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GOING HIGH! The Pros and Cons of City Verticalisation

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GOING HIGH! THE PROS AND CONS OF CITY VERTICALISATION

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Introduction from the Editors

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The high-rise is recognized worldwide as a symbol of ‘progress’ and ‘technological’ power, an ‘urban monument’ capable of turning the spotlight on itself, bearing praise and criticism to the entrepreneur, the architect, and the engineer, and often to authorities as well. The high rise – commonly and often indiscriminately referred to as the tower or skyscraper – is by now, a global phenomenon.

We see it everywhere in the world, from East to West from the Global North to Global South, from its cities of origin in the New World such as New York and Chicago to the historical cities of the Old World like Paris, London, Berlin, and even Rome, and in Chinese metropolises like Beijing and Shanghai. But we also see it in small, developing, and often perceived as ‘peripheral’ countries like Albania, whose capital Tirana has unapologetically risen to the thirtieth floor in the last two decades...

No doubt, by its sheer size and shape, the skyscraper is first of all and inevitably a sign, minimally a sign of itself, even (or especially) when its referentiality is putatively kept at a minimum, as in the case of the Seagram building in Manhattan, a building that screams through its Miesian silence: I am a skyscraper! The skyscraper is perhaps the only sign that is both a decorated shed (Venturi et al., 1972) or a “lobotomized building” (Koolhaas, 1978, p. 82) insofar as there is a disjunction between the outside (decoration) and the inside (function), and a duck insofar as the skyscraper is a symbol of itself, insofar as it cannot but look like a skyscraper ..., always already self-referencing and exclaiming: I am a skyscraper!

Yet, no sooner has the skyscraper announced its absolute, vertical self-referentiality than it starts to work laterally and horizontally, to conjure, structure, and mobilize a field of other signs, objects, contexts, neighborhoods, buildings, styles, cultures, technics, knowledge, ideologies, and desires. It is such a metaphoric power of structuring that Michel de Certeau, in “Walking in the City,” (de Certeau, 1984) reads in the figure of the skyscraper.

To think about the skyscraper, then, is to think about what it is around, about the whole city, the whole environment, the

whole landscape, the whole discourse... The skyscraper, as that which “Goes High!”, becomes the organon of the whole as such... Yet at the same time, precisely by its very virtue of being a “solar eye” it may also become an instrument of abuse and inequality, both a material object and conceptual idea that privileges a totalitarian whole that subsumes and erases the multiplicity and differences on which the very idea of the (city as a) whole that belongs to all is premised and promised.

It is the ambition of TAW 2022 the skyscraper inter-disciplinarily, in its very multi-dimensionality: both as a freestanding object and an urban field or disposition; as a technological and social infrastructure; as an architectural typology and an economic instrument; as an architectural, engineering, environmental, and urban concept, and as both a contemporary and historical sign that has a history and is constitutive of modernity, hence of our times.

Through a series of inter-and-trans-disciplinary workshops, keynote lectures, and conference presentations, both in POLIS University and online, TAW 2022 aims to inquire and speculate about the skyscraper as a global condition yet framed from the context of an unbridled verticalization of the city of Tirana in the last two decades, and how such phenomenon is currently affecting and will bear on the transformation of the city. This edition of TAW elaborates on how such a verticalized built environment should be analyzed and reported in its complexity, and how to make it easy to be understood by citizens and professionals. The skyscraper will be discussed in terms of architectural morphology, structure and technology, management, and social impact, public transportation and services, and so forth.

Going High: The historical genesis of a concept and some evolutionary questions

The ‘tall building’ was born as a response to commercial needs following the Great Chicago Fire in 1871 and therefore not for residential objectives (Aimar, 2016a, p. 3). From there, a challenge to go high, even extreme, was established following also profit-based principles in an aggressively developing real-estate

market of the time. Then it became a trend all over the USA, Europe, and later also in Asia and the rest of the world. Economics has been an essential propellant that supported the technical development of the high-rise (or skyscraper) phenomena.

Tall buildings are also influenced by the physical features of a specific form and context-related aspects. Working on a such typology of edifices requires specific skills for an out-of-the-ordinary performance, with indirect effects that spill over into the ordinary design of other city buildings (Aimar, 2016b), a difficult task in which experimentation and research play significant roles since the genesis of the tall building concept (Aimar, 2016a).

However, many other factors had to converge and resonate for the tall building to come into being. Economics and steel construction would have been insufficient to trigger the emergence of the skyscraper if it were not for two other inventions: the elevator and the telephone, that is, the ability to both go very high and communicate at a distance. Later, the air conditioning would sustain even further the design and construction of a “well-tempered environment” (Banham, 1984) high above the ground.

Yet, it is impossible to imagine these innovations isolated, only as mere technological facts; they are above all else social: standing with others in an elevator (especially when the people are turned toward one another...), waiting impatiently (alone or with others) for the elevator to come and having to take the stairs when it is not coming; being caressed by the AC breeze, or finding oneself in a hellish nightmare in the 30th floor when AC is not working properly in a hot day; when talking in the phone while looking at a breath-taking view from the 50th floor; or when one’s girlfriend or boyfriend hangs up the phone or skype while in the 75th floor, or when the router goes bad and one finds oneself in the 100th floor without internet... – all these are social situations. The skyscraper then can be also imagined as a social environment and infrastructure.

That the skyscraper could transform both the modern city and society was recognized early on by visionary modernists as diverse as Louis Sullivan, Frank Lloyd Wright, William Lescaze, and George Howe, Raymond Hood, as well as affirmed modernists like Mies van der Rohe, and Le Corbusier. They all saw the high rise as both an object and complex environment that embodied the modern spirit in its form, ornament, structure, materials, and various technological systems.

