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Planning in the Polycrisies era

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The Architecture of Relation: Reimagining the Sustainable City

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At a time when cities across the world are struggling with crises of identity, density, and meaning, sustainability has become a word that risks losing its essence. What once evoked a balance between human and natural systems is now often flattened into a technocratic slogan. Against this background, the Polis Urban Forum sought to bring the debate back to its intellectual roots.

The round table *"Exploring Sustainable Urban Futures"* was part of the series Polis Urban Forum, organized within Tirana Planning Week 2024 (April 22-25, 2024) by the Faculty of Planning, Environment and Urban Management, Polis University in partnership with the Heinrich Böll Stiftung Tirana (HBS) foundation. Their shared cultural and social agendas made this collaboration particularly resonant. The discussion took place at Destil Creative Hub, in the heart of Tirana, as an open event inviting architects, planners, students, and citizens to reflect on the shared condition of urban life.

The session gathered four scholars - Franco Purini, Pantoleon Skayannis, Skender Luarasi, and Llazar Kumaraku - each representing different schools of thought and cultural backgrounds, yet united by a common interest: the city as a living laboratory of ideas. Moderated by Doriana Musaj, the conversation followed a fishbowl format, in which questions and reflections circulated among the discussants and the audience; as Elinor Ostrom would say, *"the larger the audience, the wider the pool of the common."*

The City and Its Meanings

For Franco Purini, architecture has always been sustainable, *"it has always organized life,"*- he said. To the architect, the problem lies not in architecture itself, but in what has been forgotten: tectonics, typology, and the relationship between form and thought. In his words, the discipline is losing its hierarchy of knowledge, "Our faculties are disintegrating. Subjects multiply, but the true issues of building disappear."

Pantoleon Skayannis, approaching from a planning and governance perspective, defined the city as the very condition of sustainability, polis as both urbs and civitas. A sustainable city, he argued, depends on the equilibrium between physical form and human organization. Architects may shape space, but they must also understand how society inhabits it. *"You have to unify the two Tirana,"* he said, referring to the physical and social layers that remain disconnected in the capital of Albania. From a more conceptual lens, Skender Luarasi questioned the autonomy of architecture. *"We should not confuse autonomy with constancy,"* he noted. For him, architecture exists within a web of changing forces, - gravitational, social, environmental, - and its role is to overcome them through transformation. Refering to the historic evolution of the living environment he concludes that *"If the forces did not change, architecture would have remained the same from antiquity to today,"* he observed. Llazar Kumaraku, in turn, grounded the discussion in the enduring nature of form. While styles and languages evolve, typology persists, *"The cathedral of Paris carries Roman, Gothic, and Renaissance arches, but the typology remains constant."* He emphasized the mere fact that what changes is expression, but what remains is the structure.

Together, these viewpoints illustrate the paradox inherent in architectural sustainability: it is simultaneously eternal and constantly evolving. Purini evokes the neglected significance of form; Skayannis reinstates the civic as the authentic standard of sustainability; Luarasi contextualizes architecture within the dynamic forces that influence society; and Kumaraku reestablishes continuity via typology. Their similarity lies in the reminder that architecture transcends mere building; it embodies a dynamic network of relationships between structure and significance, between stability and transformation, and between the urban environment we create and the life it is designed to support.

The Challenges of the Contemporary City

When the conversation shifted from architecture to the city itself, Skayannis was unequivocal *"Cities are the question, not just architecture."* The challenges of the urban millennium, he argued, are primarily social, - equity, governance, migration, and mobility, - all intensified by climate change and digitalization. Cities like Istanbul, Cairo, and Hong Kong illustrate how density and inequality now coexist in paradoxical ways: compactness without community. Purini expanded the discussion to the scale of the megacity, warning of fragmentation. "*Rome is already several cities within one,*" he said. "*It is held together only by its 250 churches, -religion not in the theological sense, but as a social glue.*" He foresaw the disintegration of global metropolises like Los Angeles or Shanghai, where repetition and anonymity erode identity, *"Tens of kilometers of identical towers, where it becomes impossible to recognize oneself in space, that is the misfortune of disintegration."* For Kumaraku, the danger lies in imitation and trends: cities increasingly resemble one another, losing the uniqueness of place. From the "Bilbao effect" to the global race for towers, urban identity risks being replaced by architectural fashion. Luarasi pointed to another kind of loss - the disappearance of history as a foundation for design. "In architecture schools today, history is not taught as it once was," he lamented. Unlike mathematics, which can exist without its past, architecture depends on historical consciousness. "History is important for the future," he said. *"By studying the past, we make better choices for what is yet to come.*"

When you listen to these voices, you can tell that the city is stuck between remembering and forgetting, being dense and spreading out, copying and losing. The modern city, whether it's Tirana or Los Angeles, is no longer a single thing; it's a place where tensions exist between global models and local meanings, between the promise of progress and the fragility of belonging. What the discussants exposed, each from different tradition, showed is the urgent need to reclaim the city as a space of consciousness: a place where form remembers, history directs, and identity resists erasure. Sustainability begins not with technology solutions but with cultural awareness, the courage to remember a city's past significance and to imagine its potential future development.

Anonymity and the Ethics of the City

The most significant part of the conversation arose when Purini described anonymity as the fundamental condition of contemporary urban life. In the outskirts of Rome, he stated, individuals no longer acknowledge one another; *"Living in anonymity destroys life. It creates detachment - even within families."* Sustainability, in this sense, is not just ecological or economic but deeply human, the capacity to rebuild social dialogue. Skayannis added that sustainability today is in danger of methodological distortion. If its four dimensions - social, ecological, economic, and institutional - fall out of balance, future generations might inherit a hollow concept. Social sustainability, he warned, is under threat from the erosion of equity and justice, *"The notion of sustainability must now include welfare and governance - who makes decisions, how decisions are made, and how the public participates."* He drew an evocative example from Rotterdam, a city designed to live with water. Minor basins transform into lakes during intense rainfall and then serve as skate parks in arid periods, exemplifying a design that integrates resilience into cultural practices. *"We must design with natural principles,"* he concluded, *"not merely mitigate problems."* Kumaraku, invoking Guy Debord in 'The Society of the Spectacle,' where he cites Lewis Mumford, *"increasing communication increases distance",* warned that *"increasing communication increases distance."* The virtual metropolis, although uniting us, can exacerbate our isolation. He proposed that the issue lies in maintaining human closeness in an era of digital mediation. Purini, revisiting the concept of meaning, contended that each city encapsulates a plethora of interpretations. Central Park, he stated, is not merely a park but a palimpsest of memory - a reconstruction that maintains the concept of wilderness inside an urban framework. *"Likewise, the linear system of Tirana,"* he continued, *"is a monument not only to the city but to the nation - connecting mountains to sea, east to west. It is a sacred sign that must be restored."*

The above observations lead to the conclusion that sustainability is a reflection of the inner state of the city rather than an additional layer added to urban life. Anonymity, alienation, and excess are not merely symptoms of modernity but they serve as indicators of a profound cultural schism. Thus to preserve a city means to uphold acknowledgment, discourse, and remembrance. When architecture no longer communicates with the public, and the city neglects its own narrative, sustainability becomes devoid of significance. The objective then is to reconstruct the grammar of relations: to envision cities where proximity is reinstated, where natural and human rhythms harmonize, and where space transforms into a medium of connection rather than division.

Designing the Future

The discussion culminated in the question: *Can sustainability be designed?*

Purini resisted the word itself *"I don't like how sustainability has become a media message,"* he admitted. For him, the task is not to repeat the term but to reinterpret it, to understand what no longer works in the city and what can evolve. *"It's not about preserving; it's about knowing how to move forward."* Skayannis emphasized purpose *"The key question is who we design for."* He called for principles of inclusiveness that respond to climate, technology, and demographic shifts. Kuma-

raku's response was almost paradoxical *"There is hope only for those who have no hope."* To him, innovation may lie in returning to tradition - not in form, but in method, in how we think about space and continuity. For Luarasi, the synthesis was clear: city-making is an art, not a formula, - *"We can only speak of principles in art,"*- he said, by adding that *"formulas are the problem."* Designing cities, he proposed, is the art of moderation - the ability to resolve tensions without destroying what makes the city human.

Ultimately, these viewpoints demonstrated that sustainability should be fostered rather than built; it is a discipline of interpretation rather than a production. Purini's appeal for critical renewal, Skayannis's ethical pragmatism, Kumaraku's emotional inversion, and Luarasi's aesthetic moderation all led to a similar understanding that the city's survival depends less on exciting new developments and more on the art of caring. The sustainable city, from this viewpoint, is characterized not by relentless expansion, but by its ability to pause, reflect, and reorganize through discourse. Planning transforms into an act of empathy, and designing becomes a practice of active listening. This area of mutual acknowledgment opens the door to the potential for a truly sustainable urban futur

Afterthought

The outcome of the Polis Urban Forum was characterized by a constellation of ideas rather than a consensus. Sustainability was not delineated, but it was reconceptualized as a discourse between memory and creativity, between autonomy and connectivity, between the city we inherit and the one we have yet to build. The round table emphasized that urban sustainability is not merely a technological accomplishment but rather an ethical and cultural endeavor. It depends on our capacity to listen, inquire, and nurture the unseen connections that drive a city.

Throughout the discourse, it became evident that sustainability cannot exist as an isolated concept, instead it necessitates continual reinterpretation through experiencing contexts. The discussions at the round table encompassed not only architecture and infrastructure but also themes of belonging, identity, and the delicate equilibrium between continuity and change. Their ideas converge on a common appeal to restore the human dimension in architecture and planning, to reclaim significance, intimacy, and empathy in the creation of space.

This appeal seeks to reconnect mind and space, knowledge and duty, transforming sustainability from a mere objective into a practice of responsibility, fostering a continuous civic conversation that preserves the city's life.

This text is based on the round table "Exploring Sustainable Urban Futures: Challenges, Concepts, and Principles,*" held during the Polis Urban Forum / Tirana Planning Week 2024, co-organized by Polis University and Heinrich Böll Stiftung Tirana.*

Energy Resources

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The workshop merges the basics of energy resources for Environmental Studies students with a comprehensive understanding of how the energy sector operates in Albania and developed countries. It delves into the sustainability of both renewable and non-renewable energy sources and their environmental impacts, considering the pressing issue of climate change. By categorizing energy sources into renewable and non-renewable categories, participants gain insights into various forms of energy and their effects on the environment. Additionally, the workshop also aimed to increase participants' competence for using energy analysis tools, updating development plans connected to energy systems and sustainability, and estimating energy footprints. Practical exercises and training sessions were incorporated to help participants improve their energy management abilities in a variety of industries, including construction, energy systems, agriculture, and food. Finally, this program presented Environmental Studies students with the foundational knowledge and practical skills needed to analyze, manage, and contribute to sustainable energy practices in the face of global issues such as climate change.

OBJECTIVES

During the workshop, attendees delved into a range of topics encompassing energy management, sustainability, and environmental conservation. Through a blend of theoretical learning, practical exercises, and group collaborations, participants gained the necessary knowledge, skills, and tools to adeptly tackle the intricate challenges associated with energy. Below are the primary objectives of the workshop:

Provide Insights into Global Energy Dynamics: To offer insights into global energy dynamics, including comparisons between Albania and developed nations, facilitating the development of a nuanced understanding of energy sector variations and their environmental repercussions.

Comprehensive Knowledge of Types of Energy and Sources: The workshop provided participants with a comprehensive understanding of various types of energy and their respective sources, spanning renewable and nonrenewable categories, along with the environmental implications associated with each.

Enhanced Understanding of Energy Footprint in Product and Services: Participants gained insights into the energy footprint associated with buildings, energy systems as well as agricultural practices and food systems, including the identification of energy inputs, outputs, and efficiencies within these sectors.

Proficiency in Energy-related Calculations: Participants will develop proficiency in conducting energy-related calculations, including assessments of energy consumption, efficiency, and impacts, enabling them to analyze and optimize energy use in different processes.

Skill Development in Sustainable Energy Practices: The

Photo During the Workshop

Photo During the Workshop

workshop aims to equip participants with practical skills for implementing sustainable energy practices across various sectors, including agriculture, urban development, and industry.

Cultivate a collaborative learning environment: Fostering teamwork among participants, enabling them to collectively explore and address complex energy-related challenges through collaboration, knowledge sharing, and mutual support.

METHODOLOGY

The workshop methodology aimed to provide an engaging and comprehensive learning experience by incorporating various teaching tools and activities, encouraging active participation and collaborative learning among participants. The methodology primarily consisted of three components: PowerPoint lectures, class exercises focusing on energy analysis methods, and SWOT analysis sessions.

PowerPoint lectures: PowerPoint presentations were used to deliver key concepts and theories related to energy resources, sustainability, and environmental impacts. These lectures provided foundational knowledge on topics such as renewable and non-renewable energy sources, energy efficiency, climate change, and sustainable development.

Class Exercises on Energy Analysis Methods: Interactive class exercises were conducted to reinforce learning and practical application of energy analysis methods. Participants were guided through hands-on exercises to analyze energy consumption patterns, estimate energy footprints, and identify opportunities for energy efficiency improvements;

SWOT Analysis Sessions: SWOT analysis sessions were conducted to evaluate the strengths, weaknesses, opportunities, and threats associated with different energy resources as well products and services. Participants worked collaboratively to identify internal and external factors influencing energy-related decisions and strategies. Through SWOT analysis, participants gained insights into the current state of energy systems, potential challenges, and opportunities for improvement and innovation.

Overall, the workshop methodology combined traditional lectures with interactive exercises and group discussions to foster a deeper understanding of energy resources and sustainability concepts. By incorporating diverse teaching methods, the workshop aimed to cater to different learning styles and facilitate active participation and knowledge retention among participants.

CONCLUSIONS

In summary, the workshop offered an immersive experience over three days, combining interactive sessions and collaborative activities to deepen participants' grasp of energy resources and sustainability practices. PowerPoint lectures provided foundational knowledge, while hands-on exercises enabled practical application of energy analysis methods and identification of efficiency opportunities. SWOT analysis sessions enhanced critical evaluation skills across various factors influencing energy sources and sustainability initiatives. Participants actively engaged in assignments, including energy efficiency assessments of crop cultivations and apartments, and a comprehensive SWOT analysis of Albanian electricity sources. Through teamwork, participants not only honed technical skills but also gained a holistic understanding of sustainable energy management complexities. Overall, the workshop fostered teamwork, and critical thinking, and equipped participants with the skills to address energy challenges and contribute to sustainable development efforts.

Traffic Management

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This course provides students with foundational knowledge in traffic management, emphasizing the interconnections between urban planning and traffic systems. Students will learn the basic requirements of various traffic types and gain essential skills in designing and redesigning traffic spaces. They will apply this knowledge to simple planning examples, developing operational and design concepts for traffic routes and presenting these graphically, utilizing appropriate measures and software tools. Furthermore, students will acquire advanced knowledge in traffic planning, expanding their expertise in the operation and design of diverse traffic systems and nodes. They will apply this advanced knowledge to complex planning scenarios, creating comprehensive concepts for the operation and design of main roads within and around urban areas. Additionally, they will develop traffic processing solutions and package measures for effective traffic management.

OBJECTIVES

The objectives were for the urban planning students to understand and learn about how to create a more efficient, safe, and sustainable traffic system in Tirana, improving the quality of life for its residents and visi-tors.

Reducing Traffic Congestion (optimizing traffic flow)

Enhancing Road Safety (increasing the enforcement of traffic laws)

Promoting Sustainable Transportation (biking and walking, using public transport)

Environmental Protection (green urban planning practice to create more eco-friendly transportation networks)

Improving Public Transport

Integrating Technology (smart traffic lights and real time traffic moni-toring systems)

Urban Planning and Development (coordinating urban development project with traffic planning; developing multi modal traffic hubs)

Community Engagement and Education (raising public awareness about traffic safety and involving the community in traffic management planning processes)

METHODOLOGY

Two of Tirana's quite busy road sections have been selected, to observe traffic flow and behavior, and notice anomalies that possibly occur re-peatedly.

The Participants have been sensitized to observe all modes of transit, meaning pedestrians, cyclists, scooters, public transport, motorized traf-fic, and, also on different age groups and abilities (children, elder peo-ple, wheelchair user). Participants have been split in two groups, and allocated to the focus sections, for a first session from 2 to 4 pm., and for a second session the next day from 8 to 10 am, while the groups changed the focus section. While surveying the traffic, each participant had

to capture at least five anomalies/typical situations in a photo, to categorize and evaluate af-terwards. After sharing this experience with students, they understood the im-portance of taking a moment to observe their surroundings to effec-tively frame the traffic management problems we face in our cities. On the third day, after students had placed all their preliminary categorized pictures, they engaged in a debate. Through this discussion, they began to comprehend the significance of the issues they identified and evalu-ated them on a scale from 1 to 10 points, from the least to the most ur-gent problems needing resolution.

This process led to the conclusion that in both street segments studied, most of the traffic congestion was caused by drivers' behaviors. These behaviors included not respecting traffic signals, stopping or parking in the middle of the road, and driving in the wrong direction. Additionally, the students identified various problems related to the street geome-try, such as narrow lanes, poorly designed intersections, and inade-quate signage. The combination of these factors contributes to a chaotic traffic situation, particularly during peak hours, such as 14:00 to 16:00. The students noted that these problems are not isolated incidents but are systemic issues that require comprehensive planning and enforce-ment to address. By categorizing and prioritizing the problems, the stu-dents recognized the need for a multi-faceted approach to traffic man-agement, which includes improving driver behavior through education and enforcement, redesigning street spaces for better flow and safety, and implementing more effective traffic control measures. Moreover, the exercise highlighted the importance of involving the community in identifying and solving traffic issues. Students realized that by actively participating in such analyses, they could contribute valuable insights and solutions. This hands-on experience emphasized the critical role of observation, analysis, and debate in understanding and addressing ur-ban traffic challenges.

The project concluded with students proposing several practical solu-tions, such as increased traffic enforcement, better signage, and recon-figuration of problematic intersections. They also suggested community awareness campaigns to educate drivers about the importance of fol-lowing traffic rules. This comprehensive approach not only aims to alle-viate current traffic problems but also promotes a safer and more effi-cient urban environment for the future.

Photo During the Focus section 1: Elbasan Road (see Graphic Material below)

Photo During the Wor Focus section 2, 'Shqiponja' Crossing – Casa Italia roundabout kshop

Enhancing Tirana's Bus Service System

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This workshop is dedicated to delving into the intricacies of public transport service in Tirana, with a primary goal of devising effective strategies to enhance and elevate its overall service levels. Participants will engage deeply with a comprehensive case study, bolstered by a wealth of data and contextual information. Through analysis and discussion, they will review the provided material and seek out additional information to enrich their understanding. Participants will work in groups to craft innovative strategies aimed at driving the development and improvement of Tirana's public transport services.

OBJECTIVES

Gain a foundational understanding of public transport service management. Explore recent developments in public transport within Tirana. Acquire skills in utilizing analytical tools to assess the current service and suggest solutions. Learn techniques for defining measures to enhance public transport services.

METHODOLOGY

Students will collaborate in groups throughout the sessions. Each group will have no more than 5 people. They will be provided with the basis of data and information to conduct their research.Each session will commence with a theoretical input segment, followed by dedicated time for reading, research, site survey (if applicable), and the formulation of concepts and proposals.

CONCLUSIONS

During the 3-day workshop the students had a chance to explore bus service analysis tools, and come up with a strategy to tackle public transport improvements. Working in groups and then coordinating among the different teams in order to come up with a coordinated holistic approach was very well received from the students and gave them a glimpse of real-life practice, as experts 'working' for the Municipality of Tirana.

The students were able to come-up with substantial measures and proposals for improved bus service management in the city, from how to develop a strategy and set goals, to hands-on interventions, such as placing bus priority measures, to surveillance cameras, as well as increased bus services (night buses, new routes etc.).

Photo During the Workshop

Photo During the Workshop

The Metro of Athens as a Complex and Wicked Planning Problem of a Megaproject: the siting of some stations

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Abstract

This paper investigates the physical planning issues related to the siting of stations on the Athens metro lines. Considering issues of problematic or conflictual siting that had arisen during the planning of the first phase of the metro (base project), it focuses on two current acute issues (of the metro Line [4]), those of the location and form of the Exarcheia and Evangelismos metro stations. Trying to see the problems under the light of mainly eco-environmental and social sustainability in combination with certain approaches to planning, such as those that utilise the concepts of wicked planning and clumsy solutions (Hartmann, 2012), and the discourse on mega projects and the complexity, uncertainty, and risk inherent in them (Dimitriou, 2014), would be instrumental. The intertwining of these concepts leads us to understand the deeper essence of the problems. The paper argues that if and whenever a solution is attempted, this never-perfect solution should at least be based on extensive consultation with all stakeholders, and that the course of such design events should be recorded to ensure institutional memory.

Methodologically, the paper is the product of many years of research on mega projects in Greece and internationally. This research is qualitative, based on discussions and interviews with stakeholders and key figures associated with the projects, as well as on events recorded in the mainstream electronic and print media. The result of this research derives from the intersection of the conclusions of our previous extensive research on the Metro base project (OMEGA Centre 2012) and the research into the current real issues of Line [4] planning.

One of the research key conclusions is that there is an inherent negation in the Greek planning system to conduct substantial communication with the stakeholders if it is expected that they are going to ask 'difficult questions' or oppose a project. This runs in parallel with insufficient appraisal of the projects, especially in certain aspects of their eco-environmental and social dimensions. As solutions provided are 'over' clumsy, this results in a vicious cycle of problems leading (at least) to project delays.

From this research, it is highly recommended that future projects in Greece and internationally should utilise strong consultation procedures, and/or suitable forms of participatory planning or decision-making, and comprehensive appraisal so that they save time and resources and be more eco environmentally and socially sustainable and useful.

Introduction Wickedness and Complexity in Mega Projects

Every form of planning is 'inherently wicked' (Rittel and Webber, 1973: 160). If one looks at the ten reasons why planning is characterised as wicked by the above authors, one can conclude

that this is because the difficulty of the problems is mainly due to their social dimension (ibid) where the theories, approaches, and policies for dealing with social aspects of planning (especially its impact) are dependent on the subjects which stand against the process and the object of the application (of planning), and the position from which they are expressed. That is, in essence, from the *Weltanschauung*. This, in my opinion, is the source of the different rationalities invoked by Hartmann (2012) elaborating in his way on the now classic text of Rittel and Webber (ibid). The different rationalities reflect fundamentally different social values, expressed in types of organisations reflecting types of cultural bias (Douglas, 1999) and, of course, the consequent goals and policies. But policies are essentially proposals for the future, and each social group has its vision for the future and its futurist narrative. In this sense, the context can assume multiple dimensions and can be understood differently by different players. The various narratives rooted in the multiple understandings of the contexts indicate, amongst other things, the existence of uncertainties for the future.[1]

And if spatial planning is 'inherently wicked', it [seems] also to be inherently complex. This is not only because of the uncertainty it entails as a future situation but also because different logics develop in its context and different conditions appear. It is also because, in large spatial planning projects, we encounter characteristics of complexity, such as those defined by theories for complex systems. These include a) unpredictable behaviour (Snowden and Boone, 2007, p.3, 6; Chester and Allenby, 2019, p.7; Oades, 2008, p.12-14), e.g., of eco-systems; b) social groups, markets, qualitative transformations, e.g., a technical problem develops into a social problem; c) emergent issues/emergent changes (Snowden and Boone, 2007 p.7), e.g., while a project is carried out, new goals become necessary; d) and not clearly defined solutions of generated problems or lack of solutions (infinite solutions), e.g., in resolving traffic problems in a congested city (Snowden and Boone, 2007; Chester and Allenby, 2019; Oades, 2008, p.12-14). All are closely related to the issue of 'unknown unknowns' (Kurtz and Snowden 2003, P. 468; Snowden and Boone, 2007, p.6) which figures as the fundamental characteristic of a complex context. In parallel, there are other key characteristics of complexity, such as simultaneous order and disorder, heterogeneity, chaos, and nonlinearity (Kurtz and Snowden 2003; Esposito and Terlizzi 2023). The interaction of independent factors in various ways creates uncertainty and risk (decision risk), e.g., in environmental issues.

These states have a close connection/relationship with the ten qualities of wickedness.[2] For example, the issue of qualitative transformations (e.g., a technical problem develops into a social problem) that characterizes complex planning problems/projects is linked with the fact that solutions to wicked problems are not true-or-false, but good-or-bad (since the measurement of social issues depends on the perspective – and archival

values – of what is measured). It is also connected to the fact that every wicked problem can be considered a symptom of another problem, characteristic of the domino of qualitative transformations and their development, as a result of differentiation. The last two are the 3rd and 8th characteristics of wicked planning, according to Rittel and Webber (1973).

My argument is that if planning, in general, is both complex and wicked, then the planning of **mega projects** will be complex and wicked par excellence, not only because it is planning, but also because the **mega projects** are complex and wicked. **In terms of complexity,** mega projects:

Constitute rapidly changing environments and present fragmentation of objectives (difficulty of concurrent service), emergent issues, complex objectives, and sub-projects (Chester and Allenby, 2019).

Create unintended consequences that violate the **iron triangle** (law) in their socio-economic environments (Flyvbjerg et al., 2003; OMEGA, 2012; Flyvbjerg, 2017; Lehtonen, 2014; Gil, 2023).

Involve an abundance of uncertainties due to duration and evolving contexts (Oades, 2008; Flyvbjerg, 2023).

Due to the various groups of stakeholders, there is an interaction of factors that create contingencies, uncertainties, and conflicts (Esposito and Terlizzi, 2023).

In terms of 'wickedness', megaprojects have the following characteristics:

As intermediate goals and problems emerge, their complexity (to be solved) does not allow finalization of the solution.

Their effect or impact cannot be measured, compared or assessed (especially versus other solutions).

They are one-shot ventures.

To a large extent, mega projects are unique (Flyvbjerg, 2023) (not all, and under certain conditions, especially their multifaceted impacts).

They are parts of a sequence of complex problems.

They touch the social field that is eminently wicked.

The choices are usually made ad hoc and determine the solutions.[3]

So, we have the mega projects, the planning of which is both complex (in terms of the non-technical aspects, which are just complicated) and wicked.

In the next section, I will examine the Athens metro based on the above theoretical assumptions.

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[1] *See, for example, Low and Sturup (2013) for the significance of different storylines about the understanding of success of the Sidney Cross City Tunnel.*
[2] *There is a vast literature on 'wickedness' and 'wicked planning'. Among else see Crowley and Head, 2017; Head, 2022.32*
[3] *See Strategic misinterpretation and other behavioural biases in Flyvbjerg, 2021.*

The Metro of Athens: The Exarcheia and Evangelismos Stations

The assumption is that the metro of Athens is a mega project. This is evidenced by the fact that the base project cost $4.61 billion. In parallel, it must be noted that the base project completed in April 2003 (a year before the Athens Olympics of 2004) served 20 stations with a total route of 17.6 km on Lines 2 and 3 that run through the centre of Athens and are connected to the pre-existing Line 1. The lines operated in three stages in 2000 and 2003. They were built 100% with public expenditure (of the European and Greek public, regardless of whether it was directly or through borrowing) (Skayannis, 2021:49; Kaparos and Skayannis, 2015). Now, the metro system of Athens consists of 47 stations (71 including the pre-existing Line 1 and counting the five interchange stations twice), with a network of 90.1 km, while Line 4 is under construction (due in 2028) and will comprise 15 stations, be 12.8 km long and will cost more than 1.5 billion $. New extensions are already being planned, so the whole of Line 4 will reach a total length of 38.2 km with a total of 35 stations *(https://www.emetro.gr/?lang=en and https://en.wikipedia. org/wiki/Athens_Metro).*

Here, I will analyse the matter from the point of view of the siting of the stations of Exarcheia and Evangelismos (Line 4), focusing on the complexity and wickedness of the problems caused by them vis a vis the siting of these two stations already under construction. I will mainly refer to the social dimension, focusing on urban dispute/conflict with reference, where necessary, to its relationships with the other dimensions.

The Stations of Exarcheia and Evangelismos
EXARXEIA
Exarcheia is an old middle-class district of Athens, which, since the end of the 19th century, has developed into a haunt of intellectuals from the interwar years onwards, but especially during its recent history (mainly after 1974). In specific, its Square, where the station is planned, has been a point of activity for the youth, and mainly for extra-parliamentary left-wing organisations, anarchist groups, and a place of frequent clashes with the police to this day. This tradition is also related to the nearby presence of the School of Architecture of the National Technical University of Athens (NTUA).

The problem that has arisen is the location of the metro station in the Square, and it is as follows: According to N. Belavilas and N. Mylopoulos[4], since the initial planning of the metro, the location of the station in Exarcheia was foreseen (at that time in a future Line, now Line 4). The public consultation process for the project lasted from 02/02/2017 to 06/10/2017, with no serious objections raised. In 2018, with the approval of the Environmental Impact Study, Exarcheia Square was announced as the precise location. Then, the first discussions and

reactions about it began. In this context, the 'Anaplasi Athinas SA' (Regeneration of Athens SA[5]) raised the issue of the station with Attiko Metro (AM [6]) , and elaborated four scenarios for its location, concluding with its choice in May 2019, which was to move the station closer to the Archaeological Museum and the NTUA (intersection of Tositsa and Bouboulinas streets) two minutes away from the Square, on foot. The proposal was submitted before the public tender, and the proposed relocation did not present major technical problems. It certainly would incur some cost, but this would not be the first time in the history of the construction of the metro. Although the proposal was submitted after the public tender and while the process was ongoing, the planning at this level could still be modified. AM agreed with the proposal and was already working in this direction. However, the change of Government on July 7, 2019[7] effectively cancelled the above actions and finalized the station in the original location, i.e., on the Square. Since then, the reactions of many intensified, which continued until recently (see interview of N. Belavilas in *Avgi* on 07/11/2023 and personal interview with N. Belavilas and G. Mylopoulos).

The reactions took many forms, including institutional with appeals to the Council of State (CoS), such as that of October 26, 2022, lawsuits, dynamic with rallies, demonstrations, and even clashes with the police. All were expressed in various phases of the subsequent effort for the project against the preliminary works (preparation of the field). However, it is characteristic that the most intense forms of reactions did not occur until construction was attempted to begin in 2021. As early as the beginning of the summer of 2021, the first crews that attempted the exact topographical mapping of the field were chased out by bystanders, and it was impossible to start the work until March 2022.

In fact, in August 2022, when a new intervention was attempted, a protest was organized by the Committee for the Defense of the Exarcheia, which led to police intervention. The work started suddenly at 4:30 in the morning, guarded by the police amid protest rallies (*Kathimerini,* Lialios, 10/8/2022). This was followed in November 2022 by another appeal to the Council of State by 50 residents, with a request to stop the execution of the project for environmental reasons, an appeal which the Council declined. In the meantime, a new suspension of works took place in May 2023 with another appeal to the Council of State. The trial was set for the end of September 2023 and resulted in saving the trees for the time being. It is important that to calm the situation, AM announced an architectural competition for various public squares and the areas of 7 stations among which Exarcheia. On October 30, 2023, the Council of State declined the appeal of the 50 residents, stating that the issue of greenery had been addressed by AM and the Municipality.

On November 6, the cutting of trees had already begun, and the transplantation to another part of the city was initiated. The

newly-elected mayor H.Doukas[8] for the illegal cutting of trees. The persistent movement, however, finally managed on March 18, 2024 to cause a unanimous vote "in the EU petitions committee regarding the petition of 90 residents of Exarcheia for the illegalities, irregularities and violations that occur on the occasion of the destruction of Exarcheia square for the construction of a metro station. The committee decided to keep the case open, referring it to the relevant committees. Particular emphasis is placed on the fact that it was also referred to the Libe committee, committee for rights and freedoms"[9,10].

The points and categories of opponents are
a) the ecological character of the Square will be destroyed (greenery cut) (the Municipality stated that it will do transplanting and agreed with AM);
b) at the level of eco-environmental-urban planning in general, the Square is almost the only "green lung" in this highly dense urban area;
c) culturally, the area, especially the Square, is a centre of alternative political expression as well as a point for many intellectuals of the city, as well as for students of architecture;
d) for many, the Square is a centre of resistance to the corresponding established political power;
e) the final plan constitutes a traffic and urban planning mistake;
f) it is the beginning of the change in the economic character of the area with an 8–10-year upcoming problem for the stores. The physiognomy of the stores will change from relatively traditional to parts of market chains and
g) that there will be a total upheaval of the physiognomy of the nearby area, with effects on the population composition and, more broadly, on land uses and values.

From the above, it seems that there is a cutthroat competition between the last Administrations of AM, the Mayors of Athens and the post-2019 governments on the one hand and opposing groups on the other. But who are these groups? According to Belavilas and Mylopoulos, one could categorise these groups as follows:
a) a group of residents and intellectuals (and shopkeepers eventually allying with them);
b) a group of students of the NTUA School of Architecture and related people (professors, etc.);
c) political groups of ecology, of the Left, and others mainly of the extra-parliamentary Left;
d) groups of anarcho-autonomists and a-political consistent troublemakers prone to constant conflicts with the police, with which they have a long-standing vendetta, with multiple social origins, from other 'poor' districts of Athens to indignant 'sons' of rich families in the northern suburbs;
e) criminal groups in general, and drug dealers and traffickers

in particular. The first three groups are the ones that, in addition to physical mobilisations, also make significant institutional efforts (Council, European Parliament, etc.), while the latter two frequently find themselves in a weird coalition.

The issue, as both sides admit, has political dimensions and the solution given is essentially political. The side of AM, and the post-2919 national governments, as well as the municipal authorities, saw an opportunity through the intervention in the Square to get rid of the 'delinquent elements' that have been 'plaguing' the area for years.

It is a fact that the two main sides belong to different categories that developed into silos, and communication between them is difficult. Despite the bridges that were attempted to be built with arguments like 'both green and metro', the efforts collapsed, and the solution ended up being political. The efforts collapsed because the problem, despite the sincere prioritisation for green, was deeply political-cultural and, therefore, almost unbridgeable.

The clumsy[11] solution given (repression-enforcement) exactly resonates with the impossibility of understanding between the created silos (see Hartmann, 2012; Hartmann & Hengstermann, 2014).

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[4]N.Belavilas is a professor at the School of Architecture of the NTUA and was the first President of the company 'Anaplasi Athens SA' from August 2018 until his replacement by the next Government in September 2019. G.Mylopoulos is a professor at the Department of Civil Engineering (and ex-Rector) of the Aristotle University of Thessaloniki (AUTH) and was President of 'Attiko Metro' from 01/03/2016 to 18/09/2019. The information attributed to them is based on their interviews in the press and on a personal interview with the author of this paper.

[5]'Anaplasi Athinas' ('Regeneration of Athens') was established as an SA, initially on 18/05/2018 to operate under the supervision of the Ministries of State, and Infrastructure & Transport. The purpose of 'Anaplasi' was to coordinate urban planning and the planning and implementation of regeneration within the boundaries of the Municipality of Athens. With the change of Government (2019), on August 10, 2020, the Mayor of Athens, K.Bakoyannis (in the Government party) was appointed President. At the end of December 2023, a few days before the new Mayor of Athens, H.Doukas (opponent of the Government) took over, 'Anaplasi' came back, by law, under the supervision of the government, with the Mayor of Athens abolished as its President!

[6]Attiko Metro' after taking over the Thessaloniki metro project was renamed 'Hellenic Metro'. To avoid confusion, in this text, it will be referred to as 'Attiko Metro' or AM regardless of the period.

[7]From the leftwing SYRIZA to the right-wing 'New Democracy'.

[8]It is noted that the elected Mayors take office on the first day of the year, so H.Doukas was not yet officially Mayor on October 30, 2023.

[9]https://oximetrostinplateiaexarcheion.com/2024/03/19/%ce%b7-%cf%80%ce%bb%ce%b1%cf%84%ce%b5%ce%af%ce%b1-%ce%b5%ce%be%ce%b1%cf%81%cf%87%ce%b5%ce%af%cf%89%ce%bd-%cf%83%cf%84%ce%bf-%ce%b5%cf%85%cf%81%cf%89%ce%ba%ce%bf%ce%b9%ce%bd%ce%bf%ce%b2%ce%bf%cf%8d-2/

[10]It should be noted that, at the time of the writing of this paper, another decision of the Council of State is pending.

[11]Hartman (2012) and Hartman & Hengstermann (2014) draw their approach to 'clumsy solutions' from Douglas 1999.

Evangelismos

But do the same groups react in the case of the Evangelismos Station (on Rizari Street and at Rizari Grove)? And if there is a problem, who are the opponents, and what is the outcome of the 'battle' there?

Evangelismos Station is located at the Rizari Grove opposite Evangelismos Hospital, in the 'best' district of Athens (Kolonaki), where the residents disagree with the project, which they claim will destroy the high greenery in the area (circa 200 trees). It is noted that there is already an underground station of Line [3] of the metro operating adjacently (i.e., an interchange will be created), while the configuration of the space and the grove comprising the surrounding area of the adjacent current station is a donation of the Pateras ship owning family via their homonymous foundation. For this reason, there has been a delay in the start of the projects (see also EFSYN, Hadjigeorgiou, 27/08/2022).

According to press releases, as early as September 2021, the first works had already started (Kathimerini, Lialios, 15/09/2021), but reactions were already on the way due to the imminent cutting of trees. By November, AM was already considering alternative solutions for the location of the construction site as, due to the reactions, the construction site had been disassembled (*Kathimerini,* Lialios, 23/11/2021).

By February 2022, the Ministry, under a more comprehensive consideration and pressure, through the company Anaplasi SA, decided to launch architectural competitions for the surface sections and public areas of certain stations (including Evangelismos) while publicizing a decision to purchase 2000 trees to plant in the crossing areas of Line 4.

Until the end of August 2022, the works for the destruction of the 200 trees had not yet started due to the reactions of the residents, and mainly of the Pateras Foundation (EFSYN, Hadjigeorgiou, 27/08/2022).

The appeal to the CoS was made by the Pateras Foundation in the second half of 2021. It was supported by the residents of the area and the Rizareion Foundation, as well as by several important political personalities and agencies, as it is also based on two university studies that highlight the importance of the park (see N.Pateras's interview with Serafeimidis, in 'mononews' on 05/28/2023). According to Pateras, in January 2023, the company AVAX, from the consortium that has undertaken the construction of the metro, presented an alternative solution that was the result of a 10-month study in which it was proposed to relocate the station to an area of sparser green planting, with a cost of €5 million. Despite the acceptance of the proposal by the political and technical leadership, this option was candlled, as the final estimate amounted to a cost of €50 million. Already, N.Pateras submitted an appeal to the Council of State, while stating that none of the residents of the area was ever informed about the actual plans for the Evangelismos station since 2017, nor has a proper consultation ever taken place, an issue that is considered by the Council of State ('mononews', Serafeimidis, 28/05/2023).

A few months later, the Council of State, contradicting the decisions of the Municipality of Athens, stipulated that "Hellenic Metro" should prepare a new Technical Environmental Study (TEPEM) (since the first one already filed was pending following political interventions) to minimize the effects of the construction of the station on Rizari Park, without cancelling the initial environmental licensing of the project, nor stipulating that alternative solutions regarding its location be considered. In essence, the CoS calls on the Ministry of the Environment to revoke the submitted TEPEM and supports the Solomonic solution of 'both metro and green' (*Kathimerini,* Lialios, 12/15/2023).

Comments on the similarities and differences between the two cases and the emerging narratives of the different rationalities

As is evident from the above, the elements in the cases examined are common and different. However, here is argued that the various arguments are predominant and constitute distinct rationalities that do not communicate much with each other. These rationalities are linked with the corresponding narratives, and different silos are created. The question is if and what is the level of communication between the silos, if any.

From the subjective point of view, in both cases, distinct rationalities were developed. In the Exarcheia case, at least for the first three groups of the opponents, the basic line comprising a narrative was that "our community with all its shortcomings is under threat. The place will change dramatically; primarily, if we lose the few trees remaining in the area, we will be suffocated and lose our references. We will be kicked out of this place if we do not resist. We are a community, and we will resist in all legal ways". At the same time, the latter two groups from the opponent's side would insist that "the Government(s) is using the case of the metro as a tool to kick us out from this Square that we have the right to use as we decide. They want to exterminate us using the riot police, escalating a series of police actions over the last decades. We will fight back on the streets". These are two different silos having as a uniting principle the defence of the very basic lines of the character of the place, i.e., the protection of the greenery.

From the side of the Administration, the whole issue is perceived in the following way: "We gave the chance to everybody to participate in a consultation procedure, and there were no serious objections. The silent majority want the project which will regenerate a decadent area and bring new businesses and jobs while servicing the district and the city with modern transport. We examined the other proposals and found them economically expensive and technically problematic. So,

we stick to this one, and, of course, we clear the place from the anarchist and lumpen elements, a promise we gave before the elections. At the end of the day, this project is political, and we will show no signs of retreating from our political positions".

The case of Evangelismos is quite different. Here, the opponents had almost a single issue, green, and they moved mainly legally but also with political pressure. Their narrative was "so much effort has been made to enrich the Centre of Athens with green, we cannot let this matter pass like this. We must defend the green, which, after all, we paid to plant it." At the same time, the Administration side, as we have shown, had a more negotiating attitude. "We have done everything we can, but unfortunately any other alternative solution is not economically viable; we will proceed carefully because the city needs the Line without further delay."

From a more objective (external) point of view, the common elements between the two cases are that the apparent priority was the eco-environmental factor, specifically the 'green'. In addition, the technical solutions were found in one or the other way and had a cost that was not unattainable. They involved technical modifications, the feasibility of which was shown but rejected. Both appealed to the Council of State with similar arguments (destruction of the natural environment) yet differing outcomes.

The differences between the two cases was that in the case of Exarcheia the stake was directly political, while in the case of Evangelismos not, in the sense that: a) the Exarcheia Square was considered to be 'under occupation' by marginal elements, while in the Evangelismos case no major physical mobilisation occurred, b) Exarcheia was an activity epicentre of radical groups, while Evangelismos grove was just a passing by or leisure walk site, c) the Exarcheia residents-opponents, though intellectuals and 'normal' citizens, did not include any 'big' names, while in Evangelismos the major (visible) figure of the opposing site was a well-known shipowner who had in earlier years made a significant donation for the recreation of the area, d) in terms of class composition, in Exarcheia the local residents were generally lower middle class and a good part of the movements was composed by lumpen elements, while in Evangelismos area the residents were upper middle class and the area was the part of the 'best' Athens district.

A discussion about complexity and wickedness in the case of the two metro stations

The Metro via a vis complexity

Rapidly changing environments and fragmentation of objectives (difficulty of concurrent service), emergent issues, complex objectives and sub-projects. The passage of the metro through various areas and the stations created change the local environments, and the residents themselves can only predict further changes in general terms. Areas are changing and

changes continue. While they can be regulated by legislation (e.g., land uses), there is constant interference of requests and various kinds of movements that make the data fluid. In particular, environmental sustainability is critical as, due to the climate crisis, the data daily worsens in an unpredictable way, so there is a degree of fluidity. At the same time, decisions of courts (e.g., Council of State) and institutional frameworks (e.g. change in legislation for the company "Anaplasi SA") are changing the political game. Social and institutional sustainability is at risk, as the prevailing order changes power relations and gives priority each time to specific silos. This is reflected in participation, which generally has a weak role.

The metro project is impossible to fit into the iron triangle of mega projects because time is violated almost by default. The State itself is unable to keep the deadlines. This has also been identified by the OMEGA Centre research (2012) and is attributed mainly to a weak appraisal where issues such as geology, archaeology, etc., are underestimated[12] . Also, the weak consultation/participation creates time delays because the issues come back in the form of claims- requests, the solution of which is more time-consuming as it now requires judicial treatment (see appeals to the CoS, lawsuits in Exarcheia, etc.) or coercion, with unpredictable consequences. At the budget level, precisely because of the unforeseen situations, the costs rise, and, in addition, the nature of the construction involves unforeseen expenses. As for the specifications, they change with the changes in the design and with the progress of the technology that, due to the long duration of the work, sometimes imposes changes. At these levels, economic sustainability is problematic, but so is social sustainability in the sense of balance among important social actors.

The duration of evolving contexts within a time course includes significant changes of socio-economic, institutional, and eco-environmental conditions, e.g., changes in the population composition of areas due to the arrival of immigrants, changes in land values, or changes in eco-environmental requirements due to the climate crisis. The change of context also implies changes in the levels of dealing with sustainability, something that suffers from timing. A large part of these developments is not precisely predictable, forming a series of uncertainties where every decision entails a risk.

Due to the various stakeholder groups, there is an interaction of factors that create unpredictability, uncertainties and conflicts with risk-taking decisions. The conflict between the opposing parties in Exarcheia, but also the differences between the opposing silos, have an unpredictable effect due to the constant change of internal and external balances and are also vulnerable to more general political developments (e.g., a change of government or Municipality).

Social sustainability in the sense of balance between important social stakeholders is sensitive. For example, the op-

position block is created in Exarcheia between the small shopkeepers and the Administration, given upcoming changes. The balances also depend on the local contexts, for example, they have yielded different results in the cases of Exarcheia and Evangelismos where both appear to start from eco-environmental issues, but there are deeper causes.

The Metro vis a vis wickedness

The complexity of metro systems (like that of Athens), as intermediate goals and problems (toward a solution) emerge, impede the finalization of the 'solution'. Does the line really end 'there'? The evolution of the Athens metro shows us that we constantly have extensions (as well as changes), which take a long time to finalize. Also, emergent goals appear, e.g., to agree with the Municipality the purchase of 2000 trees to be planted somewhere else to appease the spirits or to launch architectural competitions. So, every time the problems are reset on a different basis.

The result (same versus other solutions) cannot be fully tested and compared or assessed. Example: Is Line 4 'better' than other possible 'Lines 4'? Would a 'surface project', e.g., tram or Bus Rapid Transit, be more efficient for the city in relation to a set of impacts? Impacts also reverberate into adjacent urban agglomerations and areas. Uncertainty about the outcome and the safe method of assessment poses a risk to decisions and raises questions regarding the various dimensions of sustainability while hampering participatory efforts.

Megaprojects are one-shot ventures. This fact does not help on an analytical level to deal with the problems with a perspective of generalized regulatory solutions. Therefore, according to Rittel and Webber (1973) in such difficult projects, there is no possibility of trial and error. A mistake in drawing a metro line is irreversible.

Megaprojects are largely unique (not all, and under conditions). Even each different metro line is unique in the sense that it passes through different places with particular socio-economic environments, particular land uses and values, different historical contexts, and different dynamics. So every route needs different analysis and solutions (specific analysis of the specific situation). This means that there are different contextualities that raise different issues of sustainability. Therefore, complicatedness becomes complexity and is not so much about the managerial and technical part but about the contexts, something that constitutes a serious parameter of wickedness.

Megaprojects and metros are complex and are parts of a sequence of problems that are also complex. The metro tries to solve the problem of traffic and, in turn, raises issues of the environment and social equality (it goes here and not there and favours spaces here and not there), resulting in the formation of the differential land rent [I]. Therefore, whatever solutions and interventions are necessary must be approached holistically.

But, at the level of design with a focus on sustainability, design is 'inherently wicked'.

Megaprojects touch the extremely wicked social field. The social impact of metros affects various categories, such as the socially and economically advantaged and the disadvantaged, touching on issues of social and economic sustainability. This also includes occupational categories, consumer groups, safe routes and more, constituting a set of problems with conflicting aspirations and logic that constitute a dimension of wickedness.

Choices are usually made *ad hoc* and determine the solutions (Flyvbjerg, 2021), like in the case of Exarcheia. This, in addition to the issue of eco-environmental sustainability that it reveals, also raises issues of social sustainability (especially the dimension of social equality) by changing the socio-political balances of the place, and, obviously, clearly violates any attempt to involve the interested parties and stakeholders in forms of participatory planning that, if done, become pretentious.

Instead of a Conclusion

The construction of a metro line is a complex and wicked project, deriving these characteristics from the fact that it is a planning effort and from the fact that it is a mega project. Complexity and wickedness are reflected in the design and construction of Line 4 in Athens, appearing mainly at the level of social relations and governance. So, we have seen that in two typical cases (there are others with different social coordinates), those of the location of the Exarcheia and Evangelismos stations, the social groups and stakeholders involved have such a cleavage between them that they self-place in distinct silos that make communication between them difficult to impossible (mainly in Exarcheia). They speak 'different languages', which results in 'clumsy solutions' that, in this case, are ad hoc decisions of the political leadership. It remains an open question whether more effective participatory planning could help bridge the silos, but this would require that at a higher level of abstraction, there would be a sharing of values and that all social actors could be lifted to that level, which is practically very difficult in the specific historical and spatial contexts.

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[12] *This is also identified by Flyvbjerg in his (2023), (2021), especially in his discussion about biases.*

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Some Principles of Architecture

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A premise

Reading the chapters of my recent reflections on the current state of architecture – a globalisation product – an analysis that I have proposed in this writing, one might think that my considerations result from rather negative ideas about the future of construction. As a matter of fact, identifying critical moments, debatable orientations, excesses, or compositional errors, along with proceeding according to a mosaic of different references coexisting with rather questionable outcomes, is not the deliberate fruit of a pessimistic judgment but simply the effect of an unstable, indecisive, and confused period. What needs to be understood is *how* the drift that has homogenized previous languages, understood as cultural entities, must be overcome in favor of the opposite: a *spectacularization* of architecture that has invaded and isolated media communication, resulting in propaganda and celebrations. What needs to rediscover is a new season in which it is possible to confer upon the evolution of dwelling its deepest sense, rooted in history, memory, and the search for a new organicity that aligns with the shape of the world. In the event we proceed in this direction, which can only be positive, it involves a redimensioning of functionalism and typology that have been dominant the first throughout the entire 20th century, and the second as a secret s*urplus value* considered knowledge that only a mysterious class of builders – the ancient Freemasons – possesses setting aside concrete technique, technology tends to operate on a higher level than that inherited from architects and artists such as Wright, Mies, Le Corbusier, Terragni, Libera, Goldsmith. Furthermore, over the thirty years from the fall of the Berlin Wall to today, the concepts of morphology and typology have disappeared, as has the fundamental relationship between tectonics and architecture.

