure, RTS Memorial 'Sixteen'. Her scientific research is in the field of architectural philosophy and aesthetics, focusing on the production of "architectural concepts." Vesnić is the author of "The Architectural Concept: Object of Reality and Subject of Illusion" (Akademska knjiga, IDESE 2020).

Tanja Vujinovic is an established artist who has appeared as a part of numerous festivals, shown artworks in museums, and galleries worldwide.

Her works have been shown in the Museum of Contemporary Art in Strasbourg, Kunst Palast Museum in Düsseldorf, Museum of Contemporary Art in Denver, Kunsthaus in Merano, Museum of Contemporary Art in Istanbul, Kapelica Gallery in Ljubljana, Museum Vasarely Foundation in Aix-en-Provence, and Künstlerhaus in Vienna. She has presented at festivals such as ISEA2009 in Belfast, Ars Electronica in Linz, Kinetica Art Fair in London, Spor Festival in Aarhus, FILE Festival in Sao Paulo, and FILE RIO in Rio de Janeiro. Her hybrid artworks consist of VR, digital/physical sculpture, game engines, and electronic music. She graduated with a Bachelor of Fine Arts degree, and in 2010, she obtained a PhD in Philosophy and Theory of Visual Culture.

Tanja is the founder of Ultramono, a cybernetic art hub. As a passionate supporter of rave culture she has created a few techno albums and is also DJing herself.

W

Christiane Wagner is a visiting research professor at the University of São Paulo (USP). She was awarded a doctoral degree in the science of art and aesthetics, recognized by the Hessian Ministry of Science and Art, Germany. She has a Ph.D. in the science of art and aesthetics from Université Paris 1 Panthéon-Sorbonne, and a Ph.D. in design and architecture from USP. Both with the highest honors. Also, she holds qualification training in the history of art, art education, and digital art development, sciences, and technology from the French Ministry of Education and the Institut National d'Histoire de l'Art (INHA). She is a member of the Scientific Committee of the Society for Interdisciplinary Image Science in Germany. Wagner is also a member of the International Committee and chair of the International Publications Subcommittee of the College Art Association of America (CAA) New York.

Renate Weissenböck is an architect with extensive experience in design and realization of complex projects. She is a professor at Frankfurt University of Applied Sciences (Germany), a lecturer at FH Joanneum University of Applied Sciences (Austria), and a post-doc researcher at Brno University of Technology (Czech Republic). In her research, she explores the role of different digital media in the design process, such as industrial robots and Augmented Reality, working in the tension field between human, craft and machine. Renate holds a Master of Architecture from the Academy of Fine Arts in Vienna, a Master in Advanced Architectural Design from Columbia University in New York, and a PhD from Graz University of Technology. She has worked with internationally recognized architecture firms Asymptote Architecture and Coop Himmelb(l)au. Renate has been teaching and researching at Graz University of Technology, Vienna University of Technology, University of Innsbruck, Art University Linz, University of Applied Sciences in Munich, and Kennesaw State University in the U.S.

Ž

Tijana Žišić is a PhD student in architecture at University of Belgrade – Faculty of Architecture. She works as a teaching assistant at the Faculty of Architecture in Belgrade, at the department of Architectural Technologies. Her research area is energy efficiency and energy performance of buildings in Belgrade. Besides the scientific work and research, she works in practice designing and elaborating architectural projects.

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