In its beginnings, the form of the skyscrapers resembled that of the vertically stretched classical palazzo. It was only later, in the early decades of the 20th century that the skyscraper started to acquire a form and typology of its own. The condition of sheer stacking of slabs and repetition of elements challenged the organicity of the classical Albertian compositional paradigm as per which nothing could be added or taken away from the final form. In the skyscraper, the silhouette, surface, structure, and program were freed from one another and turned into ‘variables’ that could be manipulated independently from one another.

Postmodernism precisely adapted such possibility to advance its ‘delirious’ urban and environmental dreams.

The skyscraper became an island, part of an archipelago of skyscrapers, potentially captivating the globe (Koolhaas, 1978) in and through their very stylistic excessiveness and repetition, across a presumably infinite grid.

Inheriting such a postmodern tendency, today’s skyscrapers are islands of mixed-use and different programs. The tower offers the possibility of combining different types and functions in one space or construction. Thanks to the factors such as urban intensity, it is possible to offer housing diversity, but also to combine other functions (services, shops, tertiary in general, etc.) despite housing per se, and to decide how to do it (Reale, 2008). The high-rise building, or the skyscraper later, seems more suited to the idea that embodies the International Style and its productivism ideas. Densification today means providing more possible spaces, from public to common spaces, as well as multiple types of residences. So, diversity has become an issue in the verticalization debate (Hoxha, 2021).

One can mention examples like Mirador from MVRDV, which verticalizes a series of different common spaces; or the Valley from MVRDV: a mixed-use building located in Amsterdam, featuring residential units, offices, parking, a sky bar and retail and cultural space, etc. In addition, there are examples like the Sky Green Residential & Retail Tower from WOHA, a mixed-use complex located in Taichung with two 26-story residential towers with apartment units from level 4 onwards, as well as retail spaces; or Meret Oppenheim Hochhaus in Basel, by Herzog & de Meuron, as a mixed-use building with apartments, offices, a café, and a restaurant. On the 6th, 7th, and 15th floors, there are outdoor areas that will function as terraces for the respective apartments, or as communal outdoor gathering spaces for the offices. Lastly, the VIA 57 West, designed by BIG (Bjarke Ingels Group), is also called the CourtScraper, because it combines a patio block with a skyscraper and creates a new typology, as well as the Linked Hybrid by Steven Holl Architects. So, the typology of tall buildings becomes a macrostructure with multiple functions.

What about the quality of life? City development and economy? Social and environmental impact? Design and technological progress? Image of the city and its reputation? City marketing and branding? Impacts over the city structure and urban tissue. And what about people and quality of life, first of all?

This trend listed above, therefore, seems to be context-related and influenced by it, thus bringing the context firmly back into the centre of urban and architectural discourse. It becomes perhaps necessary to discuss what the ratio of a tall building (‘tower’ type) should be to the context in which it is placed? How can the inevitable demands of the market be met but at the same time mitigate their social impact in the context? This solution could be a potential re-interpretation of the tall buildings as part of the variations regarding the urban block in a contemporary way (Reale, 2012), which update the concept of the “Bigness” by Rem Koolhaas (1995).

In a few words, we can pose several questions to be added by other queries of TAW 2022 participants.

- Is ‘going high’ or ‘verticalization’ the only alternative for

the city (centre)?

- Are there other options that can be used, like low/mid-rise with mid/high-density?
- What are the differences between high density and verticalization in the city?
- How can the tall-building typology (>14 floors, >50 m) meet the requirements of local communities, businesses, and authorities? What about the requirements of architects, engineers, and builders?
- What can be the benefits and/or problems to be expected in the future by such typology?
- What stays behind the 'glorious' phase of construction? What does it mean for maintenance?
- Is this a possible architecture to be sustained by the Albanian society and economy?
- Or do we need to invent new models of life towards a future that is calling for resilience and stability?

Going high: the case study of Tirana, Albania

The curiosity about high-rise buildings in Albania is high, given that several of them are currently under construction, especially in Tirana. These include the 'Eyes of Tirana', designed by Henning Larsen and measuring a height of +85.04 m, and the under-construction commercial tower close to the 'Tirana International Hotel & Conference Center', designed by Bolles+Wilson. Lastly, there is also the 'DownTown One' project designed by MVRDV, which will reach an architectural height of +144 m on completion. Also, by the same Dutch firm is the 'Skanderbeg Tower', which is expected to reach a height of approximately +85 m. The city centre indeed is fuelled by more and more high-rise buildings like them.

However, the debate on the topic is ongoing since the proposal phase for the redevelopment of Tirana city centre, close to Skanderbeg Square, in 1963 and then in 1974 (Dhamo et al., 2021, pp. 186-187, 190). This only led to the construction of one building, the Tirana International Hotel (56 m) on Skanderbeg Square, which was the tallest building in Albania between 1979 and 2000. The debate has been reopened also since 2003 to the present time with the new masterplan for the city centre, designed by Architecture Studio in Paris.

Today, Tirana is also booming with high-rise buildings, especially in the city centre. Inheriting from the past a monotonous skyline of building with 4-6 (before the 90s) and 7-9 floors (during early transition), at present days, it is quite something jumping to 40 floors and more. Staying in the city context, the architectural firm Grimshaw Architects proposed only one skyscraper for the northern extension of the city boulevard in 2015. In the meantime, a new building such as the Plaza (+85 m high) remained empty for five years after completion in 2015 and now is transformed into a luxury hotel. Tirana International Hotel, changed owners several times between 2004 and 2012, and now has a 36-story expansion from behind...

This has opened a vivid debate in the city among citizens, communities, professionals, and authorities. Verticalization of Tirana is also associated parallel with densification in general.

This seems to have harmed standards of public space, green and sports areas, as well as public services and utilities. As a result, the 'tower' phenomenon has earned both, pride and hate, fuelling more the local, professional and political debate.