The respect for *the environment*, a third concept after those of *landscape and territory*; the need to counteract the increase in climatic temperatures along with all the other natural phenomena that derive from it; the issue of entire populations displacement from their settlements to more convenient and advanced ones; the urgent necessity that the numerous and risky human activities, and the resulting megalopolises, which have now become entities no longer urban but geological, should be redimensionde and then placed within a broader, more human framework; the shift from non-renewable energies in favor of inexhaustible ones are not just problems to be solved, but challenges to be addressed through a necessary, careful, and extensive redefinition of dwelling that confirms the existence of the physical form of human life its materiality that becomes spirit, totality, and a constant promise of evolution increasingly in harmony with others, the world, and the universe. The following text is therefore the Gramscian outcome of *an optimism of the will* that can and must overcome the *pessimism of reason*, which is so widespread today along with dramatic ideas about the future.
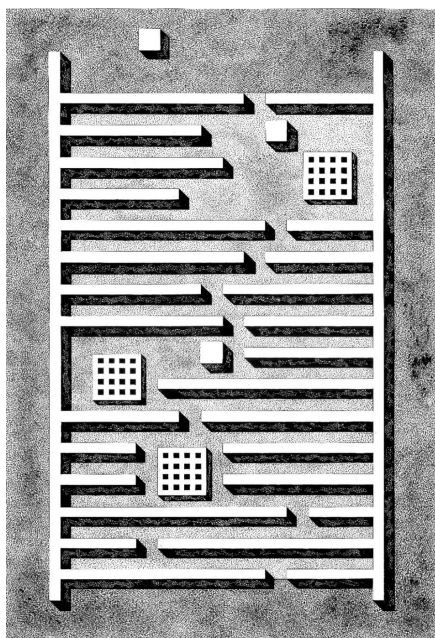
Figure 1. Taunsuan, Purini 2016

Figure 2. Congiunzione astratta, Purini, 2023

What is Architecture? Architecture is a primary activity that allows human beings to live. It unifies the construction of a building in its technical aspects and the functions it offers, with the necessity that the final outcome is form. In this context, form is understood as an artistic synthesis of the various contents of the building. In short, construction is both the result of scientific knowledge and art. Science is simpler in its resolution of technical issues, while the latter is more complex as it expresses higher-level content—no longer utilitarian but historical, conceptual, and spiritual. As is well known, without architecture, the inhabitants of the Earth would be exposed to rain, snow, cold, sun, wind, and probably would not have continued to live. Their early shelters housed scarce belongings—simple hides or rough textiles to wear, some weapons, provisions, as well as fire for cooking and warmth. These basic shelters organized families into a social order, which would later become increasingly complex, accompanied by rituals and communal practices. Above all, the primitive huts will over time be the models for building architecture no longer in wood but in stone and brick but which for a long period will preseve elements and decorations that made the first, true architecture more complete and evocative. In my opinion the art of construction is defined by three fundamental principles that have persisted from its inception with human communities to the present day, despite the passage of millennia. These principles are therefore always the same, even if the way in which they resist the various eras, with the cultural and structural changes and customs that characterize them, modify their enunciation. The first of these principles lies in architecture being the result of both scientific knowl-
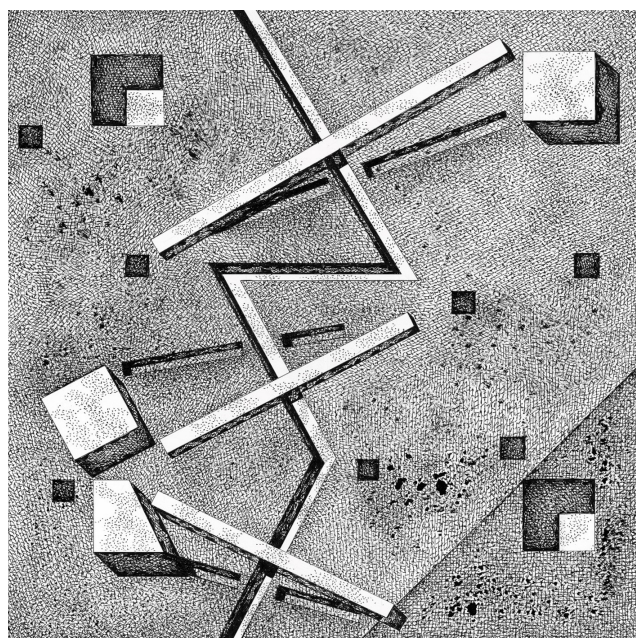
edge and artistic expression, as mentioned at the beginning of this text. This duality has remained unchanged across various architectural styles—from Babylonian and Egyptian to Greek, Roman, Romanesque, Gothic, Renaissance, Baroque, and Enlightenment architecture—all the way to the constructions of the 20th century and the first quarter of the new millennium. As previously stated, the essence of architecture has not changed in its essence. Its three aspects—utilitas (utility), firmitas (durability), and venustas (beauty)—still form the foundation of construction, even though founding a city or erecting a building may assume different secondary characteristics. These characteristics include ways of thinking and organizing, available techniques, rules for construction sites, and the need for alignment with prevailing tastes, which vary according to different cronological periods, the meaning of architecture which in less culturally prepared people is conceived according to improper or casual orientations. What remains constant is the union of science and art, two conceptual realms—the former more comprehensible, the latter more tightly closed. The second principle is represented by an ideal perimeter that defines the scope of architecture. It has a thematic field around which new characteristics are selected over time, even if these merely complement existing issues. Let's imagine an enclosure that encompasses a certain number of topics. Believing, as is often the case today in architectural schools and in design and construction work, that this perimeter can expand to accommodate any phenomenon—whether environmental or not—is an mistake that the culture of construction is currently favoring. There is no longer a pause in continually introducing architectural themes with questions to which architecture

cannot provide answers. What can be accepted, perhaps, is the partial transformation of a problem for example, the climate crisis which already exists within the repertoire of architectural research. Promoting the constant growth of functional and formal construction knowledge, while continuously embracing new questions already discussed in other fields, only serves to render the potential of architecture impossible, inundated by improper or approximate inquiries. Keeping in mind the reality of the disciplinary framework of architecture, defending its boundaries, and attempting to identify the resources within the array of design forms that could solve problems without making them an inherent aspect of architecture is, in my opinion, essential. It's worth reiterating that the right approach is not to expand the limits of architecture, as has been happening in recent years, but rather to find the nexus that connects a fact to construction and, from outside this perimeter, address the problem that such a fact entails. A second debatable aspect of this principle involves a further transformation of architectural unity. Throughout its extensive history within human communities, architecture has constituted a unique body of knowledge. It encompassed landscape, territory, and environment—three distinct definitions of an identifiable part of the world that required intervention through appropriate infrastructure. Alongside the construction of cities and homes, these elements shared a common identity that fully defined the act of building. However, in recent decades, for reasons unknown, the unity of architecture has been fractured. The various components of this primary activity, akin to the limbs, organs, and bones of our bodies, once represented unity within diversity. Now, they have become a collection of presumed autonomous knowledge domains, separate realms that are rarely discussed in architectural schools. The dispersion of unified knowledge in favor of limited, fragmented expertise rather than preserving a coordinated body of understanding that gives life to architecture is the central cause of the pronounced difficulty in conceiving appropriate and enduring interventions in landscapes, designing livable and proportionate cities, and creating buildings with welcoming forms. Deprived of this unity, architecture is now disarticulated, no longer attuned to its genetic and unitary finiteness—a loss lamented. It exists somewhere between what remains of design and the virtual potential that promises advanced exploration of new technologies, capable of paving the way for an eagerly anticipated metaverse with its dominant virtuality. The third and final organic and authentic space of construction involves the realization and care of entire habitation. More precisely, it can be defined as an operative context in which material elements are produced for individual and communal life. Intervening in the terrestrial unit referred to as landscape, territory, and environment entails creating an autonomous beauty unintentional yet shaped by agri-

cultural labor, planned and executed by farmers, shepherds, and those who tend to animals. The cultivation and harvesting of plants to nourish both humans and animals play a crucial role. This labor transforms the land's surface, imbuing it with a more complex significance than that of untouched soil The territory encompasses the same geographical space as the landscape, but this second notion, pertaining to the same location, highlights the need to make the landscape-territory accessible through various forms of pathways and architectural works. These include forest or open-air trails, roads of varying widths, rest areas with traveler accommodations, and shelters for vehicles. On the other hand, the environment considers the landscape-territory from the perspective of its exposure to natural phenomena such as those influenced by climate along with spontaneous vegetation that may be useful or unnecessary, rivers that traverse it, the presence of forests or accessible rocky soils, and the artificial geography shaped by human activity. The exploration of architecture's primary characteristics, which I've briefly summarized, is unfortunately less practiced today. The crisis of rationalism, or its outright rejection, has paved the way for numerous experiments often questionable where construction becomes not so much difficult as it is costly. The relationship between tectonics and architecture is no longer as permissible, and concepts like morphology and typology, once essential, have vanished from the design culture. My discussion of these critical theoretical themes isn't rooted in nostalgia, as some might assume. Instead, I express hopeful anticipation that the loss of fundamental aspects in our profession can be reversed, albeit with fresh perspectives. Alongside the decline of reason (which extends beyond rationalism), there's a critical engagement with the contemporary planetary challenges. Turning to green solutions, superimposing arboreal textures on cities and their buildings to radically reshape urban forms, and rethinking habitation in light of renewable energies capable of providing only partial illumination and transportation are pivotal choices. Perhaps revisiting nuclear power plant operations could offer a simpler, useful, and definitive solution for landscapes, territories, and environments. Regarding greenery, it's worth noting that over millennia, a balanced relationship has emerged between trees, grassy areas, and cities through grand parks and magnificent gardens an intricate equilibrium. However, the current green invasion seems intent on disrupting the historical harmony between cities and nature, overshadowing the proportional harmony of architecture (which, remember, is petrified music) in favor of a vegetal universe that could soon obscure spaces, volumes, and building facades entirely. Lastly, let's not forget that rational architecture isn't prescriptive, totalizing, or domineering. Within it, by listening to its spirit, we can compose infinite architectures—each distinct yet perpetually inspired by an eternal, mysterious logic.
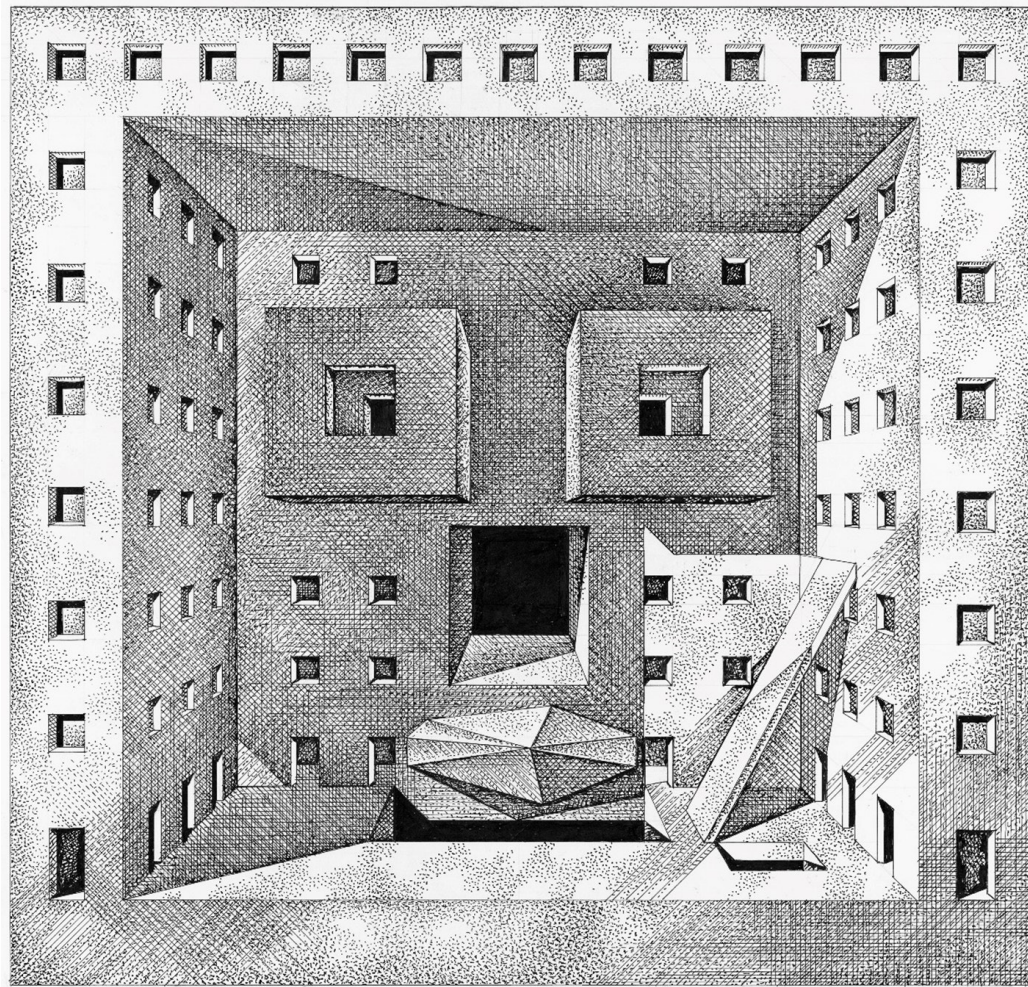
Figure 3. L'architettura guarda. Purini, 2023

Considerations on duration

During the 20th century one of the inherent characteristics of architecture has largely disappeared, if not entirely. This pertains to the concept of a building's lifespan, which had always been considered an intrinsic aspect of construction a fundamental principle. Before the eclipse of durability, it was normal for architecture to have an exceptionally long life, during which interventions such as facade modifications, substantial volume additions, restorations, or partial reconstructions never fundamentally challenged the notion of duration. Despite occasional expansions, the architecture subtly presented itself as a natural entity forever rooted in the landscape, expressing more than just a terrestrial backdrop. Sometimes, buildings originally designed for specific functions would adapt to new uses while retaining their core identity. In summary, architecture constituted one of the most profound representations of time. Even when reduced to ruins—a second existence for architecture—the skeletal remains of buildings, often partially demolished, continued to convey meanings deeper than those present during their intact phases. As a brief parenthesis, it's worth noting that the concept of ruin is conceptually visible even during the construction process. It anticipates its own state, as evocatively depicted in Maarten van Heemskerck's true-to-life drawings of the construction of St. Peter's Basilica.

As I mentioned at the beginning of these notes, the concept of architectural durability has largely faded away. The lifespan of a modern building has become arbitrary, provisional, and relative. Over the past three decades, the era of globalized architecture, buildings have often served as media expressions rather than true constructions. They do not represent themselves but their propagandistic and celebratory functions. When this promotional role ends, the building is demolished to make way for another communicative campaign. The avant-garde movements at the start of the 20th century fundamentally transformed construction. Instead of relying on the massive load-bearing walls of the past, which ensured long-lasting architecture, modern architecture turned to reinforced concrete. This material defined the skeleton of a
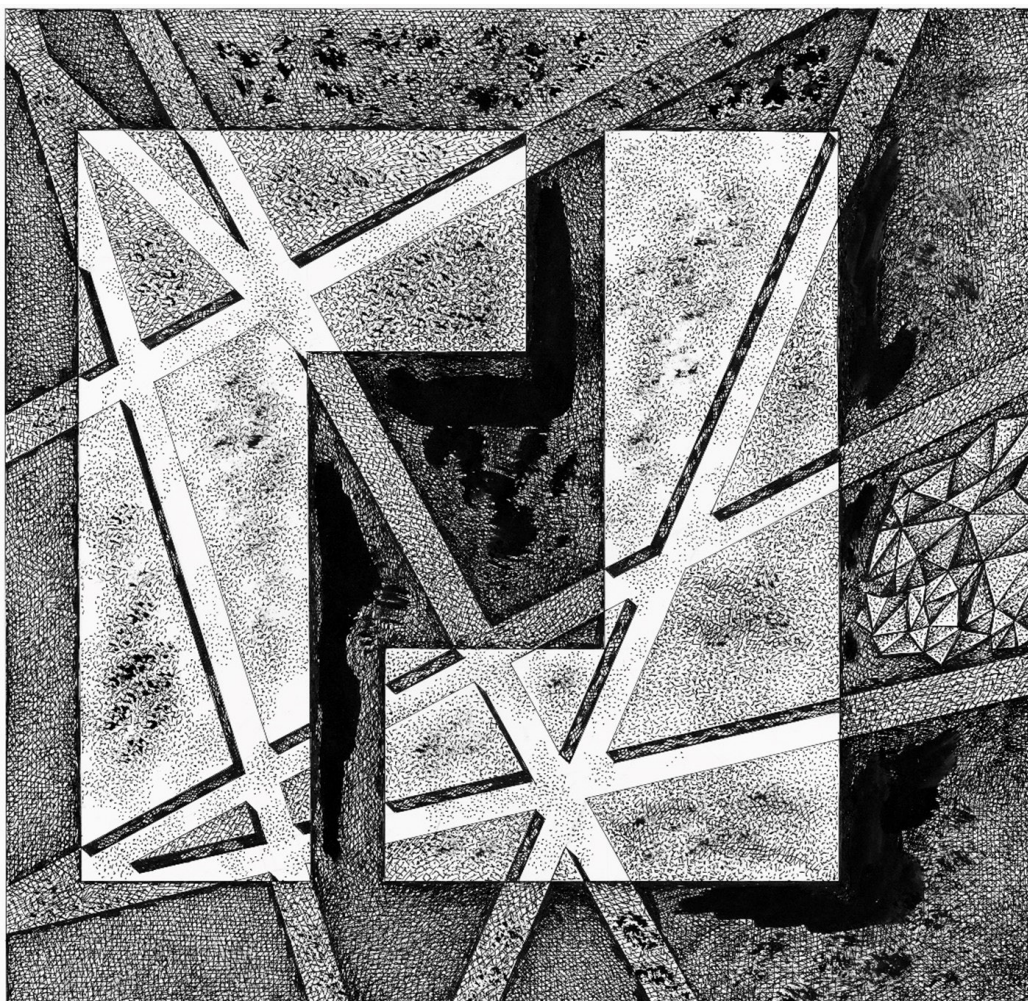
Figure 4. Congiunzioni, Purini, 2023

building, a structure with slender pillars and beams supporting walls and floors of smaller dimensions compared to earlier constructions. There exist photographs of Le Corbusier's iconic Villa Savoye, stripped of its original plaster, revealing load-bearing structures nearly consumed. Like a ruin, this 20th-century masterpiece dramatically displays its fragility, even as the remaining value of its spaces has nearly vanished. Restored to its origins, Villa Savoye embarked on a new cycle of existence, preserving the mystery of its past as a ruin. At this point of discution is necessary to clarify the concept of ruin, remnants, and fragments. For writers, poets, and historians, ruins symbolize the limitations of human ambitions their inevitable end. Ruins demonstrate this failure. However, architects perceive the remnants of a building differently. As Vitruvius famously outlined, architecture embodies three aspects: utilitas, firmitas and venustas. When observing a building, all three dimensions contribute to its unity. To be clearer, when I see architecture I grasp all three aspects that characterize it together. However, if I want to understand the firmitas of a building alone, I must cancel the utilitas and the venustas and if, inst-

ed, I want to contemplate the beauty of a building alone I have to cancel the utilitas and the firmitas. Summarising, only when there is no longer a use in an architecture and the solidity of the structures can I take note of its venustas in all its expressions. It is through this method that some architects such as John Soane or Auguste Perret have been able to recognize the presence of beauty in some of their works in drawings or reflections. The reduction in the use of reinforced concrete as a construction system has undermined the durability of buildings. As I mentioned earlier, another factor contributing to this decline is the media-driven customization of architecture, which rarely extends to a truly long lifespan. Instead, buildings are often transformed or replaced entirely. To achieve lighter and more slender structures, architects have turned to materials like iron and steel. Skyscrapers, for instance, rely on one of these two solutions. In recent years, reinforced concrete has also become increasingly common in tall buildings. A third characteristic shaping contemporary construction, especially in residential and office buildings, is the embrace of spacious environments. Apart from the designated areas for

bathrooms, kitchens, and storage, the rest of an apartment often consists of open spaces devoid of partitions and doors. Office buildings similarly feature substantial spaces that accommodate workstations alongside plants or areas for breaks, rest, and conversations. However, the limited time frame allocated for architectural projects translates into structural weaknesses in new buildings. Additionally, furniture choices and surface treatments are designed not for long-term durability but rather as transient figurative and physical scenarios. Concluding these reflections on the waning concept of durability in the 20th century, it's essential to clarify that while rapid construction timelines persist, some architects continue to consider durability not as a concrete reality but as a reference to a previous situation—a historical context. In the 1980s, during the brief era of Postmodernism, a nostalgic resurgence for remembered rather than asserted durability emerged. This sentiment was echoed by the neo-avant-garde movement of Deconstructivism, which made the ruinous aspects of buildings visible even as they were being constructed—a fleeting light extinguished almost as soon as it began. Thus, rather than negating durability at the birth of architecture, we encounter a conceptual time that remains elusive. To contemplate durability is to unconsciously (or sometimes consciously) believe that architectural structures bear witness to events that occurred even in distant times—a testimony that could reconstruct the continuous and complex narrative of cities.

Style, architectural writing, language

After recent reflections on the near-total disappearance of the concept of duration from contemporary architecture, another eclipse has emerged in my considerations about the art of construction which it concearns with the notion of style a term and compositional process that no longer features prominently in architectural discourse. Instead, new definitions have replaced it. The last notable use of the word "style" in architectural criticism was in Gio Ponti's magazine, "Stile," which was published in the mid-1940s. The end of this significant experiment in architecture occurred in 1947, a year that marked the close of an era and the beginning of the country's rebirth.

The term "style" referred to two aspects of architecture. The first involved giving an artistic purpose to an architectural work. For a building to have style meant that it was conceived as the result of a careful composition, based on the presence of meticulously studied elements, capable of creating a comfortable, elevated, and harmonious atmosphere. The second aspect indicated that an architect who had identified their own style became entirely recognizable in the sequence of their works. Style was thus considered as the recurrence in an architect's buildings of repeated structural or plastic motifs, but above all, it conveyed

the necessity of creating situations capable of producing places.

In summary, style was the effect of a conception of architecture that referred mainly to the bourgeois world, for which it created a noble living environment, articulated in careful sequences and in buildings with composed, implicit, and discreet shapes. The absence of something to replace style, considered as a tribute to the most advanced class of society, lasted for a considerable time. Until the mid-1960s, there was no substitute for this concept, which excluded not only the theme of functionalism but also, and above all, the housing needs of the less affluent classes, whose living environments were not the subject of particular studies or adequate improvement programs for their neighborhoods located in peripheral areas not always equipped with services. The response to this absence was the idea of architectural writing, present especially in the articles, essays, and books of Manfredo Tafuri, but also in many theoretical and critical texts by other historians and architecture enthusiasts. This term covered a rather vast field of themes related to living. The various utilities of architecture, as the main and often sole issue, the construction problems, the relationship between the residential communities and the buildings that house them, the characteristics of architectural details, the overall visibility of the buildings, and their layout on the ground outlined a set of aspects that required not so much a reference to the final effect of a neighborhood, for example, but rather a point-by-point attention to all the necessities of life that find in living one of the primary dimensions of their existence.

All this initially took place in the atmosphere of neorealism, which, after literature and cinema, had also involved construction. It should be noted, however, that neorealism in architecture had a significant following for several years in the central and southern parts of the peninsula.

In the north, due to a bourgeois vision of society and its own identity, there was a cultural reaction to neorealism in the form of neoliberty, proposed by Ernesto Rogers' Casabella, a trend that combined elegance with an underlying attention to a newer functionality in living. It should also be remembered that the alternative to neorealism did not prevent Casabella from having a notable interest, for example, in the works of Mario Ridolfi. It should also be said that, in reality, the definition of architectural writing was very close to the concept of style, which also etymologically relates to writing. Despite this coincidence, style had acquired the meaning of the artistic quality of the work, overshadowed by the second and broader term. Choosing such a term as the definition of a project aimed to refer to the more complex and significant contents of construction, but as I mentioned a few lines earlier, functionality has occupied the most present positions and orientations.

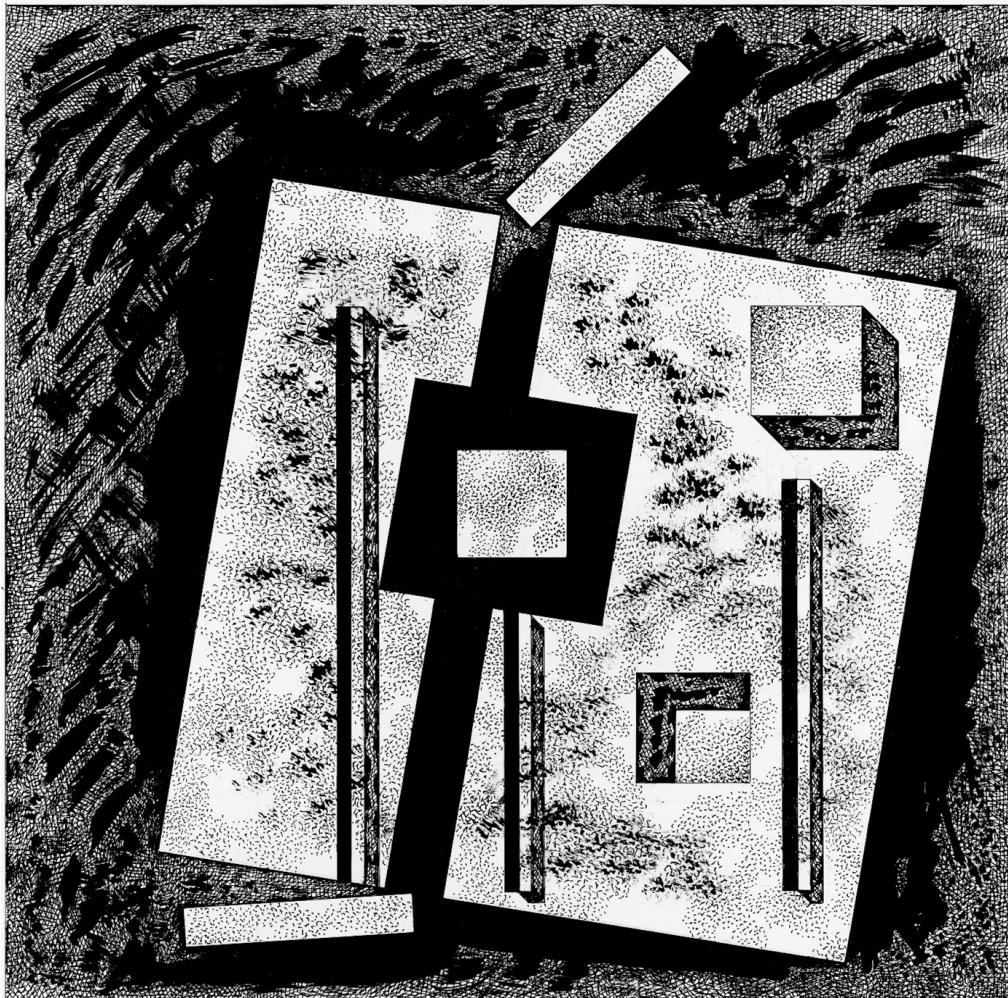Even though the two definitions of style and architectural

Figure 5. Dinamica planare, Purini, 2023

writing continue to be used at times, especially the latter, a further term has emerged in contemporary history and current criticism that has convincingly and continuously challenged them. This term is language. In recent years, this notion has prevailed, which does not seem to shift attention away from the definition of architectural writing as a set of design and construction processes. The word language merely modifies, in a non-exclusive and consistent way, the previously stated meaning of architectural writing. If the latter expression suggests a constant and multifaceted process, that of language rather alludes to grammatical and syntactic structures as fundamental elements of architecture. Obviously, if language is emphasized, it should not be something that constantly changes in an architect's research. On the contrary, language should be identified at an age that allows the choice of a set of compositional norms, namely between twenty and thirty years old. Once this language is found, it should be valid and active for a lifetime, even with some variations over the years – think of architectural protagonists like Frank Lloyd Wright, Ludwig Mies van der Rohe, Le Corbusier, Giuseppe Terragni, Adalberto Libera – and not considered as

something ephemeral that changes regularly. However, the necessity for language to be continuous is almost always denied by shifting the idea of consumption from life to architecture. In fact, architects working in these years have almost all had to endure consumerism, considering the works being built as realities to be reproduced when deemed notable. Architects like Herzog and de Meuron, to limit myself to one example, have changed their ways of designing from a precise, highly personal architectural writing to the imitation of globalized architectures made known by the media. In this way, which has involved many other architects – in Italy, Cino Zucchi, Antonio Citterio, Mario Bellini, Gae Aulenti – architecture becomes esperantist, meaning it is conceived as a mosaic of fragments taken from the most well-known works. Language is no longer personal but is halted through a reconnaissance among the many media architectures, so to speak, which many think are important because they emerged on television or in the press as works to be celebrated.

All this in cities and metropolises that no longer have a morphological order but live in a convulsive mass of buildings, each in senseless competition with the others, arranged on the urban

layout randomly. This premeditated disorder should be avoided to restore the idea of language to its meaning. It is a difficult problem, that of returning the city to itself, but it is the only positive choice that can be transformed into action as soon as possible. Current cities, metropolises, and megalopolises, even those with centuries or millennia of history, are rejecting their memories as necessary signals for the future. Only by questioning what has been can we envision what may happen in our living.

To conclude, it is necessary to realize that today the beauty of architecture is thought of as the result of technology; that spatial and volumetric order derives from digital; that a building does not create a place or confirm an existing one. Only by realizing the mystery of each architecture, which is always a cosmic synthesis, can we build with reason and emotion.

Form and informality in the city

In the last fifty years, the idea of the city in its morphological-typological essence has been almost entirely abandoned. The coherence between new urban layouts, conceived according to organic criteria, and the methods of realizing new architectures has disappeared. The intervention on cities has thus been configured as an incoherent set of urban parts with a random structure, as can be seen in City Life in Milan. In this way, buildings no longer dialogue with each other, thus interrupting a centuries-old tradition that saw the buildings themselves coordinate in typologically similar groups, whose differences in language reveal an identity that is not absolute but positively partial.

Despite the almost total abandonment of morphological-typological canons in the Faculties of Architecture and in the design of urban parts, some remnants of urban analysis and related considerations still exist. Fragments of urban theory based on the relationship between place and project have indeed remained, even though knowledge about the city and architecture has almost entirely diminished. Knowledge that has been set aside in favor of an urban planning conception exclusively related to issues of pure functionality.

Given this precarious condition, free of conceptual references and limited to functionality, it seems necessary to re-introduce morphological-typological themes. These themes are no longer exclusively related to Saverio Muratori's theory but, starting from that, redefine it as the vision of the city and its relationship with other settlements has now changed. To be clearer, the ideas of morphology and typology persist, often in part, but no longer in the version that existed half a century ago, now projected onto new issues. In short, a contamination and alliance between morphology, typology, and the current randomness of interventions is not proposed. What is needed is to verify whether there exists today a new type of morphological condition that would be able to give back to the city an evolutive program capable of producing urban parts with a precise structure, real values, and a relationship

with important and unique aspects of the city and its history.

In fact, it is urban memory that should guide the path towards the future of settlement organisms. In this thematic context, it should be remembered that even environmentalist culture, with the problems to be addressed related to the crisis the planet is going through, should tune in with what human habitation is in all its expressions.

Focusing on morphology, I want to clarify that it has two main aspects. The first is of geometric nature, meaning it tends to develop settlement patterns that consist of functionality but, before this, an overall order of urban parts, which always assumes a symbolic meaning. The diagrammatic character of the geometry that is intrinsic to morphology conveys a series of contents often difficult to understand, except for the simplest and most direct ones. The urban fabric is almost always not visible from above, and therefore some of its values are recognizable from aerial views or from heights if these are present in the city. This is the case of Rome and Naples, cities that offer extraordinary panoramic views that reveal meanings perceptible only from significant heights.

The second aspect of morphology is determined by the ground. It can be flat, which allows for the representation of a planimetric scheme. It is also possible for the ground to have depressions and elevations that will give rise to a fabric that must follow the modeling of the terrain. This will result in an urban design that highlights the altimetric trends of the ground, resulting in a vast, complex, lively, and often exciting architectural scenography. The possible presence of watercourses would then give even greater spatial articulation.

The aspects of morphology – the word was invented by Johann Wolfgang Goethe – are, in my opinion, three. The first is reticular, as in ancient Roman cities, the second is multipolar, and the third is a system of settlement islands, divided and at the same time connected by greenery. It is the archipelago city, a city of cities.

The main role of morphology and typology is not only to produce a diagram but to represent an urban community, a higher task. The form of the city includes a hierarchical arrangement that, from the representative spaces of architectures expressing the centrality of public institutions, reaches the placement of dwellings in neighborhoods that accommodate different social classes,

in industrial nuclei, in places for culture and leisure, in barracks, in parks and gardens. From a broader perspective, morphology is a concrete abstraction, a guide for the city in its mutations, the interpretation of the urban community, the sequence of architectural presences that, from the vast dimension, and therefore not configuring itself as a notable evidence, reaches the centrality and finally the primary core of the city.

Concluding this survey on morphology, incidentally articulated in multiple ways, in historical cities mainly due to the city walls, and on typology, which made the division into social classes understandable while at the same time the community

they shared, an analysis must be conducted on the relationship, established in the 19th century, between form as a place of recognition of nature and social life, made more complex in the 20th century, and the informal. The random disorder or, if preferred, the negation of urban order in favor of a more considered ensemble of cities within the city, or an urban crack in which a real and sincere identity, as well as true autonomy, is sought, has given rise to a positive hybrid in continuous redefinition.

A new morphology thus seems to propose itself as a group of singular urban orders that seek unity, and at the same time, the alternating merging of one into the other. Being increasingly aware of this unstable balance can propose unprecedented urban horizons, more open, dynamic, capable of embracing the memory of cities, as attentive to diversity as able, if necessary, to unify them. One might ultimately think that the urban formlessness is nothing but the result of a rapid morphology that exhibits, by layering them, its own metamorphoses.

Space

Not space itself, but the awareness by architects of space as one of the primary categories of construction is not a fact that has always been known. Architects have built extraordinary spaces over millennia – think of Babylonian, Egyptian, Greek, Roman architecture, the works of Michelangelo, Raphael, Giovanni Battista Piranesi – but they were not aware of the existence of space. It was August Schmarsow, at the end of the 19th century, who identified space as the fundamental characteristic of architecture. In the 20th century, Gaston Bachelard, Le Corbusier, Frank Lloyd Wright, Ludwig Mies van der Rohe, Luigi Moretti, Sigfried Giedion, and Bruno Zevi consciously exalted space, attributing to it an increasing number of complex aspects.

Space most likely originated when the first humans began to explore the forests that covered almost all the land. Simultaneously, newly formed tribes began to create structures derived from trees, vines, and leaves, resulting in villages with huts. Building them in circles or parallel lines, these residential nuclei were erected on clearings that made the huts more defensible and provided a common space for gathering or performing rituals. "Space is making space," wrote Martin Heidegger, echoing a Latin definition in which the verb patēre indicated an open surface, free of boundaries.

In reality, the presence of boundaries is very important for understanding space and its dimensions. There certainly exists infinite spatiality, as in deserts, but it is an interesting exception. A space is almost always bounded by an enclosure. Observing a crack, it is easy to understand that a piece of land is nothing but a succession of areas, more or less large, separated by boundaries. Some of these were sacred, as the death of Remus, killed by Romulus because his brother had violated the threshold of Rome's walls being traced, reminds us. Looking at a landscape, we can notice how it seems continuous, but upon closer inspection, signs are found that separate one area from another. A forest ends, a river separates two plains, these are interrupted by hills and mountains, some fields are cultivated, others remain intact. What seemed unitary reveals itself as a system of different textures. Space disarticulates, revealing the interweaving of boundaries.

The space of the landscape is very different from that of a building. Many architects habitually consider a construction only by acknowledging the envelope of its volume, its dimensions, its weight. In fact, the geometric solid that contains an internal space also has an external spatiality. If one has the necessary disposition to carefully consider the position of a construction in space, it becomes clear that a building has the ability to radiate its volumetry outward, represented by an external thickness, invisible but perceptible. As if the weight of the building were reflected on our body, we are, so to speak, traversed by the mass of the building. This evokes in us a suggestive and consistent magnetic tension. If this building has one, two, or three volumes next to it – think of architectures aligned along a street – the external projection of the four contiguous buildings would create a dialectic between them, resolved by transmitting an even more intense energy to those walking or observing these buildings.

What I described in the previous paragraph concerns an external phenomenon. Very different, however, is the study of internal space, which always seems larger than the volume seen from the outside. I have already highlighted in a previous chapter this impression that, at least for me, appears inexplicable. What I believe can define the spaces contained within volumes are two types of interiors. The first is absolute space, that is, the pure form of the volumetric envelope. It does not express only itself in its primary simplicity, which is expressed mainly in light. In this regard, for me, light has three characteristics. The first is emotional light, which surprises us in its alternation between light and dark, a dramatizing alternation. The second is analytical light, which shows, as in De Stijl architectures, the role of individual components in the constructive context of the building. The third is ontological light, the light that creates itself. I believe that the latter is what makes absolute space an interior with perfect measures that summarizes, in a single space, a magical complexity. All this, in a positive contradiction, along with the utmost simplicity. The second form of space is phenomenal space, that is, a space that contains other spaces. In a scenographic composition, space multiplies into other spaces in a set of geometrically organic cavities, with proximities and distances, depths and sudden emergences from the background, with light dialoguing with shadow. Emotional light makes the succession of different volumes vibrant.

Containing more fragments than there should be, this multiple and conflicting architecture exalts a poetic disorder that evokes a surprising conflict of form.
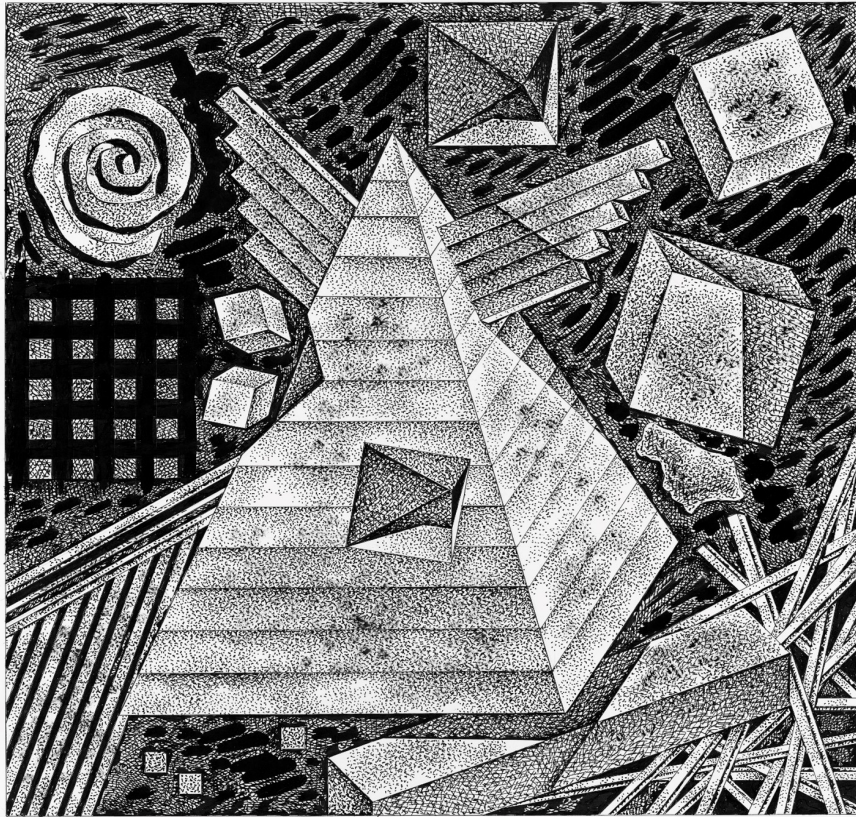
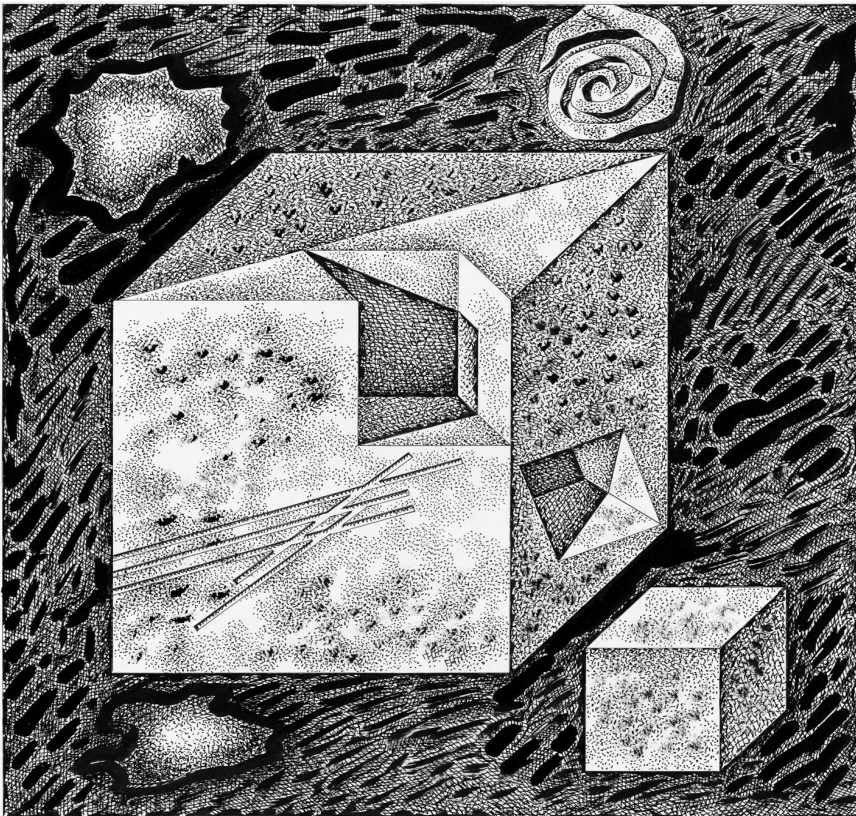**Figure 6.** Il volo della Piramide, Purini, 2023

Figure 7. Istuar Denkub 2, Purini, 2023

In architecture, space is the synthesis of construction, and together its highest purposes. In its vastness, which from the landscape traced by roads and paths, animated by cities, reaches the house, dwelling is a world of spaces that between exteriors and interiors establishes an order that is sonorous and mute, that is never empty, it is movement and evolution, like a plastic writing, it knows how to tell who we are and what will become of our life. Listening to architectural space is a beautiful and inexhaustible adventure.

Architecture and reason

Architecture should not only be well-built, convenient, welcoming, equipped with useful, adequately proportioned, and bright spaces. It must first and foremost make its inhabitants happy, but above all, its task is to establish complex connections with the cosmic dimension, always mysterious, with the memory of communities and generally with the memory of the world, and finally with reason, which allows construction to have logic, concrete knowledge but at the same time ideal. Reason allows architecture to establish important relationships with other necessary knowledge, which, however, should not be included in its scope, that is, in its thematic field, but remain auxiliary contributions.

Every creative activity has a reference. Music is nourished by the sounds of the planet, the rustling of trees, the singing of birds or the roar of lions, the wind. In turn, poetry relies on music, which scans the verse, enhancing the void from one word to another. Painting and sculpture represent both the planet and the sky as well as human beings and, from the 19th century to today, what is in their minds. Theater imitates life, often elevating it just as cinema does, transforming the real into a deeper truth. Architecture, as I said at the beginning, also finds its model in nature. The primitive hut of Vitruvius and Marc-Antoine Laugier, the cave, the tent are the first steps of construction due to the imitation of particular presences such as trees, leaves, fiber weavings, filaments to weave, the walls of caves to decorate with impressive skill. Over time, the use of wood in architecture will remain, on the one hand, a suggestive memory that will adorn huts and temples, and on the other hand, it will allow the construction of flat roofs, trusses, and floors resting on beams.

Rationality in architecture cannot be considered as a set of simple and precise construction operations. As is known, reason is not unique. There is a more widespread and followed reason, which is concrete, practical reason, favoring clear work procedures but devoid of the contents that give life to a city and its buildings. There is also an enlightenment rationality that
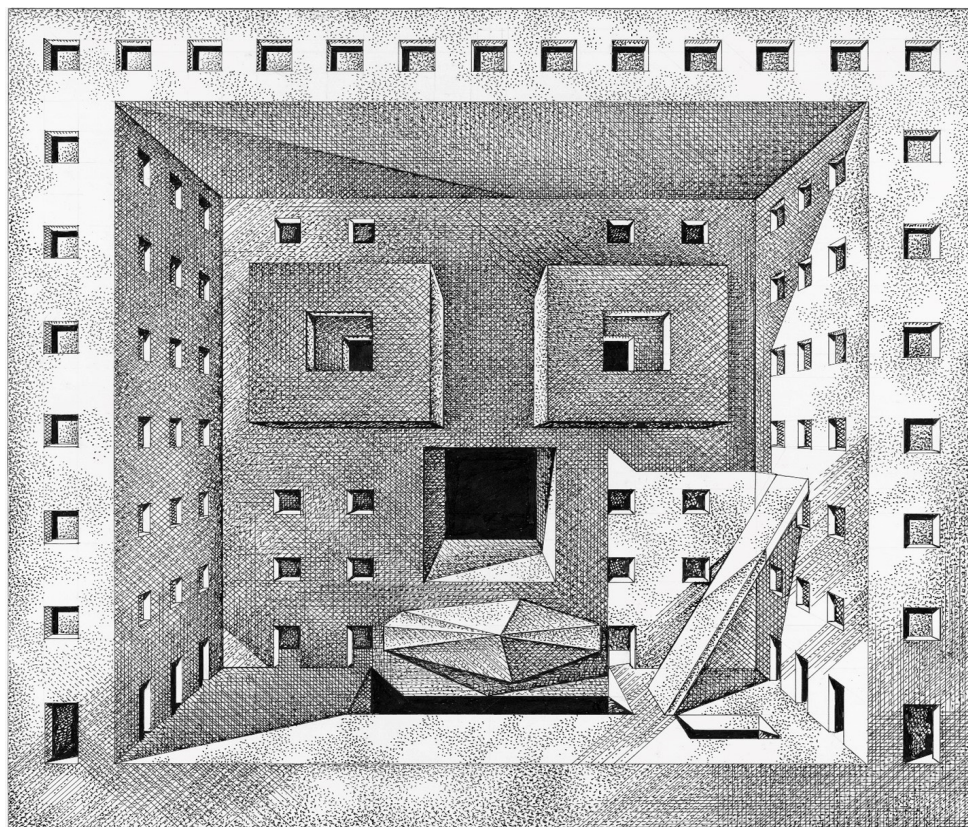

Figure 8. L'architettura guarda, Purini 2023

makes the forms and functions of architectures precious and expressive. It is a demonstrative rationality that moves between visionariness and utopia. More literary than architectural, this reason aims to produce an emotional totality in which the sense of construction acquires a prophetic and imaginative dimension. Another rationality is experimental, in the sense that everything known must be surpassed starting from the search for new conceptual and realization methods. For me, it is more authentic and human. Unlike enlightened rationality, it leaves progressive perspectives that prefigure the future free and, so to speak, more operative. Finally, there is a thematic rationality that expresses, before any other aspect, the possibility of giving architecture profound and superior meanings. These concern the multiplicity of the physical and abstract world, a parallel world made of impressions and interpretations. The character of this rationality is twofold. It is highly active but at the same time reveals itself to be dense with mysteries that cannot be understood and enigmas that can be solved. In short, thematic rationality is a category but also a research tool and, I would say above all, a fertile territory for invention.

One might think, reading this chapter, that the four forms of rationality are prescriptive. It is not difficult to think that for many architects the concept of rule is at the origin of many constraints and many prescriptions in the broad and rugged field of composition. In reality, it is not so. Reason is the space of thought even before it is of rules. Creative freedom is a gift of reason, which knows how to base itself on what is not yet, but has already set the stage to welcome the new, whose sources are beautiful and necessary to find.

The beauty of architecture

Studying the treatise by Vitruvius, the famous and unsurpassed theorist of construction and father of western architecture, one reads that the beauty of buildings is called venustas. It is the conclusion of the cycle that sees utilitas (function) precede firmitas (solidity) of a building. However, it is not known whether the placement of this aspect of architectural reasoning, venustas, in third place is the least important for the author of the Basilica of Fano or the most important. I have always thought that venustas is the most important and decisive component compared to the other two, bearing in mind that these three expressions of architecture are not separate, configuring themselves as analytical spaces that concern, as I have already said, and on every occasion, the meanings and values of construction. For me, the idea of plastic and ideal finiteness has a series of meanings, including beauty as an imitation of the divine, beauty as an expression of truth according to St. Thomas Aquinas who recalls St. Augustine, beauty as a promise of happiness by Stendhal, and beauty as the terrible at its beginning, by Rainer Maria Rilke.

Returning to Vitruvius, in the Latin language, beauty is not indicated only by the word venustas. Two other terms that denote beauty are pulchritudo and forma. I believe that the noun venustas mainly means what is well-made, like the body of Venus. I think that the word pulchritudo best expresses true beauty, which I will return to shortly. Finally, the term forma seems to define the concept of beauty as the result of an idealization based on removing everything superfluous from a work, bringing it closer to abstraction. Forma is therefore the result of an idea of architecture in which a logical construction on grammatical and syntactic planes puts tectonics and architecture in tension. This necessary dialectic must result in a few elements, chosen with great accuracy, that make their essentiality evident and, consequently, the primary relationships that bind them. All this in the closest proximity of grammar and syntax, which tend to identify with each other. The origin of an architectural idea should not produce rewritings, thematic deviations, or syntactic repetitions because they would give rise to a project historicity that would contrast with the foundational presence of a primary principle. Syntactic insistence would also, incidentally, diminish grammatical potential.

Reflecting on beauty in architecture, one can see that it is not unique, but is the sum of several aspects that all fall within the realm of artistic writing. The first aspect, which I have already mentioned, is the well-made, that is, an assembly of parts of a building so correct and well-structured as to give the construction, in its technical accuracy and the quality of the elements, a consistent pleasantness. The second aspect, in my opinion, is recognized in the harmony resulting from the proportion of the various parts of the volume and the details. A harmony that can also be measured against its opposite. The musicality that emanates from an entire work and its arts pervades it in its poetic expression and in the light that highlights the play of shadows and the intensity of the brightness that makes the facades and interiors shine.

More than the first aspect of beauty, something fixed or repeated, it is the second, the passage of the sun during the day, modifying the image of an architecture according to the hours. There is also a further content in the luminosity of the building. From the outside, it seems smaller compared to the internal spaces. It is impossible to find the reasons for the difficulty in measuring the exterior and the interior. Perhaps it is being surrounded by other buildings that generates an environmental scale in the view, alternating the real measures, so that an architecture contracts, so to speak, appearing smaller than its actual size. Hence the apparent larger dimension of the interiors compared to what we see from the outside.

The third impression of beauty is actually a mystery. It is understood that an architecture possesses a deep, evolving artistic identity that surprises and moves us, but it is impossible to know why it is so. In short, it is not possible to understand in the composition of a building why it appears so perfect to us. At first

glance, but also after studying it for a long time, an architecture does not reveal what its beauty consists of, of which we perceive the presence but not the way of being, of becoming form. We can therefore ascertain the existence of beauty in an architecture – I think of the villas and palaces of Palladio – but we will never know what the secret message proposed to us is, except for our ability to discover that beauty is present and exciting. It should also be said that a true architecture regenerates its meaning and mystery during the various periods it goes through.