Also, in terms of local architecture, this has opened a new perspective among architects and city scientists about design, aesthetics, functions, services, and technologies applied in the new buildings developed in Tirana and Albania in general.

At present time in Tirana, for example, often many flats are spontaneously used for functions such as kindergartens, call centres, and other services. These apartments are therefore slowly being adapted from their original functions, other than those for which they were designed, by installing these functions on the 3rd or 4th floor above ground, for example. This is an example of the need for a response from architects, developers, and authorities to provide new alternatives to specific local demands. So verticalization is not happening only because of the densification and building high but there exists a verticalization of services and functions as well, which need to be responded to by the supply provided by developers and authorities (Hoxha, 2022).

Is the skyscraper, the tower, or more generally, the high-rise good or bad? Can we demystify the high-rise phenomena, and draw some conclusions about the pros and cons of such developments in the city? Can we structure criticism, and balance it with the benefits for the city and society (Aliaj et al., 2003)? What and how about the city's image and history? The city's development and economy and their social and environmental impact? The impact the high-rises have on the city's infrastructure and urban fabric. And what about the people and the quality of their life (in the city) in the first place?

In terms of the locally produced architecture, this has opened a new perspective among architects and city scientists about design, aesthetics, functions, services, and technologies applied in the new buildings developed in Tirana and Albania in general. Are we following international trends? Or are we just copying them? Can we invent new ideas, techniques, and design methodologies? Can we use it to promote and brand Tirana as a good laboratory of creative/innovative architecture? In other words, can we have agency over the city, and what and how might that be?

- In between learned and general opinions, scientific arguments and political activism, 'cool' professional expertise and 'hot' public debates, individuals and institutions, and power and public agency, TAW 2022 will attempt to address these questions:
- So, why build high-rises in Albania at this moment?
- What does it mean to go high in Tirana now, in terms of the relationship between public spaces and the built environment?
- Is it possible having low/mid-rise and mid/high-density in Tirana and other cities worldwide?
- Are there typological alternatives in the Western Balkans (e.g., Belgrade, Skopje, Pristina, and Thessaloniki, among others) that can be considered also for Tirana,

Albania, as a case study?

- Are there other international models of social-economic relationships that are more appropriate for Tirana and Albania?
- What is the status of such issues in Europe, North America, and the rest of the World?

Going High, and the social dimension of the ‘verticalization’ culture

Considering the implications of ‘Going High!’ in other fields as well, some authors have described the pros and cons of living in high-rise buildings under different terms.

Whipple listed several problems in terms of “movement and amenity, microclimate, psychological effects, destruction of vistas and historic buildings, and monopoly space” (Whipple, 1971, p. 70). Microclimate includes variations in terms of natural ventilation in the nearby context (Kuznetsov et al., 2016) and the surrounding thermal environment (Nugroho et al., 2022).

Of the case studies reviewed by Gifford in his study (2007) through the literature, it “suggests that high-rises are less satisfactory than other housing forms for most people, that they are not optimal for children whose social relations are more impersonal, and the helping behavior is less than in other housing forms. Meantime, crime, and fear of crime, are greater, that affected the chances for suicides.” (Gifford, 2007, Abstract).

Similarly, socio-psychological issues are also associated with high-rise buildings in the study of Kalantari and Shepley, “particularly for lower-income populations.” (Kalantari & Shepley, 2021). Moreover, some concerns are also increased regarding urban dimensions of the podium and the amount of “embodied energy” in light of the ongoing climate change (Aimar, 2016c).

Others, as Whipple pointed out, the pros connected to “a higher utilization of limited land resources, compactness in the arrangement of urban activities, convenience through the proximate location of interacting uses, easier communication” (Whipple, 1971, p. 70).

Certain postmodern neoliberal aesthetic and economic tendencies have turned the skyscraper into a closed environment. They have become ‘smart’ archipelagos that are removed and isolated from the urban context. Of course, the question is: What happens to the space in between these skyscrapers, the presumably ‘neutral’ zone between them (Luarasi, 2021, pp. 91-92)? Investigating the topic of the skyscraper in Tirana is important precisely because this city is a veritable symptom of the complexity of the skyscraping the city if one were to think of the skyscraper as also an action or verb rather than as simply substantive. While yielding a new look, the skyscrapers in Tirana have also caused urban erasures, by violating existing cultural and historical urban layers. Hand in hand with such morphological urban erasures and under the aegis of urban ‘gentrification’ and ‘rehabilitation’, the skyscrapers or the high-rises, in general, have been instrumentalized to enable social and economic segregation and homogenization of the city and urban space. Skanderbeg Square most strongly evinces such condition, and it is veritable *mise en scène* of

an urban lobotomy that started before WWII, with Gherardo Bosio (Luarasi 2021, p. 3). The towers around it have ‘expedited’ and structured such erasure (Luarasi, 2019, pp. 79-80).

Consequently, some questions arise that need to be addressed:

- What are the impacts of such a ‘verticalization’ culture in public spaces?
- What is the social dimension concerning the impact of public transportation, local urban context, economic differences and fairness, environmental impact, quality of life, etc.?
- What do the local people think about the ‘verticalization’ culture? What about the difference between verticalised-skyscraperised centre with the rest of the city, and informally developed areas?
- How to promote a better social balance, and avoid segregation? And how to avoid another real estate bubble?

Tirana Architecture Weeks (TAW) 2022

To respond to the posed dilemmas and question marks, TAW 2022 has opened a debate that brings into focus, as an object of study, inquiry, and speculation, both the skyscraper and what is around it. A discussion that has gone beyond the mere politicized debate and poor daily technical jargon. We need to hear professional and technical arguments from different local and international actors and institutions to adopt a more friendly approach to be able to open a public debate for the best of architecture and the city.

The debate of TAW on tower/skyscraper phenomena wants to be guided by one conceptual idea: that the topic of the skyscraper should not be seen just as the skyscraper as a vertical object, but also about what is around it (including the neighbouring urban settings, or the city in broad terms). In other words, it is about an object and a field. This aesthetic and political premise intends to allow participants and contributors to unpack the concept: socially, economically, anthropologically, technologically, and so forth. An approach that can also be well contextualized here in Tirana, and replicable in any other city and society.



Figure 1. The main banner of the Tirana Architecture Weeks - edition 2022. (Source and courtesy: Polis University – Renis Batalli, Gani Kasa, Lediona Mirashi, and Marina Dalipi.)

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Waiting for eVolo - 2023 Skyscraper Competition

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POLIS University

The exponential increase of inhabitants, pollution, economic division, unplanned urban sprawl and other factors are leading towards a vertical development of the cities. Such phenomenon is appearing globally, creating new vertical entities with an impact in the urban context, the public realm and society.

The workshop aims to investigate the relationship between space and the collective in the creation of a dynamic and adaptive vertical community. It seeks a response to the exploration and adaptation of new habitats and territories based on a dynamic equilibrium between man and nature. The workshop is organized in the frame of the international competition launched by “eVolo” magazine, which since 2006 invites international architects, engineers and designers to propose innovative creations that embrace the latest technological applications and promote cultural values that can influence the future design of cities. The participants are encouraged to propose vertical buildings in any context of the world, by taking into consideration technological advances, finding new sustainable means for the urban environment, proposing methods to solve economic and cultural issues, and new strategies for the management of natural sources. The workshop was organized in six groups of five persons and the best proposal will be a participant in the “eVolo” competition.

Objectives of the workshop

In the last two years, the incidence of AI in architecture has seen the rising of significant debates regarding the implemen-

tation of these tools in professional and academic processes. On the one hand, stable diffusion models, neural networks, and intelligent algorithms have defined a new way of ‘designing’ architecture only through the use of words to be transferred into images; while, on the other hand, have opened an untouched field of investigation dealing with creativity, ideas, and as well touching some delicate points such as the authoriality in the field of AI-based design.

Quoting Ludwig Wittgenstein: ‘the limits of my language are the limits of my world, and words seem to be today even more important than before in the emerging context of natural language text-to-image applications driven by artificial intelligence algorithms. With these premises, besides the design of a proposal for the eVolo competition, the subtle objective of the workshop was to expose 5th-year students of an Integrated Master in Architecture and Urban Design to the new challenges linked to the use of AI in architectural design.

The use of the Midjourney AI (version 3.0) platform was, for the pedagogy team as well, a method of inquiry on how such potentialities could be expressed and catalyzed in proper design projects rather than just on a bi-dimensional screen of an already precompiled platform. Exposing the students to learning how to use diffusion models and how to strategize methods to convert the resulting images into 3D models, was the trigger to involving them in a deeper understanding of how to formulate a theory around their designs.

The concept is based on the very transformative years that influenced the way we live today. Having to experience it all together surely impacted how we see our "home" and the upgrades we want to do in our everyday environment. Therefore it is important to notice the patterns that re-shaped the world.

THE INTERCONNECTION BETWEEN NATURE - HUMAN - MACHINE

At this point it is no date to look into the future of the very beginning of everything. The normal understanding that it is in his own good to care for the green so there can be little bit more appreciation for their "Mother".

A big challenge is to be away of a heart's loved ones. Being mindful enough to create a "new" reality so that the so that the "old" one can be valued from the mind.

A bigger one is to be present and to stay faithful to each and... These years challenged the perception of the connections with outside and within.

THE MODULE THAT FITS TO THE NEW REALITY

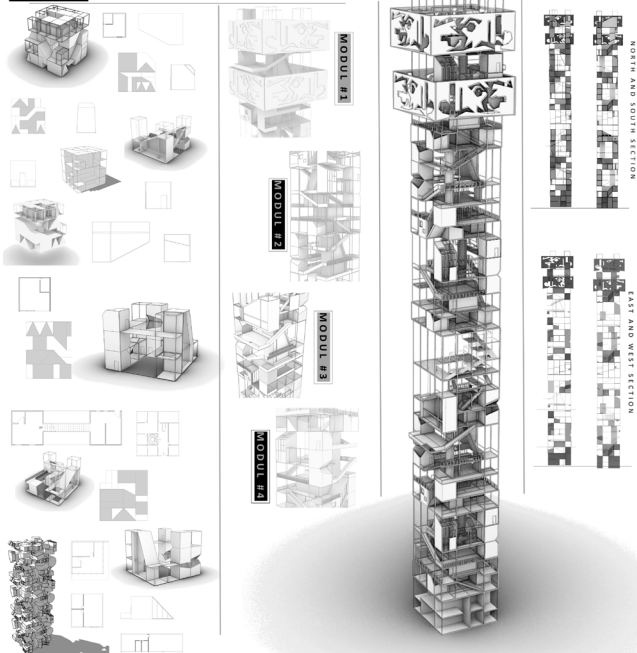
FORM GENERATOR

REDUCTION
TRANSFORMATION
REDUCTION
RECONSTRUCTION

Living a POST PALEOLITHIC

COLONNE
PODCASTING

THE MODULES



Workshop outcomes

RYU CORE

OSAKA, JAPAN YEAR 2022

In a post-apocalyptic future setting of Osaka due to a nuclear war, people have managed to find ways to adapt and protect themselves against the new abnormal environment.

Now the city and buildings are being changed in order to survive the radioactivity, tsunamis, and earthquakes.