The opinions I have expressed about the beauty of architecture are subjective, but I hope they are at least partly shareable. It is necessary to be free in experiencing architecture, making it our own, knowing it as far as possible, being attentive to understanding that the relationship between a building and a landscape is like a complex and engaging novel. Going beyond what we see in a building is necessary precisely because an architecture does not allow us to know it in every expression. As is known, even if we are architects, we will never know what it really is that we have managed to build. Our creation will always be distant from us as if it were born on its own or from the work of other architects, but just knowing that we have thought and proposed a content will be a gift for us, even if the mystery, which we have unknowingly brought to life, will continue to be unspeakable.
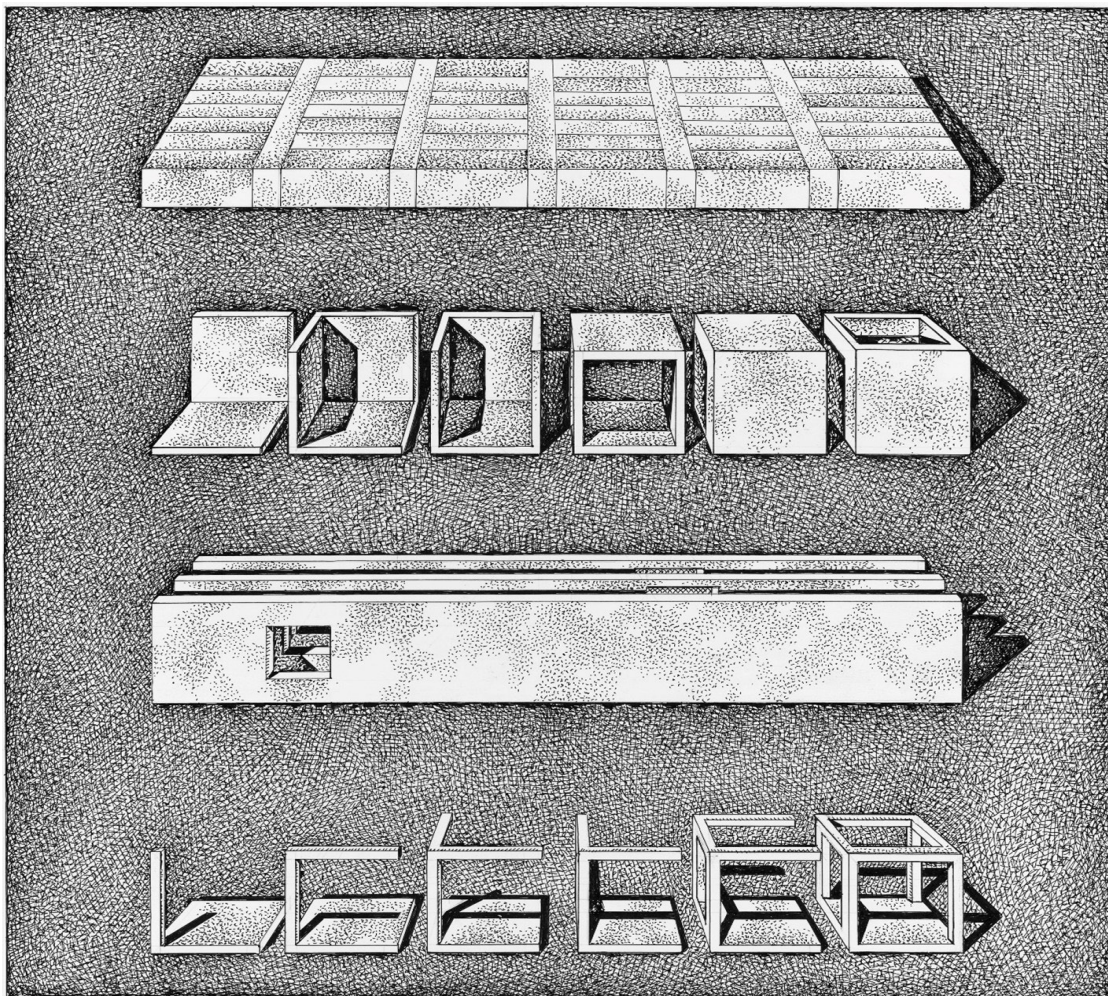

Figure 9. My way since 1968, Purini 2023

Tectonics and architecture

Contemporary architecture, which can be defined as the architecture of globalization, perhaps already in decline, is largely an "archisculpture," according to critic Germano Celant. In short, it is based on the desire to propose buildings never seen before, the result of an anxious search for the unprecedented. On the other hand, its plastic aspect, pushed to the limit, highlighted the absence of a logically conceived structure, replaced by volumetric twists, unusual overhangs, complicated ground supports, and dizzying and superfluous heights. This architecture sought wonder at all costs, rather than dialogue with other buildings, always a reason for a more humane city. Furthermore, the planning of new interventions did not foresee sufficient settlement coherence, but what was built was configured as intentional disorder compared to structured urban orders. In this context, places, as I recently wrote, have been in fact and consciously completely forgotten, thus giving up creating more livable, balanced, and welcoming parts of the city.

In this regard, it should be said that, as is known, urban planning has taken a significant step back, consisting of abandoning concrete and advanced plans in favor of conceptions linked to politics as a future projection rather than to the city, in addition to assuming an abstract character in which a utopian orientation was referred to mainly economic and environmental issues, leaving the problem of urban evolution implicit in urban history unconsidered.

The current condition of contemporary construction, briefly summarized, which also presents a deliberate denial of the need for a theory, has completely abolished a fundamental relationship, that between tectonics and architecture. In summary, tectonics is the set of solutions concerning the construction process as well as the condition of the artifact over time. Tectonics is therefore a system of technical solutions that not only supports the building but gives it a form that expresses its deepest and most lasting aspects. If an architecture has its beauty, it owes it to the form, which in turn is indebted to tectonics. It should also be said that in reality, tectonics is not separate from architecture, as we might think, but is intrinsically present in it from its inception. This means that there is no tectonics that precedes architecture, but the two terms are contemporaneous. Using a simple comparison, tectonics is like the skeleton of a body, which is not something that anticipates what the bones will support, but is present in the body from the beginning. A unitary thought therefore allows establishing the technical rules of construction at the same time as the form appears. In almost all buildings of global architecture, the dialectic between entities, the implicit one, tectonics, and the explicit one, architecture, has almost completely disappeared.

The latest theoretical research on the primary relationship between tectonics and architecture was presented by Kenneth Frampton in his 1995 book titled, Tectonics and Architecture: The Poetics of Construction in XIX and the XX Century Architecture. This date is important because it coincides with the birth of globalization architecture and at the same time with the worldwide spread of digital technology. A diffusion that surpasses the coincidence in manual drawing between an idea and its graphic expression. It is a conceptual and real contemporaneity that digital drawing could not confirm. On another level, we witness not only the eclipse of places, resulting in a casual arrangement of buildings that makes new urban interventions informal, but we also face the dissolution of another fundamental aspect of architecture, typology, which organizes construction according to the different categories in which it is articulated. Without a reference to it, each building can cultivate its being totally free to confront architectures that have the same functions. These are therefore completely different buildings and, for this reason, not being comparable, they do not constitute a recognizable system, bearing similar meanings. In this way, the type of a building is no longer considered as a message representing a condition of the urban community. All buildings can therefore be of numerous types which, not constituting an operative list dictated by the variety of the same community but a series of unclassifiable buildings, fail to structure the urban fabric as they are organized into typological families.

What has been said so far can, repeating something I have already proposed, and in which it is necessary to insist, rediscover the dialectic between tectonics and architecture. This duality, which in many ways allows the exchange of respective roles, establishes a primary compositional principle. It consists not so much in the distinction of the two roles but in their being ambivalent conceptions in which one reflects the other and vice versa. Tectonics is part of the metric universe, but its choices prefigure not only calculation but, at the same time, merge the premises of the form that the building will have. Architecture will give the data and choices of tectonics a new meaning, shifting everything that has been identified to the more complex plane, that of a higher necessity, a compositional rituality that generates a plastic, material, and spatial character shifted from technical concreteness to the most suggestive imaginary. Understanding the dual and contemporaneous presence of the dialoguing pair is a central place of the project, which makes creativity broader and deeper.

Inventing a language

In my sixty years of experience in architecture, I have always believed, from the beginning to today, that an architect has the duty to invent a personal language. This language has only one constraint: it must be understood by the majority. Regarding the search for my architectural lexicon, I have followed a path that I want to quickly retrace. At the beginning of this search,
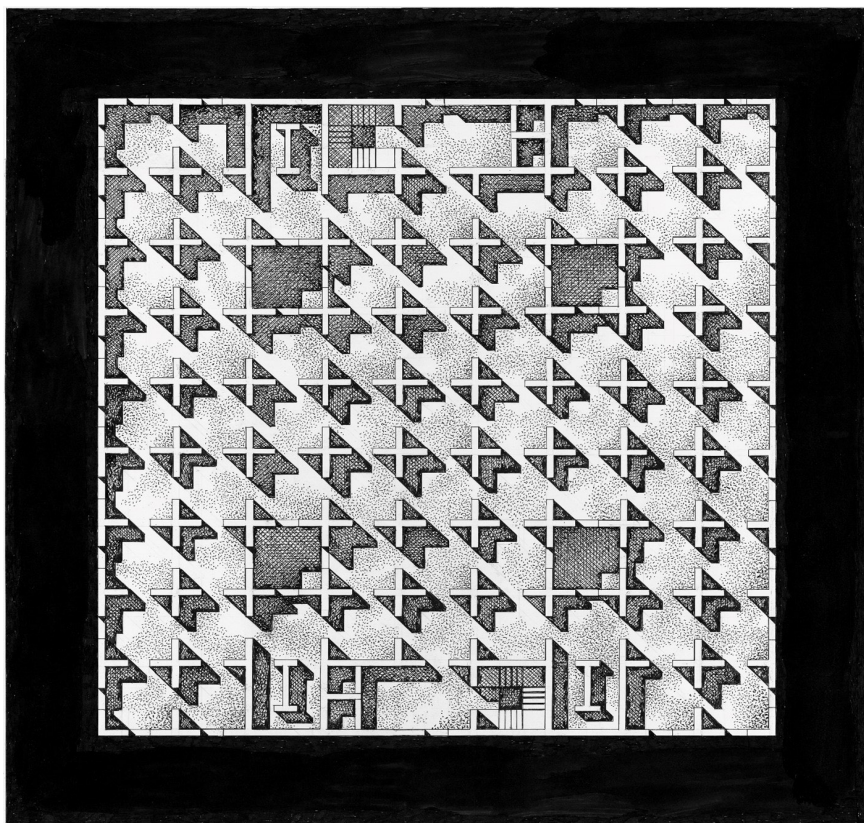
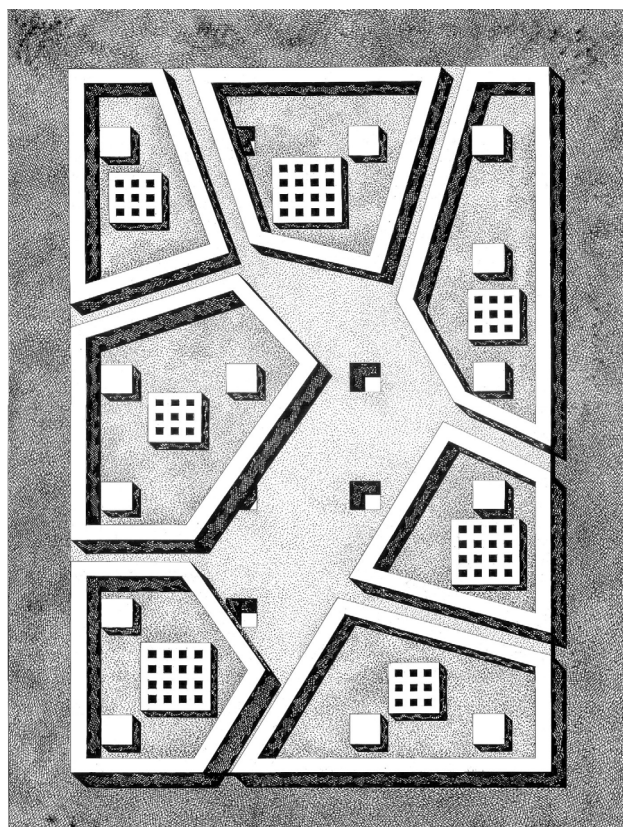**Figure 10.** Pianta illuminista, Purini 2023

Figure 11. Taunfor, Purini 2016

which can only be done when young, I realized that there had to be a self-analysis from which a language consistent with the result of this introspection had to be chosen. In short, it was about choosing what message I could convey to others. Just one. Once found, it was necessary to ask how to communicate it through architecture.

The formative process of a language must address a very important problem, namely how grammar and syntax should be considered in architectural writing. Grammar allows us to know how to write, syntax what to write. It is always very important to ensure that the two entities are not too distant. If one constantly refers to syntax, a project historicization is created in which a whole series of additions and reflections unfolds along a path as long as it is harmful in its uselessness. Only if syntax does not stray from the origin of the compositional idea does it tend to consider the rules of grammar. In this case, the origin best expresses the genetic sense of an architecture, its primary image, its creative place.

Once identified, one's language first confronts public opinion on architecture. What I said in the initial steps of this writing means that if the conceived language is not entirely in tune with its numerous interpretations, it ends up being considered a non-interior and deep thought, a casual unfinished incapable of covering the entire arc of architecture. This critical consideration requires making the language itself easier to understand, bringing it closer, in the best case, to current expressions. At the same time, the chosen language is made more readable than that of buildings, for example, located in the most advanced neighborhoods, thus demonstrating, even in words, that the contracted and widespread language is superior to the more known and generic ones thought to surpass them. Common opinion then ensures that personal languages, some of which are visionary and utopian, are considered inferior to those known by almost all citizens. The official reduction of new and personal languages does not always occur after comparing them to conventional ones, but it often happens that architects in search of their own lexicon take a step back because they do not want less important architects to defend what was remarkable years before. Hence the need for the language sought and found to operate on two levels. The first is the habitual one, with explicit content that hides an implicit meaning, which is clear to those who do not superficially know the art of building. This duality is not a mechanical device, so to speak. That an architecture has two formal registers, one normal and the other special, higher, known to those who have some precise building information. That an architecture has two formal registers is a gift to those who know architecture and a more substantial reward to those who know how to interpret the language in its unitary nature and its subjective ramifications.

Inventing a language is neither a privilege nor a pursuit born out of self-gratification or the desire to be considered special architects. Like a poet, a novelist, a painter or sculptor, a musician, an actor, a photographer, one must live with self-awareness and thus express one's own world. At the same time, being artists in the world of architects requires a dialogical ability to communicate what we have thought and realized. Creating an imaginary world, translating it into something concrete, knowing that what we do is always mysterious, questioning science, loving those who will inhabit our architectures is a beautiful, albeit risky, adventure. Even if our architectures are not works of art, the effort to conceive and realize them is a reward in itself.

Brief note on drawing

As is well known, digital drawing, towards the end of the twentieth century, revolutionized architecture in many aspects. It has been half a century since the complex process of electronic architectural graphics began to replace manual drawing, initially slowly and experimentally, and then increasingly rapidly. Manual drawing, practiced for centuries with pencils, pens, colors, set squares, T-squares, parallel rulers, tables, and drafting machines, was gradually overtaken by digital drawing. Over the years, digital drawing has not remained a mere technical change but has evolved into a set of design rules organized in a vision of architectural writing that aimed to speed it up and give it a more advanced practical attitude and greater technical capacity.

The culmination of this evolution and the conscious worldwide spread of digital drawing occurred a few years ago with BIM (Building Information Modeling), a design research system that proposed a broader, faster, and more complete design process to architects. Alongside the spread of this convenient tool, an unexpected change occurred. Alongside digital drawing, which had gone through various interesting phases, a new season of manual drawing began, focusing mainly on sketches, compositional and technical notes, and perspective studies. This way, a relationship that had disappeared was reborn, the harmony of the mind with the hand present at the same moment.

The re-emergence of manual drawing has allowed architects to rediscover a fundamental and suggestive coincidence between the mental image and its simultaneous transcription through manual drawing. Recalling two concepts of Federico Zuccari, a sixteenth-century painter who founded the Accademia di San Luca in Rome, there was an internal drawing, a mental representation known only to the one who imagined it, and an external drawing, traced by the hand, which could be understood in its meaning by anyone who saw it. Becoming external, it was no longer in possession of its author, something closed, but became open and available.

Currently, project drawing is articulated in two moments. The first is the geometric elaboration of a project carried out with

manual drawing, addressing compositional problems as well as the tectonic arrangement of the work and its form. The second is a series of graphic elaborations, made with digital drawing, organized into a set of representative and informative operations entrusted to a common language not only to every architect but also to all those who would then build the architectural work. In summary, the image becomes a fundamental thought in manual drawing, again prevalent in design, while its technicalization and readability are achieved with digital drawing.

This duality is important. It gives life to a conceptual alliance through which an exchange between these graphic entities can only be more than positive for architecture.
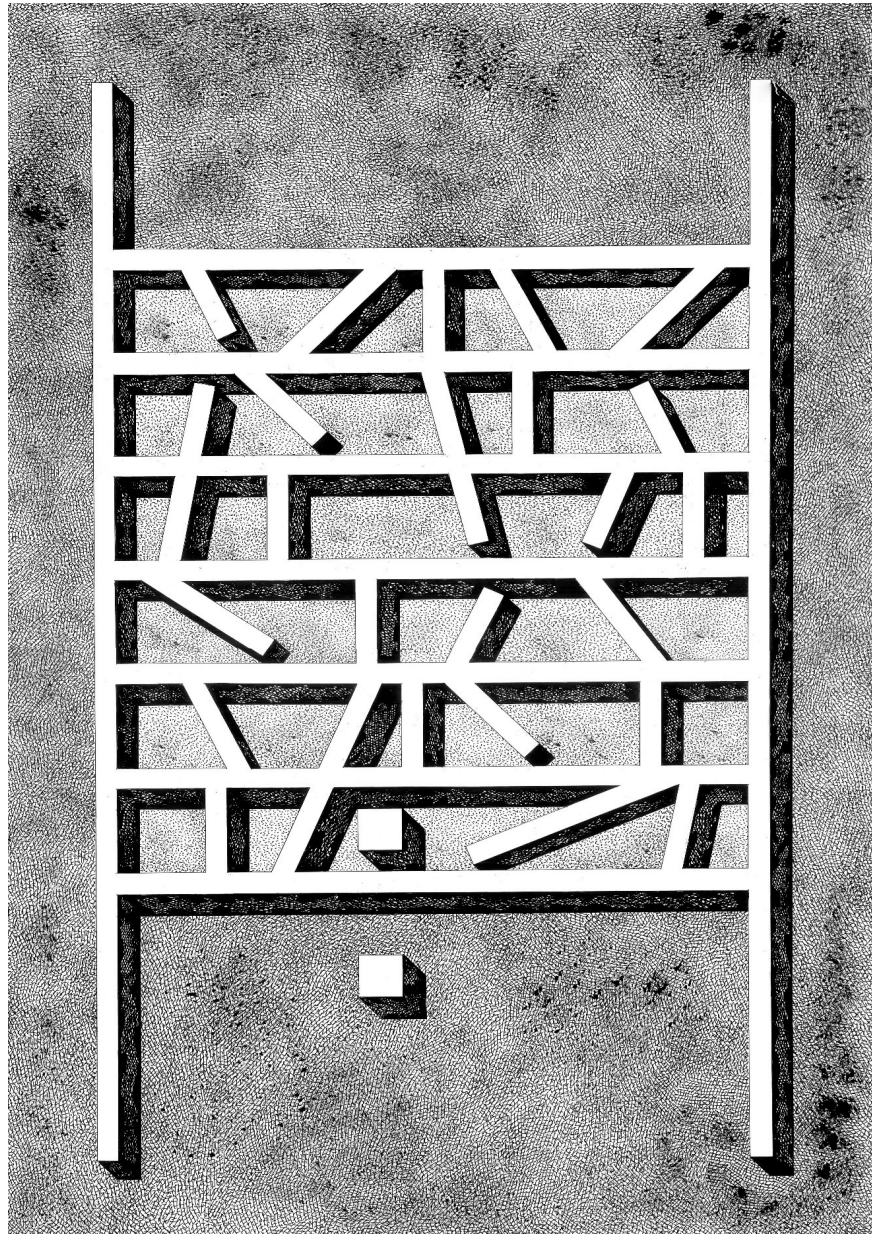
Figure 12. Taunstu, Purini 2016

Towards Equity in Architecture: Designing Inclusive Spaces for Diverse Abilities

KETI HOXHA

POLIS University

"Every actual body has a limited set of traits, habits, movements, affects, etc. But every actual body also has a virtual dimension: a vast reservoir of potential traits, connections, affects, movements, etc." (Deleuze & Guattari, 1983) This paper draws insights from the students' findings of the 3rd year of Architecture, in the framework of the course "Inclusive Design". This course's objective was to investigate how space is experienced from different users' perspectives, contributing to a better understanding of the symbiotic relationship between space and user, and enabling the students to create more inclusive environments that complement to the diverse needs and aspirations of individuals or communities. The main task was to recognize certain physical or psychological conditions' spatial requirements and translate them into future architectural ideas for POLIS University facilities.

Simplification of Human Diversity

From antiquity, the human body was considered the main reference for generating architecture, primarily not from the perceptual aspect of the architectural experience, but by considering the human body as a metaphor, as a mediator of the microcosm and macrocosm, since human proportions were seen as the perfect system created by God. Such an approach is visible in Greek temples, where male and female body figures were the genesis for creating architectural or structural elements. The search for the "ideal" body as a modulor continued throughout history, corresponding with various considerations attuned to the mentality of the society of the time.

The pursuit for the "able-body" culminated with the creation of the Vitruvius modulor, based upon "truths and emotions of a superior mathematical order" (Boys, 2017), and characterized by "a statically balanced symmetrical figure with well-defined limbs and muscles", according to Lefebvre's terms (Lefebvre, 1992). While the search for perfectionism culminated in the early 20th century, with the invention of aerobic and gym appliances and machines, which suggested a different way of seeing the relationship between the body and objects. "Avant-garde is intoxicated by the machine aesthetic… But the machine aesthetic is not everything… Their intense intellectualism wants to suppress everything marvelous in life… Their desire for rigid precision makes them neglect the beauty of all these forms… Their architecture is without soul." (Weisman, 1994) Such relation implied the shaping of the human body from objects and technology, to obtain the "ideal body" model, a mentality reflected also in architecture since both are systems that are focused on body-centric design. While the machine transforms the body, at the same time space or furniture evolving from a single-body model, does not fit the other body's proportions but on the contrary, attempts to shape it.

Using a single standardized figure with precise dimensions and

proportions, as a reference for creating spaces and furniture, resulted in a strict readjustment of the bodies towards objects presented in space, without taking into consideration the vast proportional typologies or capabilities of body movements in the range of users. The modulor of Le Corbusier, although it was a significant contribution to architecture, has its limitations, which dealt with taking as a main reference for architectural and furniture design the body of a French man of a 1.75m height with an active range of motion (limb flexibility). Such an approach excluded the consideration of the multiple typologies of bodies, such as the female gender, other age ranges, cultural ethnic differences, or even other limited motoric conditions. The fixed dimensions of the "Modulor" promote a top-down approach to design with a set of rigid proportions, risking to prioritize aesthetics over user comfort and becoming normative for all the architectural elements and furniture, in contrast to Universal Design principles, that aim to create environments for as many users as possible. However, the modernist approach evolved with a set of normative to be applied in architectural projects, making the "disabled" a passive user in spaces and facilities. But how much of a society fits the standards of a "perfect" body?

Understanding Diverse Abilities

To understand the role of a "disabled" person in architecture, it is necessary to tackle the position of him/her about societal attitudes. The meaning of term "disability" has its roots in the Latin language, and specifically "dis" means apart, while "habilis" means "ability" or "to be able". Starting from the terminology that has been carried out from the beginning of mankind till nowadays, reflects a distancing of society to this category, an exclusion. The course of "Inclusive Design" aimed to reconsider the everyday use of such terminology and replace it with the term "diverse abilities" due to the vast potential they

provide concerning experience in architecture, as the first step to an inclusive approach towards social structures. From the architect's perspective, primarily it was necessary to understand the specific possibilities of these "bodies" provided in architectural terms, representing different viewpoints of perceiving the physical environment, but also confronting their position in societal structures throughout history.

From the ancient civilizations people with disabilities were seen as a sign of divine displeasure, and as a result, most of them were abandoned or despised. This approach continued even in the medieval period, where the Christian Church played an important role in the societal attitude or mentality towards these individuals, promoting a sort of charity towards them, which as an approach excluded them more from the rest of the society by reinforcing inferiority and hierarchy to both receiver and giver, "perpetuating a system of dependence and pity, rather than genuinely empowering individuals" (Nietzsche, 2006). During the Renaissance, nevertheless the advancement in medicine and recognition of human conditions, these individuals were hidden away from the public eye or institutionalized to be cured. As a result, the "disabled" was distinguished and isolated from the rest of society.

An interesting example of this exclusion was "Narrenturm" which refers to the "Fool's Tower", a building in Vienna functioning as a psychiatric institution, built-in 1784. Such a building applies the "panopticon" effect of Foucault, representing a circular tower with individual cells arranged around a central courtyard. The use of this building was to provide an environment dedicated to the mentally ill, however, applying to the layout of the panopticon model not only provides seclusion but a psychologically damaging environment, an environment of anxiety and fear of being observed. The significance of architecture to a person, especially to an individual that has specific abilities, directly shapes the state of sanity, self-sufficiency, and
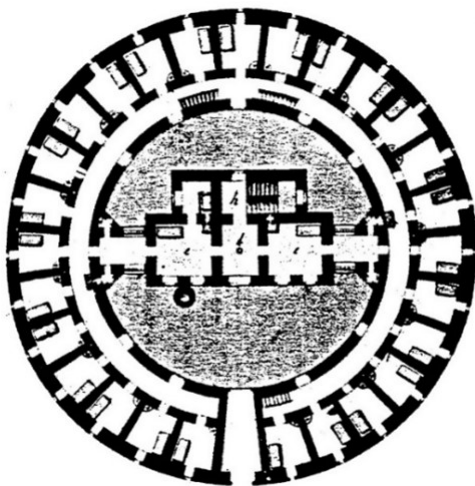

Figure 1. "Narrenturm", Vienna; Source: https://gedenkstaettesteinhof.at/

quality of life, indicating their level of physical and psychological freedom.

Institutionalization of individuals with specific needs started with the intention of inclusiveness, but the terms inclusion and exclusion are inseparable from each other, whereas the intention of providing care for a group of individuals leads to seclusion, as a result creating enclaves within the society, even if the aim of the action itself is to provide social cohesion. Modern society has a greater capacity for inclusion, but also risk disintegration varying from how the system of integration or rejection of a specific group is built.

A prime example of this discussion is the case of West Memorial Village, Lancashire in England. The village was founded in 1919 and designed by Thomas Mawson, emerging at a time when architecture and planning were a field of experiments due to post-war effects in the urban and rural contexts, to which these effects were also present in the population, where a considerable number of World War I veterans had some kind of physical impairment. The village aimed to provide an efficient environment for these individuals and grouping them all together by creating a community. It featured a mix of residential, commercial, and industrial buildings to integrate the veterans by promoting productivity and independence. The composition of the plan followed the model of the Garden City concept, offering gardens and open spaces to balance the practical needs with the aesthetics of the environment. However, this model faced several criticisms, especially from the Conference on the Aftercare of Disabled Men of 1918, which was considered a model of "segregation of the disabled". First of all, Mawson designed several designs detailed that considered the physical conditions of the veterans, which most of them were not implemented due to the financial strains, as a result, most of the cottages were built in two-storey structures and presented an obstacle to anyone with movement difficulties. Secondly, even if the concept of the village was to create a collective experience of disability, created a secluded community distanced from the rest of the society. Furthermore, considering that its genesis as a monumental village with spaces associated with sculptures that represented figures of physical impairments, reinforced the community's identification as different from the "normalized" group, painfully reminding them of their condition in contrast to the "able" bodies.

However, this case represents a first ademption to include the needs of other than "normalized" human conditions, "the rise of a new conceptual architecture that offered a new epistemology of the body, a new ontology, notably of patienthood." (Stefanos Geroulanos & Todd Meyers, 2018). It wasn't until the mid-20th century that due to the growth of several physical disability emergence from the wars, raised consciousness in the social model towards disability, considering such conditions as not only medical but also social, leading to the emergence of activism towards this topic, to turn down barriers and attitudes for the "disabled", later on, to be translated in legislations and Rights, starting with the crucial step of the Rehabilitation Act of 1973.

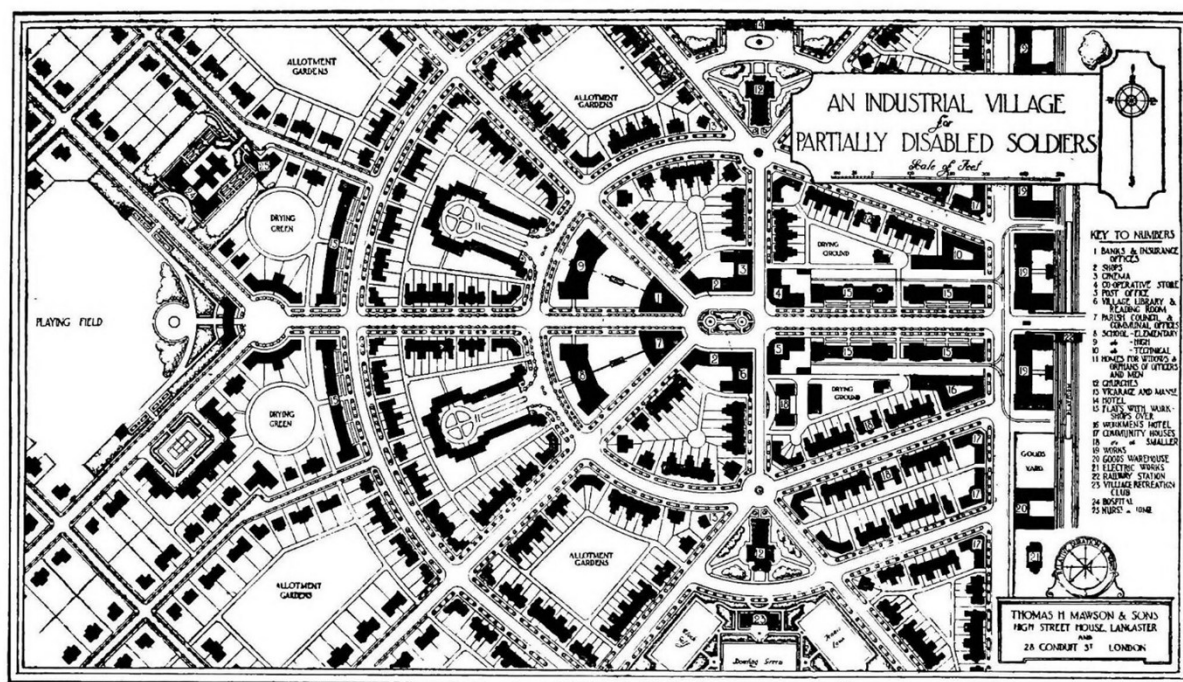Today our society aims to be an Inclusive Society, but still

Figure 2. West Memorial Village, Lancashire in England; Source: (Mawson, 1917)

needs to advance and focus more on the discipline of architecture and interior design. According to the World Health Organization, approximately 16% of the world's population experience significant disability, while in Albania, 6,2% of the adult population has a certain type of disability (UNDP, 2015). As a result, the urban structure and buildings must provide the possibility for mobility for all users. This is reflected in design standards that architects need to adhere to, to provide maximum accessibility and independence of using services and spaces. While they are mandatory for public buildings and accommodation structures in Albania, they remain less defined for residential buildings. Furthermore, such standards are seen as obstacles for architects during the design phase, rather than sources of innovation or discussions. Since such architectural elements are static physical models, do not allow the possibility to emerge into a set of creative transformations.

In the Albanian context, a notable oversight exists for both indoor and outdoor environments. According to Albania's law no. 8098 dated 28.03.96, Article 2, emphasizes the imperative of establishing suitable spaces within residences for the blind. Presently, the sole available guideline for architects in Albania is the "Guidance for Architects in Architectural Design for People with Special Needs." When dealing with public buildings, architects are expected to adhere to these design standards tailored to individuals with diverse needs, predominantly on wheelchair users, leaving aside other categories. While suggestions are offered for residential and workspaces, restrooms, and recreational areas, these recommendations focus only on physical challenges, lacking alternatives for sensorial engagement. Even though these solutions are necessary, they fail to encourage meaningful interaction with architectural elements which are viewed as additional elements rather than integral components of the architectural composition.

The main issue concerning design standards is the misconception about diverse abilities, with the mindset of being considered disabilities, not allowing the reinterpretation of standards in novel generated models of architectural elements and spaces. Such a mindset is closely related to the lack of information about how diverse abilities use and experience space. This mindset has persisted since the era of communism in Albanian society and is reflected also in the residential buildings' layout and its relation to the outdoor environment. It is noticeable that in buildings of this period, there is an absence of elevators, as a result, the presence only of staircases could not allow people with physical difficulties to use outdoor spaces, consequently not having the right to use other services, which enhances the feeling of dependence to other people. Furthermore, lack of consideration is seen in the indoor environment, through the construction of narrow doorways, effectively making the passage of wheelchair users very difficult, or even in the small dimensions of spaces that could not provide eased accessibility

to navigate from one space to another. Certainly, the lack of consideration of the needs of diverse abilities reflects the social perception of this group during the period of communism, which remains an important issue to be discussed even nowadays and to be reconsidered in architectural decision-making. "For an architect, more important than the skill of fantasizing space, is the capacity of envisioning situations of human life." (Pallasmaa, Tullberg, MacKeith, & Wynne-Ellis, 2005) The understanding of different perceptual experiences and comprehension of space requires developing narratives and architectural concepts to be applied in all building typologies. The central aim of the course "Inclusive Design" was to explore a holistic strategy for designing environments that provide comfort and accessibility for individuals of diverse abilities, fostering environments that provide the principles of dignity, justice, and autonomy without boundaries.

Methods and Findings
In the course of "Inclusive Desing," it was important for the students to be aware of the diverse conditions present in our society and the numerous typologies of users to be taken into account in every architectural scenario. Integrating unique needs helps the students create a narrative as a powerful tool for generating architectural solutions. The course emphasized the importance of involving as many users as possible by not only meeting the standards but encouraging them to view diverse conditions not as constraints but as opportunities to generate innovative and creative design. Following the principles of Inclusive Design from the starting phase of the project, students are trained to respect all users' needs, ensuring that every person regardless of their physical, psychological, or cognitive abilities can use and navigate space without barriers and most importantly with dignity. Such a way of thinking contributes to the education of a young generation towards a more respectful community. Furthermore, the course aims to educate architecture students about the significant role of the architect in society and the well-being of the users. The primary goal of the course is to emphasize the importance of accessibility in architecture for all users, promoting an inclusive approach, and avoiding exclusion in architectural scenarios. It brings to attention the necessity of research in the discipline of architecture, to gather information about various users' category, using this data as instruments for designing more accessible spaces.

The course was held in one semester and was divided into two main modules. The first module included a set of lectures related to Inclusivity in architecture, Universal Design, and Design for all, which aimed to present to the students the main regulations and standards in public buildings to consider and implement in their future projects. This module featured a series of lectures and case studies focused on "disability" emphasizing the historical background of disabilities and their

position in social context. Such information is necessary for the student to position himself/herself regarding the topic and bring awareness to the great impact the architect has on society and the life of an individual.

The second module consisted of researching two types of "disability", which aimed to understand the condition, obtain relevant information, and translate it into architectural tools for creating and designing new spaces. This module aimed to inspire the student from a particular human condition to design accessible and unique architectural experiences for all users.

The first step for module one was to develop a simple exercise, to raise awareness about the built environment and its impact on different users. It required creating a schematic representation of the students' "routine" walk, with a detailed path going from one location to another, and thinking about the obstacle encountered along this route. Later on, students were asked to re-imagine the same route from another user perspective, specifically from the perspective of a person with

specific needs, for instance, a mother with a baby stroller, an elderly person with mobility issues, a wheelchair user, etc. In this phase, the students identified other obstacles found in the physical environment. By comparing the same route from two perspectives, the students recognized how presumed architectural elements can become physical barriers with social and psychological repercussions. A missing ramp may be an obstacle for passing to another side, a wall may divide communities isolating individuals and limiting interactions. This exercise was the first step of emphasizing how thoughtful architectural solutions can provide an accessible and inclusive environment, by placing oneself in another person's position.

The exploration for the students began by being presented with the diverse range of the users' body types. The presented target groups were a set of conditions that indicated specific perceptual qualities to be used as inspiration for developing architectural instruments, such as physical conditions that included mobility difficulties, sensory limitations, and cognitive
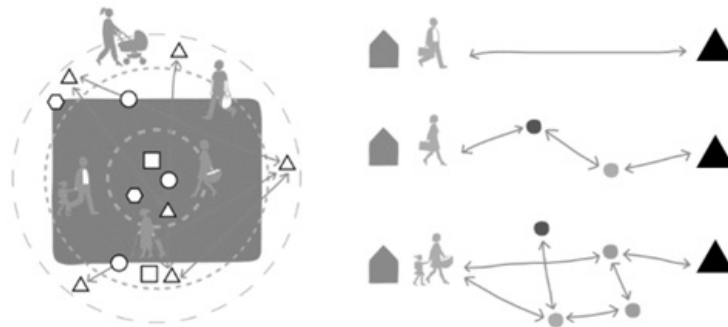

Figure 3. Exercise1: The schematic "route" compared to different perspectives
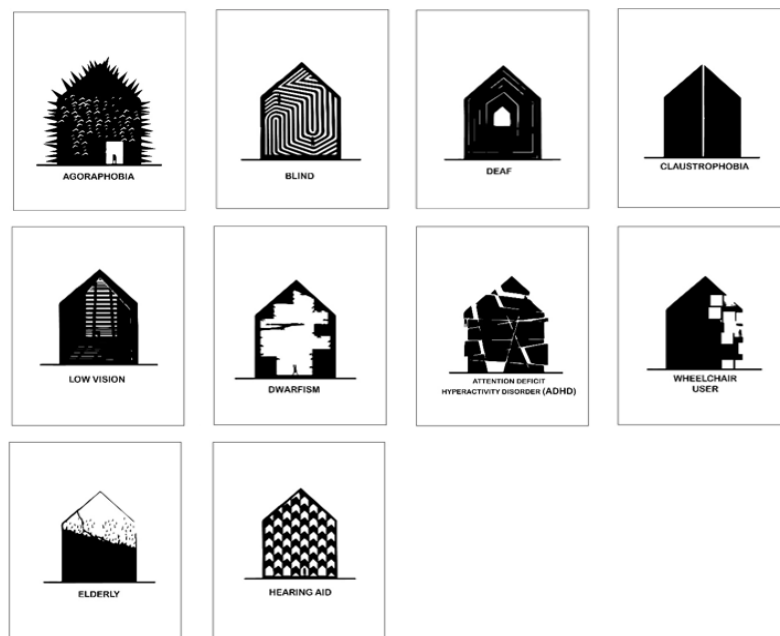

Figure 4. Target Groups for the Course of "Inclusive Design"

limitations. Each of the conditions had a crucial connection with architectural space and the user's interaction with the environment has a direct cause to a sense of belonging and accessibility. The aim of this research was for the student to understand which were the architectural elements that had a direct impact on the condition. The research raised several questions for the student to be familiar with the case study and to, later on, develop the main concept for proposing the second building of the POLIS campus, such as the physical and psychological condition of the user, how they perceive and experience space, which are the obstacles they face when they use the buildings, and which are the main architectural elements related to this condition.

The class was divided into eight groups of five people and was given two complementary conditions, which were of two different target groups. The purpose of this combination was to consider more than one person's perspective. The information obtained for this research led to the creation of the Modulor for each of the conditions. This Modulor provided sensorial information, physical conditions transformed also in dimension, and other additional information that would complete the basic unit to build the concept and from which architectural spaces

would derive. Later on, the students developed research for the conditions of the chosen case studies, to imagine and create a narrative from the target group's perspective and viewpoint, and most importantly, to define the problems these people face while navigating space and translate them to possibilities and solutions in architecture.

The Modulor played a crucial role in shaping the general layout of the plan for each floor and defining the arrangement of the spaces and furniture. It served to specify the dimensions of architectural elements, such as stairs, handrails, openings, relation to natural light, dimensions of the spaces within the structures, and the furniture system. In addition, the unit served to select the appropriate system for the doors and windows, taking into consideration the minimum height of the modulor and providing an accessible system for the target group. Furthermore, materiality specification is derived from the sensorial experience of the user, and attempting to enhance the sensorial interaction, or even using it as a signage system in the outdoor and indoor environment. The shape of the layout was defined by the shape of the walls which provided a better navigation for the user by tackling the physical interaction of the body with architectural elements through the tactile sense.
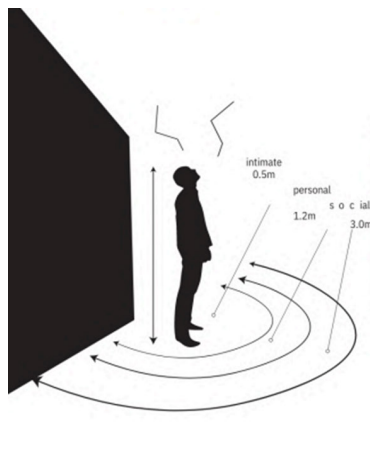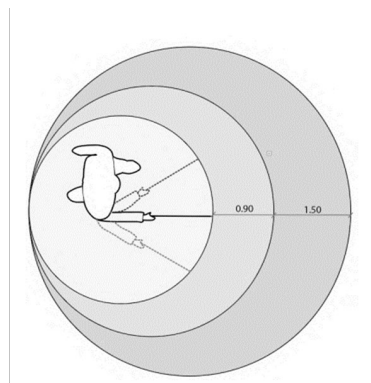

Figure 5. Modulor for Agoraphobia

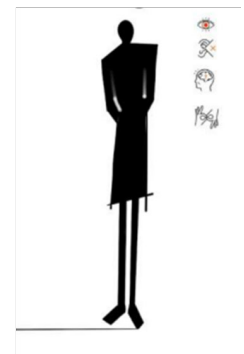**Figure 6.** Modulor for Blindness
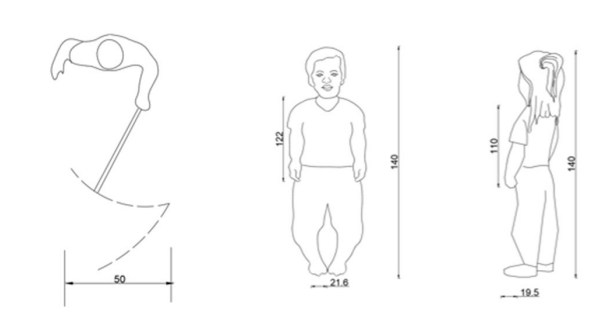

Figure 7. Modulor for Hearing Aid
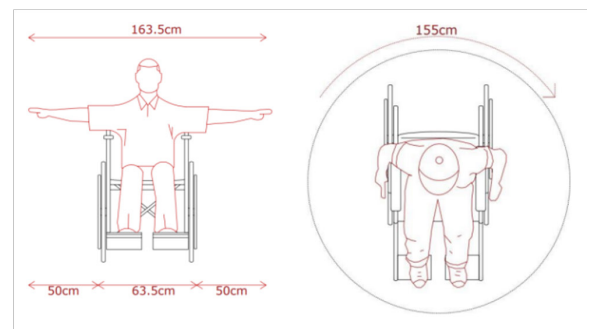

Figure 8. Modulor of Dwarfism

Figure 9. Modulor for Wheelchair User

The following phase involved continuous research about the selected conditions, adopting a multidisciplinary approach, which aimed to equip the students with the skill of interpreting information gathered from medicine, neuroscience, and psychology into architectural language. Such an approach helped them to identify and make detailed analyses of similar case studies in architectures, providing initial insights for building the design concept attuned to the target group's needs. The gathered information was presented in a booklet of architectural obstacles and translation of these obstacles into opportunities, taking into consideration the perceptual experience of the users and their needs for an efficient orientation and navigation in space. The booklet was organized into two main sections: inappropriate and appropriate scenarios. This structure provided a set of tools and guidelines to be applied not only to the final project of this course but even for future considerations in other building designs of any typology.
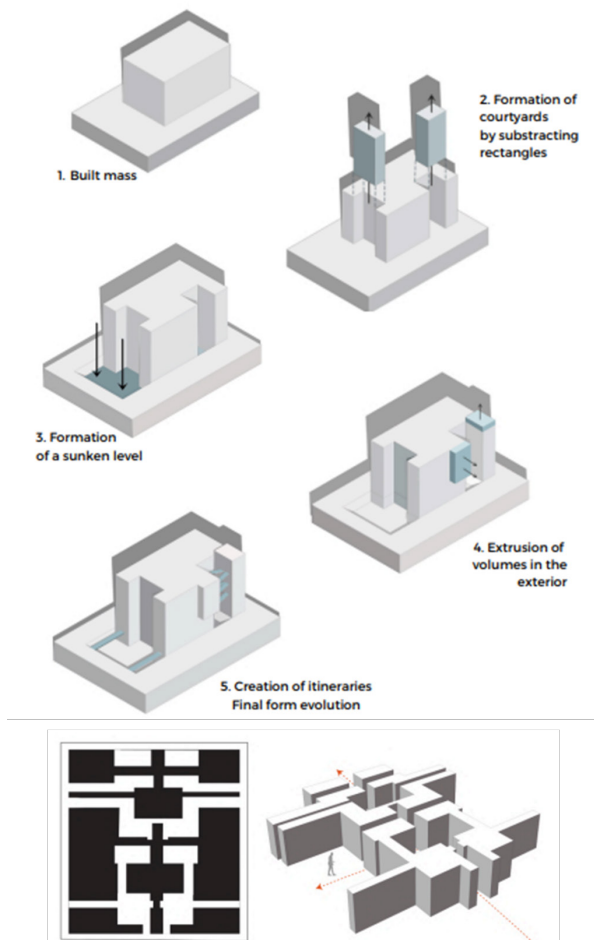
At the end of the course of "Inclusive Design", students developed a deep understanding of the principles of inclusive design and their application in practice, which provided the development of a holistic strategy by understanding various users' needs and applying them in architectural solutions to enhance accessibility and sensorial interactions in a building. Prioritizing navigation and orientation in space resulted in creating functional indoor and outdoor environments. Although the students had specific target groups in consideration for their design, the course aimed to gather all the information from each of the case studies and provide a unified booklet with a set of architectural solutions for several target groups of different specifics, as a vocabulary for architects for starting architectural concept. By applying these tools that are attuned to the needs of diverse abilities, consequently are appropriate to all users of a building and to be considered in every future project avoiding exclusion of all kinds. Combining these instruments evolved
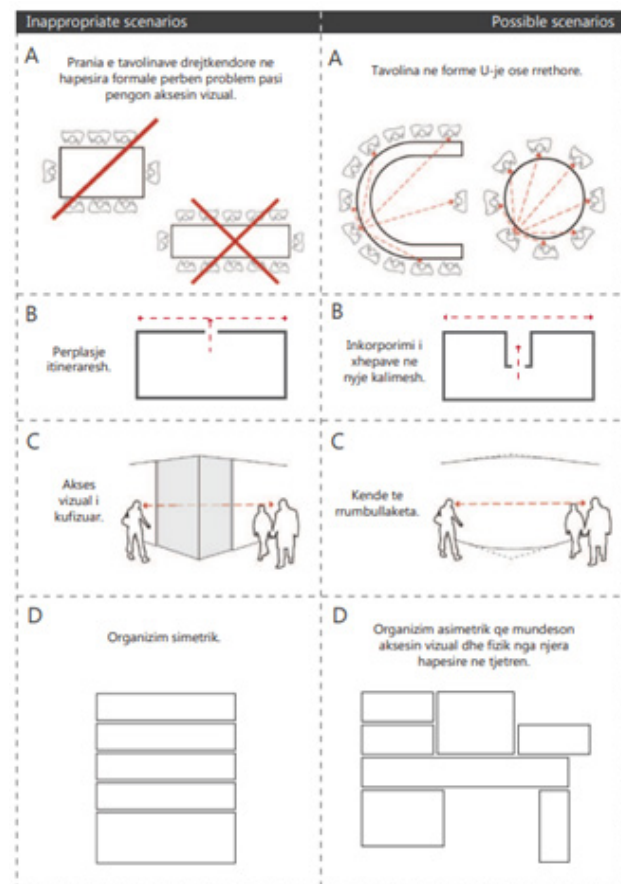

Figure 10. Example of a Booklet generated by students

Figure 11. Concept diagrams of the Final Project

into interesting narratives and storytelling enhancing the integration of various users with a strong sense of community.

The most interesting aspect of this course was providing significant insights about the social attitudes our society has towards diverse abilities, which were reflected in the student's interaction from the first day of the course. Several reactions took place, including leaving the class due to anxiety caused by the topics of diverse abilities discussed in class. Such a reaction reflects that still our society tends to hide different models from our sight and as a result avoids at any cost interaction with them or excludes them from design thinking. As we build and shape the world around us, we must consider the needs of all people, including those with diverse abilities. Inclusive design is not just a standard but a commitment to justice, dignity, and respect for all. Considering diverse abilities' s needs in our projects, we create more accessible spaces and avoid exclusion, by giving a contribution to a more inclusive society. It is equally important to educate new generations of architects about the importance of considering diverse individuals' typologies regarding their physical, cognitive, or psychological needs. By equipping them with knowledge and empathetic approach for the needs of different users, the architecture of the future goes towards a human-centered approach, proposing environments where each individual regardless of their abilities, feels independent and enveloped by architecture.

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Supermodernity imposed: "A review of Tirana's post-socialist urban development strategies dealing with non-places of hyper-verticalization"

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Abstract

This paper explores the transformative impact of skyscraper development on Tirana's urban landscape, emphasizing the shift from conventional planning to a new paradigm of supermodernity. In the dynamic tableau of Tirana's urban metamorphosis, skyscrapers emerge as both symbols and agents of a radical shift, challenging the ossified doctrines of conventional planning. By critically evaluating Tirana's post-socialist urban development strategies, the study reveals a landscape punctuated by non-places—ephemeral zones of "anonymity" engendered by a politically-powered vertical ambition. Utilizing a synthesis of case studies and literature, this research advocates for a re-evaluation of current planning policies through the integration of computational tools. Employing Grasshopper's iterative capabilities alongside traditional mapping techniques, a comprehensive digital twin of Tirana's city center is constructed to analyze these non-places and propose more sustainable and socially cohesive urban design scenarios. Insights from precedents and planning practices are evaluated and considered to enrich Tirana's risk assessment in urban decision-making, positioning Generative Design as a pivotal tool in reimagining urban spaces. This confluence of algorithmic precision and architectural foresight aims to bridge theoretical constructs with practical applications, contributing to the discourse on sustainable urban growth in post-socialist contexts. Ultimately, this research offers a vision for Tirana's ascent—a symbiotic interplay of space, identity, and the relentless march of supermodernity.

INTRODUCTION

In the vast, interconnected expanse of our current epoch, we risk finding ourselves amidst an architecture not built of tangible materials but one constructed from the very essence of excess—a supermodernity defined by an overflow of events, spaces, and individual paths, immersing us in a deep crisis of meaning (Augé, 1995). This condition, birthed from the unyielding acceleration of history and a wave of technoscientific breakthroughs, has its roots firmly planted in the late 20th century, an era distinguished by the explosive growth of digital technologies and the unstoppable force of globalization. It was the advent of the internet and its digital brethren that introduced a period of unparalleled speed and volume in information exchange, carving the contours of the supermodern zeitgeist (Castells, 2000).

In the late modernity we navigate a transformed spatial landscape where the object is already replaced by its own attributes. Spaces rapidly evolve into 'non-places' and transit zones characterized by anonymity, stripped of the historical and relational markers. These non-places are emblematic of the disorienting supermodern experience, challenging our traditional understandings of community and connection.