CRISES

RADIOACTIVITY



EARTHQUAKES



TSUNAMIES



WAR ATTACKS



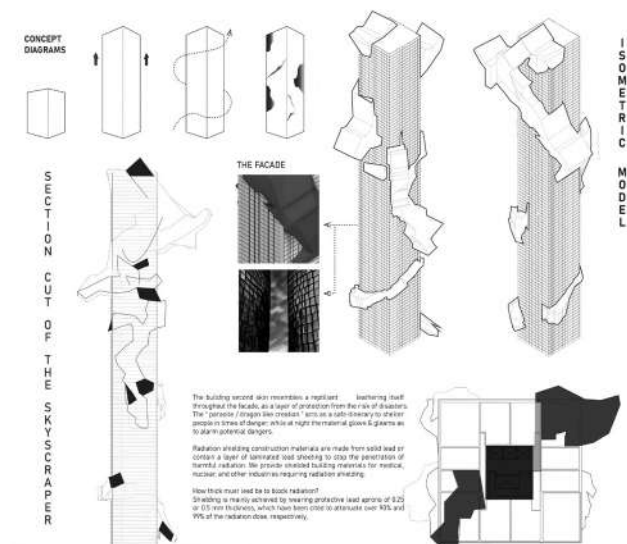
FINDING SHELTER IN HISTORY/MYTHOLOGY

Ryujin, the mythical dragon

The Japanese dragon, also called Ryū (龍) or Tatsu (竜), is a snake-like creature covered with scales and without wings, contrary to the Western dragon. As a symbol of strength and power, the dragon is highly respected and honored in Japanese society.

Ryujin is a sign of good fortune, happiness, wealth, success and symbolizes wisdom, perseverance and immortality.

The characteristics of this mythical creature are taken and transformed into tools of protection for the post-war setting.



Workshop outcomes



Workshop outcomes



Workshop outcomes

Methodology

The students were divided into groups of three to four people, in which each of the groups chose the main theme to develop the main concepts of the project. The students listed several global problems with a focus on the relationship of humans to the environment and bringing into play the possible future crisis of this relation. Each of the groups considered different themes, which resulted in unique approaches for the final project. The first concepts were generated by the use of artificial intelligence, respectively through the platform of “Midjourney”, to obtain possible scenarios for the final proposal. Consequently, the students obtain several feedback to develop the final layout of the building represented in architectural drawings and renders, which would answer a specific crisis.

Conclusions

As was seen during the workshop’s phase, enabling vast amounts of data processing and offers great simulation possibilities for the students to display many design alternatives comprehensive and progressive way. Midjourney AI was not intended as a complete alternative to the ‘traditional’ design process but as a way through which the class could develop unexplored lateral thinking enzymes to enrich their final design proposal.

All the different groups engaged, and implemented in Midjourney a series of keywords that could be intended as strong points for their future design solution. All the images generated were then re-traced into traditional modelling software and enriched with the technical drawings. Due to the short span of the workshop – 5 days -, the overall process still needs to be a test and more critical outcomes need to be produced through a longer use of the above-mentioned tool in the design process. Nevertheless, the experience was an interesting test to trigger and promote the use of the latest tools in architectural classes and courses.

Valerio Perna is an architect and PhD in "Architecture -Theory and Design" at the University "La Sapienza" in Rome. Currently he is a Lecturer at POLIS University in the Architecture Department. He is also the coordinator of Innovation Factory (IF) and the head of the Research Department.

Urban Regeneration Strategies. The Tirana Case Study

DIMITRA NIKOLAOU

National Technical University of Athens (NTUA)

NICHOLAS ANASTASOPOULOS

National Technical University of Athens (NTUA)

ELEFThERIA KOSTANTINIDOU

National Technical University of Athens (NTUA)

KLODJAN XHEXHI

POLIS University

BLERIM NIKA

POLIS University

Workshop introduction, objectives and intentions

The first signs of historical settlements in Tirana date back to the year 1614. These settlements and their road system belong to the old Ottoman city structure. Nowadays this historic north-east area of Tirana consists of a conglomeration of buildings that date back to different historical periods. Recently, a good part of these dwellings are informal ones, which damage the morphology of the area.

Tirana has gone through different regulatory plans starting from 1921 up to today. The influence of Italian architects and urban planners is undoubtedly obvious within the urban tissue of the city.

The rapid demographic growth after years of dictatorship increased extraordinarily the monotonous band of the periphery. This made the city triple the number of residents to the suburbs, leaving immobile the only center of the city designed by Florestano Di Fausto 80 years ago. Agricultural lands or free territories around the city were replaced with buildings that were unplanned by a regulatory plan and in most cases illegal or without architectural projects. “Tirana suffers today an extreme difference in the urban, economic and social level, between the center and the periphery.”

The workshop aims to introduce students to aspects of new models of urban renewal within a Southern European and Balkan context of historic and architectural character.

The workshop was structured in three main parts:

- The history and planning that shaped Tirana’s urban tis-

sue (how are the past and the history incorporated into the modern city)

- The high structures and the organization of the public space in dialogue with the city’s historical places
- The urban regeneration policies and strategies that combine both public space and high structures.

Student’s work and workshop goals

Students were asked to analyze, interpret, record, maps creation, plans, 3d drawings, collages, or other materials of their preference. Presentation of an action plan of intervention, urban activation, heritage incorporation, and quality of life parameters was one of the main goals of the workshop.

Activation and upgrading the concept of the specific area through mental maps was necessary. Students were free to imagine and propose their ideas according to the overall understanding of the city’s character. SoPHIA methodology for approaching the historical environment was one of the tools used during the workshop.

Students were asked to observe, record, and analyze the character of the city center composed of fragments of heritage both monumental, as well as anonymous, and vernacular architectural structures, and other urban details that have been identified, as well as contemporary structures, including new construction in the form of buildings, public spaces, gathering areas, rest areas, parks, etc.

Students were asked to comprehend the planning of the city

around its main axes, squares, and green spaces, as well as the chosen site of interest, and the interpretation of local and global characteristics.

The workshop went through different site analyzes involving different urban tissues, in order to enhance the sustainability of the historical sites of the city of Tirana. Finding the right key-words which involve the problematics of the area through mental maps was some of the main objectives. The identification of the area of analysis and its immediate surroundings, provided a series of appropriate uses (mental map – comprehension scenarios) towards the area’s regeneration, facilitating public use and integrating it into the urban tissue.

The formation of design principles enables us to address each of the above-proposed design scenarios. Interpretation by each team was showcased by providing an iconographic and/or sketchy way through a “section” of the town of their choice that expresses better the coexistence, merging, conflating, and still active opposition and contestation from the global to the local plan, including the community.

The workshop goal was also to critically assess what was observed as the past & present activation strategy including heritage incorporation and to evaluate and upgrade the quality of life parameters.

Therefore, the workshop was shaped around the notion of proposing an activation plan and upgrading different concepts for a specific area near the historical center of Tirana.

The collective analysis of the greater area and each specific element analyzed by each student collected a composed body of knowledge both personal and subjective as well as collective and objective, which faded into the final report.

Finally, the workshop elaborated a new methodology for approaching the historic environment, called SoPHIA, which has specific thematic categories. The students funded interest to incorporate the methodology within their proposals.



Figure 1. The students on site visit in Tirana

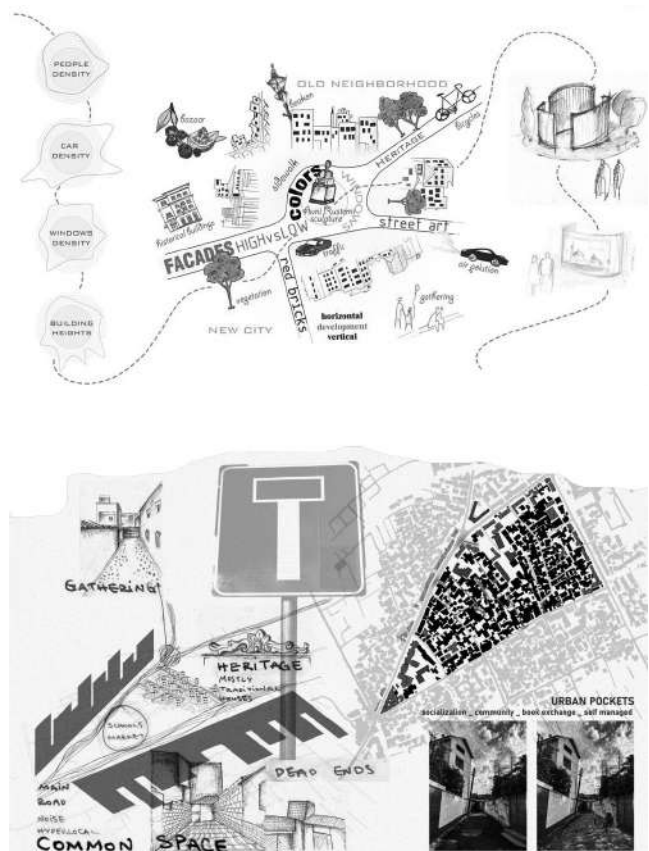


Figure 2-3. On top the work of L. Duka, M. Hazizolli, M. Kuqari, K. Ymeri, N.Nikolopoulos. Below the work of E. Oikanomou, K. Miraku, L. Muslika, M. Gjoni, M. Ziu, N. Babe.

Dimitra Nikolaou is a Professor at the National Technical University of Athens (NTUA) and a specialist in urban regeneration and historical heritage.

Framing Architecture

OLSON LAMAJ

POLIS University

VJOLA ZIU

POLIS University

Architectural photography is the photography of buildings and residential buildings. Architectural photographers are usually skilled in the use of specialized photographic techniques and equipments.

This workshop offered an exploration of the development of architectural photography and some of its key themes. Architectural photography is a seemingly simple genre, but in reality, it presents challenges for the photographer both from a technical and compositional point of view.

The topic of architectural photography was addressed both from a historical and critical point of view as well as from a technical point of view. In a word, this was an introductory but in-depth course that offered all the basic notions of architectural photography, notions which were developed in the classroom in a very specific and articulated way, juxtaposed with all those technical and expressive knowledge and photographic language that every architectural photographer must master in order to start creating satisfying and visually exciting images.

Framing Architecture workshop equips students with the necessary skills to accurately create professional photographs of tall buildings in the city.

Starting with analog techniques, students were shown how to best use the digital medium to achieve the structuring of an architectural photographic project for magazine or publicity use.

To begin with, together with the students, we chose some towers in Tirana that fit the main theme of Tirana Architecture Week, which was: “Going high! The Pros- & Cons- of City

Verticalization”. The selected towers were: Hotel Plaza, Air Albania Stadium, Forever Green Tower, Blloku Golden Cube, Credins Bank Tower, and Toptani Center.

The students were given 2 days to photograph using the techniques they learned in class the day before. After this process, the next step was to deal with the editing and post-production of the images photographed with the respective cameras. For photo editing, students were free to manipulate the image through Adobe programs such as Photoshop or Lightroom in order to play with contrasts, light, and colors to create a photo as realistic as possible.

At the end of the process, the students were asked to print 4-6 of the best photos selected together with the curators on photographic paper and stick them on top of a forex or a foam. In this way, the photographs could be exhibited in the lobby of the University, next to the MAD Gallery in a mini Expo.