Yet, the narrative of supermodernity is not homogenous; it is a diverse mosaic, shaped by the distinct features of local contexts and cultural specificities. Such diversity demands a comparative, cross-cultural approach, enabling a nuanced investigation into the varied expressions of supermodernity across the global landscape (Appadurai, 1996). This exploration, fundamentally interdisciplinary, entwines sociology, technology, and urban studies, examining the emergence of supermodernity as a complex and multi-layered phenomenon in a rapid transition country. The intention of this research is not to highlight these diversities, but rather understand which precedents might have had similar vibrances throughout history and consequently be valuable in analyzing potential risks of urban developments in the specific context of today's Tirana.

A key hypothesis of this research is that archi-punctures, which position themselves in the middle of a pre-built context and are not part of larger urban planning strategies, risk creating non-places within their boundaries or causing similar effects within their contexts. This investigation aims to understand how such isolated developments contribute to the emergence of non-places and what can be done to mitigate these effects.

At the core of this supermodern condition is the individual, now the primary architect of their identity, bridging the digital terrain and the fleeting spaces of non-places. This era signals a move toward extreme individualization, where the self is splintered and scattered across digital platforms, manifesting in a multitude of avatars and personas, each crafted for the gaze of an unseen, global audience. This fragmentation stands as a hallmark of the supermodern condition—a society where shared narratives give way to an intricate web of individual stories, each woven into the vast network of the global information ecosystem.

From Post-socialism to Supermodernity

In "The End of History and the Last Man", Francis Fukuyama argues that liberal democracy has marked the end-point of mankind's ideological evolution, predicting that all communism-oriented system of governance will gradually become liberal democracies. However, 30 years after, as most of former communist countries failed to become fully functioning liberal democracies, their cities progressed way faster and together with freedom absorbed also the drawbacks coming from its excessive use.

In venturing to shed light on the genesis of supermodernity in a post-socialist city like Tirana, this discussion does not seek to provide closure or a precise definition of supermodernity in post-socialist cities. Instead, it aims to illuminate the diverse aspects of supermodernity, tracing its impact on our collective architectural and social fabric, with the intent of igniting further dialogue about the potentiality and consequences of hyper-verticalization of historical city centers. Through the lenses of acceleration and spatial transformation, supermodernity unfolds as an invitation—an invitation to rethink, reimagine, and redefine our perceptions of space, time, and self in an urban landscape.

LITERATURE REVIEW
Non-places: A review

In the lexicon of modern anthropology, the term 'non-places' has emerged as a critical concept. These are the zones of supermodernity: airports, highways, shopping malls, spaces engineered for function over form, utility over sociality. Yet, the interpretation of non-places oscillates dramatically, contingent upon the lens through which they are viewed—be it the macroscopic gaze of societal context or the microscopic scrutiny of individual experience. Through the societal lens, non-places emerge as the very epitome of globalization and modernity, mirroring the velocity of contemporary existence and the sprawl of global networks. They are the offspring of homogeneity, the progeny of replicability, designed not for gathering but for the solitary passage (Koolhaas, 1994). Urban theorists critique these spaces for their role in the dissolution of traditional social fabrics, lamenting the displacement of communal spaces by zones where efficiency and consumerism reign supreme (Harvey, 1989). The environmental critique follows suit, condemning non-places for their contributions to unsustainable urban expansion and the alienation from the natural and the historical (Relph, 1976).

Yet, on the plane of the individual, the narrative shifts. For

some, non-places offer a canvas of anonymity, a liberating detachment from the rigid structures of identity and role. These are not voiding but shelters, arenas for introspection, creativity, perhaps even rebellion, free from the societal gaze (Zukin, 1995). In these liminal zones, fleeting yet meaningful connections emerge, defining a 'solitary contractuality' as Augé (1995) posits, born of shared, ephemeral experiences. The advent of the digital age further complicates this landscape, transforming the very essence of non-places. Virtual platforms, while embodying the characteristics of non-places—transience, anonymity, functionality—paradoxically become stages for community formation and identity expression (Rainie & Wellman, 2012). Here, in the digital non-place, traditional boundaries blur, challenging preconceived notions of space and place, of transient and permanent.

Thus, non-places stand as a testament to the dualities of contemporary life, simultaneously critiqued for the societal and environmental malaises they symbolize and are cherished for the personal sanctuaries they offer. Their essence, fluid and multifaceted, reflects the evolving dynamics between the individual and the collective, between society and space. As

the contours of modern life continue to shift, so too will the interpretations of non-places, charting new territories in the ongoing discourse of space, place, and identity in the age of supermodernity.

In the heart of current urban evolution, high-rises – capable of declaring themselves as self-referential signs (Eisenman, 1984) - bloom as monuments of modernity, and their ground floors as battlegrounds between engagement and alienation. Tirana, a city pulsating with post-socialist palimpsest's vibrances, stands at the forefront of this contemporary paradox. The ground level, a threshold between the private ascent and the public domain, holds the key to transforming these vertical giants from mere structures into vibrant participants in this urban dialogue. Moreover, beyond their monumental verticality, they hold a crucial role in changing spatial dynamics within a city or even a simple building block. By distinguishing themselves within a given context, they have the potential to create or highlight different hierarchies regarding their socio-cultural impact.

Bearing this in mind, we need to consider and address the possibility of non-places' emergence and their potential

Figure 1. Alban Tower by Archea Associati, Tirana. Image courtesy of Pietro Savorelli.

Figure 2. Front of ETC building, Tirana.

Figure 3. Front of SkyTower, before façade's intervention, Tirana.

risks due to "archi-puncture"-al strategic developments that position themselves in the middle of a pre-built contexts, and alienate from larger consolidated urban planning strategies. Non-places remain paradoxically peripheral in the grand visions of urbanism. In the pursuit of an urban utopia, there is a prevailing tendency to valorize the static, the idealized, constructing environments tailored for a hypothetical, uniform populace. This approach frequently sidelines the democratization of urban amenities, favoring instead the monumental, the aesthetically coherent, at the expense of addressing the multifarious needs of the city's denizens.

Consider, for example, the critiques leveled against Le Corbusier's 'Radiant City', with its laudable celebration of light, space, and verdure, yet marred by a sterility and homogeneity that neglects the communal, the spontaneous. Similarly, the Garden City movement, for all its aspirations towards self-sufficiency and ecological harmony, often culminated in enclaves of isolation, predicated on automotive mobility, and distant from the urban core's vibrancy and resources. These instances articulate a pressing imperative: that urban strategies recalibrate, to not only acknowledge but also valorize the dynamism, the heterogeneity inherent in urban existence, recognizing 'non-places' not as mere interstices but as essential elements in forging democratic, inclusive urban fabrics.

Saskia Sassen articulates how the ambition to achieve global city status, driven by the desire to integrate into worldwide networks of capital and information, often leads to urban projects that surpass the genuine demands of the local population (Sassen, 2001). This framework is particularly relevant in assessing Tirana's urban trajectory, where the rapid embrace of global standards and the pursuit of foreign investment have prompted developments potentially misaligned with the city's actual needs.

This synthesis underscores the importance of recalibrating urban planning strategies to prioritize local requirements over global aspirations. This recalibration is crucial to preventing the emergence of urban spaces that, while globally connected, may not reflect or serve the local community's needs, failing to ensure sustainable and inclusive urban growth. Consequently, Sassen's work calls for a balanced approach to urban development that harmonizes the global integration of cities with the imperative to address and resonate with the intrinsic needs of their inhabitants.

The risk? A descent into 'non-places'—those zones of transience, devoid of identity, as Augé explains. Tirana's skyline, a testament to unbridled capitalist ambition, narrates a tale of high-rises that that perform in a poor way considering their socio-urban isolation, their ground floors failing to whisper to the passerby, to invite, to integrate (Figures 1,2,3). This architectural oversight renders them as islands in the urban stream, disrupting the flow of social fabric (Dino et al., 2017).

METHODOLOGY
RESEARCH CONTEXT & DATA COLLECTION

During the past two decades, Tirana has experienced an unprecedented urban metamorphosis, shedding its post-socialist form to undergo a "re-branding" political initiative towards a more international persona. This transformation is not merely a shift, but a radical departure from the archaic top-down urban planning ideologies of the communist era, towards a vibrant, bottom-up model, propelled by the tidal forces of urban migration and unregulated capitalism (Dino et al., 2017).

The initial years of liberation from dictatorship's grasp unfurled a cityscape ensnared in vehicular congestion, a chaotic testament to newfound freedoms. Yet, within this disarray, a vision for Tirana's urban renaissance began to crystallize. Strategic interventions like Skanderbeg Square's transformation, the birth of Pazari i Ri, the interventions on the Artificial Lake, and the genesis of a new boulevard—have not just reshaped, but redefined Tirana's built environment, elevating urban spaces to iconic statuses, celebrated by inhabitants and visitors alike.

This metamorphosis is underscored by a notable demographic increase, with Tirana's metropolitan population almost doubling its numbers in the last 30 years; swelling from 279,311 registered individuals in early 1994, to 528,100 registered in 2024 (World Population Review, 2024). Delineating from such statistics, due to its high economic activity, as well as proximity to impactful cities like Durrës, Elbasan or Fier, it is believed that Tirana's daily occupancy regularly goes up to 1 million individuals, which reflects the everyday traffic congestion and further highlights the need of public investments on daily infrastructure.

Data gathered from Institute of Statistics (INSTAT) show that from 2010-2018 there were approximately 4.2 million square meters approved to be built with legal building permits in Tirana only, followed up by an impactful increase of 2.3 million more in only 5 years, for a grand total of 6.5 million square meters approved from 2019-2024. These numbers reflect a general surplus in built metropolitan areas, considering an average of 0.8-1.7% increase of metropolitan population from 2010-2024.

Such rapid urbanization mirrors the broader East European narrative post-socialism, marked by a seismic shift in land ownership within the shadows of an embryonic legal system, a shift that saw developers seizing open spaces with voracious appetite (Dino et al., 2017). Internationally, the demolition of the communist regime's barriers and the rekindling of ties with the West, notably with the USA in 1991, paralleled
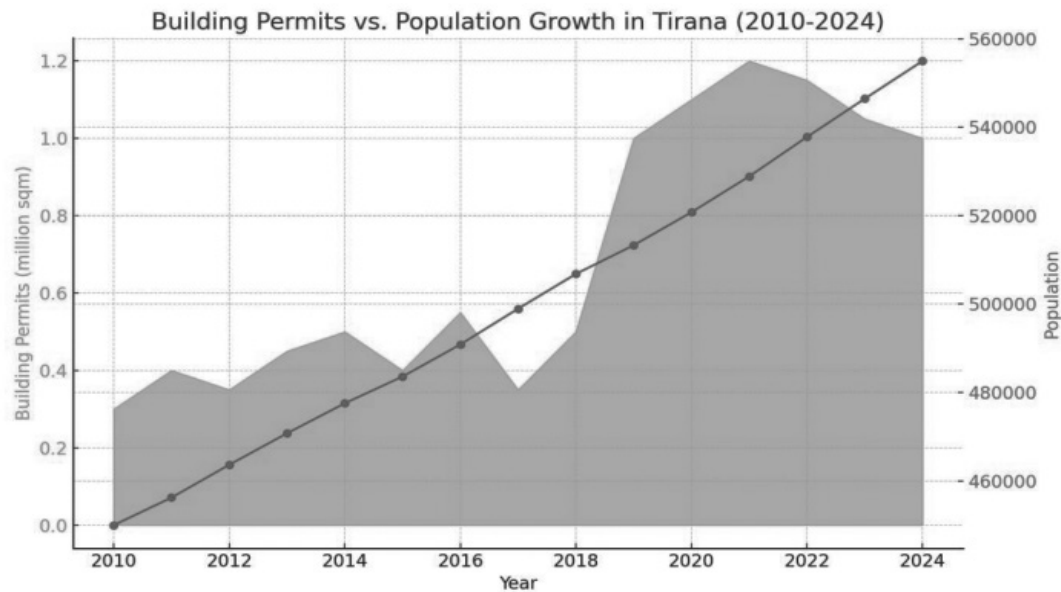
Figure 4. Chart by authors, from data gathered from INSTAT

Tirana's ascension on the global stage. The city's international airport, witnessing a record-breaking throughput of 7.25 million passengers in 2023, stands as a complementary testament to Tirana's burgeoning global allure (TIA, 2024).

ANALYSIS OF PLANNING VISIONS FOR POST-SOCIALIST TIRANA

Since 2004, when the French plan for Tirana was firstly introduced (Figure 5), the idea of a vertical city started planting its roots. The proposal of the Studio Architecture Paris envisioned a series of high-rises which were strategically positioned around the city center in way to emphasize different urban interventions like the central Skanderbeg square. Even though this plan won the competition at the time, it seems like the only thing that was inherited was verticality. In early 2015, almost a decade later, Grimshaw proposed an expansion of the city, following the traces of what the Italians envisioned during their invasive presence in Albania from 1939 to 1940. The plan retakes the concept of a monumental boulevard which links Tirana's city center to the northern river of the city, by promoting a new development around this new axis. The new boulevard, in fact, was perfectly designed and planned according to a sustainable expansion that centers human needs (walkability score, shading experience etc.) though advanced urban computational techniques. They maintained the idea of vertical expansion by proposing a new archipelago across this new boulevard axis, by changing scale and resolution of regulated building masses. Again, even though this masterplan was approved and still serves as a reference for actual building

regulations, it suffers from high-flexibility, since the only inherited attribute seems to be the change of building's scale that contrast the existing urban landscape (Figure 8). Facing the challenges of unbridled urban sprawl, the final Tirana 2030 Plan (strongly allocated with Stefano Boeri's vision masterplan for Tirana which was made public in 2017, Figure 7) emerges as a manifesto for the future, envisioning controlled development that harmonizes advanced infrastructure with green arteries and new ring-roads, cherishing the city's architectural heritage while forestalling the encroachments of urban sprawl with a verdant embrace of two million new trees. This plan articulates a narrative of development that is measured, deliberate, and sustainable, an antithesis to the unchecked expansions of yesteryears

Figure 6. GRIMSHAW– Tirana Masterplan (2015)

Figure 5. Studio Architecture Paris – Tirana Masterplan Proposal (Winner-2004)

Figure 7. Tirana 2030: General Local Plan. Masterplan by Stefano Boeri Architetti, UNLAB and IND Offices

Nonetheless, detractors contend that the flexibility of these plans to be constantly prone to changes due to unprecedented politically reconceived legal frameworks (like the KKT), could transform Tirana to the point of unrecognizability and obliterate its historical legacy (Bateman, 2021). Furthermore, there is a need to acknowledge the complexity and impact of this ever-changing socio-political landscape of a rapidly-transitioning country like Albania, where the democratization and transparency must find their institutional paths in infiltrating urban planning strategies, alongside the undergoing Justice Reform.

Consequently, a dilemma arises: Is Tirana's growth a response to actual demand or a symptom of excessive development? The demographic boom and the influx of international visitors suggest a real need for urban expansion, juxtaposed against the narrative of rapid, uncoordinated growth at a national level. Architecture though, despite non-being a panacea for political dissent nor a stand-in for the process of politics itself, must nonetheless engage vigorously with the undercurrents of society, the seismic shifts within the economic and political landscapes. It is incumbent upon this discipline to craft responses, not as mere reactions but as proactive engagements with the dominant political discourses, propelled by the imperative to innovate, to challenge, and to redefine (Schumacher, 2014). Without the need to analyze the benefits or disbenefits of the high-rises found in Tirana, numbers prove their strong and positive impact on tourism and economy alike.

However, real estate experts came up with a number standing between 40,000 to 50,000 empty apartments in Tirana as for 2023, suggesting a peak in the market alongside the highest ever-recorded prices (Euronews, 2023). The experts highlight the increasing interest of citizens to invest on individual-based leisure amenities like AirBnBs, where one individual owns up to 4-5 properties. Drawing a parallel to the phenomenon observed in New York's Billionaires' Row, where a significant number of luxury apartments remain vacant, Tirana's real estate market similarly showcases an overabundance of empty properties. This surplus, driven by doubtful investments and the proliferation of leisure amenities like AirBnBs, underscores the city's alignment with global urban trends, resulting in spaces that increasingly cater to transient, rather than permanent, residents

The economic implications of this trend are multifaceted. On one hand, the influx of investment in high-rise developments has undoubtedly contributed to the local economy, spurring job creation in the construction sector, boosting demand for related industries, and increasing property tax revenues for the municipality Additionally, the rise of short-term rental markets such as AirBnB has injected a steady flow of income from tourism, benefiting local businesses and service providers. However, the overemphasis on high-rise developments and the resulting surplus of vacant apartments also presents significant challenges.

The high number of unoccupied properties, estimated between 40,000 to 50,000, indicates a peak in the market that could lead to an artificial inflation of property prices. This situation mirrors the dynamics of Billionaires' Row, where properties often serve more as investment vehicles than as homes, thereby distorting the local housing market. Moreover, the focus on transient accommodations over permanent housing can exacerbate the creation of non-places—spaces devoid of social significance and community engagement. As more properties are converted into short-term rentals, the availability of affordable housing for permanent residents diminishes, potentially leading to displacement and gentrification. These non-places, characterized by their lack of identity and cultural relevance, contribute to the fragmentation of the urban fabric and undermine community cohesion and social stability. The increased presence of temporary visitors over stable residents can also strain local infrastructure and public services, which are often designed to support a more permanent population.

Additionally, the rise of short-term rental markets such as AirBnB has injected a steady flow of income from tourism, benefiting local businesses and service providers. However, the overemphasis on high-rise developments and the resulting surplus of vacant apartments also presents significant challenges. The high number of unoccupied properties, estimated between 40,000 to 50,000, indicates a peak in the market that could lead to an artificial inflation of property prices. This situation mirrors the dynamics of Billionaires' Row, where properties often serve more as investment vehicles than as homes, thereby distorting the local housing market. Moreover, the focus on transient accommodations over permanent housing can exacerbate the creation of non-places—spaces devoid of social significance and community engagement. As more properties are converted into short-term rentals, the availability of affordable housing for permanent residents diminishes, potentially leading to displacement and gentrification. These non-places, characterized by their lack of identity and cultural relevance, contribute to the fragmentation of the urban fabric and undermine community cohesion and social stability. The

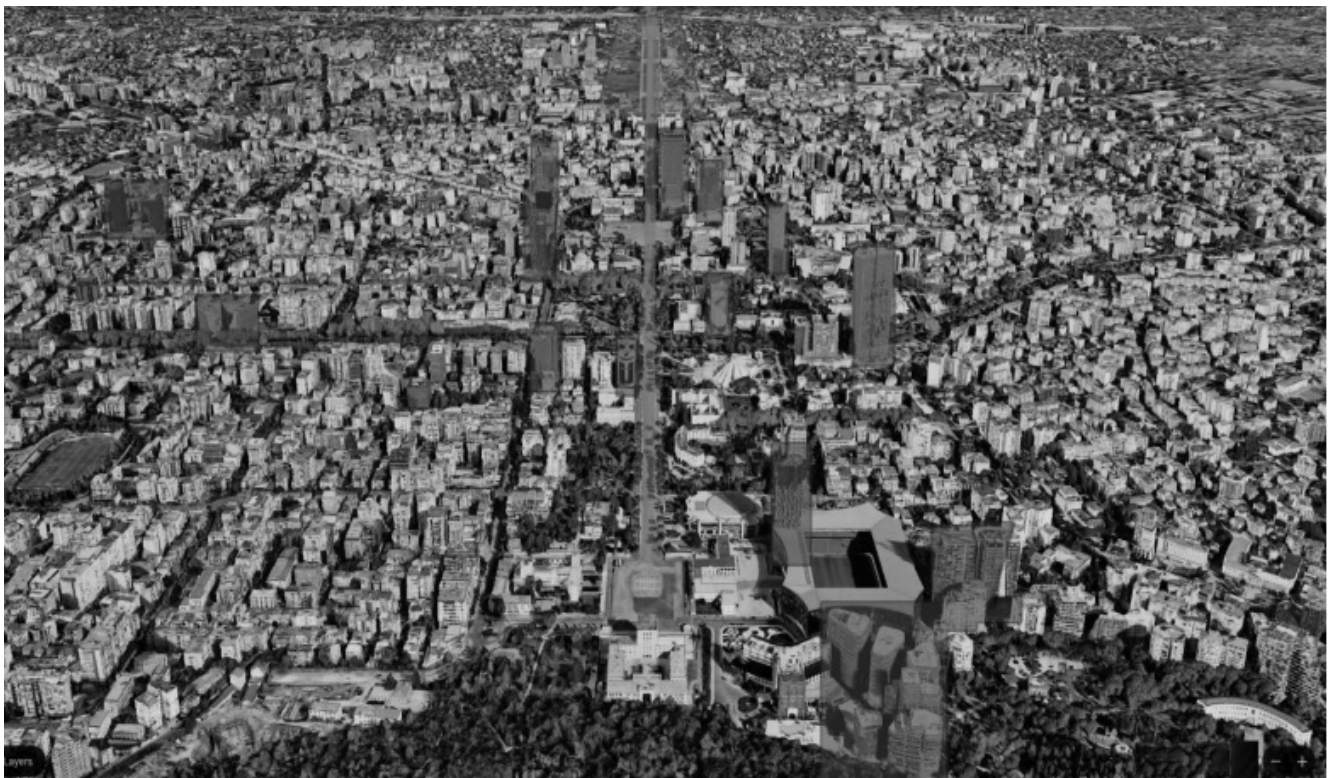**Figure 8.** Tirana from top – Change of building's scale, Alienation

Figure 9. Tirana from top – Inconsistency of positioning in relation to public Masterplans & visions

increased presence of temporary visitors over stable residents can also strain local infrastructure and public services, which are often designed to support a more permanent population. Thus, the narrative of Tirana's evolution from a post-socialist relic to a beacon of innovation and international charm is a complex conglomerate of internal motivations and global engagements. Amidst this, strategic urban planning emerges not just as a tool but as a vision for a sustainable, deliberate march towards the future - requiring continued inquiry into the intricate balance between demand-driven expansion and the specter of excessive development. Interdisciplinary solutions must navigate the complexities of societal evolution, embedding within their very fabric the potential to influence, if not reshape, the trajectory of our collective future.
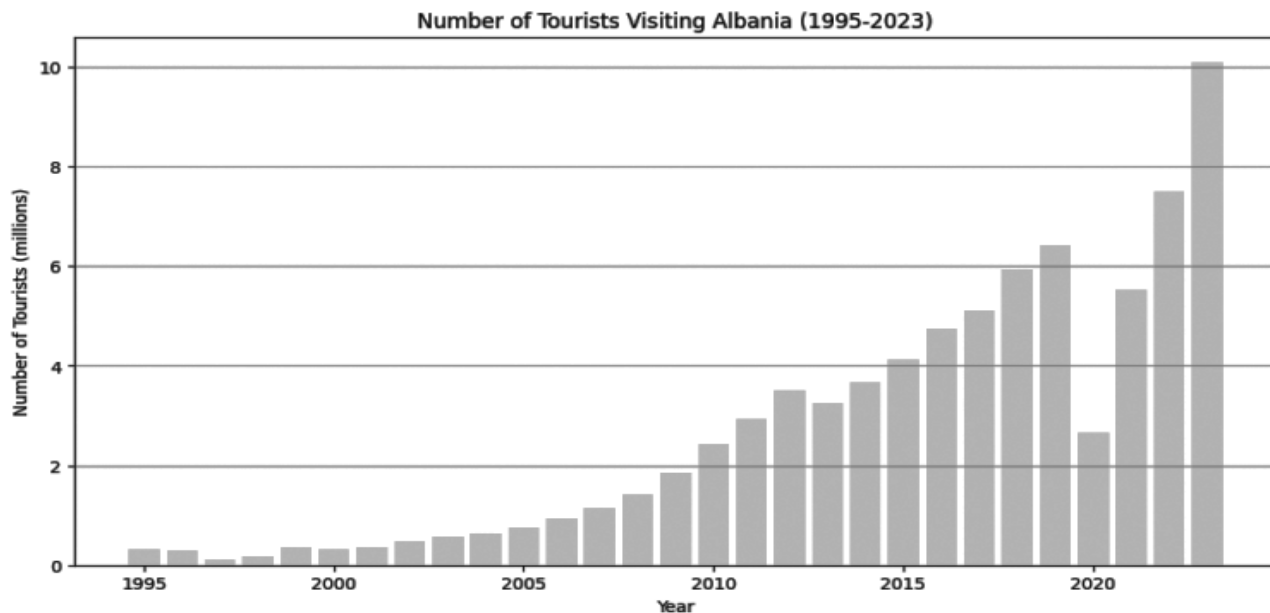

Figure 10 - Graph by authors, data gathered from WordData.info

Analyzing Factors Which Impact The Contextualized Phenomenon's Emergence
CASE STUDY 1: ALBAN TOWER

The Alban Tower in Tirana by Archea Associati, a manifestation of modern architectural ambition, serves as a pertinent case study for examining the intricate dynamics between urban high-rises and their contextual embedding within the fabric of a city. This building, through its positioning and structural design, exemplifies the paradoxical relationship between architectural identity and the urban landscape it seeks to complement. Positioned strategically at the heart of Tirana, the Alban Tower not only punctuates the skyline but also redefines the relational aesthetics of its surrounding area. The building's substantial footprint and the consequential out-of-the-matrix approved height in relation to distances, impose a significant visual and physical presence, which can either forge new spatial hierarchies or disrupt existing urban continuities. The challenge here lies in the towers' ability to align with the granular textures of Tirana's urbanism without overwhelming them. From a structu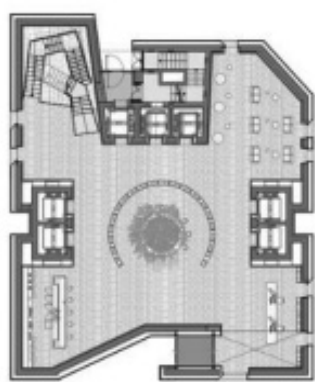ral perspective, the tower employs a design that prioritizes verticality and spectacle over the porosity of ground-level interactions, characterized by concrete shear walls with no columns. Its reliance only on concrete walls and minimal ground-level openings contributes to a fortress-like facade that, while impressive, risks diminishing the permeability so crucial for vibrant urban life. The ground level, dominated by the tower's imposing structure, may lead to a public realm that feels underutilized—a space where pedestrian flows are more peripheral than integrative. The facade of the Alban Tower, articulated with materials that are both foreign and technologically advanced, tries to introduce a dialogue between local architectural vernaculars and the global language of high-rise design. This interplay is critical, as it reflects on the tower's capacity to either alienate or engage the citizenry. The choice of facade materials and the design approach can create a visual dissonance that either intrigues or repels, thereby influencing the building's acceptance within the local cultural milieu. Hence, the Alban Tower stands as a critical inquiry into how high-rises can embody the tension between being a landmark that aspires to global standards and a structure deeply embedded in the local context. The balance it seeks to maintain between innovation and alienation is a

potent reminder of the complex role architecture plays in shaping not just cityscapes but also social spaces within the urban framework. As a result, by analyzing the contextualized built example, we can deduct at least three main factors which can cause the emergence of non-places in high-rises: positioning in the urban fabric (impact on existent granularity), structural development, as well as façade design and used materials.
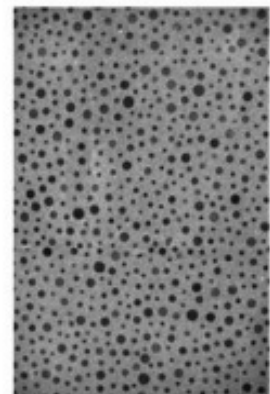

Figure 11 - Alban Tower Tirana - Non-place of ground level

Closed Ground Floor
due to **Structure & Location**

All concrete walls – No columns
due to **Challenge & Individuality**

Murano Glass Façade
due to **Individuality**

Figure 12 - Alban Tower Tirana - Analysis by author – Original images are courtesy of Archea Associati

CASE STUDY 2: TIRANA GARDEN BUILDING

The Tirana Garden Building, through its pronounced deviation from established masterplans and its considerable scale, serves as a vivid exemplar of how the misalignment of building scale with its urban context can engender what urban theorists' term 'non-places' within high-rise urban developments. On the other hand, on-site monitoring suggests that buildings which starkly contrast with the scale and planning strategy of their environments do not merely stand in isolation; they actively reshape the surrounding urban experience. The imposing scale and extended linear form of the Tirana Garden Building carve out urban corridors—expansive tracts of space dominated by the structure's presence, which contest the city's established fabric. These corridors, while architecturally commanding, typically lack the essential elements of human-scale interaction and accessibility that are vital for a thriving urban existence. The edifice's vast scale and its separation from other urban constructs not only cast a shadow over adjacent areas but also obstruct the organic flow of pedestrian and vehicular movement, culminating in a diminished level of public engagement and interaction at the pedestrian level. This positioning disrupts uniform urban development and may create a 'blocking node' within the urban fabric, impeding both physical and visual connectivity. This severance is aggravated by the design of the building's ground floor which, lacking sufficient permeability with one open passage across a linear expansion of more than 90 meters, fails to promote public access or interaction, thereby facilitating the transformation of the area into a non-place. This scenario concerning the Tirana Garden Building accentuates the imperative for urban design strategies that prioritize considerations of scale, placement, and activation of the ground level in high-rise constructions in relation to proportions. To alleviate the detrimental impacts and to foster more inclusive urban environments, it is crucial to implement design solutions that enhance ground floor permeability and integration, advocating for active frontages that encourage public interaction and contribute to the creation of a sense of place.

Figure 13 - Tirana Garden Building - Bird-Eye View

Figure 14 - Tirana Garden Building - images from Google Earth

SUCCESSFUL PRECEDENTS

The challenge before us is clear: architects and urban planners must consider reimagining the high-rise, not as an isolated spire, but as a node of activity, a connector rather than a divider. This reimagining is not merely architectural; it is a reclaiming of urban space, a statement of inclusivity and vibrancy in the face of modern urbanization's challenges. These "archi-puncture"-al fungi, when performing in high levels, have the capabilities to create a new connection web as an additive layer to the city's evaluative readability. Yet, the solution lies within reach. The ground floor, when envisioned as a canvas of mixed-use, becomes a vibrant agora, a place of exchange and interaction. Retail, leisure, and community services bring life into these structures, anchoring them firmly within the urban narrative (Jacobs, 1961). Within the context of spaces that defy traditional definitions and the ascendancy of architectural structures toward the sky, the oeuvre of Renzo Piano emerges as a subject of profound inquiry. His approach to the design of the ground level is marked by a distinctive openness and clarity, creating a seamless interface between the built and natural environments. This harmonious fusion is a testament to the symbiotic relationship between architectural form and its surroundings, as vividly demonstrated in the Eighty-Seven Park endeavor, where the transparent ground floor merges the external park with the interior space of the From a functional perspective, Piano's architectural language promotes enhanced accessibility through the strategic placement of service components, such as elevators, on the building's facade. This facilitates not only an unobstructed and adaptable interior layout but also underscores his dedication to public inclusiveness. This commitment is palpable in the Jerome L. Greene Science Center at Columbia University, where the ground level, embracing a Wellness Center, an Education Lab, and commercial venues, is openly accessible, thereby knitting the fabric of the community with the institutional (Piano, 2018). Furthermore, Piano's collaborative efforts with Skidmore, Owings & Merrill, alongside the municipal authorities to craft zoning regulations for the "Special Manhattanville Mixed Use District," highlight the emphasis on public accessibility within urban development projects. Such strategic design interventions underline the integration of Piano's architectural practice with sustainable and inclusive urbanism, in an age characterized by the vertical expansion of cities. In doing so, we do not merely design buildings; we sculpt the urban experience, fostering spaces that are not only inhabited but lived, celebrated, and cherished
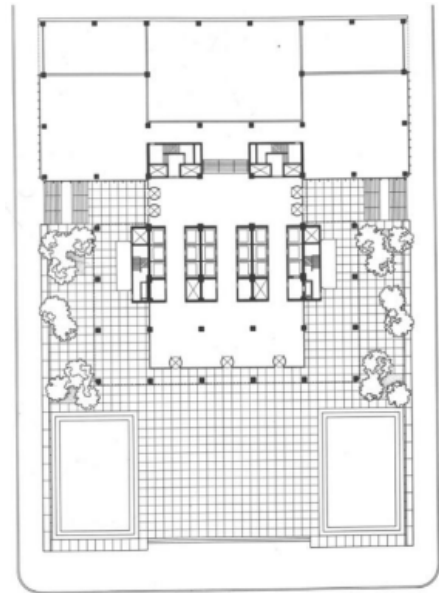

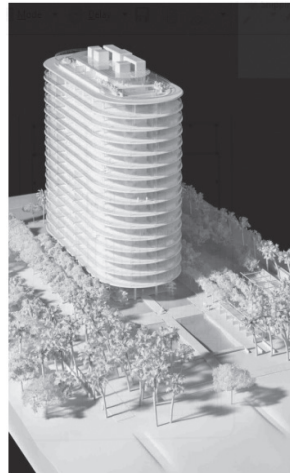**Figure 15** - AThe iconic Seagram Building – Mies van der Rohe. Ground floor and Plaza

Figure 16 - Model (1) & Construction image (2) on ground level. Eighty-Seven Park by Renzo Piano. Image

Figure 19. General Plan. Columbia University Campus Masterplan by Renzo Piano in collaboration with SOM. Image courtesy of RPBW
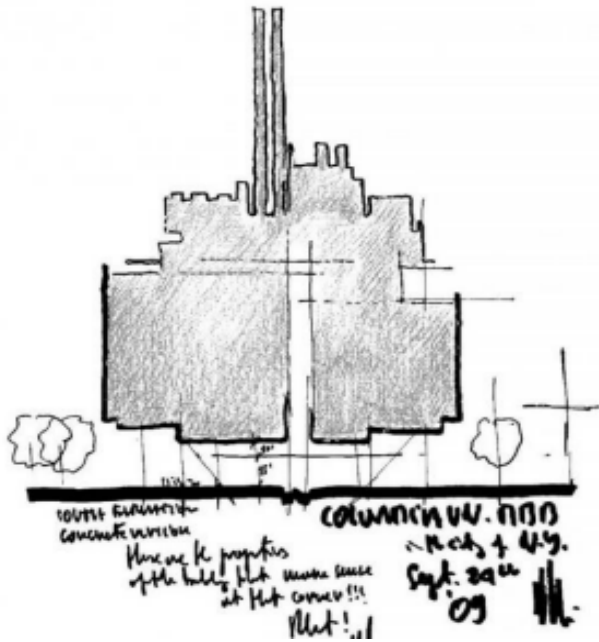

Figure 17. Sketch. Jerome L. Greene Science Center integrated in the Columbia University Campus Masterplan by Renzo Piano in collaboration with SOM. Image courtesy of RPBW courtesy of RPBW
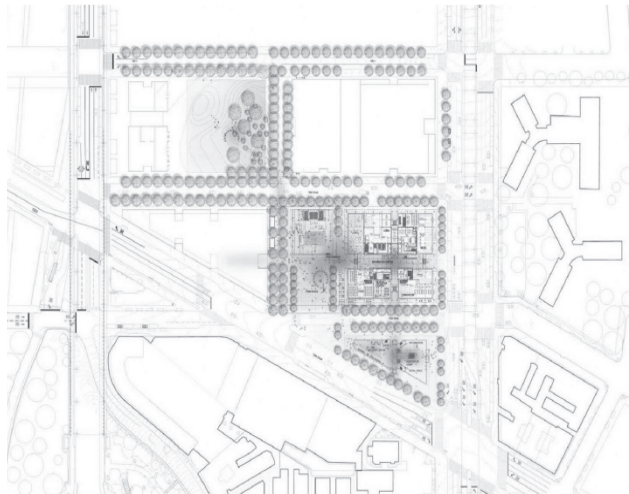
HOLISTIC QUANTITATIVE EVALUATION

The interdisciplinary approach related to the phenomenon of non-places emergence makes it difficult to objectively evaluate existing buildings or new proposals based only on quantitative inputs and outputs. Nevertheless, algorithms can be partially introduced to analyze buildings' attributes in way to automate, facilitate and further optimize decision-making techniques to minimize the impact of non-places emergence around the city or its parts. Taking hints from known Generative Design approaches that are now used world-wide to analyze and evaluate decision-making scenarios regarding urban planning, we tried to test as a first step, an algorithm that evaluates existing high-rises in relation to their proximities around Tirana's city-center. The algorithm employed in this study aims to evaluate and improve the walkability score and integration of high-rise developments within Tirana's urban center. By leveraging computational design and data-driven analysis,
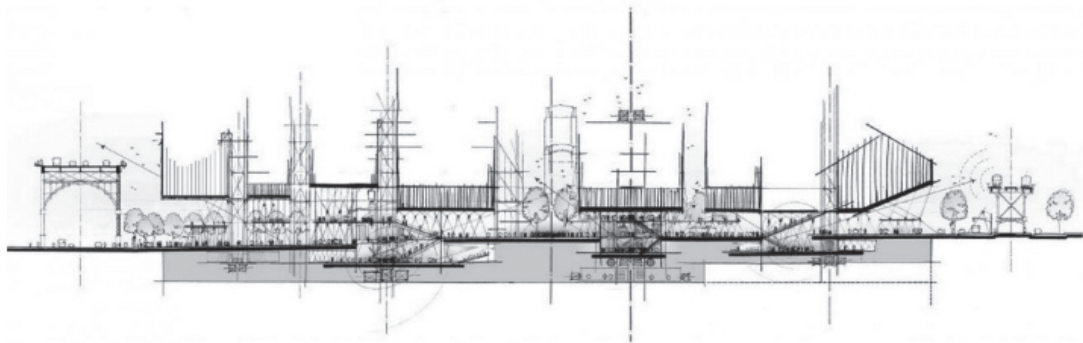

Figure 18. Section. Columbia University Campus Masterplan by Renzo Piano in collaboration with SOM. Image courtesy of RPBW.

the algorithm provides insights into urban dynamics and helps propose more sustainable urban design scenarios. A city's walkability score is influenced by several factors, including:

Sidewalk Infrastructure: The presence, width, and condition of sidewalks and pedestrian paths.

Safety: Low crime rates, well-lit streets, safe crossings, and pedestrian-friendly traffic signals.

Proximity to Amenities: Accessibility to essential services and amenities such as grocery stores, schools, parks, restaurants, and public transit

Street Connectivity: A grid-like street network that reduces walking distances and increases route options.

Density: Higher population density and mixed-use development that places residential, commercial,

and recreational spaces close together.

Aesthetic and Environmental Quality: Presence of green spaces, trees, clean streets, and visually

appealing architecture.

Traffic and Speed Limits: Lower traffic volumes and speed limits that enhance pedestrian safety.

Public Transportation: Availability and convenience of public transit options that complement walking.

Due to the lack of metadata for all the above mentioned and more, the comparative methodology we used considers street connectivity, proximity to amenities (only mapped ones), traffic and speed limits, public transportation as well as approximate density for urban areas extending to a radius of 50 meters from each vertical development.

The primary purpose of the algorithm is to:

Assess the walkability score of high-rise developments.

Analyze spatial relationships between buildings and their surroundings.

Identify non-places and areas with low walkability.

Components of the Algorithm

Data Collection and Processing:

Spatial Data: Extracted from Open Street Map (OSM) and other sources to create a detailed 3D model of Tirana's city center.

Building Permits and Demographic Data: Obtained from the Institute of Statistics (INSTAT)

to understand building densities and population trends.

Metadata Integration: Additional data such as traffic volumes, public amenities, and sidewalk

conditions are integrated into the model.

3D Model Creation:

Rhinoceros 3D and Grasshopper: Used to create a digital twin of the city center, including detailed representations of buildings, streets, and other urban elements.

Geometric Objects: Generated from the spatial data and enhanced with metadata describing their attributes.

3. Algorithmic Analysis:

Walkability Score Calculation: Evaluates the pedestrian-friendliness of areas based on factors like sidewalk infrastructure, proximity to amenities, and traffic conditions.

Iterative Scenario Testing: Simulates different development scenarios by adjusting parameters such as building height, density, and distance from amenities.

Visualization: Generates maps, graphs, and diagrams to depict the spatial impacts of high-rise developments.

Workflow of the Algorithm

1. Model Setup:

Import spatial data from OSM and other sources into Rhinoceros 3D.

Use Grasshopper to generate geometric objects representing buildings, streets, and other urban elements.

Integrate metadata into the 3D model using tools like Urbano and Colibri.

2. Data Processing:

Clean and preprocess the spatial data to ensure accuracy and completeness.

Assign metadata to geometric objects, including information on sidewalks, traffic volumes, and public amenities.

3. Walkability Score Calculation:

Evaluate the presence, width, and condition of sidewalks.

Assess the proximity to essential services and amenities.

Analyze street connectivity and intersection density.

Consider traffic volumes, speed limits, and public transportation availability.

Calculate the walkability score for each high-rise development and its surrounding area.

4. Iterative Scenario Testing (Figure 20, 21):

Simulate various urban design scenarios by adjusting parameters such as building height and density.

Evaluate the impact of each scenario on the walkability score and spatial relationships.

Identify scenarios that improve walkability and integration with the urban fabric.

5. Visualization and Interpretation:

Generate visual outputs, including maps, graphs, and diagrams, to represent the data and findings.

Use these visualizations to communicate the spatial impacts of high-rise developments and propose design improvements

Application and Impact

The algorithm's application in this study has several significant impacts:

Identification of Non-Places: The algorithm identifies areas with low walkability scores, indicating the presence of non-places. These areas are characterized by poor pedestrian infrastructure, limited access to amenities, and high traffic volumes.

Impact Assessment: The algorithm assesses the spatial impacts of high-rise developments, revealing how isolated

developments can disrupt the urban fabric and create non-places.

Design Recommendations: Based on the findings, the algorithm proposes design improvements to enhance walkability and integration. These recommendations include better sidewalk infrastructure, improved connectivity, and increased proximity to amenities.

- Policy Implications: The algorithm's outputs inform urban planning policies, advocating for the integration of computational tools to optimize urban development strategies.

After testing the performance of the algorithm in this simple case study, we came to the conclusion that decision-making based on iterative processes' evaluation can further contribute to the social sustainability discourse of new urban developments in Tirana. These computational techniques can be implemented in preas well as post-planning scenarios once optimized and consolidated.

The limitations in the existing metadata shall be updated and enrich further research and policy considerations.

In the meanwhile, we are working on optimizing as well as enlarging the scope of action of our algorithms in the specific context of Tirana, by implementing evolutionary solving algorithms in existent equations. Some workshops are being ideated together with the students of Polis University, in way to contribute in enlarging the availability of these metadata for Tirana.

To enhance the transparency and reproducibility of this study, all data sources, analytical frameworks, and computational models are documented and available upon request

CONCLUSIONS & FURTHER RECOMMENDATIONS

The transformative impact of skyscraper development on Tirana's urban landscape is both profound and emblematic of a seismic shift from conventional urban planning paradigms to an era defined by supermodernity. In a state of ongoing transition imposed by the historical circumstances, post-socialist Tirana quickly embraced hyper-verticalization in this rush for modern life. This transition, marked by rapid vertical
growth, is driven by a nexus of political ambitions and economic incentives. The findings of this research reveal critical insights into the consequences and opportunities presented by this urban evolution.

This synthesis distills the essence of the original argument, presenting a visionary critique and a call to action for the design of high-rise buildings, particularly their ground floors, in the urban landscape of Tirana. It emphasizes the necessity of integrating these structures into the city's social and cultural fabric to prevent them from becoming 'non-places'.

One of the study's most significant revelations is the emergence of non-places—spaces devoid of cultural significance and social engagement. These areas, birthed from the city's rapid and often unplanned vertical expansion, are characterized by anonymity and transience, failing to foster a sense of community or identity.

Tirana's post-socialist urban development strategies, when critically evaluated, highlight how these non-places stem from the disjointed and isolated nature of high-rise developments that do not integrate seamlessly with the surrounding urban fabric.

The utilization of an algorithm to dissect and visualize the spatial impacts of high-rise developments introduces a novel approach in urban studies. Integrated within the Grasshopper platform, this algorithm enables the creation of a digital twin of Tirana's city center, facilitating detailed analysis and risk assessment. The spatial distribution and characteristics of non-places are revealed through compelling visual outputs—graphs, maps, and images—that are pivotal in communicating the study's findings and advocating for more sustainable and socially cohesive urban design scenarios

The algorithmic analysis underscores the urgent need to re-evaluate current planning policies. The evidence suggests that existing policies have often favored rapid development and economic gains over social cohesion and cultural significance. There is a clear advocacy for a shift towards planning strategies that incorporate computational tools to better assess and mitigate the risks associated with high-rise developments.

Such strategies would emphasize inclusivity, connectivity, and the integration of high-rises into the broader urban context.

The research also elucidates the socio-economic implications of the current urban development trajectory.
While the influx of investment in high-rise developments has spurred economic growth, it has also introduced significant challenges. A substantial number of vacant apartments indicate a potential oversupply and market saturation, driven by speculative investments and the proliferation of short-term rentals like AirBnBs. This phenomenon mirrors global trends seen in New York's Billionaires' Row. The focus on transient accommodations over permanent housing exacerbates the creation of non-places, undermining community cohesion.

The findings suggest that integrating computational tools, such as the algorithm employed in this study, can significantly enhance urban planning practices. These tools offer a data-driven approach to evaluating the spatial and social impacts of urban developments, enabling planners to make more informed decisions. The study demonstrates how computational techniques can simulate and assess different development scenarios, optimizing urban growth to promote sustainability and social cohesion.

In an era where the vertical expansion of cities is both inevitable and indicative of broader socio-political dynamics, the integration of skyscraper development within the urban fabric must be handled with a nuanced

COMPUTATIONAL URBAN PLANNING CAN AID **HOLISTIC CONSIDERATION OF ATTRIBUTES** OF THE BUILDING ENVIRONMENT
PRE OR *POST* PLANNING PROCESSES

AMENITIES PROXIMITY
SCORE ANALYSIS

SHORTEST PATH EVALUATION
SCORE ANALYSIS

DEAD ENDS PROXIMITIES
NUMERICAL EVALUATION

BEST BUILDING SCENARIO
NUMERICAL EVALUATION
OF NEVRALGIC NON-ACTIVE
INFRASTRUCTURES → Archipunctures

Evolutionary solving Optimization

LIMITATIONS & FURTHER RESEARCH ON:
EXISTING METADATA FOR TIRANA

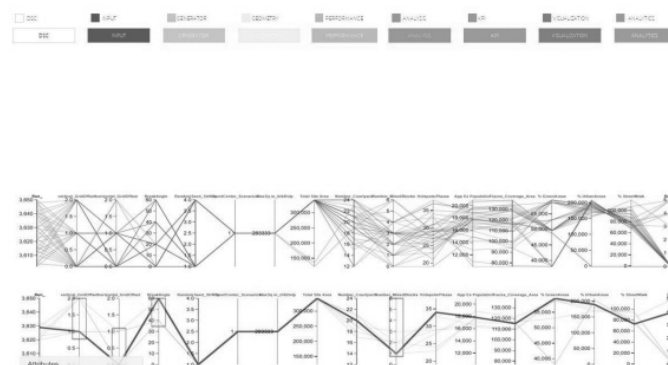**Figure 20.** Iterative Scenario of Tirana's City Center - Analysis of proximity/amenities

Figure 21. Evaluation Space of Scenarios based on output scores - GeD

and balanced approach. This research underscores the need for policies that not only accommodate growth but also preserve and enhance the social and cultural vibrancy of urban spaces. The use of advanced computational tools in urban planning provides a pathway towards achieving these goals, ensuring that the evolution of cities like Tirana leads to sustainable, inclusive, and cohesive urban environments.

Recommendations for Future Urban Development

Based on the findings, several recommendations for future urban development in Tirana and similar post-socialist cities are proposed:

Adopting a balanced approach to development that aligns global aspirations with local needs.

Ensuring high-rise developments are integrated into the existing urban fabric to avoid creating isolated non-places.

Utilizing computational tools for comprehensive risk assessment and decision-making in urban planning.

Promoting inclusivity and connectivity in urban design to foster a sense of community and identity.

Addressing the surplus of vacant properties through policies that encourage permanent residency and affordable housing.

Policy Framework Suggestions for Skyscrapers' Development Based on the deductions, a structured policy framework to guide skyscraper development, integrating walkability metrics:

Comprehensive Planning: - Develop a new dedicated master plan for skyscraper integration within existing dense urban contexts that incorporates walkability as a key criterion. - Conduct walkability assessments for all proposed skyscraper projects.

Regulatory Requirements: - Implement zoning regulations that mandate the inclusion of pedestrian-friendly infrastructure in skyscraper projects. - Require developers to submit walkability improvement plans as part of their development proposals.

Incentives for Developers: - Offer incentives, such as density bonuses or tax breaks, for projects that significantly enhance walkability. - Provide grants or subsidies for incorporating green spaces and public amenities within skyscraper developments.

Community Engagement: - Engage with local communities to identify specific walkability needs and preferences. - Involve residents in the planning process to ensure that skyscraper developments align with community goals.

Monitoring and Evaluation: - Establish a monitoring system to regularly evaluate the walkability of areas around skyscrapers. - Use data from walkability assessments to make ongoing improvements and updates to planning policies

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Urban Microclimate In Relation To Urbaniza-Tion And Urban Greening Of Tirana City

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Abstract
Urban microclimates comprise indicators that affect local climate and environmental conditions, impacting public health and quality of life. Given the expansion of cities, population growth, varied building types, informal urbanization, increased transportation, and reduced green spaces, questions arise about the relationship between microclimates, urban green spaces, and urbanization forms. Are these microclimate indicators and their influencing factors integrated into the urban planning process? Issues like greenhouse gas emissions, rising temperatures, lower air humidity, and inadequate urban greenery capacity suggest the need for a comprehensive approach.

The primary challenge we address in our methodological framework is to identify the interconnected relationships between urban greening, urbanization, and microclimate indicators. Using a GIS-based methodology combined with field observation, we aim to clarify these connections. This framework involves evaluating urban greenery within Tirana's administrative units, measuring microclimate indicators, and assessing pollutant discharge across different land cover types, while considering variations in building typologies and green spaces.

Preliminary results show significant differences in microclimate indicators across various locations within Tirana, with maximum temperature disparities of 6-8 degrees Celsius during the summer, air humidity variances of 25-30%, variations in solar radiation, and greenhouse gas emissions. Optimal microclimate conditions are found within green spaces. These early findings underscore the importance of incorporating urban microclimate indicators into urban planning, action plans, and short- and long-term strategies to foster sustainability and increase green areas in line with EU standards.

Future research will expand this topic by including additional indicators, drawing from the experiences of European cities that have installed green infrastructure to reduce atmospheric pollutants and improve urban microclimates. This study will highlight key findings on the relationships and effects of urban greenery and urbanization patterns on microclimate indicators, as well as offer strategies to mitigate environmental and public health impacts.

INTRODUCTION

The urban microclimate includes indicators that influence local climate and environmental conditions, affecting the health and quality of life of residents. Factors such as city expansion, population growth, urbanization, transportation, climate change, shifts in land use, and the reduction of urban greenery have significant environmental and health consequences. This is due to the increase in greenhouse gases, air temperature, changes in air humidity levels, and other microclimatic indicators. This study aims to answer research questions and analyze the connections between urbanization, urban greenery, and microclimate indicators to mitigate their impact on the environment and public health. Interest in the urban microclimate is growing, with architects, planners, environmentalists, and landscape specialists increasingly focusing on the topic. However, microclimate indicators are still insufficiently integrated into the urban planning process. This study also seeks to explore correlations, balances, and the incorporation of these indicators in urban planning.

The subject of urban development and urbanization is prominent in global literature. For instance, Vinayak et al. (2022) observe that "expanded urban regions transform natural surfaces into urban areas, affecting various physical and biophysical properties, such as evapotranspiration, albedo, emissivity, anthropogenic heat flux, wind speed, and air pollution." These changes can alter both local and regional climates in the long term (Vinayak et al., 2022).

Our collected data, to be analyzed in the results chapter, reveal connections between urbanization, traffic congestion, and urban greenery in affecting carbon dioxide emissions, temperature, and humidity levels. Environmental conditions in Tirana, including rising temperatures, decreasing humidity, and pollution from multiple urbanization sources, are negatively impacting residents' quality of life. To assess whether urban greenery effectively reduces pollutants, we have gathered data on microclimate, greenery, and urbanization as key indicators.

The formation of urban heat islands, influenced by rising local temperatures, is documented by Geo Factsheet (1998): "Recent research on London's heat island suggests that high levels of air pollution reduce daytime temperatures by blocking solar radiation, yet trap heat at night within urban areas" (Geo Factsheet, 1998). Urban areas, particularly during summer, experience higher temperatures than rural areas due to factors like industrial activities, housing, and vehicular emissions that generate heat and pollution. Air pollution in urban areas also impedes the radiation process. Infrastructure materials such as concrete, glass, brick, and asphalt absorb substantial heat and release it slowly at night, impacting the urban microclimate. Additionally, evaporation and transpiration processes are higher in urban areas. Amer et al. (2023) explore the relationships between urban trees, their biomass as carbon stores, and their shading potential.

Research by Buyadi et al. (2013) on the effects of vegetation growth on land surface temperatures in urban areas finds a "strong negative correlation between land surface temperature and urbanization, indicating that vegetation helps reduce temperature" (Buyadi et al., 2013). The role of urban greening in mitigating urban heat islands is receiving increased attention. Vegetation affects microclimate conditions and human comfort by moderating temperature. "Green areas provide ecosystem services, including carbon sequestration, energy savings, and recreational value" (Gómez-Baggethun & Barton, 2013).

The release of carbon dioxide into the environment depends on industrial activities, traffic, and the level of vegetation cover. Reduced urban forests and other factors have increased atmospheric carbon concentrations over time. Fares (2017) notes, "The atmospheric concentration of carbon dioxide has increased dramatically since the start of the industrial revolution. From 280 ppm in 1870, the global average surpassed 400 ppm in 2013" (Fares, 2017).

Major global issues such as global warming, climate change, flooding, droughts, desertification, urban heat islands, and urbanization are affecting the current environment. Addressing these challenges requires collaboration among researchers and urban planners. Takebayashi & Masakazu (2020) define the urban heat island as a phenomenon where urban areas are significantly warmer than surrounding rural areas due to human activities.

International literature acknowledges that climate concerns and mitigation strategies are particularly relevant to existing building stocks. Winker & Rudolph-Cleff (2019) present Germany's approach, emphasizing that "urban development tools in established districts—with competing demands—are increasingly important in urban regeneration and planning". They highlight that for urban areas, "preserving cold-air areas, large open spaces, forested areas, connected parks, green spaces, rivers, open water bodies, artificial water surfaces, and large-scale retention areas are crucial design elements".

LITERATURE REVIEW

In recent years, architects, landscape planners, urban planners, and environmentalists have increasingly focused on studying and publishing about the impact of urbanization on the urban microclimate. Efforts have also been made to conduct comparative tests and create scenarios to identify factors such as land use changes, urban heat waves, and urban heat islands. Additionally, there has been some progress toward drafting specialized protocols. However, a review of the literature reveals disagreements, ambiguity, a lack of interdisciplinary cooperation, and challenges in gathering comprehensive information. Among the key suggestions regarding the urban microclimate is the connection between urbanization patterns and the greening of building facades, which helps mitigate the summer heat load.

METHODS

Our methodology integrates a multidisciplinary set of analytical techniques and data sources to explore the connections between microclimate parameters, urban greening, and urbanization in the city of Tirana. Initially, we acquired geographical data,

including administrative boundaries, land use, and structural units, from the State Authority for Geospatial Information (ASIG). This dataset forms the foundation for our spatial and statistical analysis.

The land use dataset provides detailed information on how land is distributed and utilized in different areas, which is crucial for identifying patterns of urbanization, conservation, and resource management. The structural unit's dataset offers insights into the number and types of buildings, as well as parameters like land use coefficients, building density which will be defined and used in later stages of the analysis to assess urban form and development patterns. Additionally, tree data, obtained from the National Agency of Planning Territory (AKPT) and the General Greening Directorate of Tirana Municipality, was integrated into our database. Any missing green space data identified from orthophoto was digitized and added, ensuring a complete representation of Tirana's urban greening.

Our research methodology emphasizes a combined use of spatial and statistical modeling, field measurements, and urban green infrastructure assessment to clarify the intricate relationships between these factors and microclimate dynamics in Tirana. We specifically assessed differences in microclimate indicators such as CO_2 concentration, temperature, and humidity across various urban settings, (including shaded areas, sunny spaces, and regions with varying levels of urban density and green coverage). Air pollution indicators were compared with national standards. Measurements were conducted using a Testo environmental instrument, collecting data at multiple locations while considering different building types, densities, and distances. This configuration accurately reflects the complex urban structure and green space distribution across Tirana.

We employed the Pandas library in Python to conduct correlation analyses between CO_2 concentration, temperature, and humidity in order to clarify their relationship. The data was further analyzed using ArcGIS 10.8, which was utilized to create visualizations and charts, mapping out spatial patterns and connections between land use, urban greening, and microclimate data. The ArcGIS platform is used to generate maps, land-use overlays, and proximity analyses to visually represent spatial patterns in urban greening and building density, while the Pandas library in Python assists in data manipulation and correlation analysis on the tabular data. This combination of tools provides comprehensive insights drawn from both spatial and tabular data sources, facilitating well-informed urban planning and resource management decisions.

By going beyond descriptive analysis, this methodology leverages empirical research, practical field measurements, and data visualization to offer actionable insights. Our ultimate objective is to support urban resilience and sustainability by integrating evidence-based strategies into urban greening initiatives, while mitigating the adverse effects of urban microclimates.

RESULTS AND DISCUSSION

Urbanization and trends of microclimate indicators

In this result the focus will be on the relationship with urbanization. Compared to the year 1990, the city of Tirana now has a population about three times larger and is located on a surface area of 41.8 km2. One of the challenges that the city continues to face is finding ways to mitigate the impacts of rapid and chaotic informal development, without careful spatial planning and disregard for urban planning laws. This development has led to the loss of green spaces and increased air pollution. The indicators of microclimate are crucial in assessing the impact of mistakes on territorial planning, cementing, informal urbanization, traffic, relationships with urban greenery, changes that modify local climates, environmental conditions, and their influence on the quality of life and population health. The worst case of urban informality in the city of Tirana took place during the period of 1992-1997, with the construction of numerous slums (kjoska) in the centre and suburbs of the city, when 33% of the green surfaces were seriously damaged or eliminated (figure 1 and 2). The construction impacted also the Lana River, which was affected by the pollution and lost its function. Furthermore, after the demolition of the slums, thousands of tons of inert material were transported, resulting in significant financial loss.

Figure 1. Constructions along the Lana River 1992-1997

Figure 2. Lana River, 2014

In the publication ALBANIA 2030 Manifesto, after a detailed analysis of development and planning, the authors, architects and urban planners, recommend that "a national spatial plan, it should be connected with other plans on a smaller scale with spatial importance for the country, which elaborate in more detail with sectoral issues such as: infrastructure plans, land use plans, sustainable development, environmental plans, social-economic development plans, etc. (Aliaj, Janku, Allkja, Dhamo, 2014). First of all, from this point of view, enough data that we have analyzed in this article strengthen our opinion that the indicators of the urban microclimate are influenced by urban forms, distances between buildings, building design, infrastructure, land use changes, human activities, density, building materials, which absorb and release the heat of the atmosphere, urban transport, which discharges carbon dioxide as a greenhouse gas with a fundamental impact on global warming. In cities, temperatures are higher, compared to rural areas around them, as the effects of land use change replace the natural cover with layers that absorb solar energy and change the temperature of the environment. Urban greening and its role in the urban microclimate cannot be reduced as a goal in itself, but as a complex, harmonious and multi-purpose relationship with the city, community, public health, relaxation, shading, reduction of environmental pollution and mitigation of climate change. Through direct temperature measurements on March 2024, during midday, at several points on the asphalt on "Barikadave" street, the air temperature was within the limits of 29.1-32.4 degrees Celsius and the air humidity was 29.5%. While at a distance of 100 m below the pines of the flower garden, 25.7-27.8 degrees Celsius and humidity 60.9 -71 %. The same difference is found in this comparison in other points of Tirana measured on the same day. The temperature varies from 16.2 – 18.4 degrees Celsius at the Grand Park of Tirana at midday, regarding to the greenery in this area. The urban microclimate significantly impacts the energy consumption of buildings for cooling during heatwave conditions.

In areas with high density buildings or a little distance between them, and without corridors to allow air circulation, the concentration of CO2 was significantly high. This was particularly observed at "Liqeni i Thate". Additionally, the temperature ranged from 16.3 to 20.3 degrees Celsius due to the presence of vegetation, while the concentration of CO_2 varied between 367 and 371 ppm (figure 3). However, the measured points where there is a high density of buildings but there are distances between the buildings the temperature varies from 18.4-20.4 degrees Celsius.

In these areas was also the presence of vegetation. At 20.4 degrees Celsius the temperature was measured on the asphalt. In the points where there is a high density of buildings but there are no air circulation corridors, the carbon points vary from 350-383 ppm, the temperature 18-21.1 degrees Celsius and the humidity 42.2-45%. The highest levels of carbon are observed in critical traffic areas, which vary from 470 ppm to 506 ppm. The temperature on the asphalt varies from 22 - 24 degrees Celsius. The humidity ranges from 33.6%- 40.7%. There is a notable correlation between urbanization and microclimate variables.

The study by Chaosu Li, "Urban Building Energy Consumption/Microclimate Tools and Models" (2018), examines the relationship between urbanization and microclimate by introducing models for urban microclimates. The models produce outputs such as energy heat balance generated by buildings and air temperature. They rely on various data inputs related to urban and building design, including number of floors, building materials, reflectivity, cover type, soil condition, heat generation and transfer by buildings, roof material or cover type, as well as meteorological factors such as solar radiation, regional temperature, humidity, and wind velocity (Tanimoto et al., 2003).

A case study was also conducted to assess the microclimatic effects of urbanization in a metropolitan region of India, projecting changes up to the year 2050. This study integrated land use and land cover models for 2018 and 2050, while keeping meteorological conditions consistent (Vinayak B, Lee H, Gedam S, Latha R).

By comparing simulated outcomes to identify potential adverse microclimatic effects arising from future urban development under three different scenarios, the authors indicate that, without implementing a mitigation strategy, urban centers could experience a temperature increase of 4.9–5.5 degrees Celsius by 2050.

However, this increase could be reduced by 1–1.7 degrees Celsius if mitigation strategies are applied. The authors further recommend that, in the future, the integration of various gridded urban parameters such as building height, anthropogenic heat flux, and air pollutants, which affect the local climate will be essential.
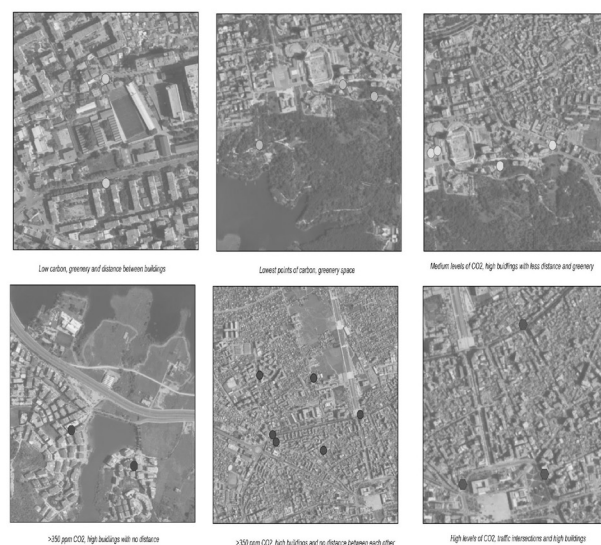

Figure 3. Levels of CO₂ in different areas of Tirana (lowest points at the park)

Air pollution and urbanization factors

However, air quality has improved in comparison to 1990 in several indicators, but it still remains a persistent problem. The main cause of CO_2 emissions is both public and private transportation, the high number of vehicles, the flow of traffic without proper management, and the urbanization typology. The number of critical points, particularly for intersections/interchanges at junctions, major intersections of the city roads, is very high, indicating a high concentration of carbon dioxide emissions. The measurements we conducted in the months of February and March 2024 in the city of Tirana confirm the correlation between carbon emissions, air temperature, and air humidity with traffic flow, land coverage, and urbanization patterns (figure 4).

The data show that in the months of February and March, out of 50 measuring points, in 26 of them the concentration of carbon dioxide is above the allowed standard (350 ppm). The highest concentration is mainly in the center of Tirana, the ring of Tirana (intersection of Don Bosco and Zogu Zi), "Elbasani" street and "Barikadave" street at urban bus stations. While the concentration is the lowest in the Great Park of Tirana, of 297 ppm, due to its urban greenery and lack of cars (figure 3). In other measurements of the concentration of carbon dioxide in Tirana, it has been found that in the summer months, which are characterized by a drastic decrease in rainfall and severe drought, the differences in the concentration of carbon dioxide, temperature and air humidity between the measurement points are greater sensitive and has the highest impacts. So, the measurements at "Tirana International Hotel", shows that the amount of CO_2 is on average 500 ppm; relative humidity 22% and temperature 38 degrees Celsius. (Lushaj, Aliaj, 2018).

The high level of carbon dioxide in the city of Tirana is primarily caused by the large number of resident vehicles, the inflow and outflow of private and public vehicles from other areas, the dominance of oil-powered vehicles, a significant number of old vehicles, chaotic traffic, congestion in the underpass passages and lack of green spaces. At the national level, in 2023, the total number of motor vehicles is 28 % higher than in 2020, of which 81 % are automobiles. The Municipality of Tirana possesses 34.8 % of the total number of vehicles of all types and 31 % of automobiles of country (DSHTRRR,2023). About 80 % of total number are automobiles, over 56% are over 15 years old, and 81 % run on powered by oil contributing to carbon dioxide emissions and other pollutants. In recent years, the Municipality of Tirana has introduced the use of around 1500 electric and another hybrid vehicles.

In Administrative Unit 9, located north of the National Museum, residential spaces lack green surfaces, and the area experiences high traffic flow. This contributes to elevated temperatures (figure 5). Tirana features a diverse range of housing typologies. In Unit 9, which covers approximately 283 hectares, building types are distributed as follows: individual/connected/linear/tower structures occupy 21% of the area; linear/perimeter/tower structures, 52%; perimeter structures, 24%; and tower structures, 3%. These building typologies have a direct impact on microclimate indicators.

At the measurement points on March 14-15, humidity in these areas ranged from 32.9% to 52.9%, while temperatures varied from 17.9 to 22.9 degrees Celsius. It is noteworthy that some points were measured in shaded areas or near trees, while others were taken on asphalt or at intersections. The highest concentration of carbon dioxide (472 ppm) was recorded on the sidewalk behind the museum, attributed to the high volume of car traffic in this area.
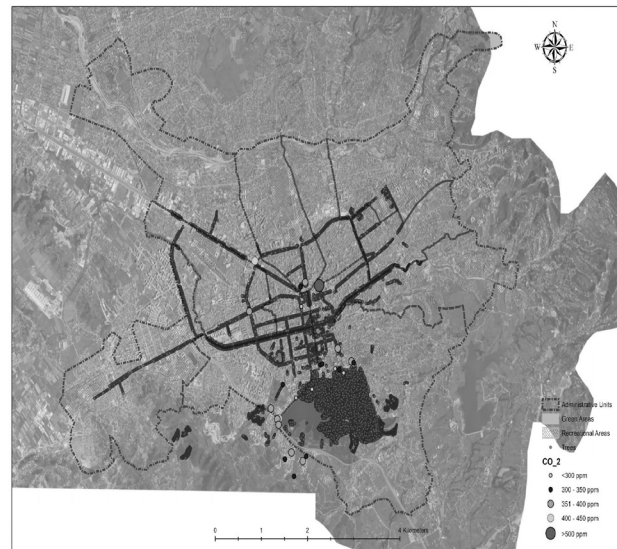

Figure 4. The levels of CO_2 on field measurements

Figure 5. Correlation of high CO_2, building typology and temperature

The correlation coefficient between CO_2 levels and temperature is approximately -0.372, indicating a moderate negative correlation. While correlation coefficient between CO_2 levels and humidity is approximately -0.266, indicating a weak negative correlation. While on in March 2024, on the all location the temperature increases, humidity is low. This suggests that as temperature increases, humidity is low.

Urban Greening and its role in improving microclimate

In the context of the spatial expansion of the city of Tirana and the population growth of around 682,187 thousand inhabitants,

the projections of climate change with increasing temperatures and decreasing precipitation levels will also have further impacts on microclimate indicators and the population.

The maximum average air temperature in Tirana in 2020 was 2.6 degrees Celsius higher than the 30-year average from 1961 to 1990, while in 2021 it was +2.3 degrees. Unfortunately, the reports on urban development indicate poor levels of intensity and typology of buildings, as well as a lack of balance between concrete and green spaces. Urban greening and traffic management for reducing greenhouse gas emissions and mitigating environmental temperature receive special attention. In the city of Tirana, throughout the past 33 years, which marked the period of transition, there has been a rapid and chaotic urbanization, accompanied by a reduction in green spaces for residents, ecological corridors, and the release of greenhouse gases into the atmosphere. The built-up area covers 940 hectares from the last data updated. Currently in the Tirana city there is only 3.5 m2 of green space per inhabitant (figure 6). There is a lack of green space referring to build up area.

Urban greening is a key factor for sustainable urban development and as part of urban planning in cities and inhabited centers. Greenery in urban areas, through transpiration, releases water vapor, creating a soil-plant-air relationship that increases air humidity, reduces temperature, and cools the urban environment, improving microclimate and urban city cooling. Based on the measurements taken on March 29, 2024, at two specific points near the "Zogu i Zi", the air humidity was recorded as 34.2% in sunlight and 46.6% in shade. In their publication, the authors state that land use transformation is a common occurrence in cities worldwide (Gaitani et al., 2011), which results in increased intensity and decreased frequency of precipitation, leading to urban flood hazards (Lal et al., 2020) (Upreti M., Kumar A., 2024).

Urban greenery plays a distinct role in public health. In 2019, researchers from the WHO and the University of Colorado discovered that for every 0.1 increase in the normalized vegetation index within a 500 square meter inhabited area, premature mortality decreased by 4%. This is attributed to urban greening, improvement in environmental and living conditions, as well as a reduction in air pollution (Lushaj, Muharremaj, 2018). The greening of European cities has increased by 38% during the past 25 years. Air pollution is associated with heavy traffic and the reduction of green surfaces. In the year 1990, the city of Tirana had an average of 12.5 m2 of green space. From 1991 there is an increasing trend of green spaces being covered with concrete.

The expansion of green areas, including urban forests, parks, gardens, tree planting, rooftop gardens, vertical greening, urban agriculture, and other forms of greening, should remain a significant objective in Tirana's urban greening efforts. Although the Great Park of Tirana's Lake, with its 159 hectares of forested area, is the largest green space in Tirana and regulates the microclimate, Tirana needs to expand urban greening in its public open spaces and in new areas of urban expansion.

At eight critical traffic congestion points, carbon content

Figure 6. Distribution of green space in the city of Tirana

Figure 7. Green spaces around critical traffic congestion points within 1km2 area

ranged from 417 to 507 ppm, accompanied by high temperatures and low air humidity (figure 7). The measurement points included Kamza and Kombinati Overpass, Karl Topia Square, "21 December", the former "Train Station" and the intersection of "Dibra Road" and "Barrikadave" Road. Using GIS, we assessed the amount of vegetation cover for a 1 km² area at each point, which included 36 hectares of green spaces and fruit trees in urban gardens (an average of 4.5 hectares per km²). By leveraging GIS data to measure green surface area and tree density alongside critical environmental factors like carbon content, temperature, and humidity at traffic congestion points, urban planners can gain valuable insights into the efficacy of urban greening initiatives. This data allows decision-makers to identify areas most in need of intervention and prioritize efforts to improve urban microclimates. By strategically implementing green infrastructure, such as increasing green spaces and tree canopy coverage, cities can effectively mitigate pollution, reduce the urban heat island effect, and create healthier, more livable environments for residents.

Inclusion of microclimate indicators in Urban Planning

The challenges related to integrating microclimate knowledge into urban planning over the past decade have been extensively addressed in numerous published works. The inclusion of environmental indicators in urban planning is increasingly seen as essential for designing public spaces, enhancing urban greening, guiding urbanization, and improving quality-of-life parameters. Although environmental aspects of microclimates—such as the effects of urban heat islands, air quality, temperature, humidity, wind, and other microclimate conditions—are acknowledged in studies, their practical use in planning remains limited. This limitation arises from the lack of a unified protocol that facilitates collaboration between designers, architects, environmentalists, meteorologists, and urban planners.

Mills underscores the importance of embedding environmental goals into urban plans across different levels of governance. He emphasizes the need for applied climatology, which would enable urban development decisions to account for the relationship between design choices and climate outcomes. For this integration to succeed, a suitable form of climatological knowledge must be incorporated into urban planning processes (Ravnikar Z, et al., 2023). Although Spain and Slovenia have developed protocols for collecting microclimate data—with a primary focus on assessing roads in relation to microclimate conditions and exploring the potential of the collected data for urban planning—debates, misunderstandings, and limited expansion of these methods persist. In Albania, certain microclimate elements are considered in urban planning, but the integration remains in its early stages.

However, the microclimate is not yet a fully sustainable and controlled system in urban areas through the analysis and implementation of measures aimed at improving the quality of life. When examining other impacts, it is noted that extreme weather conditions can cause microclimates to quickly exceed typical boundaries. For instance, heat waves can significantly raise microclimate temperatures, resulting in detrimental effects (Mislan, 2008). Other studies suggest that "the greening of inner courtyards creates an attractive residential environment" that improves urban microclimates, reduces urban heat islands, and retains water. Additionally, incorporating water features such as playgrounds and fountains in public spaces offers further cooling benefits (Einker M, Rudolph A, 2019).

Globally, to reduce the impacts of climate change and improve urban microclimates, efforts focus on green city initiatives, including greening urban spaces and buildings with green roofs and walls. Sustainable building designs and urban forms aim to mitigate the adverse effects of microclimates.

At the core of green city planning is the goal of cooling - mitigating heat waves and reducing the formation of urban heat islands. Trees and grass play a crucial role in cooling urban areas. Landscape designers should select tree species that absorb more pollution and provide extensive coverage, ideally matching the height of buildings. According to Richter, "Forest ecosystems effectively buffer climate extremes and

Figure 8. Vertical greening of the Tirana building, 2024
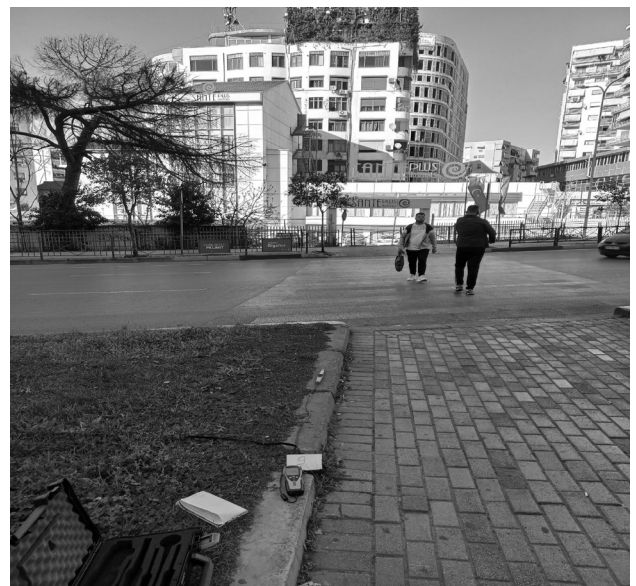

Figure 9. Green roof Tirana

mitigate climate change effects below the canopy, creating a distinct microclimate with significant temperature differences between ambient air and the area within and below the canopy. Globally, understory temperatures in forests have been found to be, on average, 1.7 ± 0.3 degrees Celsius cooler (mean) and up to 4.1 ± 0.5 degrees Celsius cooler (maximum) than ambient temperatures—greater than the global warming observed over the past century."

What Tirana needs, both now and in the future, is the integration of microclimate indicators in urban planning, greater collaboration among key stakeholders, the expansion of green spaces, and the creation of a consolidated database of essential data. A national-level in-depth study is required, one that unites institutions, environmental and planning agencies, expertise, policymakers, and decision-makers in developing a long-term strategy for the "effects of urban greening." This strategy should aim to achieve EU green space standards per

capita. Additionally, policies related to transportation should be reviewed to promote the expansion of alternative transport modes and the gradual reduction of diesel and gasoline vehicles. There should also be standardized inclusion of microclimate indicators in urban planning and design aspects. Involvement from universities is essential for conducting in-depth research on themes like maintaining ventilation corridors, controlling pollutant emission standards from transportation, industry, and services, and promoting alternative energy production.

CONCLUSIONS

Through an analysis of field measurements of carbon dioxide levels, temperature, and air humidity, combined with GIS data on building density, we identified several factors influencing the microclimate in Tirana. These factors include shifts in local climate and environmental conditions and correlations between urban climate, greening, and urbanization.

Significant variations in air humidity, carbon dioxide levels, and temperature were observed across 50 measurement sites in February and March 2024. These discrepancies are influenced by location, traffic congestion, urban density, and the layout of air circulation corridors. Out of 26 measurements, CO_2 concentrations exceed the allowed limit. However, in Tirana's Great Park, CO_2 concentration was measured at 297 ppm, the lowest recorded level, which is within the acceptable range. The city center, particularly areas such as Karl Topia Square, Elbasani Road, Barikadave Road, and the overpasses near major urban road intersections, exhibits the highest levels of CO_2 concentration, temperature, and low air humidity due to vehicle emissions.

Urban green space per capita has significantly declined since 1990 due to the expansion of buildings and infrastructure, a change that substantially affects the city's heat levels. Our correlation analysis yielded meaningful insights into the relationships among temperature, humidity, and CO_2 concentration. Specifically, a moderate negative correlation between CO_2 concentration and temperature suggests that urban activities impact local climate dynamics. Additionally, a slight positive correlation between CO_2 concentration and humidity indicates potential effects on atmospheric moisture. The strong inverse relationship between temperature and humidity emphasizes the delicate balance of these microclimate elements in urban settings.

To cool the city and reduce temperatures, expanding green spaces and maintaining ventilation corridors free from surrounding activities are essential. This goal can be supported by choosing appropriate vegetation, implementing vertical greening and green floors on buildings, managing traffic, and incorporating these factors into urban planning. Adding water features and exploring alternative approaches can also positively affect urban microclimate parameters. Moving forward, microclimate indicators should be incorporated into urban planning standards. Some concerns that require further study will be addressed in future projects.

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Vehicle Speed and Acceleration Control in a Vanet Simulation (Four Legs Intersection Case Study)

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Abstract

Vehicular Ad-Hoc Networks (VANETs) are a specialized form of ad-hoc networks that enable communication between automobiles and also between vehicles and roadside infrastructure. The speed parameter is significant in multiple aspects of VANET design and applications and it denotes the rate at which vehicles move inside the network. The goal of this paper is to achieve different levels of the speed and study their influence on different parameters of vehicles' network especially in beacon message transmissions. Another aspect is how the speed and the load channel are related to other. In other words, the main aim consists on adapting the traffic simulation to the reality as close as possible, specifically to find how can we adapt the simulation speed to real vehicle speed. An important element in this effort was the control on the speed and acceleration of the vehicles. Besides this, we highlighted the influence of the speed on the communication between vehicles in a VANET simulation, considering specifically the BSM messages and beacon interval. According to the result of these simulations, there is a relation between the speed and the network features, and a relation between the combination of speed and channel load to network properties. The goal of the simulations after all, was to envision how this network would be implemented in real situations. These vehicle networks have a promising future

Keywords
Speed control, OMNET++, SUMO, TraCi, Traffic simulation, Veins

INTRODUCTION

In recent years, the advancements in wireless communications have created new areas of research in computer networking. These areas focus on expanding the connectivity of data networks to settings where wired solutions are not feasible. Of all these factors, vehicular traffic is receiving increasing attention from both academia and industry. This is due to the significant number and relevance of the applications associated with it, which range from ensuring road safety to managing traffic and even providing mobile entertainment. The speed parameter is an essential one while creating communication protocols, routing algorithms and applications in VANETs to ensure reliable and timely communication among the vehicles.

The vehicle speed and acceleration control are managed from two sides: from SUMO (Simulation of Urban Mobility) side and OMNET++ &Veins side.

OMNET++ is an extensible , modular, component-based C++ simulation library and framework, which make possible the building of network simulators. These networks, called VANET, are networks between vehicles and units on the street and between vehicles themselves. These networks make possible the communication among vehicles and among vehicles and outside infrastructure, providing in this way a big help to drivers to regulate the traffic and avoid accidents.

Veins is a framework that joins the OMNET++ network simulator and SUMO. It provides an interface between these two components which allows us to customize different elements of the simulated traffic and the communication.

The vehicle speed and acceleration control are managed from two sides: From the SUMO side and OMNET++&Veins side. In Sumo there are a wide range of influences on vehicle speed. Each of these influences sets an upper bound on the vehicle speed (dlr.de, n.d). Urquiza-Aguiar et al., (2019) analyzed different alternatives that we can use in SUMO to generate a traffic. First, the model chosen in Sumo has its own influence and interpretation of different parameters used in different commands. By default, within SUMO, the microscopic model developed by Stefan Krauß (Lopez et al., 2018) is used and defines the car speed in relation to the vehicle ahead.

The research question of this paper is how does the speed influence on other VANET parameters, specifically channel load, BSM messages and beacon interval. The main aim consists on achieving different levels of speed and evaluate this relation.
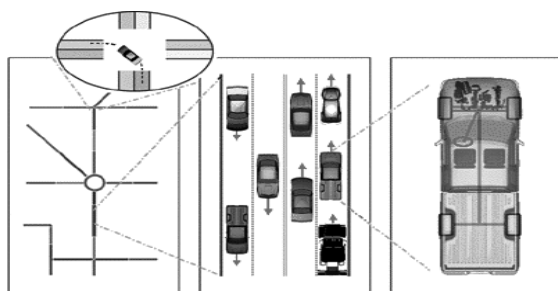

Figure 1. The different simulation granularities; from left to right: macroscopic, microscopic, sub-microscopic (within the circle: mesoscopic) (dlr.de, nd)

LITERATURE REVIEW

There are a lot of papers and materials whose subject is the simulation of the vehicle traffic, and a variation of analysis related to this traffic. Regarding the main purpose of this paper, the studies about the relation among BSM, the beacon interval, the channel load and their influence on speed, are considered.

Bouk et al., (2015) proposed an examination of the latest hybrid adaptive beaconing techniques suggested for VANETs. Their paper provided a detailed discussion on the parameters that these systems optimize, which include beacon power, rate, and/or CW. It also explained the operating principles of these schemes. Ultimately, the assessment and simulation parameters are comprehensively presented to facilitate a clear understanding of the differences among all the schemes discussed in the literature. Furthermore, they offered a compilation of current obstacles and potential areas for further exploration. Their intention was to inspire deeper investigation into the limitations of beaconing in VANETs.

Furthermore, Sathyapriya et al (2020) studied the regulation of vehicles' speed base on the speed limit of a certain area. A single transmission of data from a central control site is sufficient to initiate vehicle-to-vehicle communication. A vehicle initially receiving the signal transmits it to the adjacent vehicles, creating a continuous chain of transmission. VANET mitigates the drawback of signal loss caused by the velocity of vehicles. This technique has the capability to effortlessly regulate the speed of the vehicle in an automated manner. Vehicle-to-vehicle (V2V) transmission is more efficient compared to previous technologies such as GPS transceiver systems, which require transceivers to be installed at regular intervals along the route. This signal may experience signal degradation if the vehicle is traveling at a high velocity. VANET effectively mitigates these limitations.

Amour & Jaekel, (2023) proposed a decentralized congestion control algorithm where each factor adjusts the data rate (bitrate) used to transmit its wireless packet congestion based on the current load on the channel.

In Tomar et al (2022) one aspect of the work analyses the impact of beaconing in the network.

Considering these researches and many other ones related to VANET simulation, this paper aims to contribute to the studies related to the interplay of speed, channel load and other VANET parameters.

METHODS

This work is a study about how to control the vehicle speed and acceleration of traffic and about the relations between the speed and some VANET parameters, specifically channel load, BSM messages, and other network parameters.

The methodology was based on traffic simulation and the establishment of a network among the vehicles involved in this traffic, specifically VANET. Many experiments are done, changing different parameters, until some conclusions were presented.

Software SUMO is used to generate the vehicle traffic. Two

files are needed as inputs by SUMO to generate the traffic: one that represents the road network of the zone that we study, and a file that describes the vehicles, their characteristics, and the routes they take.

The real information that we have is the number of cars during 24 hours per one week, collected by cameras in some intersections of Tirana.

Then the first input, that is, the road network, is imported from the map around one of these intersections – specifically, the Don Bosco intersection, by OpenStreetMap. Then, this file is converted into a format accepted by SUMO and is called file.net.xml.

For the second input - the file that describe vehicles, their characteristics, and the routes that they take, there are different approaches in SUMO software to generate the vehicle traffic depending on traffic demand generation tools (Luis F. Urquiza-Aguiar, Pablo Barbecho Bautista, William Coloma Gómez, Xavier Calderón, Comparison of Traffic Demand Generation Tools in SUMO, Case Study).

We argue that the combination of duarouter (one of traffic demand generation tools) and randomTrips.py command is the best way to judge and analyze the real vehicular traffic. This choice is dictated by the limited information that we have.

As a result we get the file named file.rou.xml.

Providing two files file.net.xml (road network generated from maps imported from OpenStreetMap) and file.rou.xml (generated routes), as well as a configuration named file.sumocfg, the vehicular traffic is generated independently by SUMO.

The traffic generated by SUMO is integrated into OMNET++. On OMNET++ side, we use programming to test the vehicle network features, especially the BSM messages in different situations of the speeds, by using different speed modes. We also combine the speed mode parameter with different channel load in message transmission.

Therefore, the set of software SUMO&OMNET++&Veins were used in this study. The simulated traffic by SUMO was integrated into OMNET++, where a VANET network was simulated. It is Veins that provides the join of SUMO and OMNET++.

The work done

As we mentioned before the first phase of the work is the generation of the vehicle traffic and SUMO software was chosen to do it. There are some preparatory steps to prepare the information that SUMO will use to generate the traffic. Each of these steps has some input and output that are used by the following one. The following alternative of a sequence of commands was applied:

The command openmapstreet creates the file file.osm generated from maps

The command netconvert creates the file file.net.xml – routes network

The command randomTrips.py creates the file file.trips.xml –contains a set of random trips for the network

The command duarouter generates the file file.rou.xml – contains vehicle, their characteristic and the routes that they take

There is the command randomTrips.py where we have some parameters that influence the vehicle speed: maxSpeed, tau, minGap. Considering the default values of these parameters the command has the view:

…/randomTrips.py --vehicle-class passenger -n "file.net.xml" -b 0 -e 3600 -p 2.6 --route-file "file.trips.xml"--trip-attributes="length=\"5\" accel=\"2.6\" decel=\"4.5\" sigma=\"0.5\"

tau=\"1\" minGap=\"2.5\" maxSpeed=\"55.55\" emergencyDecel=\"9\"

carFollowModel=\"Krauss\"" –validate

Some of the parameters can be interpreted differently in different models. Considering the default model, which is represented by carFollowModel=\"Krauss\"", the following parameters are almost all the parameters of this model and their meaning is:

vehicle-class defines the type of vehicles, in this case we have considered passenger vehicles

-n is used to specify the network in this case file.net.xml

-e specifies the end time which is set to 3600 sec

-p represents the arrival rate. The arrival rate is calculated by the formula: (t2-t1)/ n

o specifies where resulting trips are stored

To define the parameter -p we have used the information taken during a week, 24 hours per day, but we have considered the time interval 7:00-to 20:00, when the number of cars has no big differences, as it is shown in the following chart. The calculation of the formula (t2-t1)/ n gives us the value 2.6.

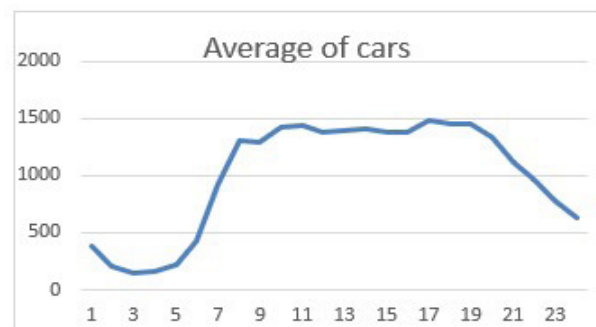-trip-attributes: by the Specification - SUMO Documentation,

Figure 2. The average of vehicles' number in 24 hour, we have considered the time interval 7:00-to 20:00, when the number of cars has no big differences,

Trips-attributes	Meaning
carFollowModel	The model selected, in this case the default model
tau 1	The net space between leader back and follower front
Accel	The acceleration ability of vehicles of this type (in m/s^2)
Decel	The deceleration ability of vehicles of this type (in m/s^2)
Sigma	The driver imperfection (0 denotes perfect driving)
maxSpeed	The vehicle's (technical) maximum velocity (in m/s)
minGap	Empty space after leader [m]
emergencyDecel	If for some reasons, reaching the safe velocity requires braking beyond the desired deceleration, the vehicle may do so up to a hart limit configured by this attribute

n.d. the meaning of the trip attributes are presented in the following table

the --trip-attributes parameter generates the following information in resulting file of the command roundTrips.py, which is file.trips.xml.

<vType id="passenger" length="5.00" minGap="2.50" maxSpeed="55.55" vClass="passenger" carFollowModel="Krauss" accel="2.6" decel="4.5" emergencyDecel="9" sigma="0.5" tau="1"/>

After that, the command duarouter is used,

duarouter file.net.xml --route-files file.trips.xml -o file.rou.xml,

where the file file.rou.xm is generated, and we can simulate a traffic in SUMO with the command:

sumo-gui file.sumocfg,

where file.sumocfg is the configuration file:

```
<configuration>
<input>
<net-file value="file.net.xml" />
<route-files value="file.rou.xml" />
</input>
. . .
<output>
. .
<tripinfo-output
    value="/. . ./tripinfos.xml"/>
<tripinfo-output.write-unfinished value="true"/>
</output>
    . . .
</configuration>
```

If we use the OUTPUT tag in the configuration file, we can get an output file, in this case, tripinfos.xml with information, which gives us the following results:

All these parameters, which are trip-attributes, influence the vehicle speed and acceleration, as we can see it in the maximum

Defaut	Speed Average	Speed Max	Waiting Time	Time Loss
parameters	18.4km/hour	42,3km/hour	21.9	28.8

Table 1. Some statistics generated by SUMO

speed, because of the parameter maxSpeed=\"55.55\".

We can improve the vehicle behavior using the attribute "speedFactor," which makes the vehicles drive with that factor of the current speed limit. Dhe default value of this parameter is 1.

Having a distribution of speed factors (and hence of desired speeds) is beneficial to the realism of a simulation (Specification - SUMO Documentation, n.d.). The truncated normal distribution[1] is chosen for this parameter, which can be represented by:

speedFactor="normc (mean, deviation, lowerCutOff, upperCutOff)"

and if we use it in the shorter way, speedFactor="normc(mean,deviation)", the two last parameters

have the values [0.2, 2]

Adding this parameter, the command randomtrips.py has now the form:

…/randomTrips.py --vehicle-class passenger -n "file. net.xml" -b 0 -e 3600 -p 2.6 --route-file "file.trips.xml" --trip-attributes="length=\"5\" accel=\"2.6\" decel=\"4.5\" sigma=\"0.5\" tau=\"1\"minGap=\"2.5\"maxSpeed=\"55.55\" speedFactor="normc(1.2,0.3)" emergencyDecel=\"9\" carFollowModel=\"Krauss\"" –validate

The values 1.2 and 0.3 imply a speed between 80% and 120% of the legal speed limit.

The following table shows an important improvement related to speed and other traffic indicators.

Integration of SUMO simulation in OMNET++

Using	Speed Average	Speed Max	Waiting Time	Time Loss
speedFactor distribution	31.5km/ore	76.9km/ore	0.19	0.86

Table 2. Some statistics generated by SUMO considering speedFactor parameter

The vehicle traffic generated by SUMO can be integrated and controlled from OMNET++ side.

TraCI ("Traffic Control Interface") is an interface between SUMO and OMNET++, where SUMO plays the role of a server and the client is on OMNET++ side.

Some steps, then, are necessary on the client side.

As a first step, we create a project in OMNET++, and we include the Veins project on it, which is an open-source framework and provides a C++ client library for the TraCI API.

OMNET++, as an object-oriented modular discrete event network simulation framework, provides infrastructure and tools for the VANET project, and this one, using the OMNET++ modules and its own C++ library, makes possible the use of the running traffic by TraCi on the client side, that is, from OMNET++ side.

Some files need to be added in the project created.

File file.NED: as we have already mentioned, the role of OMNET++ is the creation of a VANET network between road side units and vehicles and between vehicles themselves. For this purpose, a topology description language is used in a file called file.NED, with a minimum content as follows:

```
network networkName extends Scenario{
    submodules:
rsu[1]: RSU {
    @display("p=150,140;i=veins/sign/yellowdiamond;is=vs");
    }
}
```

where a road unit side is added to the content of inherited .ned file, Scenario (part of the veins project).

Files file.net.xml, file.rou.xml, file.sumocfg, used in SUMO,

have to also be included in the project.

File file.launchd.xml, with the following content is also created in project

```xml
<?xml version="1.0"?>
<!-- debug config -->
<launch>
        <copy file="file.net.xml" />
        <copy file="file.rou.xml" />
        <copy file="file.sumo.cfg" type="config" />
</launch>
```

and the name of it is represented in the configuration file OMNETpp.ini.

File OMNETpp.ini: to run the simulation, we need to create an OMNETpp.ini file. The file tells the simulation program which network to simulate and allows you to assign values to different parameters declared in the .ned files (your file or the inherited ones), and it explicitly specifies seeds for the random number generators (Team, n.d.). The initial content of this file can be copied from the file with the same name in the folder . . ./home/veins/src/modules/application/traci and modified. Many other parameters are included here, which can be grouped by some categories, and some of them are:

        [General]
        Simulation parameters
        Obstacle parameter (some updates here)
        TraCIScenarioManager parameters
        RSU Settings
        11p specific parameters (some updates here)
        App Layer (some updates here)
        Mobility

Files VehicleControlApp.h, VehicleControlApp.cc. These two files will replace the respective default files TraCIDemo11p, which are used by default in OMNETpp.ini. To take into consideration our code in simulation, we add the following lines on file.ned file with the following content,

simple VehicleControlApp extends DemoBaseApplLayer

```
{
  parameters:
  @class(veins:: VehicleControlApp);
  double allowedSpeed=default(55.55);
  string appName = default("My first Veins App!");
}
```

Some customizations are done in OMNETpp.ini file like:

        [General]
                . . .
network = networkName
        #Obstacle parameter(some updates here)
#*.obstacles.obstacles = xmldoc("config.xml",
"//AnalogueModel[@type='SimpleObstacleShadowing']/obstacles") (commented)
        #11p specific parameters (some updates here)
*.**.nic.mac1609_4.useServiceChannel = true
        #App Layer (some updates here)
*.node[*].applType = "VehicleControlApp "

. . .
*.node[*].appl.sendBeacons = true
*.node[*].appl.dataOnSch = true
*.node[*].appl.beaconInterval = 1s

TraCIDemo11p is an extension of the module DemoBaseApplLayer and this one inherits the class BaseApplLayer.

Some modifications are done in the module VehicleControlApp. There are some event based methods that can be customized as:

        void initialize(int stage)
        void handleSelfMsg(cMessage* msg)
        void onWSM(BaseFrame1609_4* wsm){};
        void onBSM(DemoSafetyMessage* bsm){};
        void onWSA(DemoServiceAdvertment* wsa){};
        void handlePositionUpdate(Object* obj);

These methods are event methods, and they will run based on the events that happen in one moment. As we see, some of these methods accept as information messages of different types, and based on the information that they receive, they react in a specific way.

There are different types of messages that can be sent or received, and some are managed by OMNET++ classes, like cMessage, and others by Veins classes like DemoSafetyMessage, DemoServiceAdvertment.

In this work we are interested on the basic safety messages (type DemoSafetyMessage), or beacon messages, because these are periodic messages, and they broadcast regular information like the position speed, status of vehicle, address, location, speed direction, etc., but we could allow other messages too. Other messages can be:

DemoServiceAdvertment– is the type of wave service announcement (WSA) messages,

DemoServiceAdvertment– is the type of wave service announcement (WSA) messages, and

BaseFrame1609_4–is the type of wave service message (WSM).

Event-driven messages are sent whenever certain events, such as traffic accidents or road hazards, are detected, while BSMs are sent at regular intervals by each vehicle in the network, regardless of the road conditions. This means that, as the vehicle density increases, the total number of BSMs being transmitted within the network increases proportionally (Bouk et al., 2015). Because the beacon messages are the most frequently sent messages from one vehicle to the others and to the vehicle itself, and the function that is activated associating this event is on BMS (DemoSafetyMessage msg), we can write here some code that would cause changes on simulated traffic behavior.

The logic used in this function is the same as in Park (n.d), but we have changed some parameters. This code forces to adapt the vehicle speed to the real speed.

The pseudo code is:

onBSM: (DemoSafetyMessage msg)
 get the sender speed from msg object;
 get the position of preceding vehicle from msg object

set SpeedMode to traciVehicle object
define e desired distance between two vehicles
define e coefficient as beaconInterval;
 find the distance between preceding vehicle and the current
position
 find the acceleration = (distance – desired distance)/
coefficient^2
 if (distance - desiredDistance> 1)
  set SpeedMode to traciVehicle object
  set acceleration to traciVehicle
  apply slowDown function with parameter allowedMaxSpeed
          (defined in .ned file)
Otherwise if (distance - desiredDistance< -1)
set SpeedMode to traciVehicle object
setEmergencyDecel(-acceleration *5)
apply slowDown function with parameter allowedMinSpeed []

Some explanation here:

• SpeedMode is a TRACI command. As we have already mentioned, TRACL gives access to a running road traffic simulation generated by SUMO and can interfere in it due to a TCP based client/server architecture.

For simulation purposes, three types of parameters for speed mode command are considered here. This command retrieves the values set by TRACL commands speed (0x40) and slowdown (0x14) and regulates the behavior of the car. By default, the vehicle is restricted to driving at a speed lower than what is considered safe according to the following car's model. Additionally, it must not overcome the limits on acceleration and deceleration. In addition, the vehicles follow the right-of-way regulations when approaching an intersection and, if required, they brake hard to prevent crossing a red traffic signal. To regulate this behavior, one can utilize the speed mode command. The parameter is a bitset, where bit 0 represents the least significant bit. It contains the following fields (A., 2018):

bit0: Regard safe speed

bit1: Regard maximum acceleration

bit2: Regard maximum deceleration

bit3: Regard right of way at intersections

bit4: Brake hard to avoid passing a red light

Three different parameter values are used for the SpeedMode in our experiments.

The first is parameter value 0x1f or bitset 11111, for the speed mode, which means that all the bits with respective meaning are considered : bit0(Regard safe speed), bit1(Regard maximum acceleration), bit2(Regard maximum deceleration), bit3(Regard right of way at intersections), bit4(Brake hard to avoid passing a red light)

The second is the parameter value 0x07 for the speed Mode, which means that bit set 0011is considered. And the third parameter value is 0x06 or the bit set 000110.

 To calculate the acceleration, we have used the formula.

Acceleration= (distance – desired distance)/ coefficient^2

where coefficient = beaconInterval

SUMO runs externally as a dedicated service and is not "built in" while compiling.

We have to launch sumo in parallel, so that it can wait for incoming connections on the port specified in the behavior of our application (generally 9999). Therefore, we need to start the TraCI server first by the command:

python /home/veins/src/veins/sump-launch.py -vv -c sumo-gui

Results

The tests are done with the following simulation parameters:

     Beacon interval 1s

     Fixed transmission power 20 mW

     BSM size 256

     Minimum power level −110 dBm

     Noise floor −98 dBm

     Vehicle number 60

The results represented in the file.vec, which is the output in OMNET++ in result folder, are presented in the table below:

The graphic below shows vehicle speed-modes influence to

Speed Mode	Speed Mean	Speed StdDev	Generated BSM	Received BSM	Received Broadcast	Sent Packets	Total Lost Packets
0x1f	28.8	7.9	3	51	143	8	64
0x07	29.8	4.02	6	50	126.6	7	69
0x06	118.8	15.3	3	11	11	3	19

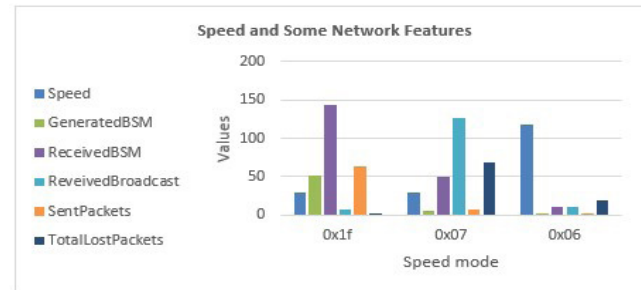**Table 3.** Some statistics generated by OMNET++ using different speed mode

Figure 3. The influence of speed mode in other network parameters when beacon interval is 1 sec.

different network indicators. The incrementing of the speed is associated with the decrementing of the other network properties.

We can see that the incrementation of the speed is caused because in the 0x06 mode there are fewer limitations dictated by different bit fields of speed mode, while, the Received BSM and Received Broadcast are higher in the 0x1f speed mode.

Continuing the experiment with different channel load we have the following results. The load of the channel, discussed on Amour, B., & Jaekel, A. is considered:

Low channel load:

     Beacon interval 0.1s

     BSM size 256

Medium channel Load

Medium channel Load

Speed Mode	Speed Mean	Speed StdDev	Generated BSM	Received BSM	Received Broadcast	Sent Packets	Total LostPackets
0x1f	31.1	3.9	35	484	1278	74	154
0x07	31.3	3.9	15	458	1228	51	92
0x06	190.4	1.8	29	80	106	37	55

Table 4. The statistics for low load channel

Speed Mode	Speed Mean	Speed StdDev	Generated BSM	Received BSM	Received Broadcast	Sent Packets	Total Lost Packets
0x1f	31.1	3.9	160	2446	3242	200	111
0x07	31.1	3.8	152	2275	3061	192	124
0x06	190.4	53.8	36	59	398	483	158

Table 5. The statistics for medium load channel

Beacon interval 0.02s
BSM size 256
High channel Load:
• Beacon interval 0.05s
• BSM size 1024
The three tables in Fig. 4,5,6 show that the channel load does

Speed Mode	Speed Mean	Speed StdDev	Generated BSM	Received BSM	Received Broadcast	Sent Packets	Total LostPackets
0x1f	31.1	3.9	64	969	1780	104	87
0x07	31.4	3.8	62	912	1694	101	120
0x06	190.4	55.5	58	162	187	66	81

Table 6. The statistics for high load channel

not have an influence on the speed average, but the standard deviation for the speed is better in the low channel load with the combination Bacon Interval = 0.1s and BSM size=256.