Olson Lamaj, is a multimedia artist from Albania. He graduated as a painter from the Academy of Fine Arts in Florence, and received his M.A degree in artistic photography from the Academy of Fine Arts Brera in Milan. From 2020, he is part of Polis University where he teaches Museography and Exhibition for the department of Art and Design.



Workshop Outcomes

Theory of Architecture for Towers

ALESSANDRA COMO

University of Salerno

LUISA SMERAGLIUOLO PERROTTA

University of Salerno

SIMONA TALENTI

University of Salerno

ANNARITA TEODOSIO

University of Salerno

MARSELA PLYKU DEMAJ

POLIS University

The concept

The workshop consisted in a critical and visual laboratory to interpret skyscrapers through specific historical, architectural and spatial paradigms. The skyscraper was explored through a critical analysis of relevant texts and design examples which had a great impact on its spread as an architectural type. Particularly significant Italian case-studies from the Second Post-War period – such as the Velasca and Pirelli towers in Milan – were analyzed to explain skyscrapers as a phenomenon which characterized the vertical growth of cities and parts of them. The study highlighted the main features of the high-rise and the intrinsic connections between its elements and parts; attention was also paid on the relationships that the tall building established with the city and the urban landscape. The focus was therefore on the impact that skyscrapers have had on the transformation of cities and the understanding of their role in the contemporary city. The historical and visual exploration was followed by the critical reading of selected excerpts from relevant texts from the history and theory of architecture. The final result was a visual and narrative investigation on the Skyscraper through texts and diagrams. The main objectives of this laboratory were:

- To explore the complexity of the skyscraper as architectural and urban phenomenon in the modern and con-

temporary city;

- To develop visual tools to analyze and explain the main characteristics of the skyscraper from a typological point of view;
- To experience a comparative reading of texts and images/drawings in order to create a bridge between history, theory and design;
- To explore comparison as a method to analyze the experience of the space in the city.

The process

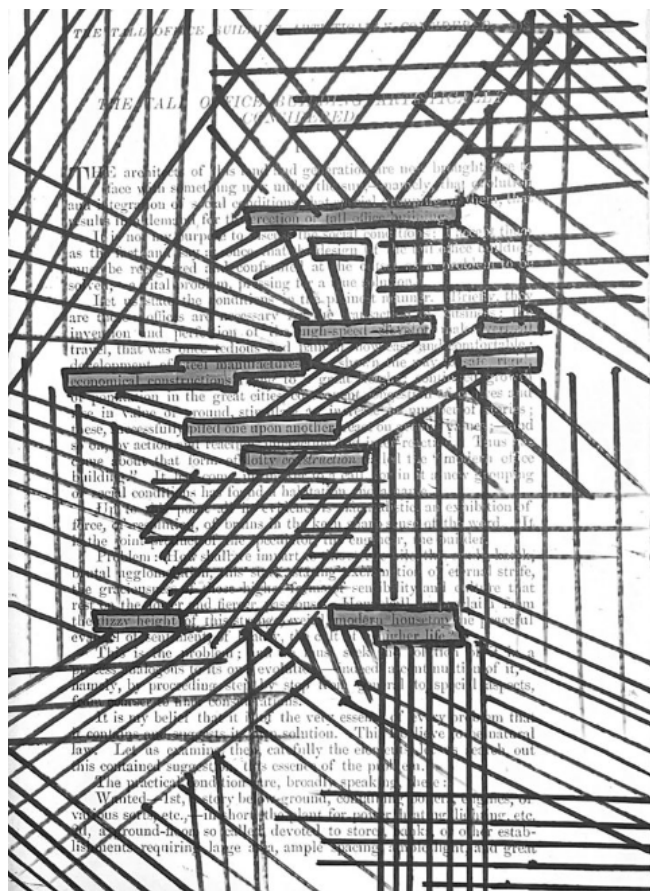
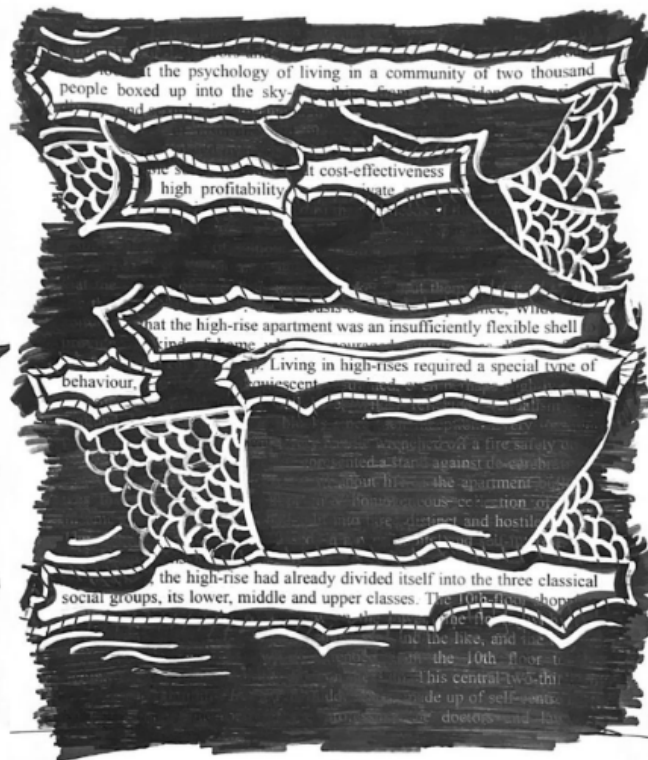
The workshop was organized as a process of sequential steps over 5 days with brief lectures and seminar sessions. Students were required to follow the progressive work of the workshop through three different tasks methodologically separated and with different related assignments. The outputs were sketches, studies of extracts from books; interpretative diagrams, and collages.

The Tasks were sequential and connected at the same time because of the content and the output. Each task lasted about one / two days.