Regarding the network communication, that is, the BSM messages and Broadcast, the channel load is important.

If we compare the network data for different channel mode for each of speed modes, we have the following evidences:

In the 0x1f speed mode for the medium load channel we

Channel load 0x1f speed mode	Generated BSM	Received BSM	Received Broadcast	Sent Packets	Total LostPackets
Low load	35	484	1278	74	154
Medium Load	160	2446	3242	200	111
High load	64	969	1780	104	87

Table 7. Statistics for 0x1f speed mode

Figure 4. The graph for 0x1f speed mode,

Channel load 0x07 speed mode	Generated BSM	Received BSM	Received Broadcast	Sent Packets	Total LostPackets
Low load	15	458	1228	51	92
Medium Load	152	2275	3061	192	124
High load	62	912	1694	101	120

Table 8. In 0x07 speed mode

Figure 5. The graph for 0x07 speed mode

Channel load 0x06 speed mode	Generated BSM	Received BSM	Received Broadcast	Sent Packets	Total LostPackets
Low load	29	80	106	37	55
Medium Load	36	59	398	483	158
High load	58	162	187	66	81

Table 9. In 0X06 speed mode

have the highest number of beacon messages, broadcasts and packets. Also in 0x07 speed mode for the medium load channel, we have the highest number of beacon messages, broadcasts and packets. In the 0x06 speed mode, the high load channel provides the highest number of beacon messages, broadcasts.
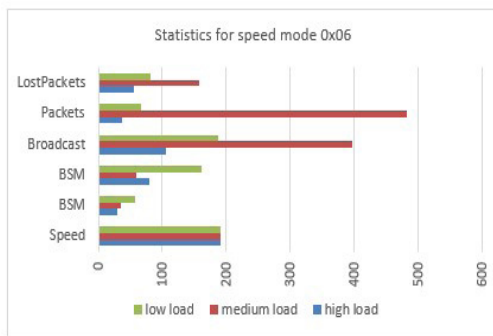
Conclusion

Figure 6. The graph for 0x06 speed mode

Monitoring car traffic today is possible through various technologies that enable the extraction of some important statistics regarding real-time traffic condition and its problematic points. However, the studies on traffic are necessary to make predictions to prevent difficult traffic situations, to establish control strategy regarding the direction of vehicles, and to find suitable topology of key points of the road network. These studies are practically possible only under traffic simulation conditions.

This paper is presented in the form of tutorials theat use some of the software such as SUMO, OMNET++, and Veins to carry out a simulation. In addition to the simulating traffic by SUMO, OMNET++ has established a network between vehicles, through which communication between them is carried out. The data comes as a result of traffic monitoring from the Municipality of Tirana at a point in Tirana, Don Bosko, where monitoring through cameras is accomplished

In our paper the goal is to achieve different levels of the speed, and how it influences different parameters of the vehicle network, especially in beacon message transmissions. Another aspect is how the speed mode is related to the load channel.

The tables and charts represent different levels of the speed, depending on command parameters used and the load channel and BSM messages related to different levels of the speed mode.

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Advancing Circular Economy in Concrete Build-Ing Frames: Enhancing Sustainability Through Efficient Resource Use and Thermal Perfor-Mance

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Abstract

Reducing resource consumption, waste production, and environmental consequences in the built environment is contingent upon the adoption of a Circular Economy (CE). The world's largest user of raw materials is the construction sector. The concrete industry is leading the way in advancing the circular economy and enhancing sustainability overall as a result of the growing awareness of sustainability and the circular economy across all industries. In an effort to reduce the rate of consumption there is an urgent need to adopt more efficient recycling and reuse practices in the building industry. Emerging to support this need is the circular economy framework (circularity) – a concept that aims to separate "economic growth from environmental destruction". Using the framework of circularity this research critically evaluates the "reuse" performance of a key area of modern construction; the concrete building frames.

The built environment can be made circular by replacing building components with more circular ones. Therefore, this paper is going to discuss on prospective of CE to the outer part of the buildings: façade. The method used is by composing an efficient concrete frame and maximizing resource efficiency. In this regard, the thermal performance of the insulation layer of concrete frame is being considered and also the thermal mass component which is important towards improving the energy efficiency. The assessment through this methodology shows a potential to derive useful lessons for the future concrete building frames while dealing with the energy efficiency strategy. The suggested approach would improve the applicability of this method in a normative context by improving the consistency of assessment in the case of circular economy.

Discussions in this paper indicate a prospective of the transition towards Circular Economy (CE) and its implementation to yield significant positive performance as it is possible to incorporate various materials into the concrete. Also, the efficiency of the circular economy in the concrete industry may be improved by building management systems. However, it is feasible to support a more circular and sustainable construction sector by incorporating these ideas into the design and construction of concrete building frames.

Keywords
Circular economy, concrete façade, thermal performance.

Introduction

Circular economy tends to be a general decision-making consisting of materiality and construction methods but on the other hand, they need special knowledge and tools. When it comes to energy use and CO2 emissions, the building industry has a significant influence. Data from the European Environment Agency (EEA, 2013) and the International Energy Agency (IEA, 2013) show that the building industry is in charge of 36% of global CO2 emissions, 40% of global energy consumption, and the production of 9000 million tons of construction trash. For this reason, policies to transition from the linear to the circular economies are presently being established. Following that, the European Commission produced a number of messages in 2015 (EC, 2015), 2016 (EC, 2015), and 2019 (EC, 2016) that included recommendations for actions to support the aspects of the circular economy and Eco-Design standards.

Adopting circular principles in building design and construction enhances thermal performance by improving material and energy efficiency, reducing environmental impact, and enhancing occupant comfort and well-being. These aspects together create a strong synergy between Circularity and building thermal performance. Overall, the combination of climate conditions, building design factors, and human comfort needs contributes to higher energy demand in warm temperate climates, primarily driven by the necessity for effective cooling solutions during hot periods.

Building location is a crucial factor that significantly impacts how energy-efficient they become (Kim, S., et al., 2017; Bilous, I., et al., 2018; Pajek, L., and Košir, M., 2017). Energy-efficient buildings that adjust to the local environment must be designed with the building's location in mind when it comes to new construction. When it comes to constructed structures, it's imperative to create rehabilitation plans that ensure the buildings' energy efficiency is appropriate for their location. The location of the buildings that will be examined must be determined because this study analyzes building façades for rehabilitation. The locations with warm temperate climates will be the application's scope. The influence on energy usage is higher in these locations. It is obvious that environmentally friendly construction methods are required to lessen the energy footprint of existing structures in Mediterranean climate zones. For this reason, the study case for this paper will be Albania, which enjoys a subtropical Mediterranean climate.

In Albania, the majority of residential buildings were constructed during the communist era, which ended in 1990. They were not designed for rehabilitation, and a lot of time has passed since they were constructed. They haven't had any restoration since they were constructed a long time ago. The existing buildings are inefficiently energy-efficient, which puts the government budget at significant risk and jeopardizes structural stability given that structural degradation occurs over time (as demonstrated by the earthquake occurred on November 26th, 2019). Since the façade of a building loses the most energy (Sukamto, D., et al., 2021), dealing with designing the façades is crucial to addressing this problem.

Moreover, buildings constructed during the socialist regime often lack energy efficiency due to design choices focused on rapid construction and cost savings rather than energy performance. The materials used, such as concrete and single-glazed windows, contribute to thermal inefficiencies that increase energy demand for heating and cooling. Retrofitting these buildings to meet modern energy efficiency standards often requires significant investment and structural modifications to overcome these inherent challenges.

The building envelope serves as an enclosure within the structure. This kind of element serves as a boundary between the public and private spheres as well as the interior and outdoor environments. Concrete Frames and especially external walls are part of the building envelope. Each of these elements serves as a gauge for the quantity of energy needed to maintain thermal comfort within the building. However, there are a number of elements that affect energy loss, including the building typology, construction technique, and climate of the surrounding area.

Note: unless otherwise stated, all material in figures and tables derives from IEA data and analysis.

Figure 1. Building Envelope Components (Source IEA, 2013)

Background

Citing many energy directives, there are ways to lower the consumption of energy of existing buildings by approximately 50% during their life cycle, provided that prior retrofits and relevant technologies are taken into consideration. The primary legislative framework governing the use of energy in both new and existing buildings is the EU Energy Performance of Buildings Directive (EPBD). It was originally made public in 2002 and offers suggestions for putting energy performance in buildings into practice. It establishes uniform goals for each EU member state's energy performance. The Directive was revised in 2010 and 2018 with additional recommendations, such as implementing "cost-optimal solutions" and "nearly zero energy buildings."

It is also imperative to strike on both the energy performance of new construction and existing buildings in order to reduce carbon emissions in compliance with the Paris Agreement. Improving an existing building's energy efficiency not only helps to minimize costs by drastically reducing CO2 emissions and energy consumption, but it also lowers running expenses. A cost-benefit analysis that integrates several different approaches

is used to assess the cost-effectiveness of initiatives on energy efficiency. There are times that an opportunity to more effectively increase the energy performance of the buildings is lost as a result of this overly simplistic analysis.

The International Energy Agency (2017) describes the payback period as the length of time needed to recover the cost of a capital expenditure. This method is basic and easy to use. The lowest alternative is the better choice in this scenario since the simple payback approach only takes into account the recovery of the initial expenditure and ignores any subsequent benefits.

Albania, like many other nations that have gone through or are going through similar experiences, is dealing with issues related to development and the ongoing change of the its landscape. The rapid growth of the built environment and its spontaneous development, during a disorganized transition process have produced a development model that is focused on the here and now and, for the most part, does not ensure that the needs of future generations will be met. Nowadays, the most significant idea is sustainable development with a well-thought-out strategy, which would allow the continuity of the growing effectiveness over time. To yet, very little has been done in Albania to improve buildings' energy performance, which could lead to increased efficiency and the potential for effective resource management.

Implementing circular economy principles in Albania's construction industry is important, including potential economic benefits, environmental impact reductions, towards more sustainable construction practices through the adoption of circular economy principles in concrete building frames. Referring to traditional materials used in Albania typically consists of cement, aggregates (such as sand and gravel), and water. The proportions and quality of these materials can vary, affecting the durability and thermal properties of the concrete. Insulation materials, when used, often include traditional options like expanded polystyrene (EPS) or mineral wool. However, the use of advanced insulation materials with higher thermal performance is considered limited. Albania's regulatory framework includes basic energy efficiency standards for buildings, leading to variability in building performance and energy consumption.

On the other hand, limited adoption of recycled materials in concrete mixes and construction practices contributes to higher resource consumption and waste generation. There seems to be a lack of awareness among construction professionals about sustainable construction practices and the benefits of adopting circular economy principles. Initial costs associated with sustainable construction practices, such as using high-performance insulation or incorporating recycled materials, may deter adoption without clear economic incentives or regulatory support.

In this regard, it is of great importance to start encouraging research and development in alternative concrete formulations and advanced insulation materials to improve energy efficiency and sustainability. By addressing these current practices and challenges, Albania can work towards enhancing sustainability in its construction industry, particularly in the context of concrete building frames, through improved resource efficiency, energy performance, and environmental stewardship.

Literature Review

Numerous research has looked into the structural elements of buildings as well as energy saving in recent years. A range of approaches have been used, including holistic ones (Vieites E., et al., 2015), dynamic analyses of different types of structures (Kramer R., et al., 2015), and concrete solutions like the use of a thermal, vegetal-based insulating plaster (Zagorskas J., et al., 2014).

In their 2017 study, Mannella et al. examined a novel multidisciplinary approach that they outline structural diagnostics, and in-situ studies, by creating a replicable method for enhancing the functionality of existing buildings. It is being developed a model that can anticipate a building's energy consumption and structural stability by using this multidisciplinary approach to building diagnostics.

Calvi et al. (2016) offered a combined method for energy efficiency and earthquake vulnerability assessments. Marques et al. (2018) were able to evaluate the financial benefit of avoiding earthquake damage to that caused by the repair by doing a thorough cost-benefit assessment of the reinforcing methods.

The building envelope code standards have seen a substantial improvement, and performance has continued to improve over the years. This has led to a rise in demand for the development of novel materials with low transmittance levels, or U-value, and thermal insulation. This value can be calculated by dividing the total quantity of heat transported in a structure, either of a single material or a composite, by the temperature differential across the structure.

In order to have good structural insulation, the U-value must be as low as possible. It is also determined by the insulation standards and the method, which must be as appropriate as possible to prevent gaps and cold bridges and to prevent high levels of thermal transmittance (Sadineni S., et al., 2005). The heat loss resulting from radiation, diffusion, and conductivity is referred to as "thermal transmittance".

The external wall is the primary component of the building concrete frame and provides thermal and acoustic comfort for a structure. However, aesthetic considerations must also be taken into account, since these may be indicated by the surrounding environment in which the building is located. The wall's thermal resistance (R-value) provides an indication of how much energy is being used. High-rise buildings were typically built using thermal mass to provide energy conservation rather than taking insulation into account, which is crucial and can be found in many technical solutions.

The R-value influences the U-value directly, with higher R-values indicating better thermal resistance and lower U-values indicating better thermal insulation. High-rise buildings often leverage thermal mass, primarily through materials like concrete and brick, to improve energy efficiency

by moderating internal temperature fluctuations and reducing reliance on active heating and cooling systems. High-rise buildings often utilize concrete as a structural material due to its high thermal mass. Concrete walls, floors, and columns can absorb heat during the day and release it at night, reducing peak cooling loads in warm climates and heating demands in colder climates. A very interesting examples are the building of:

i) One Central Park, Sydney which incorporates extensive use of concrete and thermal mass strategies by integrating plantings and vertical gardens and the building of

ii) The Barbican Centre, London which also utilizes thermal mass to stabilize indoor temperatures and reduce energy consumption for heating and cooling.

Referring the case study, the majority of concrete building frames in Albania were constructed prior to the implementation of energy standards, and as such, they have poor seismic performance, low thermal comfort, and low energy efficiency. About 40% of Europe's current building stock was constructed before to the 1960s. There was some knowledge of earthquakes and the significant utilization of energy throughout these times. The highest potential for energy savings is highlighted by the fact that they account for almost 20% of all energy use in Europe (Simaku Gj., 2011). The energy retrofit would also enhance the residents' quality of life by reducing energy expenses and raising thermal comfort.

Building retrofit strategies
Measures and criteria for retrofitting
The use of concrete elements in the façades of new residential buildings has been studied before by (Rusi I., 2018) by emphasizing the structure expression or even the perforation trend (Rusi I., 2019). Regarding the structural stability and the advantages of using those systems for high-rise buildings is discussed in the article of (Rusi I., and Kumaraku Ll., 2022) from which is being possible the ongoing analysis of the concrete building frames by adding the energy efficiency analysis. The main focus is to enhance the production of new and innovative construction materials that simultaneously provide the structural stability, aesthetically pleased, efficient and cost-effective design approach.

On the other hand, for the existing buildings it is important to use the structural evaluation to sustain damage from earthquakes. The choice of the most effective action or combination of actions to improve the building's performance comes next. Tsionis et al. (2014) developed a list of the most popular retrofit measures along with the attributes they affect. This was predicated on the three primary response qualities (strength, stiffness, and deformation capacity) as well as the two primary goals of repair and strengthening (lowering demand or raising capacity). As it can be seen from the table below, frames are considered as a global measure. Moreover, considering the concrete wall elements part of concrete frames it is interesting to underline the fact that can both be used as a new design element for building façade or as an element for retrofitting the existing construction. In the following sections there will be

discussed more about the wall element and its contribution to the building energy performance.

Another option is to recommend a successful "integrated"

		Strength	Stiffness	Ductility	Irregularity	Force demand	Deformation demand
Local measures	Concrete jacket	√	√	√		X	√
	Steel jacket	√		√			
	FRP jacket	√		√			
	Post-tensioning	√		√			
	Strength reduction	X					
Global measures	Frames, braces	√	√		√	X	√
	Mass removal				√	√	X
	Partial demolition				√	√	
	Isolation				√	√	√
	Dampers		√			X	√
	Expansion joints				√		

Table 1. The effect of local and global retrofit initiatives on the physical attributes of buildings (Source: Tsionis G., et. al., 2014, Revised by the author 2024)
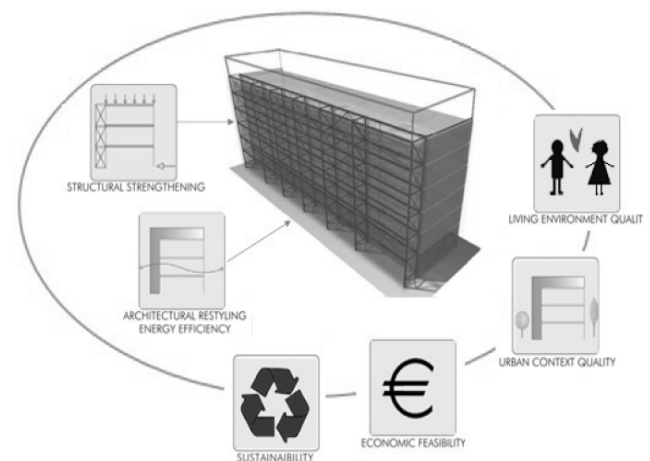

Figure 2. A double skin façade system that provides structural stability, architectural renovation and energy efficiency improvement while minimizing environmental effect, rehabilitation costs, and impairment. (Source: Feroldi F., et al., 2013)

approach to support the massive stock of masonry buildings' long-term renewal. In order to increase provide sustainable structural frame of buildings, architectural and urban environment quality, and energy efficiency, external "integrated" double casings are designed and recommended. According to Feroldi F. et al. (2013), exterior structural and technological double casing techniques are examined, with a focus on achieving minimum environmental impact and rehabilitation cost requirements. A double skin facade enhances energy efficiency by providing effective thermal insulation, solar control, acoustic benefits, and improved indoor environmental quality. It is a sustainable design solution that contributes to reducing a building's overall energy consumption and operational costs while enhancing occupant comfort and well-being.

Seismic and energy retrofit

By definition, "repair" is the process of repairing damage caused by ground vibrations following an earthquake that does not appreciably increase a structure's seismic resistance over its pre-earthquake condition. But "strengthening," "seismic upgrading," or "seismic strengthening" refers to scientific advancements in the structural framework of a building that make it more ductile and stronger. The process of reinforcing a structure before an earthquake is called "rehabilitation," and the process of strengthening a structure after one has occurred is called "retrofit."

By integrating circular economy principles into seismic retrofitting projects, stakeholders can not only enhance the resilience of buildings but also contribute to a more sustainable built environment. It is important to mention the fact that the structure seismic resistance determines whether to retrofit it or not. And also, as was demonstrated by recent earthquakes, the contraction age is not the most important reason to the damages caused by a natural hazardous rather other factor tend to be in focus such as the old seismic design codes. Like in Albania, it is crucial to update the national codes considering the very recent seismic activity and also those codes should provide considerations to the energy efficiency upgrades.

Considering the energy retrofit of the buildings, is important to provide and to increase the thermal performance. In this regard the building outskirt play an important role. The element that represents the thermal performance is given by thermal transmittance, which is known also as the U value, is expressed in W/m2K. As was stated by the Joint Research Centre in 2014, because it makes up 57% of the building's total thermal loads, the building façade becomes the most crucial element in energy-efficient constructions. An analysis on the material used for the building envelope is described in the studies carried out by both the author Alotaibi and Riffat. It is an interesting analysis since it deals with the presentation of the past and future materials. In this regard, referring the past materials the authors give the concept of conventional materials. The thermal conductivity of those materials varies from 20 to maximum value of 50 mW/mK. Regarding the cost of thermal insulation per unit, it differs among the thermal conductivity. The lower the value, like in the case of Polyurethane (PUR), the cost is higher, which also corresponds to the higher impact on environmental aspect. What is important to emphasize in this section, is the fact that neither of all materials according to the authors are not being considered as thermal materials used for future insulation for building envelope.

On the other hand, presenting the state-of-the-art materials for insulation, from the Vacuum panels (VIP) to nano materials (NIM) not only show lower values of thermal conductivity which as a parameter would be discussed later to other calculations done but also provide opportunities to be used in the future as thermal insulation material. Referring the cost per thermal resistance, which according the authors is high, it surely calls for additional research in terms of providing other advantages of this new insulation materials.

The material of the building envelope is critical for providing the required values for thermal insulation. The insulation itself can be rather a combination of various materials in order to provide the requested level of the building's energy performance.

In the recent decade there are numerous studies that focus in testing materials with that are not conventional. In the Albanian engineering definition, the concrete façades are those façades composed by structural elements like in the case of concrete walls. Definition in terms of Energy Performance in Buildings "coating" means the type of construction and the materials used to separate the interior space of a building or a building unit from the external environment.

Material	Thermal conductivity (mW/mK)	Cost per thermal resistance	Environmental impact of production and use	A thermal insulation material and solution of tomorrow?
Conventional insulation materials				
Mineral wool	30-40	Low	Low	No
Expanded polystyrene (EPS)	30-40	Low	High	No
Extruded polystyrene (XPS)	30-35	High	High	No
Cellulose	40-50	Low	Low	No
Polyurethane (PUR)	20-30	High	High	No
State-of-the-art insulation materials				
Vacuum insulation panels (VIP)	4-8	High	Moderate	Near future
Gas-filled panels (GRP)	10-40	High	Moderate	Probably not
Aerogels	13-14	High	Moderate	May be
Nano insulation materials (NIM)	<4	High	Moderate	Yes

Table 2. The old and future thermal insulation materials (Source: Alotaibi SS and Riffat S, 2014, Revised by the author 2024)

Methods

Building an efficient concrete frame while integrating circular economy principles involves dealing with the concept of the entire life of the structure while maximizing its energy efficiency. In this regard, considering the thermal performance of the concrete frame with insulation and thermal mass considerations is important to improve energy efficiency. Moreover, adopting the construction practices that minimize energy consumption during the building process, such as optimized construction schemes bring more advantages to the topic.

The future materials scenario is based on the study conducted by Alig et al. (2020) for Europe and it is regionalized to the case study of Albania built environment. It will be analyzed the wall element which is part of the concrete frame of the buildings and its contribution to the overall energy performance. Referring to the concept of "thermal properties of building elements", the Energy Code of Albanian Buildings does not have any calculations analyzed accurately. In this regard, referring the U value of the thermal transmission coefficient there are no separate values for each material layer of the construction element but is determined together as an average number. However, it is important to emphasize the fact that this methodology is considered to be applied to new concrete building frames, and that for the existing buildings the structural retrofit methos are applied.

Results And Discussion

Discussing the topic of circular economy for a small European country like Albania has it has its own peculiarity because as it was stated before, the built environment reflects a smaller consideration to the building energy performance. Referring the existing building structures there have been several attempts of intervention techniques reflecting in the meantime their associated effects on building behavior. On the other hand, those interventions have reflected the respective financial costs which have often been a financial burden for the community too. But it is important to mention the fact that it has been emphasized the co-benefits between energy and seismic retrofit. The community of professionals in this field, engineers in recent years have embraced the positive study cases in performing energy loss assessments and cost-benefit analyses on specific buildings in Albania.

The main barrier in Albania is informality. There is no formal materials market. The innovative materials and methods for structural and energy retrofit are not officially labor-costed. This may have an impact on how the cost-effective techniques are evaluated. A further significant obstacle is the lack of laboratory testing. They might be costly and devoid of the necessary technological equipment for the majority of the tests that are required, which could be the cause. The material deterioration of the existing buildings is not taken into account. Analyses are conducted as though the building hasn't changed since it was constructed. Following the methodology proposed for the new concrete building frames, it is important to state some simple calculations for several typology of buildings wall which are being summarized in the table 3 and graph 1 below.

It is important to emphasize the fact that the calculation is based to the values of thermal transmittance taken from the study of Simaku Gj., in 2020. There were distinguished six different wall elements which also are very commonly used in Albania. Considering the fact that those walls can be used in several part of the perimeter of concrete buildings façade, there are being derived considerable facts for analysis. The thermal transmittance is the value represented by the thermal resistance characteristics of the concrete wall elements. The amount of heat stored in the wall depends largely on the thermal mass, which is known as the volumetric heat capacity of the material. On the other hand, the building envelope configuration and its thermophysical properties affect the time lag. Building wall with lower thermal transmittance (U) value has better capability to reduce indoor surface temperature variations. Two authors Koray and Vijayalakshmi in their studies of nearly twenty years ago, have separately discussed and derive in a same conclusion that by combining different wall layers of materials having different thermophysical properties, it can be achieved a better thermal performance of the walls. Referring the above table with the simple calculations on thermal transmittance and time lag, it can be seen that the lower the value of thermal transmittance (U), higher will be the time lag. The high values of the time lag reduce the inside temperature fluctuation amplitude and maintain inside temperature fairly at constant temperature.

As it was mentioned before judging on thermal transmittance of a material is important since is related to another important factor which is the time lag of the material. The variation between two material parameters thermal transmittance and time lag is also of great interest to be studied. As it can be seen from the figure below for the decreasing values of thermal transmittance, the material time lag shows increasing values. A correlation made between the thermal transmittance and time lag is graphically given below. It is interesting to emphasize the fact that for the values given in the table the trend of element time lag which is given by the increasing line in the following graph shows the most representative wall element to be used in the respective case study of Albania to be wall 4, wall 3 and wall 5.

A fully representative analysis campaign is submitted for further development in the previously specified setting. The latter states that in order to produce a set of results sufficient to form the basis for creating integrated approach guidelines, all feasible combinations of building configuration, retrofit and improvement techniques, as well as seismic hazard and energy requirements. Although this study is focused in the application of the thermal mass walls which absorb and store heat energy during the day and release it slowly during the night, for Albania, considering the Mediterranean climate with hot summers and mild winters, a combination of thermal mass and insulation could provide optimal results. This hybrid approach leverages the benefits of both methods, ensuring maximum energy efficiency and indoor comfort.

Building Wall Types	Thickness (m)	Density (kg/m3)	Heat Capacity (KJ/kg)	Thermal Transmittance (W/m2oC)	Time Lag (hours)
W1. Lightweight concrete wall with external plaster	0.20	1300	1	1.868	**3.73**
W2. Lighter combined dense concrete wall with external plaster	0.20	1500	1.2	1.089	**5.75**
W3. Lightweight concrete wall with air layer with external plaster	0.25	1200	1.5	0.698	**8.98**
W4. Dense concrete wall with air layer with external plaster	0.30	2300	0.88	1.115	**9.04**
W5. Dense concrete wall with insulating layer with external plaster	0.30	2400	0.84	1.271	**8.45**
W6. Concrete wall without external plaster	0.25	2200	0.95	3.778	**4.16**

Table 3. The correlation between thermal conductivity and time lag for different building wall types (Source: Author, 2024)

Graph 1. The correlation between the thermal transmittance versus time lag (Source: Author, 2024)

Conclusion

Integrating circular economy principles to concrete building frames, involves considering the entire life cycle of the structure, from design and construction to maintenance and eventual demolition. Therefore, below are being underlined four main conclusions related to the topic:

1. Explore alternative, more sustainable materials that align with circular economy principles, such as cellular concrete, recycled aggregates or supplementary cementitious materials. This can lead to a future design component that can be easily reused in other construction projects.

2. Design structures with a focus on durability to minimize the need for frequent maintenance and repairs. In this regard there will be possible for easy upgrades or adaptations to accommodate changing needs.

3. Conduct an assessment to evaluate the concrete building frames like in the case of Albania that are being proposed three main wall elements for building façades that show good results in terms of energy efficiency.

4. Foster collaboration among architects, engineers, and other stakeholders to ensure a holistic approach to circular design and construction materials. This can affect policies that promote circular economy principles in the construction industry and sustainable construction practices.

Research on time lag in building materials makes several valuable contributions across various fields. By understanding how materials with high thermal mass can moderate temperature fluctuations, architects and engineers can design buildings that require less energy for heating and cooling. Insights from time lag studies can drive the creation of advanced building materials with improved thermal properties, contributing to the evolution of the construction industry.

By integrating those principles into the design and construction processes of concrete building frames, it is possible to contribute to a more circular and sustainable construction industry. To do this, it is important to plan for the effective involvement of multiple experts to the early design phase in order to define the best intervention's multidisciplinary goals.

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Textile as metaphore in the work of ”Christo and Jannete Cloude” (resilience and perseverance in everyday artistic routine)

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Abstract

This paper explores the intersection of textile, art, and the environment, drawing inspiration from the transformative works of Christo and Jeanne-Claude. The visionary approach of the artistic duo has deeply influenced the research, emphasizing the metaphorical power of textiles in art. Through monumental installations that blur the boundaries between art and environment, Christo and Jeanne-Claude's use of textile as a medium for landscape transformation is examined.

The study delves into specific projects such as "Wrapped Coast," "Running Fence," "Wrapped Trees," "Wrapped Reichstag," and "The London Mastaba," highlighting their temporary yet impactful nature. Drawing serves as a primary tool for conceptualizing their projects, facilitating both the artistic vision and technical aspects. The paper reflects on the collaborative partnership of Christo and Jeanne-Claude, their meticulous planning, and the deeper social and political messages embedded in their installations.

This act of wrapping symbolized resilience in its ability to provoke dialogue and emotional response, transcending mere physical transformation to evoke deeper philosophical and cultural reflections. Furthermore, the significance of the creative process in art is explored, inspired by insights from Jouhanis Palasma, emphasizing the transformative power of art in shaping perceptions of the environment and human interaction with it.

Keywords

environment, textile, art, drawing, wrapping

Introduction

Christo and Jeanne-Claude's works transitioned from purely sculptural objects to immersive spatial experiences, reflecting their shift in focus upon encountering American art. Initially, Christo's Early Works had a strong sculptural character. However, their approach evolved after moving to the United States, emphasizing the manipulation of space over traditional sculpture. By using space as their primary medium, Christo and Jeanne-Claude were able to engage viewers in a more profound, physical manner. This engagement transformed spectators into active participants or "visitors," who experienced the art through interaction—walking, touching, and perceiving. Their installations, such as "Wrapped Floor and Covered Windows," elicited diverse reactions from visitors, demonstrating the artists' ability to create complex, multi-layered interactions through spatial interventions. The couple's fascination with American art, particularly the atmospheric qualities in Jackson Pollock's works, influenced their shift towards space as a raw material. Christo appreciated the "physicality of the frame" in Pollock's paintings, which emphasized sensitivity and experimentation over explicit meanings. This perspective informed Christo and Jeanne-Claude's artistic direction, focusing on the dialogues between object, person, and place. Their works, such as the Show Cases, Show Windows, and Store Front series, illustrate this transition. Initially, these objects contained spaces, inviting viewers to explore the hidden dimensions within. This exploration of space culminated in larger, more ambitious projects that blurred the lines between sculpture, architecture, and environmental art. Their installations introduced themes of materiality, abstraction, and temporality, often appearing as natural extensions of their environments despite their artificial origins. The resilience of Christo and Jeanne-Claude's work lies in their ability to transform spaces through simple actions like wrapping, accumulating, and concealing. Their installations challenge viewers' perceptions and prompt questions about the nature and purpose of art. As George Segal noted, Christo's interventions divert attention from the familiar associations of everyday objects, leading to a deeper engagement with the art. In summary, Christo and Jeanne-Claude's resilience is evident in their innovative use of space to create immersive, thought-provoking experiences. Their ability to transform environments and engage viewers in a dynamic dialogue underscores the enduring significance of their work.

The artistic indiscipline of the 20th century

The production of the artists Christo (1937-2020) and Jeanne-Claude (1937-2009) is often described as uniform. While they were constant in the materialization of their art in terms of appearance, their artistic philosophy evolved significantly. Their idea of art changed and expanded over time, as seen by comparing their early works with their later projects. The shift from sculptural objects to artistic projects is not only dimensional and formal but also conceptual, philosophical, and aesthetic. Despite these changes, their ultimate objective remained consistent: the desire to "make art," transforming the perception of everyday objects through alteration and incorporating abstract qualities. Initially, they manipulated objects to give them the status of art. Later, they expanded their understanding to include architecture and landscape environments, projecting their temporary transformation into works of art. This shift added a spatial, phenomenological dimension to their work.

Evolution of Plastic Art

The evolution of plastic art in the 20th century is characterized by indiscipline, a term used here to describe the blending of painting, sculpture, and architecture. Historically, these disciplines have been related, reflecting the philosophical ideas of their time. However, the 20th century saw a trend towards the independence of these arts, culminating in the avant-garde movements. Painting became associated with image and symbolism, sculpture with matter and volume, and architecture with space and movement. Traditional sculpture struggled to find its place in this new ideology until the second half of the century when artists like Christo and Jeanne-Claude redefined it by incorporating qualities from architecture and painting. This expanded the definition of sculpture to include artistic spaces or installations, a concept that defied traditional classifications of art. Christo and Jeanne-Claude sought to "make art" without being confined to being a painter, sculptor, or architect exclusively. Christo, trained in all three disciplines, created works that were a mixture of these elements, reflecting his desire for a free, accessible, and popular art.

From Object to Space

The transition from working on artistic objects to proposing transformed spaces designed for active public experimentation marks a significant shift in Christo and Jeanne-Claude's work. This transition is particularly evident in the 1950s and 1960s, a period of intense artistic activity and personal discovery. Christo's arrival in Paris in 1958 marked the beginning of this journey. There, he met Jeanne-Claude, and together they explored dynamic and modern art. Their Parisian period, though brief, was productive and influential, characterized by works that manipulated found objects into art. This phase included series like Surfaces d'Packaging, Wrapped cans and bottles, and Packages, all of which focused on transforming everyday objects into sculptural forms through wrapping and accumulation. These works maintained a sculptural discipline but began to hint at larger projects that would later define their career.

Influences and Evolution

Christo and Jeanne-Claude's work in Paris was influenced by the lively cultural environment and figures like Duchamp, Klein, and Cage. Despite their independence, they were often associated with movements like nouveau réalisme and the KWY Group, which shared similar ideologies. Their early works reflect a fascination with the avant-garde, particularly Picasso and Duchamp. Christo's early works, such as the

Surfaces d'Packaging and Cratères series, were closer to painting in form but pursued total abstraction, creating a formal ambiguity that placed them between painting and sculpture. His wrapping technique, influenced by objet trouvé and arte povera, transformed common objects into autonomous art pieces imbued with abstract qualities like fragility and mystery.

Conceptual and Philosophical Shift

The true conceptual and philosophical shift in Christo and Jeanne-Claude's work occurred when they moved to New York in 1964. Here, their art expanded beyond objects to encompass space, influenced by the environment and artists like Pollock and the Pop-Art movement. This transition is exemplified by projects like Wall of Oil Barrels – The Iron Curtain and L'Arc de Triomphe Wrapped. These projects marked the beginning of their exploration of larger artistic spaces and installations. Their work evolved to incorporate social and humanistic themes, using materiality and decontextualization to communicate messages without imposing specific interpretations on the audience. This approach allowed for a broader dialogue between the observer and the work, emphasizing the sensitivity of the human experience over strict disciplinary boundaries.

Drawing as creation

A life closely intertwined at the intersection of textile, art and the environment, drawing inspiration from the transformative works of Christo and Jeanne-Claude. Their visionary approach has deeply influenced my research, prompting reflection on the profound metaphorical power of textiles in art.

The artistic duo's diverse backgrounds and collaborative partnership paved the way for monumental installations that blur the boundaries between art and environment. Their use of textile as a medium for landscape transformation is a hallmark of their work.

Wrapped Coast: Transforming Landscapes Explore the temporary metamorphosis of California's hills through the installation of a 24.5-mile-long fabric fence. This project not only harmonized with the natural surroundings but also sparked vital discussions on environmental stewardship and land use.

Art Is a state of being

You are born with the capacity, to integrate your energy into objects, to create, objects that never existed before.
They can enlarge the knowledge of man about his planet, about his environment, about his problems.

Magdalena Abrakanowic

Through this contribution that Abrakonovic makes on her work on the ability of man to become the creator of new forms in nature. As a creative thought energy which then turns into a visible tangible project. In this way, I look at the whole process in Christo's work, as a form that is created in his mind born from a real picture (which in his case is the object or nature that surrounds us) which then develops in the mind his, is created through the drawings he develops during the artistic process. And then all this long relationship where he gets inspired, creates and reflects closes with the contracting with the people who are part of that environment. Sometimes they choose to follow him, sometimes they choose to refuse to cooperate with his projects. But this is the phase of his work, which is very important. Because at this moment we can reflect on the need that our nature has for that part of people who respect it and try to cooperate with it without damaging it without transforming it but living it.

And all these pauses of his work take place without creating protests to protect the various rights related to our environment. But working and showing this whole process through their artistic movement.

When nature imitate art. This is a great reflection of a life spent in creation through drawing and imitation of the creation on the nature environment.

Drawing serves as a primary tool for conceptualizing their projects. Before embarking on large-scale installations, Christo and Jeanne-Claude create detailed sketches, renderings, and plans to visualize their ideas. These drawings allow them to explore different possibilities, refine their concepts, and communicate their vision to collaborators, stakeholders, and the public. The drawing process is iterative, allowing Christo and Jeanne-Claude to experiment with various compositions,

Figure 1 a&b. Magdalena Abakanowicz,sketches. b Magdalena Abakanowicz installation view of "Every Tangle of Thread and Rope" at Tate Modern, 2022. © Fundacja Marty Magdaleny Abakanowicz Kosmowskiej i Jana Kosmowskiego, Warsaw. Photo © Tate Photography. Photo by Madeline Buddo. Courtesy of Tate.

materials, and spatial arrangements. They often create multiple sketches and studies, refining their designs through successive iterations. This iterative approach enables them to fine-tune the details of their installations and ensure that they achieve the desired aesthetic and environmental impact. Drawing also facilitates the technical aspects of their projects. Christo and Jeanne-Claude meticulously plan every aspect of their installations, from the dimensions of the fabric to the structural supports and anchoring mechanisms. Detailed technical drawings and schematics help them coordinate logistics, anticipate challenges, and ensure the safety and stability of their installations. Christo and Jeanne-Claude use drawings to convey their artistic vision to engineers, fabricators, permitting agencies, and other stakeholders involved in the realization of their projects.

These drawings serve as blueprints for execution, guiding the construction process and ensuring that everyone involved is aligned with the overarching vision. Beyond its practical utility, drawing allows Christo and Jeanne-Claude to imbue their projects with emotion and expression. Through their sketches and renderings, they capture the essence and atmosphere of their installations, conveying the awe-inspiring scale, beauty, and temporality of the transformed landscapes. The intensity of their drawing process reflects their deep passion and commitment to their art, inspiring others to engage with their work on a profound emotional level. The work of Christo is divided in two parts. The first phasis is in the project sketches and in they mind and in the mind of 100 people that say no is impossible end anther 100 that say yes I can help you. The importance of her work was the process, the every day routine that he need to draw to work to make many and to spend their money for their dreams work of art. Is the consumerism life that he leave and use everything por recreate thoughts and dreams about the importance of environment.

When schetching an imagined space, or an object being designed, the hands is in a direct and delicate collaboration and interplay with mentall imagery. The image arises simultaneosly with an internal mental image and the sketch medialted by the hand, It is imposible to know appeared first, the line on the

Figure 2. Christo in his studio working on a preparatory drawing for L'Arc de Triomphe, Wrapped, New York City, September 21, 2019. Photo: Wolfgang Volz © 2019 Christo and Jeanne-Claude Foundation

paper or teh thoughts, or a consciousness of an intention. In a way, the image seems to draw itself throught the human hand. Drawing is a proces of observation and expression, receiving and giving , at the same time. It is always a result of yet another kind of double perspective.

The role of fabrics in their work

Christo and Jeanne-Claude's artistic vision revolves around the idea of transforming ordinary landscapes and structures into extraordinary art pieces. They use fabric as their medium to create temporary, monumental installations that capture the imagination and challenge perceptions. Fabric is central to their work. They meticulously select the type, color, and texture of fabric to suit each project, often utilizing industrial materials like nylon or polypropylene. The fabric serves not only as a means of aesthetic expression but also as a tool for altering the visual and spatial qualities of the environment. Their installations are deeply rooted in the environment. They carefully consider the natural surroundings of each site, engaging with the landscape in a way that highlights its beauty and significance.

By wrapping or draping structures and landscapes, they temporarily alter the visual appearance of the environment while maintaining a profound respect for its integrity.One of the defining characteristics of Christo and Jeanne-Claude's work is its temporality. Their installations are intentionally temporary, existing for a finite period before being dismantled and leaving no permanent trace. This ephemeral quality adds to the allure of their art, encouraging viewers to appreciate the fleeting beauty of the transformed landscapes. Beyond their aesthetic impact, Christo and Jeanne-Claude's installations often carry deeper social and political messages. They provoke thought and discussion about public space, environmental conservation, and the role of art in society, inviting viewers to contemplate the interconnectedness of humanity and the natural world. All drawings are made before Christo work was accept or be ready for projection, let's reflect on the profound nature of the creative process, inspired by the insights of Jouhanis Palasma. When we sketch an imagined space or an object being designed, there's a delicate dance between our hands and our minds. The act of drawing is not just a physical one; it's a collaboration between our internal imagery and the external expression through our hands. In this process, it's intriguing to ponder: Which comes first, the line on the paper or the thought behind it? The truth is, it's a simultaneous emergence of both, intertwined in a dance of creation. The image seems to draw itself through the human hand, guided by the conscious and subconscious intentions of the artist. Drawing, therefore, becomes a profound act of observation and expression, a reciprocal exchange between receiving and giving. It's a manifestation of a double perspective, where the artist engages with both their internal world and the external reality they seek to shape.

In the footsteps of artists like Christo, we recognize the transformative power of this creative process. Through art, we not only reimagine our environment but actively participate in shaping it.
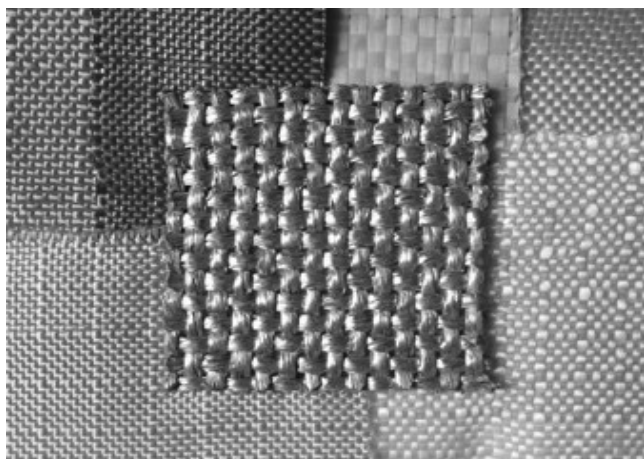
Figure 3. Christo and Jeanne-Claude, Running Fence, 1972–76, woven nylon, steel cables, steel poles, guy wires, hooks, earth anchors, 18′ × 24 1/2 miles. Photos: Wolfgang Volz

"Each piece of fabric is a reminder of the work of Christo and Jeanne-Claude. The variation of colors, materials and textures, provide an iconographic reference to a masterpiece of modern art: starting with the concept of the material and architecture all the way to ways of conviction in people's minds. Christo and Jeanne-Claude have not only extended the denomination of sculpture and Land Art within classic art history, they have manifested societal and democratic dialogue within their art form. The synaesthetic perception of feeling these fabrics, as well as ascertaining them in great visual detail, aids to transport their oeuvre in aesthetic value and momentum. Furthermore, every single fabric represents an original piece of a project, and thus constitutes a relic of classic modern art history."

André Chahil

The importance of cooperation between people

Before to present some important work of the artists I wont to dedicate same rows about the opinion of Marina Abramovic for the work of Christo and Jannetta Cloud.

Marina abramovic   Marina Abramović is a pioneering performance artist known for her groundbreaking and often provocative work that explores the relationship between performer and audience, the limits of the body and mind, and the transformative power of art.

She talk about the importance of the work of Christo :

For every of this project he need a community to be on his side to running fast how many negocation to makes to the people ,to understand the concept and to let work in theyr property.

This is a huge negotiation and you have to do this in a human level.
You need to meat the farmers and tell them why you are doing that,
TO UNDERSTEND THE MEANING OF ART.

Marina Abramovic

And the beauty in his work is that he have the capacity to create a interaction between people and nature or people and heritage. Regarding Running Fence (1976). This project involved erecting a 24.5 mile long fence made of white nylon fabric across the hills of northern California. It stretched across Sonoma and Marin counties, creating a temporary work of art

that blended into the landscape. The Running Fence project by Christo and Jeanne-Claude, completed in 1976, was truly an important environmental artwork that sparked discussions about land use, art and the natural landscape. By erecting a 24.5-mile-long fence made of white nylon fabric across the hills of northern California, Christo and Jeanne-Claude temporarily transformed the landscape. The fence ran through Sonoma and Marin counties, harmonizing with the surrounding hills and fields. This integration of art with nature encouraged viewers to reconsider their relationship with the land and the ways in which art can intertwine with the environment.

Figure 4 a. Wrapped Coastline. 4b. Christo and Jeanne-Claude Wrapped Coast, Little Bay, Australia, 1969 Color offset lithograph Edition 15/100

For the project "Wrapped Coast", Christo and Jeanne-Claude wrapped a 2.4-kilometer stretch of coastline in fabric. They used 95,600 square meters of erosion control fabric, secured with 56 kilometers of polypropylene rope. The fabric was attached to the rocks and stretched to the waterline, transforming the rocky coastline into a surreal and visually stunning landscape.

It took place from October 28 to November 23, 1969, along a section of the coastline of Little Bay near Sydney, Australia. Nevertheless, the entire project continued, influencing later generations of artists and prompting conversations about the differences between art, landscape, and environment. The Wrapped Coast demonstrated Christo and JeanneClaude's commitment to creating large-scale works of art that relate to beauty and invited viewers to see familiar landscapes in new and unexpected ways.

This work contributed to discussions about land use, the impact of human activities on the environment and the value of

preserving natural landscapes. In this sense, the project added to the broader cultural dialogue about environmental stewardship and the importance of balancing human development with the conservation of natural resources—a conversation closely related to the challenges posed by climate change.

Christo and Jannete Cloude projects

(Wrapped Trees project, The Reichstag, The London Mastaba)

1."WrappingTrees project " Christo and Jeanne-Claude's

Figure 5. 5a."3 Chênes empaquetés" (Projet pour la Fondation Maeght – St. Paul de Vence) , Drawing 1967, Pencil and wash .
5b. Wrapping Trees 1998 pencil, charcoal, wax crayon, photographs by Wolfgang Volz, fabric sample and tape
drawing in two parts: 38 x 244 cm. and 106.6 x 244 cm.
5c.Visualization of tree crown formation captured by the artwork of Christo and Jean-Claude. (Christo and Jeanne-Claude, Wrapped Trees, Fondation Beyeler and Berower Park, Riehen, Switzerland 1997 – 98, Photo: Wolfgang Volz, ©Christo 1998).

Wrapped Trees project, also known as Wrapped Trees, Beyeler Foundation and Berower Park, Riehen, Switzerland, 1997-1998, was a temporary environmental artwork that involved the wrapping of many trees with fabric. The project took place in Berower Park near the Beyeler Foundation in Riehen, Switzerland, from 1997 to 1998. Christo and Jeanne-Claude wrapped 178 trees, mostly deciduous, in white fabric. The fabric was carefully wrapped around tree trunks and branches, transforming the landscape into an otherworldly scene. Like many of their other projects, Wrapped Trees was characterized by its temporary nature, as the fabric covering the trees was eventually removed, leaving no lasting impact on the environment. The artwork aimed to draw attention to the natural beauty of the trees and their surroundings, while challenging viewers to reexamine their perceptions of familiar landscapes.

While Wrapped Trees may not have directly addressed climate change, it contributed to broader discussions about human interaction with the environment and the ways in which art can encourage reflection on nature and our relationship to it. Additionally, the project emphasized the transient nature of the natural world, underscoring the importance of conservation and stewardship in the face of environmental challenges such as climate change.

2. "Wrapped Reichstag"

Figure 6. 6.a. Christo, Wrapped Reichstag, 1994, offset print with embossed foil print on thin cardboard,print and graphic art.
6.b.Visitors queue in 1995 to receive autographs from artists Christo and Jeanne-Claude, outside their most famous work, "Wrapped Reichstag", in Berlin. Photo: Reuters

The Reichstag, which houses the German Parliament, holds significant historical and political importance in Germany. By covering it with 100,000 square meters of silvery polypropylene fabric and 15 kilometers of blue rope, Christo and Jeanne-Claude transformed the building into a shimmering spectacle. The fabric was secured with steel cables and was illuminated at night, creating a striking visual effect against the Berlin skyline. The project was years in the making, with Christo and Jeanne-Claude facing numerous bureaucratic and logistical challenges along the way. However, "Wrapped Reichstag" ultimately became a symbol of unity and renewal following the reunification of Germany in 1990. While "Wrapped Reichstag" was primarily an aesthetic and artistic endeavour, it also had deeper symbolic significance. The wrapping of the building symbolized a temporary transformation, emphasizing themes of concealment and revelation, history and memory, and the impermanence of human structures. The project attracted millions of visitors, sparking conversations about art, politics, and the relationship between the past and the present. "Wrapped Reichstag" remains one of Christo and Jeanne-Claude's most celebrated and enduring works, leaving a lasting impact on the art world and the cultural landscape of Berlin.

3. "The London Mastaba"

Figure 7. 7.a.Christo and Jeanne- ClaudeThe Mastaba (Project for London, Hyde Park, Serpentine Lake)
7.b.Photo during the documentary on the bbc channel. Where he explains the depth of his study regarding the placement of the barrels, the importance of the angle which must be repeated precisely to create the stability of the barrels with one another.

"The London Mastaba" was indeed a monumental installation by the artist Christo, which was displayed in London's Hyde Park from June 18 to September 23, 2018. It was one of the artist's most ambitious projects and marked his first major public outdoor installation in the United Kingdom. The artwork consisted of 7,506 horizontally stacked barrels arranged to form a structure resembling a Mastaba, an ancient Egyptian architectural form with a flat top and sloping sides. The barrels were brightly colored in red, blue, and mauve hues, creating a visually striking contrast against the natural surroundings of the Serpentine Lake in Hyde Park. The Mastaba, draws inspiration from the ancient architectural form of the same name. The Mastaba has its roots in ancient Egyptian culture, where it served as a type of tomb structure with a flat top and sloping sides. Christo and Jeanne-Claude's reinterpretation of the Mastaba form in their art reflects their fascination with geometric shapes, monumental scale, and cultural symbolism. Simple yet striking geometric design evokes a sense of timelessness and monumentality, echoing the enduring legacy of ancient architectural forms. By reimagining the Mastaba in a contemporary context, Christo and Jeanne-Claude infuse it with new layers of meaning, inviting viewers to reflect on the intersection of past and present, tradition and innovation. As with many of Christo's projects, "The London Mastaba" prompted discussions about the intersection of art and the environment, the temporary nature of large-scale installations, and the role of public art in urban spaces. After the exhibition period, the barrels were dismantled, and the materials were recycled, leaving no lasting impact on the park. This work left a lasting impression on the city's cultural landscape and served as a testament to Christo's visionary approach to art and his ability to transform ordinary materials into extraordinary works of art. Like many of their projects, is ambitious in scale and vision. Its sheer size and complexity command attention, drawing viewers into an immersive experience that transcends

Figure 8. Christo and Jeanne-Claude at The Pont Neuf Wrapped in Paris, 1985. Photo: Wolfgang Volz © 1985 Christo and Jeanne-Claude Foundation

ordinary perception. Christo and Jeanne-Claude's work exemplifies the powerful convergence of art, textile, and the environment, creating immersive experiences that celebrate the beauty of nature while prompting reflection on our relationship with the world around us and drawing is an integral part of Christo and Jeanne-Claude's artistic practice, enabling them to conceptualize, communicate, and realize their monumental environmental installations with precision, creativity, and intensity.

Christo and Jeanne-Claude's work from the late fifties to the sixties represents a significant evolution in the understanding of plastic art. Their transition from object-based art to space-oriented installations reflects a broader trend in 20th-century art towards interdisciplinary and expansive definitions of artistic practice.

Christo and Jeanne-Claude's choice of materials demonstrated a profound understanding of durability, flexibility, and aesthetic impact. They often used large-scale fabrics, plastics, and other materials that could withstand outdoor conditions. The act of wrapping or concealing objects was more than a simple aesthetic gesture; it was a transformative act that challenged perceptions and invited contemplation. This deliberate concealment prompted viewers to see these objects in a new light, questioning notions of permanence versus impermanence, visibility versus concealment, and the adaptability of environments and societies to change. This act of wrapping also symbolized resilience in its ability to provoke dialogue and emotional response, transcending mere physical transformation to evoke deeper philosophical and cultural reflections.

Together, these dual concepts of resilience—both in the choice and use of materials and in the artistic act of wrapping or concealing—define the core of Christo and Jeanne-Claude's artistic practice. Their works not only showcased technical mastery and creative innovation but also embodied a profound belief in the transformative power of art to challenge, inspire, and endure. Christo and Jeanne-Claude's artistic practice often centered around the physical resilience of the materials they selected for their installations. Their choice of materials, such as large-scale fabrics and plastics, was crucial as these elements had to endure rigorous outdoor conditions throughout the duration of their projects. Whether wrapping buildings, bridges, or natural landscapes, these materials needed to withstand wind, rain, sun exposure, and varying temperatures, showcasing not only their durability but also their ability to maintain their structural integrity over time.

In the context of their installations, the resilience of these materials became symbolic of the artists' determination and vision. Each project involved meticulous planning and engineering to ensure that the materials could withstand the elements without compromising the artistic integrity or safety of the installation. This resilience was not just about physical endurance but also about the transformative power of art to reshape perceptions of space and environment. For example, their iconic project wrapping the Pont Neuf in Paris in fabric highlighted the contrast between the historic stone bridge and the ephemeral, shimmering fabric that temporarily altered its appearance. The resilience of the fabric, carefully selected for its ability to drape and cling to the architecture without causing damage, emphasized the temporary nature of the intervention while underscoring the enduring beauty and strength of both the bridge and the material. In essence, the resilience of materials in Christo and Jeanne-Claude's work embodies a synergy of artistry and engineering, where the choice of robust yet flexible materials not only facilitated the realization of monumental installations but also conveyed deeper messages about the adaptability of art and the environment to change. Their installations continue to inspire awe and contemplation, showcasing the transformative potential of materials in the hands of visionary artists. Christo and Jeanne-Claude's art embodies a symbolic resilience that goes beyond the physical materials they used. Through their iconic practice of wrapping or concealing objects and landscapes, they invited viewers to perceive familiar entities in a new and transformative light. This act of transformation was not merely about altering appearances but also about prompting profound contemplation on fundamental themes such as permanence and impermanence, visibility and concealment, and the adaptability of environments and societies to change. The deliberate act of wrapping monumental structures like buildings or natural landscapes with fabric or other materials created a temporary alteration of their usual appearance. This deliberate concealment served to highlight the inherent qualities of these objects or environments that are often taken for granted in everyday life. By temporarily masking these entities, Christo and Jeanne-Claude encouraged viewers to reconsider their relationship with the built environment and the natural world. Moreover, the act of wrapping also underscored the artists' belief in the resilience of art to provoke thought and dialogue across diverse audiences. It challenged perceptions of permanence by demonstrating the temporary nature of the intervention, thereby encouraging reflection on the impermanence of physical structures and the fleeting nature of artistic gestures.

In essence, the symbolic resilience in Christo and Jeanne-Claude's art lies in its ability to transcend the physical act of wrapping to evoke deeper philosophical and existential questions. Their installations served as catalysts for conversations about visibility and concealment, the cyclical nature of change, and the enduring power of artistic expression to reshape perceptions and provoke contemplation. Through their transformative artworks, they left a legacy that continues to inspire awe and introspection, reminding us of the resilience inherent in both art and the human spirit.

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Changing Context in Urban Regeneration: How the Post-Socialist City of Tirana Failed to Affirm the Legacy of Socialist Realism.

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Abstract

After World War II, no other Eastern European countries succeeded in controlling urbanization to the same extent as the communist Albania did. As a largely non-industrialized country its capital city was perceived as the focal point for the implementation of the aspired modernisation. While the process was inspired by the Soviets 'five-year plans of encompassing targets for construction and services', the architecture of Socialist Realism was used to convey the regime's clear political agenda and its monumentality endeavored to impose a clear sense of hierarchy.

Transitioning from communism, Tirana as the capital city became westernized in appearance and its cultural-political core continued to be developed around the center. By architects and planners alike it once again was perceived as a "sublime space" that this time would represent the democratization of the Albanian nation, state and society. Furthermore, with the introduction of capitalism and market economy the city experienced a rapid and dramatic population growth. But, as housing became increasingly commodified and regarded as an asset, rather than a social good, the new buildings began to replace the socialist ones, and while expanding and occupying the remaining vacant spaces a compact yet unplanned city started to emerge.

This paper argues that the contemporary Tirana is silently erasing its socialist legacy. Soviet-era Socialist Realism architecture added the last layer on the history of authoritarian design before capitalism taking it over and doing probably more harm than all previous regimes taken together. Rather than increasing the city's liveability, the 21st century urban densification process is transforming Tirana to a vivid monument to capitalism.

Introduction

The establishment of socialism in Albania found Tirana city center composed by the monumental department building around the Skanderbeg Square and its Neo-Renaissance style echoing the fresh legacy of Fascism. The newly set regime found itself unprepared to act against a classic case of "clean" architecture, but, however, tried to blend it by vividly implementing an amalgam of styles swiftly borrowed by the USSR. As there was no neoclassical legacy and even less an attempt to embrace any values from the Ottoman Empire which during the last decades saw the development of a new architectural style called neo-Ottoman or Ottoman revivals, the return to neoclassical architecture was a clear product of USSR cultural exportation which were neither justified nor confronted with any present-day style. Later on, as Albanian communism crushed any opposition in its path and paved its way unbothered by equally strong ideologies, leaving no room for others to emerge, it found it easy and presumably necessary to let the aesthetics of Soviet Socialist Realism blossom.

As the move to neoclassical architecture was never questioned, Viktor Kokorin[1] in citing Lenin stresses: "Far from rejecting the most valuable achievements of the bourgeois epoch, Marxism has on the contrary assimilated and refashioned everything of value in the more than two thousand years of the development of human thought and culture; our architecture like all socialist culture, is the direct heir, and successor of the best in the historical legacy of past eras", its embracing intended to unite the various schools of literary though and define a movement that would act as a socio-political umbrella for all the socialist societies.

LITERATURE REVIEW:

2.1 Socialist Realism's necessary evil

Being physically distant from the center of the empire and having no strong gravitational pull, cities in the Western Balkans were defined by what the twentieth-century historian of Croatian and Dalmatian art Ljubo Karaman called the freedom of peripherality (Blau & Rupnik, 2007). Described as a cultural condition that is radically different in terms of its relation to the center, the freedom of periphery helped the formation of urban territories that maintained a more indigenous authentic expression. As the founding of the modern states in the Balkans revealed cities characterized by the imperial duality of the Ottoman Empire which throughout its reign did not invest much in the infrastructure within its lands, up to that moment, no major movements in architecture had managed to penetrate the country. Ottoman Empire dissolution exposed the country's immaturity to carefully evaluate complex aesthetics associated with political movements. But, As the *Sublime Porte* had already been in decline for centuries, its contribution in the fields of art and architecture after the Renaissance appeared locked within the Turkish carpets, decorative calligraphy, painted ceramics and religious ornaments. Since the mosques and külliyes had been the most representative monuments of its architecture, the monumental department building around the

Skanderbeg Square in its Neo-Renaissance style was a winner without fighting.

According to Alfred H. Barr Jr. (Soby & Alfred H. Barr, 1949), "twentieth-century Italian art has produced two movements— Futurism and the *scuola metafisica* — which have made vital contributions to the international mainstream of art in our time". In this respect, according to Walter Benjamin, Fascism was merely exploiting widespread aesthetics, and deemed as the "the Church of all heresies[2]" , in Albania it saw fertile grounds where its ideas could be easily implemented. As Mussolini attempted an assimilation to fascist culture of all manner of representations from the Roman empire to rationalist architecture (Merjian, 2018), in the case of Tirana the aesthetics which were imposed had no occasion to be confronted. However, Fascism in Albania had simply no physical time to install a fully comprehensive ideological reign. Neither Futurism nor the scuola metafisica were put forward or embraced the cultural domain. As a consequence, after the war, when socialist realism began to be implemented and came into effect, it did not confront any equivalent ideologies already active. Whilst in the USSR the turn to neoclassical architecture was part of the socialist endeavor to adopt certain successful stages of its cultural legacy, in Albania, its implementation had no strings attached to the country's cultural past. Additionally, the reductive rationalism of Gherardo Bosio and Neo Renaissance of Florestano Di Fausto was considered as a given, unavoidable and too obvious to be submerged, but never part of its developing narrative. The first regulatory plan during communism tried to intervene onto the Skanderbeg Square which was previously designed through the principles of "Decorative Novecento Architecture", a movement that was erected in Italy by the beginning of 1920s.

Meanwhile, in 1947, there was established the country's first institute of urban design and planning, including Town Planning design (later to become the Institute of Town Planning and Architecture). Albania had little experience in the planning field at that time and the enterprise was assisted by the Soviet counterparts. The Institute of Town Planning and Architecture introduced its first Regulatory Plan of Tirana in 1957. As the socialist city grew primarily by expanding outwards to as yet unused areas, periodical regulatory plans were drawn up to direct the urban expansion. The drafting of the first socialist regulatory plan for Tirana city center in 1947 applied erasure and a specific demolition-based urban reconstruction strategy, where the clearance of the old bazaar was among the first imperative measures. As the formal center of a typical feudalistic town, the bazaar posed a viable antithesis of the centralized economy – one of the pillars of communism. However, rather

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[1]*Zubovich, K., (2021), Moscow Monumental: Soviet Skyscrapers and Urban Life in Stalin's Capital, Princeton University Pres*
[2]*The fasci were not to be aligned with any political party and explicitly rejected "creeds" and "dogmas," describing themselves as the "church of all heresies." - The History of the Twentieth Century, Episode 197, "1919 – Italy I" Transcript*

than underlying the points of friction between communism and the city's Ottoman legacy, the multifaceted character of the post-war reconstruction policies aimed at transforming the city to a concrete spatial agenda for Marxism. As there was a clear political paternalism on town-planning which developed primarily on the idea of manufacturing the socialist society, it also aimed at clearly showcasing its contradiction with the Ottoman past, as an essential representation of the new beginning.

The perpetual politization of aesthetics

Communism in Albania as elsewhere in Eastern Europe aestheticized its supposedly strong elements, and against the fascist strategy of rendering politics aesthetic it responded by politicizing all the fields of art. While in the USSR, the attempts to control the content of art and literature goes back to the Tsarist government, in Albania, during the first decade of the totalitarian regime, the political aspect of socialist realism had no similarities with any previous long-running features of the cultural life. It was not a continuation of any pre-communism state policies and therefore its introduction rather than something to be tested was seen as a significant step towards de-Ottomanization and further modernization.

Socialist realism in USSR's philosophical aesthetics relied on Maxim Gorky's enunciation which was revealed as a doctrine in 1934 at the Soviet Writers Congress. However, it was fundamentally related to neoclassicism and the Russian tradition of realism in literature during the nineteenth century. As it served as the basic method of Soviet Literature and Literary criticism, according to Nelson (Cary & Grossberg, 1988) its purpose was to limit popular culture to a specific, highly regulated faction of emotional expression that promoted Soviet ideals. However, according to Wojciech Lesnikowski (Lesnikowski, 1992), "communist belief develops on the ideal that object making should have no role in a truly socially motivated society, and socialist realism's desire for order and character in architecture rather for a style speaks for a way of living". According to Walter Benjamin (Benjamin, 1935) the aestheticization of politics is a key ingredient to fascist regimes, and probably, as Desmond Manderson (Manderson, 2018) notes, "it is misleading to take this contrast between fascism and communism at face value". Speaking about the politicization of aesthetics, Emilio Gentile (Gentile, 1990) considered fascism a form of political religion, which was largely influenced by Marinetti's futurist manifesto as a national rebirth from decadence. In the case of Albania, Fascism lasted for approx. four years and much of its effort was invested on producing architecture. The same goes for socialist realism which did consider the capital as the leading city in their presumed process of modernization, and speculative approach fostered by similar case studies would have equally exposed the Socialist Realism vision of total planning and total design. For instance, the ideology-driven conception of Nowa Huta in Poland showcases a classical example where Socialist Realism was thoroughly materialized.

But, is there any theoretical contradiction in Social Realist architecture? What would have been the future of town planning in Tirana had there been no Fascist legacy? These are questions that rather than speculating "on the possibility of an absolute architecture[3]" try to understand to what extent was town planning subject to subsequent political paternalism. As Robert Venturi (Venturi, 1966) stresses, "architects can no longer afford to be intimidated by the puritanically moral language of orthodox Modern architecture", socialist realism in architecture was all about maintaining its morality which was initially posed by Modernism but in communist countries forged and mastered by Marxism. Focusing on architecture, Anders Åman (Åman, 1992) notes that "socialist realism as it applied to building throughout eastern Europe and the Soviet Union derived in no small measure from the example of Russian neoclassicism. Architects in each of the six countries encompassed by Anders Aman's book-Czechoslovakia, Hungary, Poland, Rumania, Bulgaria and DDR assimilated Soviet models in various stylistic approaches that included approved local "traditions." According to Robert Venturi (Venturi, 1966), "it is a characteristic of the twentieth century that architects are highly selective in determining which problems they want to solve". But, which problems did Social Realism in Albania solve? A thorough analysis of the built environment shows that more than massive rationalizations for simplification, problem solving was not principal in its agenda. Communism replied to fascism's aestheticization of politics by politicizing art and its architecture functioned as monumental representations of the regime, adhering to the socialist-realist dictum: 'socialist in form and national in content'. Rather than a work of beauty, harmony and good proportions, the aesthetics of communism were meant to appeal to a general public. The architecture proved to be a powerful tool of propaganda and the failing to affirm the Socialist Realism legacy after the 90s came also as a reaction precisely to its politicization of its aesthetics.

According to Desmond Manderson (Manderson, 2018), "the problem of the relationship between aesthetics and politics is essentially one of time—a problem not of vision but of transition". Additionally, for the historian Emilio Gentile the aestheticization of politics and politicization of the aesthetics are not mutually exclusive, and have a large degree of the other[4]. When the Albanian–Soviet split occurred in the 1956–1961 period, Albanian communist leaders profoundly condemned Nikita Khrushchev's subsequent de-Stalinization and retained the Soviet Union's initial aesthetic-political influence. In the meantime, even though socialist realism was already imposed throughout Communist Europe, Yugoslavia applied a mild form of it and remained committed to a more international modernism.

METHODOS:
Superimposition and Speculation: The impossibility for a Pruitt-Igoe Myth[5]
Among others, the global failure of communism exposed the weaknesses of its housing program. Since it did function as a national project designed to meet the pressing need for public

housing, the intense processes of parasitism and informality that started after the 90s once again proved the validity of Frederick Engels quote (Engels, 1872) that "the housing question can only be solved when society has been sufficiently transformed". The intended eradication of classes did not resolve the class struggle and neither Socialist Realism resolved the Albanian society housing question. On the contrary, it exposed the financial deficit of a country that had just embarked on the journey to functioning as an independent society.

According to Vladislav Todorov (Todorov, 1991), "communism created ultimately effective aesthetics structures and ultimately defective ones. That is what empowers its strong presence and durability in the world". A post occupancy evaluation of socialist housing would have exposed the failure in providing favourable housing conditions and in eliminating the housing shortage. According to Kazimierz Zaniewski (Zaniewksy, 1989), "while in most Western countries the goal of matching housing units with households has been achieved, in most communist countries the shortage of dwellings in relation to the number of households is still the main problem that overshadows all the others". So, to what extent was socialist realism able to expose its deficiencies and undergo a process of internal purification? As Friedrich Engels called to turn the society into collective owners, prevented Socialist Realism from being maintained from within.

Architectural historian Charles Jencks cites that much-seen dynamiting of Pruitt-Igoe as the moment "modern architecture died"[6] . As a relatively quick response towards its failures the dynamiting of Pruitt-Igoe speaks for a functioning democracy able to act in case of urgency. As Pruitt-Igoe became a symbol of modern architecture's failure, it also showed the ability of the West to reflect upon its mistakes and undergo a catharsis process which eventually gave birth to Postmodernism. In this respect, what would be actual chances for 'Social Realist Pruitt-Igoe'? At 'No Accident, Comrade: Chance and Design in Cold War American Narratives', Steven Belletto (Belletto, 2012) explains how the denial and eradication of chance became symptomatic of Soviet tyranny. As totalitarianism denied the very existence and operation of chance in the world, it would have been naïve to believe that a theory proclaimed to be infallible, both scientifically and morally, would admit any design failures. On the contrary, any grave error or lasting damages would have been explained as missteps or temporary difficulties. So, this association of chance with democratic freedom can accept and reflect upon the emergence of Pruitt-Igoes, as it already did. According to Belletto, the objective world is governed by "absolute chance" which is a sign of true reality, and intellectuals across disciplines agree with that. Having said that, all possible ideologies can be subject to dysfunctionality imposed by unforeseen circumstances. But, quoting V. I. Lenin, "The teaching of Marx is all-powerful, because it's correct" (Lenin, 1913), Marxism does not accept absolute chance, but, on contrary, it tolerates the "narrative chance", which is rather tied to planning and design. So, the only way a Pruitt-Igoe could have been accepted was as a scripted accident

showcasing a design task turned into a problem of how, and to what ends, was an appropriate synthesis of cultural continuity with 'the latest innovations of science and technology'.

RESULTS AND DISCUSSION
POST-SOCIALISM DISTORTED

The introduction of socialist realism was alien to the Albanian cultural environment but faced practically no contestant. Further, the other political opponents had no affiliation with any art movement, and so did the monarchic regime. This made it easier for the Socialist Realism to gain territory after more than two decades of mass implementation in the USSR. However, as it did succeed to avoid a *God's Own Junkyard*[7], its false consistency prevented the city to grow on its roots. Eager confrontation with the monumentality inherited from Fascism, the newly set regime redesigned the center fully aware of its contradictions in scale, rhythm and texture, which similar to Piazza S. Marco in Venice, as Venturi explains (Venturi, 1977, p. 54), "the varying heights and styles of the surrounding buildings violate its consistent spatial order". Even though the newly established regime saw town planning as a leading instrument towards crystalizing its ideas, it was practically impossible to avoid responding to the Italian legacy. But, in order to prove the accuracy of Socialist Realism doctrine on town planning, cases where town planning was not subject to any previous political ideology should examined.

According to Catherine Cooke (Coke, 1989), "Socialist Realism core principle was critical assimilation of the heritage". But, as Socialist Realism died with the fall of the Berlin Wall much of its own heritage became subject to aesthetic alienation. In the case of Albania, the capital's center was previously built under foreign domination, and the mass eradication of communist heritage delivered a false consistency which after the fall of the regime left the city completely exposed to foreign influxes on planning and design. As the post-socialist urban landscapes grow as per socialist city principles but try to maximize the regained freedom through a pressing acquisition of "the competence to build"[8], by their own nature

[3] In The Possibility of an Absolute Architecture, Pier Vittorio Aureli proposes that a sharpened formal consciousness in architecture is a precondition for political, cultural, and social engagement with the city (Aureli, 2011).
[4] https://rayvenndclark2015.myblog.arts.ac.uk/2015/11/05/political-aesthetics-a-new-beginning/
[5] The Pruitt-Igoe Myth. The film provides an alternative to the popular explanations of Pruitt-Igoe's demise.
[6] According to Charles Jencks, the very beginning of Postmodernism corresponds to a destructive event: on March 16, 1972, the first out of 33 buildings of Saint-Louis's Pruitt-Igoe neighborhood explodes and collapses to the ground (domus, n.d.).
[7] Blake, P., (1979), God's Own Junkyard: The Planned Deterioration of America's Landscape. The book contains many black and white photos of the desecration of the U.S. landscape in the late 50's/early 60's (Blake, 1979).
[8] Theorizing patrimoine: reflections on Françoise Choay's textes instaurateurs - LAUREN M. O'CONNELL. arguing that the very survival of rooted human cultures depends on the prolongation of our "compétence d'édifier" –our ability to innovate, to imagine new forms and architectural frames for our lives in community.

they evolve against the doctrine of Socialist Realism. The promotion of the rational and utilitarian use of the resources available gets replaced by a pervasive aim of attracting external investment. A creative engagement of political instability combined with rapid densification manufactures the 'naturalization' of ever-changing the collage city.

CONCLUSIONS

As an inescapable burden, the Italian legacy served as a solid starting point for all the regulatory plans that emerged during the past century. Eager to challenge it but unconfident to inflict any precarious modifications, for these plans the Italian legacy was the necessary evil upon which their scholar narrative emerged. Further, to a certain degree it excused the socialist-realism dysfunctionality which hid behind the urgency to integrate what Fascism had left unfinished.

After defeating the socialist vision of 'total planning' and 'total design', the post-socialist city radically challenged the traditional urban guidelines. The instant eradication of socialist grand urban rules strangled the emergence of a resilient city which quickly got engaged in a neoliberal post-socialist endeavor which was characteristic of new democracies that emerged after the 90's. However, as an ease of motion unknown to any prior urban development was being experienced, the neoliberal city grew on the existing infrastructure while reinforcing its existing spatial urban structures. The transition from a state-controlled command economy to market-driven capitalism lacked ideology at core allowing for an exuberance of incoherent paths of development. The failing of socialism left its dwelling legacy at the mercy of decentralized models of governance, which combined with new forms of individual freedom eventually incepted informal settlements and extensive parasitism in architecture.

As neoliberalism created the conditions for capitalist class formation, any form of 'after urban regeneration' principally adopts the neoliberal frame of unrestricted development. As a consequence, post-communist capital cities' real estate consistently outperforms national averages. The socialist city over-exploited the architectural content as a propaganda tool. The digital age offers new ways of mass communication making the power less evidenced in the buildings. As manipulating architecture as Socialist Realism no longer manipulates ideas about reality, the post-socialist city learnt to adopt and quickly embrace the features of the neoliberal economy. All forms of state intervention aiming at substituting the collective judgment produce entanglement of public and private property and use. As institutions of contemporary capitalism are designed to facilitate this process, neoliberalism in post-communist countries might as well be a destructive force.

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Architectural ungrammaticality: the case of Book Building in the center of Tirana.

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The Book Building (BB) tower, along with other towers, was also discussed in another article I published in issue 26 of Forum AP titled "Vertical Tirana 2023: When an Elephant Enters into a Glass Shop" (Kumaraku, 2023). In that article, I criticized the violence and insensitivity with which these projects are introduced into a fragile urban context such as the center of Tirana. Considering the issue of urban violence addressed in the aforementioned article, where I referred to BB as a "garage tower" due to the first impression it gives from a formal perspective, we will continue in this article with the architectural analysis of the building. We will not analyze the functional and structural aspects. We will focus solely on the ge-ometric/formal analysis of this work, listing a se-ries of critical points it presents.

First, we will begin by quoting the studio that de-signed it, which on its official website states about this building:

"In the absence of a restrictive set of urban rules, this project is an opportunity to engage in an open dialogue on how we envision densi-fying the centre of Tirana.

The project bears a responsibility in showing how this future can be envisioned. We have identified some of the important as-

pects that make Tirana a unique and high-quality metro-politan centre. The project idea translates these different aspects into a prototype for the future Tirana." 51N4E. (n.d.).

Paraphrasing what has been written on the offi-cial website of 51N4E, Johan Anrys and Freek Persyn, or someone else on their behalf, it can be briefly stated that the architects claim that, due to the lack of urban regulations in Tirana, they can do whatever they want to densify its center. The representatives of 51N4E, or whoever else for them, continue to say that they have identi-fied a series of important aspects that make Tira-na unique, without specifying what they are, and have translated them into a new tower proto-type.

In my area, we use the expression "Me hengert mortja mua" or simply "u mortja mua," which is difficult to translate into English because it fun-damentally embodies the skepticism of a people who cannot be easily mocked.

When everyone starts using empty words that say nothing except for a rhetorical discussion, which is as stable as a ship on top of the Himala-yas, the discussion loses its value and becomes useless. Everyone uses empty words to say noth-ing. What are these *"some of the important as-pects that make Ti-*

rana a unique and high-quality metropolitan centre" and how have they specifically translated these into "a prototype for the future Tirana"? The leaders of 51N4E do not say this. They write empty words to deceive a people who do not analyze concrete details but prefer dogmas. After all, they may have left some trace of 45 years of dictatorial communist ideolo-gy, where it was enough to be loyal to the party to do anything. You could be a cowherd, but loyal to the party, and still lead the parliament or even be an architect or engineer. As it is said in movies, "Any reference to existing people or actual events is purely coincidental." In such realities, skill is not necessary. Loyalty, yes.

All architects, especially those from abroad who are unfamiliar with the context when they come to Albania, use empty and meaningless language. Artistic criticism, and particularly architectural criticism in this country, if it ever existed, current-ly shows no signs of life. Intellectuals are silent, and critics are biased, especially when it comes to works by the party. There is no criticism of the language or architectural style of a series of tow-ers that say nothing and do not engage in dia-logue with each other. These towers, with a nar-cissistic and self-affirm-ing attitude, are detached from the context in which they are placed. They do not engage in dialogue either typologically or morphologically. Where is in these towers what *"make Tirana a unique and high-quality metro-politan centre"?*

The towers with arch ornaments and rigid cur-tains in the center of Tirana: it seems as if nothing happened in the 20th century regarding architec-ture. Adolf Loos would have killed himself if he were alive today and had seen the Book Building; surely he is turning in his grave in Vienna. If Loos had not writ-ten about 115 years ago "Ornament and Crime" and if we had not had the Modern Architecture Movement, which still echoes in the way we design, the intervention with useless decoration in the BB tower or in other works by 51N4E would be justifi-able. It is a fact that Loos (1908) wrote, and so did Le Corbusier (1923), as well as Hitchcock & Johnson (1932), about an archi-tecture where useless and non-venustas decoration has no place in contemporary archi-tecture. Surely these books mentioned above have passed through the libraries of Brussels. If 51N4E have not had time to browse them until now, they should try to take a look because it won't hurt them.

The reader might argue that a lot of time has passed since the architecture of the Modern Movement and that we are in postmodernism, which in a way rehabilitates decoration. They might bring into discussion Charles Jencks, Rob-ert Venturi, or Charles Moore, bursting into the apotheosis of Guy Debord's society of the spec-tacle (1967). The reader might justify these inter-ventions as a critique of modernist sterility. All of this is rhetoric. 51N4E should answer the ques-tion: What are these "some of the important as-pects that make Tirana a unique and high-quality metropolitan centre" and how have they con-cre-

tely translated these into "a prototype for the future Tirana"? How are these aspects translated into towers with arches cut into chords and not diameters, or into windows with "rigid cur-tains"? These displays are expressions of a super-ficial and mocking attitude towards the culture of the context in which they are intervening. "Let's make some towers with arches and Ottoman cur-tains for the Albanians because they like them a lot": this could be a hypothetical mocking expres-sion of for-eigners towards our context.

From the perspective of architectural composi-tion, the tow-er presents a series of problems. In architectural composition, the repetition of a se-rial element and hierarchy are two essen-tial in-struments. The arch element does not appear as serial, as it has at least three different dimensions, and at this point, they become three serial ele-ments instead of one. These three serial ele-ments, combined with construction errors, have resulted in the arches of the tower having differ-ent dimensions. These dif-ferences are so small that they make the appearance unappeal-ing to the eye. The eye prefers regular and serial forms because it can control them more easily. At this point, the BB arches are all different due to the construction, whereas in the rendered image, the arches appear all the same.

As Loos teaches us again with the Chicago Herald Tribune project, the type of tower – which has the column as its arche-type – is divided into at least three sections: the base (ground connec-tion), the development, and the crown (sky con-nec-tion). This lesson and division, a direct influ-ence from Semper (1851), is not expressed in the Book Building. The tower with arches in Tirana has a higher arch base on the ground floor, higher arches again on the fourth floor, thus repeating the base, and also higher arches on the ninth floor where it begins to narrow. In the project, the arches are then repeated uniformly to the end, while in the realized version, the last floor brings higher arches again, creating a kind of "crown" for the sky connection. In this case, the realization improves the project, which closed at the top without any distinction from the body of the tower.

Another architectural flaw is the fact that the side abutments of the upper arches of the tower do not fall on solid parts but fall on a "random" point of the base arches, both in the project and in the realization. Someone might bring as a precedent ex-ample the column on the first floor of the Cor-tile di Bramante in Santa Maria della Pace, which discharges in the center of the base arch to justify the Tirana Tower, but it is not enough because Bramante still discharges the small column in the cen-ter of the arch, in a well-defined point and not in any point. One might also bring as a justifying example the column in the center of the entranc-es of Jože Plečnik's projects, such as the National and University Library in Ljubljana and Plečnik House, but again the column is in a well-defined and not anony-mous point.

The last point I want to address in this article re-garding the architectural flaws of the Book Build-ing is what is called the corner problem. This problem is as old as architecture itself. In classical Greco-Roman architecture, this problem affected the corners of Doric temple buildings, which had an interplay be-tween triglyphs and metopes and was solved in various ways.

The problem always affected the side triglyph, which had to be ad-justed to the column to provide an aesthetically accept-able solution. The same problem is present with the arches of the 51N4E tower in the center of Tirana. The abutment of the side arches is thinner than the abutments of the central arch-es, thus showing a lack of care from the designers. The cor-ner problem was solved 2000 years ago in architecture, but it seems this problem has not yet reached Brussels, or at least the designers from Brussels do not recognize it as a problem. Some lessons in the history of classical architec-ture would not hurt to ensure similar problems do not recur.

In conclusion, the Book Building project is weak and has a series of unresolved architectural prob-lems. Third-year archi-tecture students with such a project would not pass the class because they lack solutions to classical architectural problems, as mentioned above.

This whole issue contains only one good aspect. The arched facade is not structural and can be demolished and redrawn with more appropriate architectural solutions. There are many cases of facade modifications. The 15-story building is an ex-ample (without discussing whether the Pistol project or the current one was better). The prin-ciple of the Free Facade in modern architecture is still operative.

At this point, we have only one suggestion: to redraw and rebuild the facade of the Book Build-ing. A national competi-tion could also be orga-nized. Those arches are an international architec-tural disgrace.

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A Second Clarifying Article on the Non-Return to Identity of the Saint Procopius Church

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At the top of the Grand Park of Tirana, the new Saint Procopius church is coming to completion, looking very much like the renderings posted along the construction fence: a white, concrete building with a waving silhouette and a dome over the crossing of the nave and transept. The building contrasts sharply with what used to be originally there, the former Saint Procopius church designed by Skënder Kristo Luarasi (the author's grandfather) in 1940 and completed in 1945. This church replaced the old Saint Procopius church that was built in 1787, right where today is the President's office, but which had to be relocated where it is now in the late thirties, due to its proximity to the new boulevard and the city's urban expansion. The Saint Procopius church was closed in the late sixties by the communist antireligion campaign and then modified into a restaurant in the early seventies, almost to a point of nonrecognition. The only parts that remained from the former church were the north aisle wall and the remnants of four piers of what used to be the original three tall arches of its west façade, an architectural element that would be the subject of much misinformed contention and prejudice with regard to its supposed religious symbolism, namely, whether they represented the orthodox architecture of the catholic one, a matter that this paper aims to elucidate, among others.

The new church has been compared to Santorini's touristic adobes and a concert hall, while many decry the fact that it betrays the identity of the former church. The Albanian Historical Society claims that the architecture of the new Saint Procopius church, supported and financed by the National Autocephalous Orthodox Church of Albania, has "clear alienating Greece-isation tendencies in comparison with the original church."[1] One of the strongest voices against the new church is the architect Artan Shkreli who, in January 2023, publicly demanded to "stop this perversion of Saint Procopius Church […] before it is too late," by arguing that the new church "relates neither to the original iconic project of the architect Luarasi (senior), nor to the stylistic and ecclesiastical age-long tradition of the southwest Balkans."[2] The keyword here is "perversion" (in Albanian, *"përçudnim"*): the problem is not just that the new church is different from the original, but that it *falsifies* the latter by modifying or deleting certain parts – like the west façade - that presumably do not conform to the orthodox ecclesiastical architecture.

In reaction and in direct opposition to Shkreli's comments on the new Saint Procopius Church, in an interview for Radio Ngjallja [*Revival Radio*] – a media of the Autocephalous Orthodox Church of Albania, Father Ilia Mazniku preempts any possibility of someone criticizing the Orthodox Church in the first place, insofar as the latter is "a heavenly institution that is not influenced from and does not give account to any external national or international agency or association," and that "the Saint Procopius Church will be rebuilt according to the Orthodox rite as we want and decide."[3] In other words, the Orthodox Church is infallible. Yet Father Mazniku is certainly fallible when he claims that the previous Saint Procopius church designed by Luarasi in 1939 was a "conqueror's architecture,"[4] of a Roman Catholic style, imposed on Tirana's orthodox community by Fascist Italy, and that the new Saint Procopius church is *"a clear* model of byzantine architecture, with modern stylistic elements that fulfill all the liturgical, spiritual, and aesthetic needs of the orthodox community of Tirana."[5] While no evidence is given for the first claim, since, as it will be shown here, such evidence simply does not exist, plenty of evidence can be found to question the second claim, both in terms of its facticity and a presumed equivalence, isomorphism, or matching between an architectural style and a liturgical function.

Father Mazniku expresses surprise why the debate on the new church is "suddenly" happening only now instead of when this project was first published in the church calendar in 2022. But this is not quite correct either. It was in December 2017 that the Mayor of Tirana first declared that the "237-years old Saint Procopius Church and the Lake will return to identity:"

On this Christmas Eve, we also have news about the church located at the Lake, which was destroyed during the communist era. The famous Saint Procopius Church, turned into a restaurant, is now a church, but still looks like a Soviet bar-buffet from the 70s-80s. We have decided to restore the church as it was, to ensure that not only the communities of faith, but also the Lake that was built around the church of Saint Procopius, returns to its full identity.[6]

The article in the *Tema* Journal where this claim was first posted also showed the renderings that would later be published in the church calendar and are now shown along the construction fence. Right after this claim was published, I sent a private email to Mayor Veliaj, where I suggested to him to correct some of the facts in his statement, and to say in particular that the new Saint Procopius Church does not represent a "return of the church as it was" or in "full identity," and that it is a modification of the church designed by Skënder Kristo Luarasi in 1940. But disregarding such a suggestion, in the *Panorama* Journal, six years later, on April 30, 2023, Mayor Veliaj reiterated exactly his former statement, by claiming that after a 30-year ordeal with property and usage issues, we have finally

solved the problem, and all the faithful will soon have a new Church of St. Procopius, to return to it as it was, with the same capacity, but of course, now as a restored building as a Church, no longer as the improvisation we have had these 30 years,[7]

Such a claim motivated me to publish "A clarifying article on the non-return to identity of Saint Procopius Church [*Artikull sqarues mbi mos-kthimin në identitet të Kishës së Shën Prokopit*]," in *Gazeta Shqiptare* on May 4th, 2023, where I reiterated in more detail my earlier concerns.[8]

It is rather comical that both Father Ilia and Mayor Veliaj - both the Church and Politics – claim that the Saint Procopius church is returning to its identity, but they mean different identities: the religious identity that Father Ilia claims the church is returning to is predicated on the *non*-return to the architectural identity that Mayor Veliaj claims the church is returning to. What motivates this "Second clarifying article on the non-return to the identity of the Saint Procopius Church" is an obligation to say things as they are, that is, tel quel, that in both cases we have a *non*-return to identity, even if the non-return is different in each case: the new Saint Procopius Church does *not* return to the former architectural identity, while the religious identity of the new project is in no way "more orthodox" than the former Saint Procopius. Such a demonstration leads to a theoretical argument supported on historical facts: that the architectural identity is *not identical* with the liturgical, functional or typological one.

Another motivation behind this second clarifying article relates to the predominant tendency in Albania to *not* mention or recognize the authorship of this church in particular and other modern architectural works in Albania in general, especially when the authors are not Italian, or foreign..., and to not accurately describe of the architectural and professional nature of their authors' oeuvre. This might seem like an exaggeration, but the fact is that as I was writing the first clarifying article back in April 2023, I discovered, by chance, that the plaque near the entrance of Saint Procopius church stated that Saint Procopius church was designed by the "Italians" and Gherardo Bosio in particular. I am not kidding… The plaque read:

Background

The Saint Procopius Church, martyr of the Christian religion, who is considered the patron saint of Tirana and is commemorated every year on July 8, dates back to 1780. It was the Ruler of Tirana, Inbrahim bey Bargjinolli, who supported the building of this church, as a sign of gratitude for the contribution of Orthodox families. The church was a simple and low building. In 1886, several other buildings were erected around it, giving it the shape of a monastery. The complex remained like this until 1937, the year when it was demolished, as the main promenade of Tirana, now the capital, was planned to pass there.

In this place, where it is still today, **the Church was erected**

by the Italians in 1939 as part of the large boulevard complex. The project bears the signature of the famous Florentine architect Gherardo Bosio. In 1967, Saint Procopius Church also had the fate of all other cult objects. She was mutilated, having her bow parts removed. In its place, the cafe-restaurant "Liqeni" was built. What remained of the Church of St. Prokop returned to its previous function, only after almost 30 years, in 1993, but with a mutilated appearance. Very soon, the Church of St. Prokop will be reconstructed, returning it to its former glory (my emphasis).

[Historiku

Kisha e Shën Prokopit dëshmor i fesë së krishterë, I cili konsiderohet si shenjti mbrojtës i Tiranës dhe përkujtohet çdo vit në 8 korrik daton më 1780-n. Ishte Sundimtari i Tiranës, Inbrahim bej Bargjinolli, që përkrahu ngritjen e kësaj kishe, në shenjë falenderimi për kontributin e familjeve ortodokse. Kisha ishte një ndërtim i thjeshtë dhe i ulët. Në 1886 perreth saj u ngritën disa ndërtesa të tjera, duke i dhënë formën e një manastri. I tillë mbeti kompleksi deri në 1937, vit kur u shemb, pasi aty u planifikua të kalonte shëtitorja kryesore e Tiranës, tashmë kryeqytet.

Në këtë vend, ku është edhe sot, *Kisha u ngrit nga Italianët ne vitin 1939 si pjesë e kompleksit të bulevardit të madh. Projekti mban firmën e arkitektit të famshëm florentin Gherardo Bosios.* Në vitin 1967 edhe Kisha Shën Prokopit pati fatin e të gjitha objekteve të tjera te kultit. Ajo u gjymtua, duke iu hequr pjesët harkore. Në vend të saj u ngrit kafe-restorant "Liqeni". Çka mbeti prej Kishës së Shën Prokopit iu kthye funksionit të mëparshëm, vetëm pas gati 30 vjetësh, në 1993-shin, por me një pamje të gjymtuar. Shumë shpejt Kisha e Shën Prokopit do të rikonstruktohet duke i kthyer lavdinë e dikurshme. (theksimi im)]

That "…*the Church was erected by the Italians in 1939 as part of the large boulevard complex [and that] the project bears the signature of the famous Florentine architect Gherardo Bosio"* is simply not true. First, the Church itself was founded in 1940, the project was delivered in 1940-41, and the construction was finished in 1945. Second, Saint Procopius Church was designed and directed by Skënder Kristo Luarasi and not by the "Italians" in general or Bosio in particular, while the construction company Ing. Lucca & C. Milan was, indeed, Italian. In fact, the original project's archival drawings, are not signed by any person, but say "Under the auspices of the Construction Ministry," in which Skënder Kristo Luarasi exercised his professional activity at the time. The sheets have a stamp that says *"Approvato, Ufficio Centrale per L'Edilizia e L'Urbanistica dell'Albania,"* which appears in many other projects of the time, but there is no indication whatsoever that Gherardo Bosio was the architect of the church. That the architect of the church is no other than Skënder Kristo Luarasi is confirmed by several construction documents found in the Albanian State Archive, like the one shown in Figure 1, signed by the "director of the project" – *Ing. Luarasi,* by a well-known

period photo showing Luarasi himself working on a model of the church (Fig 2), but more importantly, by the original marble plaque of the Saint Procopius Church, currently at the disposal of the Albanian Orthodox Church (Fig. 3). This plaque was nobly saved and preserved by a worker when the Church was demolished in 1967, who gave it to my father, Pavllo Luarasi, who handed it, in turn, over to the Church in 2001. For this handover there is also an attestation (Fig 4). The plaque reads:

ESTABLISHED IN 1940
IN THE TIME OF THE ARCHBISHOP OF ALL ALBNIA MONSIGNOR CHRISTOPHER
WITH PARTICIPATION AND COOPERATION
OF THE ELDERS OF THE CHURCH AND THE CARE-TAKER OF THE CHURCH OF TIRANA BUILD WITH THE PROCEEDS OF THE DISPOSAL OF THE OLD CHURCH TO SAINT PROCOPIUS AND WITH THE HELP OF THE ORTHODOX PEOPLE DESIGN AND MANAGE BY ING. ARCH. SKANDER PLAYERS
IMPLEMENTED BY THE ENTERPRISE ING. LUCCA & C. MILAN.

[THEMELUE NË VITIN 1940
NË KOHËN E KRYEPISKOPIT TË GJITHË SHQIPNIS IMZOT KRISTOFORIT
ME PJESËMARRJEN EDHE BASHKËPUNIMIN
E PLEQËSIS KISHËTARE DHE TË KUJDESTARIS SË KISHËS TË TIRANËS
NDËRTUE ME T'ARDHUNAT E ÇPRONËSIMIT TË KISHËS SË VJETËR
TË SHËN PROKOPIT DHE ME NDIHMËN E POPUL-LIT ORTHODOX

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[1]*Newsbomb, January 13, 2023*
[2]*Koha Jonë, "Artan Shkreli: Ndalojeni këtë përçudnim të Kishës së Shën Prokopit! Ndërhyni para se të vonë!" January 13, 2023. https://kohajone.com/politike/artan-shkreli-ndalojeni-kete-percudnim-te-kishes-se-shen-prokopit-nderhyni-para-se-te-vone/, accessed on September 13, Translated by autho*[r]
[3]*Radio Ngjallja, "Kisha e "Shën Prokopit" do të rindërtohet sipas ritit Orthodhoks ashtu siç ne e duam dhe vendosim!" January 21, 2023, https://radiongjallja.org/kisha-e-shen-prokopit-do-te-rindertohet-sipas-ritit-orthodhoks-ashtu-sic-ne-e-duam-dhe-vendosim/, accessed September 13, 2024.*
[4]*Ibid*
[5]*Ibid*
[6]*Gazeta tema: https://www.gazetatema.net/2017/12/19/veliaj-kisha-237-vjecare-e-shen-prokopit-dhe-liqeni-do-te-kthehen-ne-identitet, accessed 2024*
[7]*http://www.panorama.com.al/nis-rindertimi-i-kishes-se-shen-prokopit-veliaj-rikthejme-historine-ne-vend-qyteti-perfiton-nje-hapesire-publike-per-komunitetin/, accessed in April 2023 (my emphasis)*
[8]*Skender Luarasi, "Artikull sqarues mbi mos-kthimin në identitet të Kishës së Shën Prokopit," Gazeta Shqiptare Journal, May 4, 2023, https://gazetashqiptare.al/2023/05/04/artikull-sqarues-mbi-mos-kthimin-ne-identitet-te-kishes-se-shen-prokopit/, accessed August 2024.*

PROJEKTUE DHE DREJTUE PREJ ING. ARCH. SKËNDER LUARASIT
ZBATUE PREJ SIPËRMARRJES ING. LUCCA & C. M LANO.]

To rectify the current plaque, I contacted Miriam Koliqi at the Agency of the Parks and Recreation, who swiftly corrected and changed the description of the plaque, according to the information of the old plaque (Fig #), whose description is cited above. I would like to publicly and heartily thank Miriam for her professionalism in correcting the plaque and for understanding the importance of such rectification. While the rectified plaque is not yet available for the public since it is within the construction area of the church, the new corrected description is also available online, on the website of the Agency of the Parks and Recreation.[9] It now reads:

Background

Saint Procopius Church originated about two centuries ago and is the first Orthodox church in Tirana, after the Ottoman occupation. It was dedicated to Saint Procopius, martyr of the Christian religion, who is considered the patron saint of Tirana and is commemorated every year on July 8.

The first Saint Procopius Church was built where today is the courtyard of the Presidency and it functioned until 1938, when, based on the regulation plan of New Tirana, it was expropriated and demolished.

The new Saint Procopius Church was built with the proceeds of the expropriation of the old church and with the help of the people of Tirana. The church was designed and directed by Eng. Ark. Skender Luarasi and was implemented by the enterprise Lucca & C. Milano. The construction started in 1940, the year when the foundation stone was laid, and was inaugurated on May 20, 1945, by Archbishop Monsignor Kristofori, with the participation and cooperation of the church elders and under the auspices of the church of Tirana.

In 1967, the Saint Procopius Church also suffered the fate of all other cult objects. In its place, the cafe-restaurant *"Liqeni"* was built. What remained of the Saint Procopius Chucrh returned to its previous function only after almost 30 years, in 1993, but with a completely changed appearance.[10]

[Historiku

Kisha e Shën Prokopit e ka origjinën rreth dy shekuj më parë dhe është kisha e parë ortodokse në Tiranë, pas pushtimit osman. Ajo iu kushtua Shën Prokopit, dëshmor i fesë së krishterë, i cili konsiderohet si shenjti mbrojtës i Tiranës dhe përkujtohet çdo vit në 8 korrik.

Kisha e parë e Shën Prokopit u ngrit aty ku sot është oborri i Presidencës dhe ka funksionuar deri në vitin 1938, kur në bazë të planit rregullues të Tiranës së Re u shpronësua dhe u prish.

Kisha e re e Shën Prokopit u ndërtua me të ardhurat e shpronësimit të kishës së vjetër dhe me ndihmën e popullit të Tiranës.

Figure 1. Construction Administration document of Saint Procopius Church, signed by Skënder Kristo Luarasi, as the "director of the project." (Albanian State Archive)

Figure 2. Skënder Luarasi working on the model of the church, circa1940, period photo (Author's Personal Archive).

Figure 3. The Original Plaque of Saint Procopius Church, photo by Pavllo Luarasi (Author's Personal Archive).

Figure 4. Attestation that certifies that Mr. Pavllo Luarasi has returned the original marble plaque of Saint Procopius to the Holy Archiepiscopate, on January 18, 2001 (Author's Personal Archive)

Kisha u projektua dhe u drejtua nga ing. ark. Skënder Luarasi, dhe u zbatua nga sipërmarrja Lucca & C. Milano. Ndërtimi nisi më 1940, vit kur u vendos guri i themelit, dhe u përurua më 20 Maj 1945 nga Kryepeshkop Imzot Kristofori, me pjesëmarrjen dhe bashkëpunimin e pleqësisë kishtare dhe nën kujdesin e kishës së Tiranës.

Në vitin 1967, edhe kisha e Shën Prokopit pati fatin e të gjitha objekteve të tjera të kultit. Në vend të saj u ngrit kafe-restorant "Liqeni". Çka mbeti prej kishës së Shën Prokopit iu kthye funksionit të mëparshëm vetëm pas gati 30 vjetësh, më 1993-shin, por me pamje tërësisht të ndryshuar.][11]

But why did the former plaque have the wrong facts, in the first place? Perhaps the person who first formulated the description did not know the history well. Probably. But what is hard to understand is how could the church authorities walk by the plaque every day and not be bothered by its erroneous description and not ask the Agency of the Parks and Recreation to change it, knowing full well that those facts were wrong, as Father Ilia's interview, clearly indicates? Is it, perhaps, because such an erroneous facticity supports the Orthodox Church's narrative that Saint Procopius Church designed by Luarasi reflected the "architecture of the conqueror," and that it was of a Roman Catholic style, as Father Ilia himself claims in his interview?

Even though Saint Procopius Church was built during the Italian occupation, it was not of an "Italian" or Roman Catholic style, like the Autocephalous Orthodox Church of Albania *arbitrarily* claims; I would argue that Saint Procopius was even more orthodox or byzantine-like than the new project. But beyond and *independently* from their stylistic belonging, Luarasi's project is characterized by a formal sophistication that is hardly matched by the new project.

The Saint Procopius Church designed by Luarasi has a traditional basilica form with narthex, nave, dome, and apse (Figures 5-11). Including the narthex, the nave has four bays, followed by the dome inscribed on a square with a side twice as big as a typical nave's bay. The dome establishes the vertical axis directly in front of the iconostasis. In line with the Orthodox architectural canon, the altar is positioned behind the iconostasis. On the lower level, all these elements are composed within a rectangular plan. It is only above the height of 3.5 meters, that is, on the second level of the narthex, that the church is spatially and volumetrically differentiated into two transepts and the upper nave topped with a gable roof, at the intersection of which the dome is positioned. It is on this level that the plan takes the form of a cross. The upper walls of the nave supported by a post and beam system, while those of the dome and the apse by an arched system; both systems form a colonnade of thin reinforced concrete columns that runs across the whole length of the interior. The Church of Evangelization near Kavajë Street, also designed by Luarasi in 1962, gives a

sense of how the interior of Saint Procopius might have looked like, with the exception that the upper nave walls in the Church of Evangelization rest on an arched system (Fig 12).[12] On the lower level, the interior colonnades reciprocate with two arcades that consist of five round arches on piers topped with a gable roof. There is a cascade of and scaling and transposing correspondences among the architectural elements along both the vertical and the horizontal axis. The roof of the arcade on the lower level corresponds to the gable roofs of the nave and transepts on the upper level. The round-arched windows at the base of the dome are reiterated below and along the upper wall of the nave and the transept and composed into three sets of three round-arched windows, and then scaled up into a rounded arches of the arcade below. Somehow the arcade is an "external iconostas" that mediates between nature and the church, between the physical and social space of the city and the closed interior of the church. The arcade becomes a sculptural, transparent layer or rather a void that partially wraps the sacred space within. Both the arcade and the cornice of nave's volume are articulated with brick ornaments. Those of the nave's cornice have an abstract trapezoidal shape that might evoke things as diverse as an inverted ziggurat in miniature or a fruit hanging from the vineyards, thus perhaps suggesting the bucolic landscape where the church is situated. The brick ornament in the arcade articulates the lower half of the arcade's piers, in this way breaking the heaviness of the piers, but also suggesting a rhythmic horizonal band that plays the role of a base. Most of the volumetric articulation takes place happens between the brick base and the nave's cornice. The dome, as the most sacred of all the elements and spaces, stands above

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[9]*https://aprtirana.al/parqe-dhe-objekte-memoriale/kisha-e-shen-prokopit/, accessed on August 30, 2024.*

[10]*https://aprtirana.al/parqe-dhe-objekte-memoriale/kisha-e-shen-prokopit/, accessed in August 30, 2024.*

[11]*https://aprtirana.al/parqe-dhe-objekte-memoriale/kisha-e-shen-prokopit/, aksesuar më 30 Gusht, 2024.*

[12]*A church that is like Saint Procopius in style and scale is the Church of Evangelization near Kavajë Street, designed by Luarasi in 1962, five years before religion institutions in Albania were closed. The church has the same basilica typology and nearly the same form and proportions as Saint Procopius's. The differences lie in the way the upper nave wall is supported and in the open one-story arcade at the front, which morphs vertically into a bell tower on the north side. The tower anchors the church visually in relation to Kavajë Street vis-à-vis a narrow alleyway. The western façade and narthex, which includes a choir, are part of a one-bay-wide temple-like volume, which becomes a clear story structure in the bays that follow. Unfortunately, the renovation of the tower after the church reopened in the 1990s does not adhere to the original design. The arcade was closed in the late 1960s when the building was adapted for utilitarian warehouse functions, but it unfortunately remained closed even after the renovation in the 1990s. The original volume of the nave has also been covered over by later one-story additions. The interior is elegant and airy, and apart from the iconostasis, which is a later design, it provides a faithful sense of what Saint Procopius Church might have been and felt like.*

such a volumetric articulation. The arcade stops before the narthex, just one bay before the western façade. This last bay is articulated as a separate architectural element - a pedimented entrance higher than the arcade but lower than the piers of the western façade's arches, which ties in and anchors the spatial and ordering sequences of both the north arcade and the façade. The western façade, which is also the most and memorable element of the church, consists of three tall arches, which reciprocate with the internal spaces of the church indexically but not proportionally: the middle, wider arch corresponds with the nave and the two side arches with the side aisles. The piers of the arches are clad in rough stone and the upper parts in smooth stone, while the wall inside the arches is finished with stucco. The piers slant toward the top, animating and perceptually emphasizing the verticality of the entire façade. The central arch is wider than the other two and has a cornice inside it and two openings: the round-arched main door and the window above it. The other two arches, which belong to the series of lower-level arches, have one window each and create a triangle with the upper window of the central arch. There is an ingenious compositional move here that is never mentioned in the analyses and descriptions of the Saint Procopius church: the three arches of the western façade are a scaled-up version of the three-arched window configuration along the upper wall of the nave, a characteristic typological configuration of byzantine churches, but more about it later.

Such a compositional density and coherence are hardly found in the new church (Fig 13-14). The first thing that strikes one when looking at the new church is the harsh flatness of the façade, and how its "wavy" curvilinearity is of a fundamentally different style from the round, more traditional looking curvilinearity of the vaults, the dome, the side arches, and the circular rosette, which, by the way, looks quite "catholic…" Such a stylistic "staccato" is also found in the front portico, where the inner arches are of a round type, while their outer silhouette belongs to the "wavy" "loose-like" curvilinearity of the façade. One is perplexed whether the façade should have been more differentiated elementally to reciprocate with the rosette and the vault, or even more "wavy" and abstract; whether there should have been only one rosette or an aggregate of fenestrations that would bring light in the interior, which is not uncommon in many byzantine churches. One almost feels an irresistible urge to take a pencil and correct the façade…

The real problem of the new church is that it is neither contemporary nor traditional enough: it feigns to look contemporary by "dressing" traditional forms with a seemingly contemporary "wavy" shape, which even in its very "waviness," still maintains a "tactical" resemblance to the traditional vault and side volutes (which also end up looking quite "catholic" …).

The architect has applied the same type of "wavy" curvilinearity to all the façades, to probably suggest a centralized, byzantine-like form, but the church evinces its basilic organization, insofar as the dome clearly does not occur at the center of the church. Instead of an in the round articulation of the volume, typical of byzantine architecture, the four façades look like

thins faces of a box, both inside and outside of which are placed traditionally shaped elements like the vaults, the dome, and the arches on the side aisles. One wonders what would happen to the overall design if these this "wavy" façades were removed: nothing; the traditional elements would be revealed as they really are. The façade's "waviness" neither respects nor rejects tradition, but rather falsifies it, and even parodies it, in the same way that getting rid of the former church's west façade erases the former project.

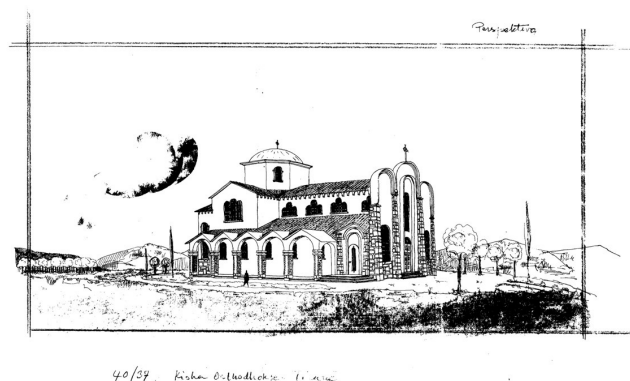**Figure 5.** Skënder Kristo Luarasi, Saint Procopius Church, circa 1945, period photo (Author's Personal Archive

Figure 6. Skënder Kristo Luarasi, Saint Procopius Church, circa 1945, perspective drawing (Technical Central Archive of Construction
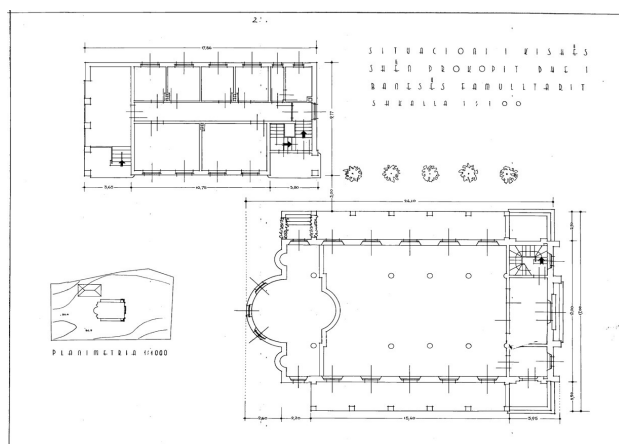

Figure7. Skënder Kristo Luarasi, Saint Procopius Church, circa 1945, Ground Floor Plan (Technical Central Archive of Construction
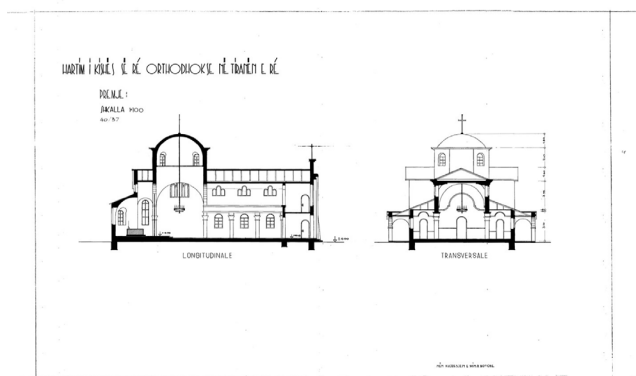
Figure 8. Skënder Kristo Luarasi, Saint Procopius Church, circa 1945, Cross and Longitudinal Section (Technical Central Archive of Construction

Figure 9. Skënder Kristo Luarasi, Saint Procopius Church, circa 1945, West Facade (Technical Central Archive of Construction

Figure 11. Snapshots from the film Skënderbeu, 1952, with Saint Procopius in the background

Figure 10. Skënder Kristo Luarasi, Saint Procopius Church during construction, View of the north side, period photo. Luarasi is on the left (Author's Personal Archive

Figure 12. Skënder Kristo Luarasi, Church of Evangelization, near Kavajë Street, Interior view, photo by author, 2022. The iconostasis is not the original

Figure 13. The new Saint Procopius Church during construction, View of the south façade, photo by author, September 2024. (To the author's knowledge the name of the architect is not made public
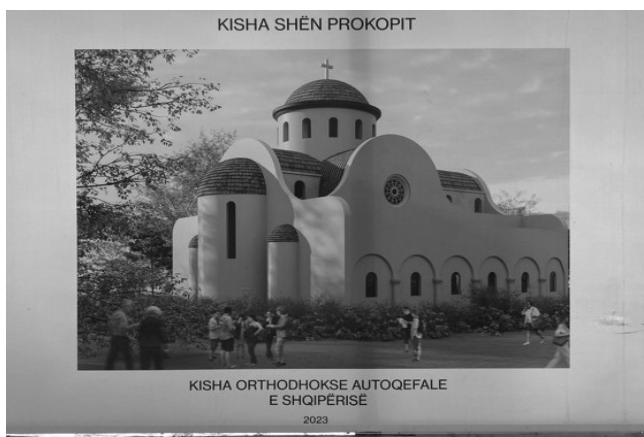

Figure 14 The new Saint Procopius Church, Rendering posted on the construction fence, photo by author, September 2024.

In defense of the new church, one might argue that the church is characterized by a "collage" of disparate curvilinearities, and that its stylistic "staccato" is intentional, of "postmodern" sort (though I highly doubt that this is the case). If that were the case, it would not have been a problem at all: as I will argue later, style does not have to be isomorphic with the (liturgical) function of the church. Yet, the "staccato" would still need rigor and precision, even more so than in a more traditional approach, because new rules would have to be invented... The gap between style and content opens up many but not every possibility… Certain formal strategies could have been followed: the "wavy" curvilinearity could have continued inside the box and "infect" the dome and vaults; or it could have continued outside and "infect" the peripheral elements of the side arcade, the front portico, and even the serving building on the east side, while keeping the dome and vaults "traditional;" or the whole first floor, as a base or plinth, could be traditional-like, and the upper part completely different; or the inverse, the upper floor could remain quite traditional in its stylemes, while the base becoming quite untraditional.

The new church evinces other instances of non-articulation and non-coordination among its elements. Unlike the façade of the former Saint Procopius, both the west and east façades of the new church stretch horizontally to include the side arcades in their altimetric projection, with the west façade also stretching vertically to form a bell tower. This causes the façade to feel rather wide and undifferentiated in relation to the spatial and volumetric organization behind it. The apse feels quite narrow and tall in relation to the façade, almost encroaching on the upper vault. The former church, on the other hand, was characterized by a balanced sculptural façade, which consisted of a semicylindrical apse with a spacious width, almost half of the façade. In the new church, the dome has a cornice at the base, but this element is not repeated elsewhere. The former church was characterized by a wealth of different, specifically "tailored" cornices that contoured different architectural components, such as the dome, nave walls, arcade, and the façades. The new church has only one cornice, which feels almost like an afterthought given the fact that the other elements are bare of any cornice. The former church has a wealth of different materials, such as marble, stone, brick and plaster, which articulate and differentiate the architectural form. The new church has only one material, for now, only an elusive "white" (It remains to be seen whether it is concrete painted white or is it finished with stucco painted white; whether the same finish is applied in all the surfaces, like the renders show, or there is some differentiation.) The dome in the former church has an octagonal base with a spherical shape on top as well as markedly different windows from those of the nave, both in terms of their shape and their rhythmic disposition, distributed in every other face of the octagon. These attributes make the dome a unique, almost a real "teleological" moment in the church. This is not the case with the dome of the new church, insofar its base has the same geometry as that of the nave and transept vaults, and the windows are the same as those of the nave's upper wall and the side aisle.

Regarding the latter, it is hard to understand why its arches are not left transparent or open like the original arcade but are instead closed with small openings. The same problem stands with the front arcade in the Orthodox Church of Evangelization near Kavajë Street, also designed by Skënder Kristo Luarasi in the early sixties: the original arcade arches were infilled when the church was closed in the late sixties, but they were not "liberated" from the infill walls when the church reopened in early '90; instead, small arched windows were opened on the non-original infill wall, ending up looking exactly like the north and south walls of the new Saint Procopius Church. The transparent arches would have contrasted and emphasized the volumes of the church. And finally, a note on the relationship of the main liturgical structure with the adjacent supporting structure. In the new project, the latter is aligned with the main liturgical structure along the Park's main street, and this alignment increases the perceived size of the whole church.

In Luarasi's project, on the other hand, the supporting structure is of the same scale yet slightly smaller than the liturgical structure and is set back from the street, a picturesque disposition that respects the natural setting and creates a dynamic and cinematic experience of the church.

Different from what Father Ilia states in his interview, I would argue that the former Saint Procopius Church designed by Luarasi belongs and relates much more to the orthodox and byzantine architectural tradition than the new church. Such belonging is articulated through specific compositions and configurations of the architectural elements and details.

In his interview, father Ilia argues that the reason the former Saint Procopius is not faithful to the byzantine tradition is that it has a basilic form, that the basilic form is found only in the early Christian (Paleochristian) and post Byzantine period - influenced either by Catholicism in the former case, or imposed by the Ottoman empire in the latter, and that the true, authentic form of the byzantine architecture is that of the centralized church of the middle and late Byzantine period. Now, it is beyond the space and scope of this article to exhaustively to deal with such vast historiographical arguments, except to bring a few counter examples. While the centralized church is the dominant form of the orthodox church – Hagia Sophia in Constantinople being the exemplar of such form, there are also basilic examples of the middle and late Byzantine period. A good example that comes to mind is the Panagia Chrysokephalos Church in Trabzon (in present day Turkey) - now Ortahisar Fatih Mosque, built in the Middle Byzantine period, 913-914 AD, being of a distinct basilic type. On the other hand, there are many centralized byzantine churches that have a rectangular elongated basilic-like shape, evincing a tendency of hybridization between the two typologies. In Albania, during the post Byzantine period, or that of the Ottoman empire, there are both centralized and basilic byzantine churches.

There is no inherent attribute of the basilic form that makes it inappropriate for the Orthodox symbolism and liturgical functions, in the same way that there is no inherent attribute of the centralized form that makes it inappropriate for the Catholic symbolism and liturgical functions.

There are many examples of catholic churches in the Italian Renaissance with a circular and square plan – a Greek cross or centralized plans in general, like Brunelleschi's Pazzi Chapel in Florence, Bramante's Tempieto in Rome (though this is not exactly a chapel, even if it may certainly become one…), Sangallo's San Biagio in Montepulciano, and of course Bramante's first plan and Michelangelo's second plan of Saint Peter, among others. For Rudolf Wittkower the underlying geometric organization of these projects symbolized the platonic cosmic order.[13] Saint Peter eventually was composed of two different typologies: Michelangelo's centralized plan and Maderno's basilic nave. Both the basilic and centralized plan enjoy, what I would call, a typological, or rather an archetypal availability that predates not only Christianity but even the ancient Western culture itself. It should also be noted that the basilic form has a practical advantage for large congregations in comparison with the centralized plan, insofar as it offers much easier structural solutions for covering larger spaces than the centralized plan does. Of course, Hagia Sophia is a fantastic solution of a large dome cover but also a difficult and expensive one to build…

Of course, the Orthodox Church and its followers may still believe that the centralized plan is the authentic orthodox typology. And yet, while history demonstrates such belief empirically, through the sheer quantity of centralized churches, it does not exclude or falsify the fact that the basilic form is also a valid typology of the orthodox church. It is not quite clear, however, why is the basilic organization maintained in the new church of Saint Procopius, or why was the latter not built in a centralized typology, given the fact that it started from scratch, namely, there were no constraining existing condition, and that the Church, according to Father Ilia, seems to think that one of the "problems" of Luarasi's design, is precisely its basilic form, which presumably is Catholic and not Orthodox? It is hard to answer such a question exhaustively, but I would bet that keeping the basilic form maintains the "political" alibi that the new church supposedly returns to its architectural identity, even if such a return, according to Father Ilia, would have been at odds with the return to the "authentic" orthodox religious identity.

Let us return now to the "hot" subject of the west façade of the former Saint Procopius Church, the one that the Autocephalous Orthodox Church of Albania thinks is an "architecture of the "Italian conqueror" and of the style of the Roman Catholic Church and evaluate it not in terms of its compositional density, as we have already done above, but in terms of its typological and stylistic belonging. The west façade is neither of an Italian nor a Roman Catholic church style. I invite Father Ilia and the whole Holy Synod to open all the books of the history of architecture and find evidence of an Italian Roman Catholic church whose façade or volumetric silhouette consists of three independent giant arches. There simply isn't. Yes, there are lots of arches in the Italian secular or religious architecture, but these arches typically do not span the whole height of the façade, and they are always either framed by a combination of a giant or smaller columnar and/or pilastric orders or are simply

part of a wall component, pedimented or not. Such idiom is almost didactically applied in the Italian 16th century mannerist architecture, such as that Carlo Maderno and especially Palladio. The façade of Saint Peter, for instance, has both arched and rectangular openings, but these are framed and subordinated under a giant and smaller order. Or in Palladio's Il Redentore the arched entrance is framed by a small pedimented order that is nested in a larger, giant pedimented order, which, in a typically mannerist tour de force, is nested in a larger pediment-like articulated "background." One might argue that there are tall, giant arches in Roman Catholic churches as in Leon Battista Alberti's Sant'Andrea in Mantua or Tempio Malatestiano in Rimini, but then again, these arches are framed by a pedimented columnar or pilastric order, indeed very much in line with the ancient Roman forms that Alberti was aiming to revitalize, particularly that of the Roman temples and triumphal arches. Even in Borromini's Baroque "hallucinations" such a classical idiom is never violated. (North of the Alps as well, where the classical radiation cools off, it is hard to find a church façade with independent tall, giant arches. When there are such giant arches, they are still part of a wall component culminating in pinnacles or sharply steeped gabled roofs.) Significantly, this also holds true for modern Italian architecture in general and Architettura italiana d'oltremare - the "conqurer's architecture" - in particular, that architects like Florestano di Fausto or Ghrerado Bosio were major protagonists of. In the INPS-INAIL palazzo in Tripoli (1938) Di Fausto does, indeed, use tall arches, and in the Indigenous Market building in Dessie, Ethiopia (1939), Bosio also uses tall, double-story arches, but in both cases the arch is not an independent silhouette-defining element of the façade, and, in line with the classical idiom, is always subsumed or subordinated under the volumetric wall mass and/or the columnar/pilastric order. In Di Fausto's, Bosio's, or Giulio Berte's buildings in Abania we never find a motif like Saint Procopius's three-arched façade. One wonders, then, on what basis does Father Ilia, as a spokesperson the Autocephalous Orthodox Church of Albania, claim that the architecture of Saint Procopius designed by Luarasi in 1940 is that of the "Italian conqueror?" On no basis at all.

But where could such claim originate from? There must be some basis, even if it is the wrong one or un-intentionally invented to support a particular narrative or thesis, such as that of the "conqueror's architecture." I have a cynical, but I'm afraid, correct answer. Saint Procopius was used as a set in the Albanian-Soviet film Skënderbeu (1954), when Skanderbeg goes to Lezha to form what is historically known as the Lezha Covenant. Scenes of Skanderbeg trying to convince the Albanian Princes to unite against the Ottomans alternate with scenes of the Albanian catholic clergy conspiring with a Venetian official and Hamza Kastrioti, Skanderbeg's brother, against Skanderbeg. Saint Procopius is in the background, and since, in the fim, it is in Lezhë, then a territory of the Republic of Venice, it must be of the "conqueror's architecture," namely "catholic" (even if there is quite a bit of byzantine architecture in Venice, like Saint Mark's for instance…) And suddenly, the church "goes

over the rainbow:" it breaks the virtual barrier of the film and emerges as "catholic" on the other side, namely in reality… Even the French Nouvelle Vague could not invent such a surrealist blending of fiction and reality…

What style is Luarasi's Saint Procopius then? I would argue that it is of a modern style composed with Orthodox morphological components or stylemes. Let's unpack this proposition. As mentioned earlier, the three arches of the west façade are drawn from traditional Byzantine architecture. The latter is characterized by tall arched openings - either standalone or compositions of three and, in some cases, even more openings, located in various parts and components of the church, such as around the drum of the dome, and in the nave and transept walls. In the former Saint Procopius, there are two fenestration typologies: a singular vertical arch window located at the drum of the dome and the arcade's inner wall and a compositional motif of three narrow arch windows - with the two side ones being narrower and shorter than the middle one, located in the upper nave walls. It is this fenestration motif that Luarasi transforms into a whole façade by scaling it up and articulating it with three sculptural arched cornices, two stone corner piers that turn the corner, two central stone pilasters that taper toward the top, an arched molding inside the middle arch, whose inner surface is recessed in relation to the outer surface, and three vertical arched openings three of which are windows, and one is the main entrance. There is a convoluted play here: the piers and pilasters "obey" or are a function of the giant arched order, which inverts the classical idiom, while the arched openings are, in turn, framed by the piers and pilasters, which respects to the classical schema. The arch both contains and is contained by the pier-pilastric system. The door being larger than the other openings and standing out as the fourth element in a series of tripartite configurations emphasizes vertical axiality, which is further enhanced and multiplied by a stacking of arches: above the arched door there is an arched window framed under the arched cornice, which is framed, in turn, by the large central arch. Such a cascade of vertical arches is "pulled down" by the triangular composition of the three window openings which connect with the vertical arched windows of the inner wall of the side arcades, thus enabling a transition between the sky and ground, the sacred and the profane. The side arches of the façade, with the void between the upper arched cornice and the arched window below, offer repose and balance the vertical and horizontal vectors. Such a cascade of readings feels inexhaustible each time one looks attentively at the church.

To recap: the morphological and typological elements of Luarasi's Saint Procopius church are historical, namely, inherited from the Byzantine vocabulary; yet the methodology of composing them into form is unmistakably modern. One could even claim that such a methodology is super-modern or even post-modern, because it consists in detaching or suspending an element from its original context and transforming and transposing it in another context. Having studied in Graz between 1929 and 1936, Luarasi was certainly influenced by Otto Wagner's school, which was characterized by a free yet rigorous and

sophisticated interpretation of the classical idiom. Such an influence, however, has nothing to do with the architectural style of the Roman Catholic church (whether of Austrian or Italian origin), but with a modern methodology of design.

What is "modern (in) architecture?" The popular view is that modern architecture is the rationalist modernism of the 20-s and 30-s, characterized by "white" unornamented surfaces. But such a modernism is only one manifestation of modern architecture. Modern Architecture is a style that is not a style. More precisely: Modern architecture is not a particular style but an effort or methodology to not be a particular historical style. At the very heart of the modern architecture there is a negation regarding (a previous) style, or tradition. The concept of modern style, more precisely, that of the modern and style originates in enlightenment, in the second half of the 18th century, but matures only around mid-nineteenth century. It is around this time that from the two "competing" large styles of the Enlightenment - the neoclassical, which symbolized knowledge and progress, and the neogothic, which symbolized spirituality and tradition, emerged a plurality and multiplicity of historicist styles. But what also emerged was the concept of style in itself, without or autonomous from a particular referent (historical or otherwise); a concept of style that did not describe or symbolize a particular historical style but made the description and symbolization of any particular style possible. Such a meta-concept of style resembled a language or system of rules with an internal logic that combined different stylemes, be they classical Greek or Roman, gothic or renaissance, paleochristian or byzantine, and so forth… Such a concept of style as a compositional methodology was already announced by Jean-Nicolas-Louis Durand in Précis des leçons d'architecture, in 1817. It is precisely this compositional methodology that makes the modern style.

It is not by chance that the Crystal Palace, which housed the Great Exhibition in London, in 1851, is considered the first modern building. It was modern not simply because it was built with iron and glass and with standardized construction methods (though these are certainly important, epoch-defining attributes), but especially because for the first time, there is an intentional gap between the architectural style and function. There is a weak relationship between the particular historical stylemes used, like the giant Roman-like vaults and baroque-like planimetric organization on the one hand and the building's exhibition function on the other: such an historical style could house different functions, and conversely, the exhibition function could be "clothed" with different historical styles. It is this non-equivalence that makes the Crystal Palace modern. To illustrate this point further, let us use an analogy with painting. The Crystal Palace is the first modern building in the same sense that Édouard Manet's Le Déjeuner sur l'herbe is the first modern painting (painted only twelve years later than the Crystal Palace, in 1863). Different from Delacroix's La Liberté guidant le peuple, where the seminude female figure symbolizes the noble and progressive ideals of the 1830 Revolution, the nude female figure in Manet's painting symbolizes nothing at all. There is anisomorphism or non-equivalence between ico-nography – the system of images (in this case, the nude), and iconology – the interpretation of such images by the artist or viewer, to use Erwin Panofsky's framework. It is the autonomy of style from content (be it functional, symbolic, liturgical and so forth…) that inaugurates modern style.

A quite common misunderstanding must be immediately staved off here: that things may be autonomous from one another does not at all mean they are necessarily non-relational with one another, or that their relationship is arbitrary. The autonomy of one term is not necessarily achieved at the "expense" of the other. To stand on firm ground, let's illustrate such a claim with an example from mathematics: each coordinate of the point can be described parametrically, completely independently from another, each with a different parametric equation, and the three coordinative values – x, y & z, can be conjoined or composed to form a point. The autonomy of the three coordinative values from each other defines or makes the point possible. Or in modern architecture, that the free façade is autonomous from the structure or function "behind" it, does not mean that the two are not related or disconnected; on the contrary it is the autonomy between the two that opens a space of relatability and reciprocity.

It is in such specific sense of the autonomy of style and content that the modernity of Luarasi's Saint Procopius church should be properly understood. The stylemes themselves are orthodox, but the methodology through which they are composed with one another is autonomous from the symbolic and liturgical function, yet without disregarding or undermining such function. On the contrary, such a methodology emphasizes and enhances the symbolic and liturgical function even more. For example, as already expounded earlier, the famous, or rather "infamous" three arched west façade originates from a typical byzantine fenestration motif, that of the three arched openings. But the way such a motif is transformed and transposed into a façade is thoroughly modern and unique. Such uniqueness yields from compositional process that has a style of its own, its own autonomous formal logic, yet one that is used to give shape to a particular liturgical function. The same thing can be said about the side arcades, the numerous surface details, and the basilic form, even though the latter's use in Byzantine architecture well predates modernity.

It is in relation to such autonomy between style and content that the architects of the new Saint Procopius, whom we still do not know who they are, should have positioned themselves. They had two alternatives: either to reproduce Saint Procopius as it was or refer to its modern spirit by adopting its design methodology, and in this way produce a different form. Instead, the new church maintains a political alibi of its former architectural identity by keeping some elements and removing others, a religious alibi by keeping some of its elements "traditional," and an alibi of emancipation by introducing other "contemporary" elements. The non-return of this church to both the former architectural identity and the religious one is finally cast forever in concrete.

In 2016, I was commissioned by the Honorable Beatitude Archbishop Anastasios to design the new Saint Procopius Church. There were no particular architectural requirements for the new project except that it should not repeat in any way the former Saint Procopius's "infamous" west façade because of its "catholicism…," to which I agreed. Rather than reproducing the former church or imitating its form, I decided to imitate and reenact its design methodology. If Skender Kristo Luarasi had used and transformed certain key elements of Byzantine architecture, I used and transformed certain key elements of Luarasi's Saint Procopius church itself, primarily the dome, the façade and the nave (Fig 15-X). The dome is scaled up slightly wider than the footprint of the former church, to become not simply a moment in the liturgical space but that space itself. The arched openings of the dome yield from cutting the latter with the virtual planes of the existing footprint, and the other components of the church such as the apse and the nave vault. The three arches of the former façade merge into one which, then, becomes a nave vault leading and opening up to the dome, by widening both in plan and in section. The former arcade arches are maintained and articulated as transparent. There are only three main elements, the dome, nave and a base on which the first two stand, as well as a distinct façade and apse. The enlarged dome celebrates the airy, immaterial Orthodox space that hovers from the sky.

Eventually this project did not go forward, because the current project, that is, the one that is currently being built, was already underway and approved by the church. I don't know the reasons why the current project was chosen over my project, but probably it was because of those very agencies that Father Ilia claims the Orthodox Church is not influenced from.
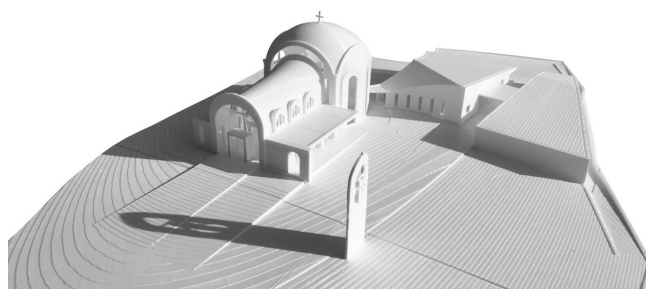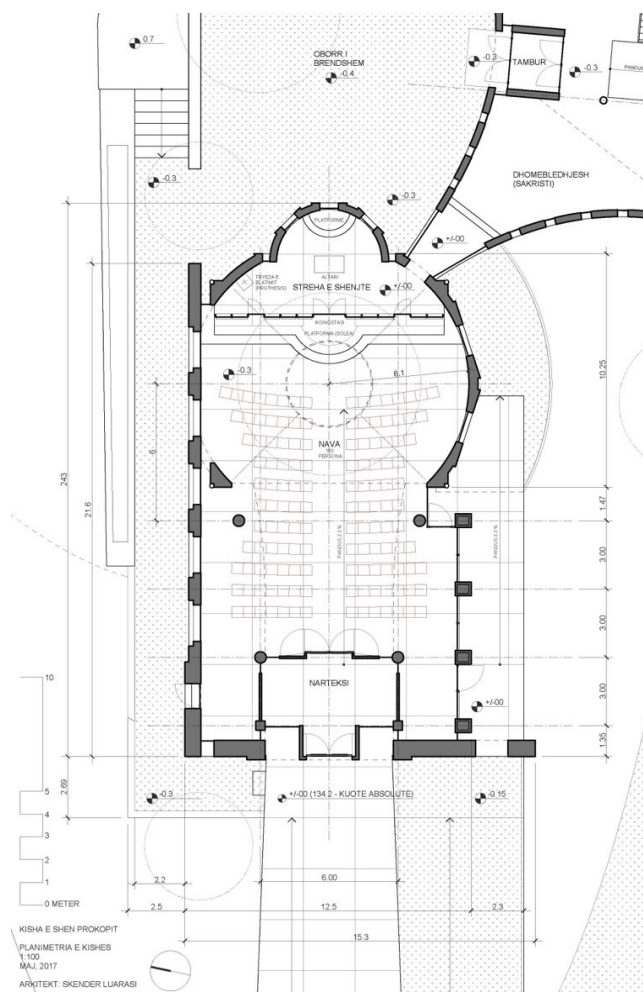

Figure 16. Skender Luarasi, Schematic Design of the Saint Procopius Church, Plan of the Main Liturgical Space, 2017

Figure 15 Skender Luarasi, Schematic Design of the Saint Procopius Church, Model, 2017

Figure 17 Skender Luarasi, Schematic Design of the Saint Procopius Church, Render, 2017

Figure 18. Skender Luarasi, Schematic Design of the Saint Procopius
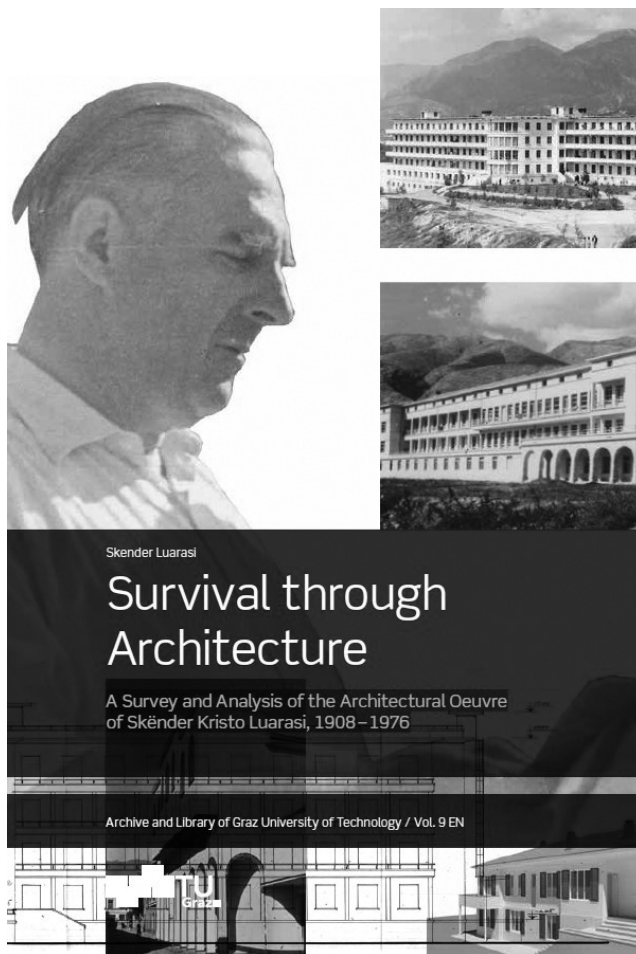Church, Render, 2017

Figure 19. Skender Luarasi, Schematic Design of the Saint Procopius
Church, Render, 2017

Survival through Architecture. A Survey and Analysis of the Architectural Oeuvre of Skënder Kristo Luarasi, 1908 – 1976 by Skender Luarasi

Llazar Kumaraku

POLIS University

Author: Skender Luarasi
Publisher: Archive and Library of Graz University of Technology / Vol. 9
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The book "Survival through Architecture," written by Skender Luarasi—an architect educated in the USA where he completed his doctoral studies—and published in 2023 by the Verlag publishing house of TU-Graz in Austria, analyzes the life and professional work of Skënder Kristo Luarasi (SKL), 1908–1976. It would be easy to label him "an Albanian architect," but it is more accurate to consider him "an architect of Albanian origin" with international training. This fact positions Skënder Kristo Luarasi as an architect with international training, and while it is true that he was educated in Graz, it is equally true that he is more of an "Austrian" architect than an Albanian one. His Austrian training is evident in the works listed in the book, where traces of modern architecture are visible, which, although in its embryonic stage throughout Europe at that time, are displayed from student projects to those of the last period of SKL's professional life.

Before moving on to the analysis of the book, it is important to analyze the book's title, "Survival through Architecture." From the title itself, the author combines architecture with survival, making us think about how these two words placed together can be interpreted. The first meaning of these words relates to the difficult context in which SKL operated, where the only way to survive was to immerse oneself in the professional world and work as an instrument to "forget" the difficult reality lived by a people "imprisoned" within national borders. The second meaning these words take when placed together can be interpreted in the Heideggerian sense of the word, that to survive through work, through the result achieved, and the final work. This interpretation leads us directly to the third meaning, which sees the work of architecture itself as an instrument for the perpetuation of personal experience into eternity. The work of art, which includes architecture, has the main role of reify-

ing the experience of its author, including the context in which he operates, into eternity. Through the "reification" of the author's work in different periods, the value of that work is determined: the more it is reified in different periods, the greater its value as a work of art. In this way, architecture, like a work of art, becomes an instrument for the survival of its author and the context in which it was built. Survival through architecture must be understood through this threefold reading.

The book opens with forewords by Pirro Thomo, Andi Papastefani, Gary Huafan He, and Adil Mansure, who emphasize the importance of this monograph in the field of history and theory of architecture in Albania. The testimonies of Thomo and Papastefani, who knew Skënder Kristo Luarasi directly, are vivid testimonies that speak of a period that now seems very distant, but which is still operative in the consciousness of a people who tend to forget more easily than to document the past in detail. At this point, the book's author offers a detailed reading of the work of architecture at the architectural level, reading in a formally detailed manner the projects and constructions authored by SKL. This detailed reading of architecture seems today to be surpassed by a superficial reading with characteristics different from the formal one. The forewords of Gary He and Mansure emphasize the book's importance at the international level.

The introduction offers a detailed framework for understanding SKL's work within the broader context of modern architecture. It emphasizes the interaction between local tradition and modern influences, setting the tone for the detailed analysis that follows. This analysis, as mentioned a few lines above, touches on the architectural and formal details of SKL's various works. From this point of view, this detailed reading is a value that has now been lost in readings influenced by the fashions of the time.

The first chapter unfolds SKL's origins and initial work. This part details Luarasi's formative years, especially his education in Graz and his early projects. It examines the evolution of what the book's author calls "vernacular modern" in Albania, comparing it with the "Balkan" vernacular and architectural influences during the Italian occupation. This part is important because it shows us the "vernacular" as a continuation of the traditional building practice, while the epithet "modern" shows us the consciousness that the designer and builder have of the action they are performing. Generally, this consciousness in architecture is expressed by the presence of a project. This part is important because it shows a kind of "vernacular" formal identity influenced by modern thought and architecture.

In the second chapter of the book, the focus shifts to Luarasi's residential projects, represented by individual houses. The analysis shows how SKL integrated modern principles with local building traditions, creating a unique architectural idiom that resonated with the Albanian context. This part emphasizes Luarasi's architectural identity influenced by his education in

Austria, but also by the context in which he intervened. The chapter is important because it documents at the iconographic, altimetric, and scenographic level not only the undamaged buildings but also those that are no longer part of the urban repertoire. After all, they are no longer there due to the destructive surge of new constructions.

The third chapter explores SKL's contributions on an urban scale, including collective housing, hotels, hospitals, and other important projects. It emphasizes his ability to scale his architectural vision from individual houses to large urban complexes, maintaining a consistent design philosophy. The reading that the book's author gives to these projects and constructions goes from the large urban scale through morphological analysis to the detailed reading of the architectural dimension at the level of compositional elements, such as that of the balcony of the Agimi buildings on page 124 (image 3.1.12).

Luarasi's work in Gjirokastër is examined in the fourth chapter through the prism of critical regionalism. This chapter provides a detailed overview of key projects such as the Çajupi Hotel, the Court, the Asim Zeneli Gymnasium, and the Gjirokastër Hospital, illustrating how SKL's projects responded to the city's historical and modern contexts. Another aspect that the author emphasizes in this chapter is the relationship that these buildings have with the urban and natural context of Gjirokastër.

The conclusions synthesize the insights from previous chapters, reaffirming SKL's place in the ranks of modern architects not only in the Albanian context but also internationally. This is shown through his diverse work and refined sensitivity to the context in which he was intervening. He reflects on his lasting legacy and the importance of his work in contemporary architectural discourse. The book concludes with a complete catalogue of Luarasi's projects, providing a chronological overview of his architectural work. This section serves as a valuable resource for researchers and practitioners interested in the evolution of modern architecture in Albania.
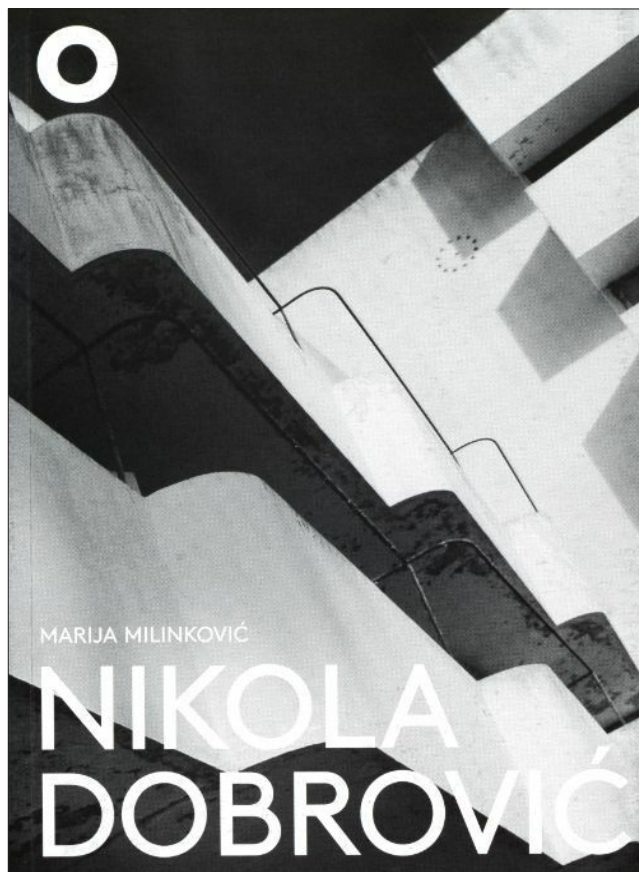
"Survival through Architecture" is a research monograph that offers an in-depth analysis of the life and work of Skënder Kristo Luarasi. It documents in detail his architectural achievements but also places them within the framework of modern architecture in Albania. The analysis and documentation that the author makes of SKL's work are detailed at the architectural level, touching on the syntactic and epistemological plane of the constituent elements of the discipline of architecture. This "close-range" analysis of architecture makes this book an essential value for all those who are interested in the art of building dwellings.

This book is an essential read for all university students and anyone interested in the intersection of local traditions and the modern architecture movement. It serves as a didactic book to understand how to move within a local context using international theoretical and intellectual ideas and instruments.

"Nikola Dobrović: The Shifting Modes of Critical Practice in Architecture"

Juljan Beqiri

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Few historical eras other than the 20th century have experienced such an inextricable connection between architecture and politics. This celebrated coexistence constantly pushed the architects towards producing an abundance of monumental buildings adding pressure on those who wanted to resist the blending of their work with the zeitgeist of political discourse. In the case of Socialist Federal Republic of Yugoslavia, the emergence of late modernism from the end of the Second World War to the mid-1980s aimed at resisting the dominating forces from the Eastern and Western blocs. Primarily, this was achieved while trying to build a parallel form of socialism. After the 1980s, Yugoslavia's modernist architecture got entangled in a vortex of national and regional narratives, but, however, by then the international currents of 20th century architecture had already penetrated the domain of design. This book elucidates this belle époque of Yugoslavia's architecture by displaying the contribution of Nikola Dobrović, one of the most important figures of modernism in Yugoslavia. Dobrović stood up as a great influencer of the country's post-war architectural identity, and his architecture demonstrated an unambiguous capability to sustain itself in an ever-changing socio-political context.

In "Nikola Dobrović: The Shifting Modes of Critical Practice in Architecture", Marija Milinković tries to reveal the rationale between architectural design in Yugoslavia and the political settlement that was brought about by 20th century utopianism. By splitting the content into three main chapters, she exposes a theoretical treatise yet historical while laying down an immense number of possibilities of how, through the lenses of Nikola Dobrović, Yugoslavian modernism could have otherwise been. Through the analysis of his work, this mono-

graph sheds light on the importance of maintaining a critical acknowledgement towards modernity, and reveals the necessity to see polemics and reflectivity as leitmotivs of this ongoing confrontation. Finding traces of this 'anti modernity' in the Balkans is rather hard and exceptional given the turbulent history of its 20th century.

As Nikola Dobrović passed through all the phases of purification his artistic language departed from the Euclidean representation of form leading to various expressive choices and experimental approaches used to creating architecture. As Marija Milinković clearly explains it, through an anti-modern response Dobrović refuses to carry on as if nothing has changed, while constantly rejecting the notion of modernity as a set of fixed and unchanging values. Rather, "Dobrović's modernity" appears in an ongoing process of negotiation between nature and society. While the former penetrates through the city landscapes, the latter carefully blends in the context of an evolving political environment. The urbanization, as well as the cultural and geopolitical shifts that post-war modernism put forward were highly influential, but, however, Nikola Dobrović succeeded in proposing a different conception of modern urban planning. Being radically contradictory at base and also by challenging the unquestioned embracing of modernism in Yugoslavia, Dobrović demanded constant progression and vivid transformation. His overall attitude towards modernity exclusively condemned the option of getting rid of modern commodities, in order to get rid of modern conflicts. As a pioneering figure of architecture he does not rest on assuming that society and nature are two separate entities. On the contrary, Nikola Dobrović sees them as distinct things that can be combined towards inevitable transformations, precisely what Bruno Latour later would have called "hybrids".

From the point of view of Milinković, Nikola Dobrović's critique of the Modern Movement advocates the existence of another modernism constantly redefining the order of things. Recognized among the European intellectual avant-garde, his design for New Belgrade radically challenges the Baroque legacy of city planning in Europe, and decisively sees urban and architectural aspects closely related. However, the movement system which connects the critical components of the city is preserved and endorsed, making the building a supporter and accelerator of that movement and in a constant process of "setting space in motion".

As the author clearly emphasized it, Nikola Dobrović proudly maintains the desire to resist the influence of the traditional by exploring the multiplicity of post-war modernist identities and challenges the conventional division between politics and society. Attempts to reconnect them to the natural world through city landscapes react as these distinctions had never existed. His artistic language benefits from the social and natural experimentation of modernism and the problem of repre-

sentation that he encounters derives precisely from his refusal to transcribe Yugoslavian politics through architecture. Eventually, making the case in the Ministry of Defense Headquarters, Nikola Dobrović embraced paradoxes as a way of criticizing modernism.

What Marija Milinković appealingly conveys in this monograph is the fact that Dobrovic's objection towards modernism does not necessarily lead him to postmodernism. The analogical reference he uses in Ministry of Defense Headquarters absorbs only the formal aspects of it and the building elegantly succeeds in unveiling the post-war universal emancipatory values. While in the Eastern bloc the embrace of postmodernism was inevitably charged with political meaning, Dobrović's application of postmodern principles took the form of the critical engagement with ideas originating in the West.

In this book, regardless of the highly condensed political context, Nikola Dobrović work appears as neither an architecture of the proletariat nor an architecture for the poor. His consistency towards avoiding the representation of politics through architecture shows that even less was he interested in embracing the easy task of social realism. Clear evidence of democratic urbanism speaks for an idealism genuinely preserved, which also continues to perceive the socialist city freed from ideological meaning but proudly egalitarian and densely collective.

Conceived as a synthesis of the entire Dobrović's portfolio, this monograph showcases the circumstances and conditions in which this work was created. Under the leadership of Josip Broz Tito Yugoslavia aimed at inserting the nonalignment movement also in art and institutional practices, but, however, Nikola Dobrović continued to maintain his originality and kept his work distanced from the ongoing political influences. As Theo van Doesburg also stressed it, Dobrović and Plečnik alike developed their styles precisely thanks to conflicting influences mainly arriving from the West. This process of learning from western sociopolitical aspects made his work highly respectable yet avant-garde for a socialist state.

Fragmented Continuities
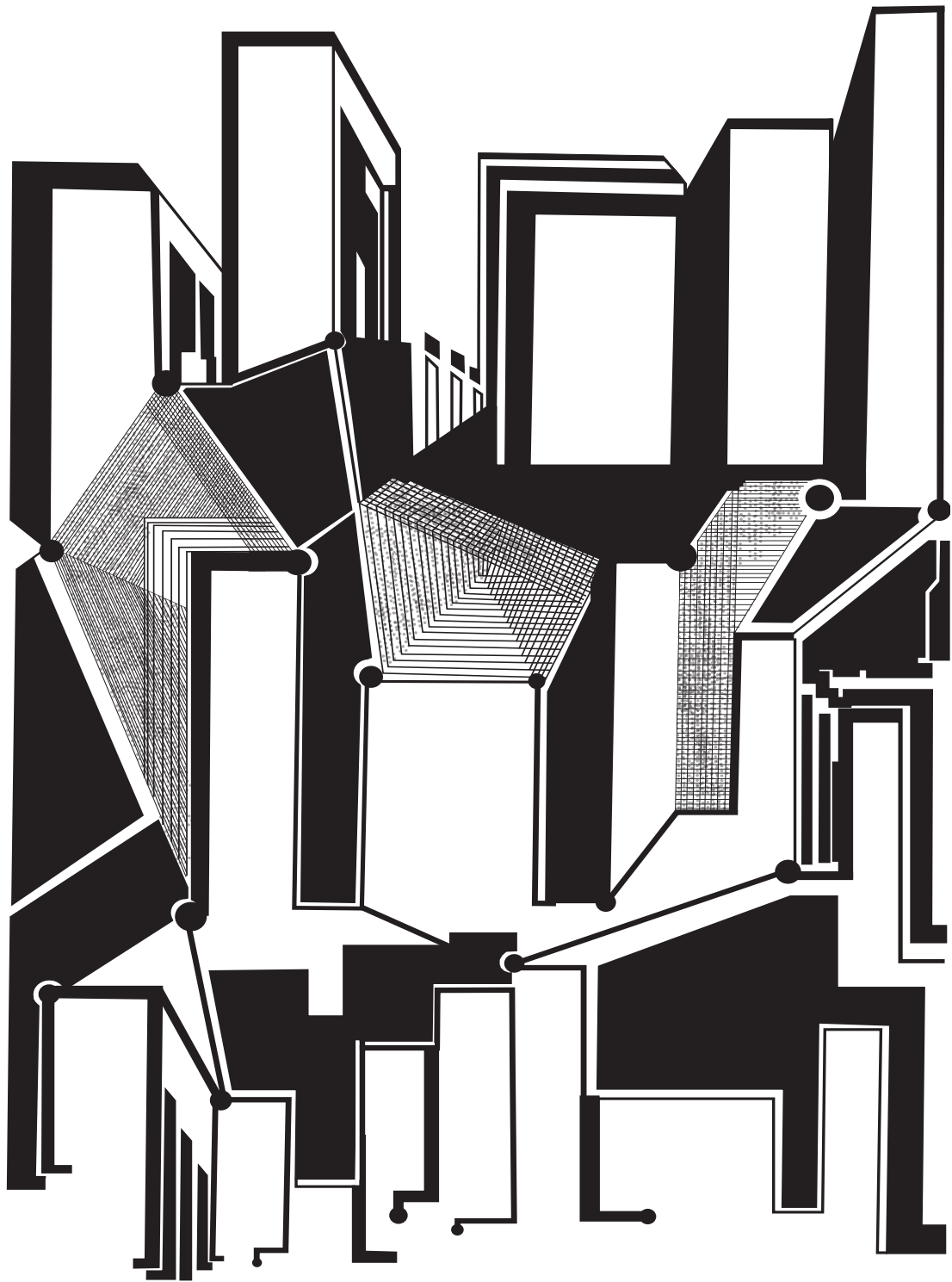
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Cities are complicated creatures that are continuously molded by forces of growth, destruction, adaptation, and renewal. This drawing explores the fragmented yet interconnected nature of urban environments, where rigid structures meet fluid transitions. The composition, a juxtaposition between the solid and the empty, expresses the tension between the structured and the random, which is one of the characteristics of urban resilience.

The use of lines and nodes demonstrates the communication, connectivity of the infrastructure as well as relationships between people. The challenges of sustainability in the twenty-first century, when cities have to address traffic jams, transportation, congestion, and environmental concerns at the same time are shown through geometric distortions and superimposition. Each part suggests both separation and cohesion, and this is because a city's strength is in its ability to change, rearrange, and reconnect.

The dichotomy of the concept of permanence and change, which is characteristic of the urban environment, is shown through the use of structured black and white. Although the built environment appears to be static, it is actually a dynamic entity whose significance and role change over time. Cities are narratives written in space of historical processes, policy decisions, and social memory. The material and the intangible are what makes them resilient, the tangible and intangible.

In essence, this composition is an invitation to reflect on the fragility and strength of our urban environments. In an era of rapid transformation, sustainability is no longer a static goal but an ongoing process—one that requires both innovation and a deep understanding of the social fabric that binds a city together.

Drawing. by Armela Reka

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