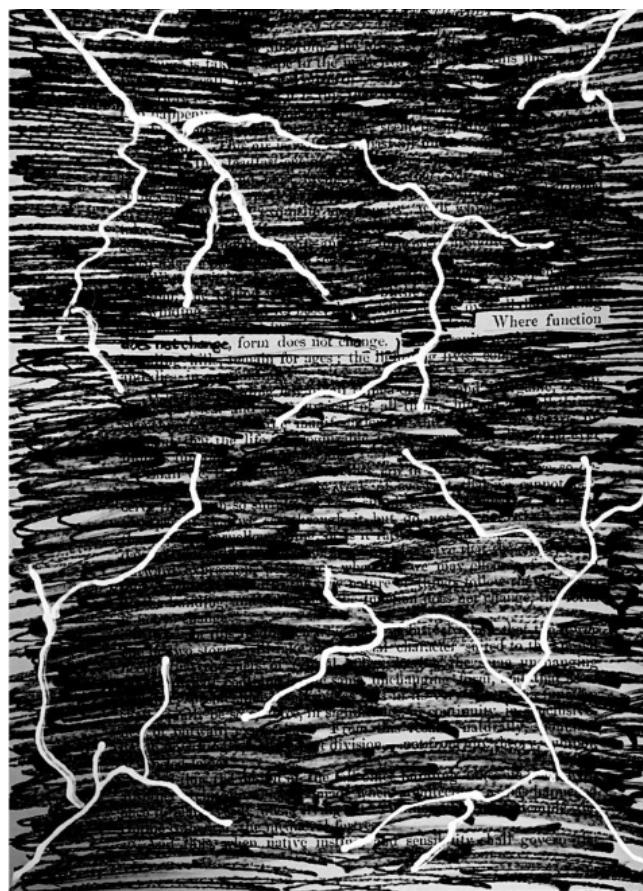
The first task - “Skyscraper History and Observation”: the Skyscraper through some Italian case studies - dealt with analyzing texts and images of the skyscraper topic through Italian case studies. It was an exploration of critical texts and



Works from Dea Hushi



Works from Dhimitra Dodi



projects about Italian 50'-60' skyscrapers. The students carried out the task divided into 8 groups. Each group studied a specific case study using provided historical research, visual materials from archives and from books and historic journals.

The case studies were the Italian project: Centro svizzero (1949-52) designed by Armin Meili and Giovanni Romano; Torre al Parco (1953-56) by Vico Magistretti; Velasca Tower (1955-57) by BBPR; Pirelli Tower (1956-58) by Giò Ponti and Pier Luigi Nervi; Grattacielo INA (1953-58) by Piero Bottoni; Torre Galfa (1956-59) by Melchiorre Bega; Torre Breda (1954-56) by Luigi Mattioni; and Torre Turati (1963-68) by Giovanni Muzio, Lorenzo Muzio, Bosisio Pietro Giulio. The studies underlined historical issues and descriptive information, regarding designers, timeline, localization, construction materials, number of floors, and so on for each case study as well as the main information on the building, such as dimensions, proportions, structures, etc..

The second task - "Skyscraper Reading": some readings from selected texts and feedback from the students - was a critical reading of selected texts about the genesis and meaning of the tall building (Fig.1). The selected readings were texts particularly meaningful for the skyscraper topic, within different realms. The texts were from different historical periods and were different in typologies such as novels, critical texts, and papers. Within the selected texts there were the L.H. Sullivan article "The tall building artistically considered" (1896); the book "Delirious New York" by Rem Koolhaas (1978); the book "La poesia del grattacielo/The poetry of the skyscraper" by G.M. Titone (1998), the J.G. Ballard's novel "High-Rise" (1975) and the book "Green Obsession, Trees Towards Cities, Humans Towards Forests" by Stefano Boeri Architetti (2022). Task 2 was a collective reading experience. Each member of the group read a different text in order to have an overall reading at the end of the task. The students were asked to select parts of the texts and to identify the main issues by graphic and creative elaborations on the texts such as highlighting, deleting, underlining as in the works of the Italian artist Emilio Isgrò.

The third task - "Skyscraper Design Exploration" - was a skyscraper comparative design exploration. Through the use of diagrams and collages, students were required to explore selected spatial topics in different skyscrapers using case studies of their choice. The topics were defined in order to have all the groups working on different aspects. The topics were divided into Building Topics such as module repetition/variety; single/mixed use; plans/sections; solids/voids; and into Buildings and City Topics such as above ground/underground; visual fields; paths: from the city/within the building/towards the city; building/urban landscape and territory. All the explorations, from the different groups with different topics, became a common and broad analysis on the spatial potentiality of the skyscraper's design.

Students were asked to discuss and present their work at the end of each TASK with a final discussion. This was a useful way to test their interest and understanding of the process during the five days. In this way the students were involved into the work and they understood the sequence of steps as a method of analysis. Students demonstrated their understand-

ing of the Skyscraper spatial conditions and its related arguments through the development of graphic materials. At the end of the week, students gained an integrated view of the topic of the Skyscraper through various issues from the history, theory, and design points of view. In the final discussion, the interest in the Italian cases of the 1950s was evident. They are all located in Milan. Today, studying these old examples placed in the city that is considered a reference for the international architectural debate, was quite special for the students. Starting from these emblematic cases-studies of the first architectural exploration of tall buildings in Italy, the student's attention shifted from the skyscraper as an image and icon of the city to the skyscraper as the space of the city.

In the final step the comparative analysis explored the topic of the skyscraper in its spatial solutions transversally through time and space and through specific characteristics. From this point of view, the main interest of the workshop was the collective response to the topic. Each group with its work represented a piece of common research that found its value in the exchange, underlining the nature of the workshop as a collective exploration.

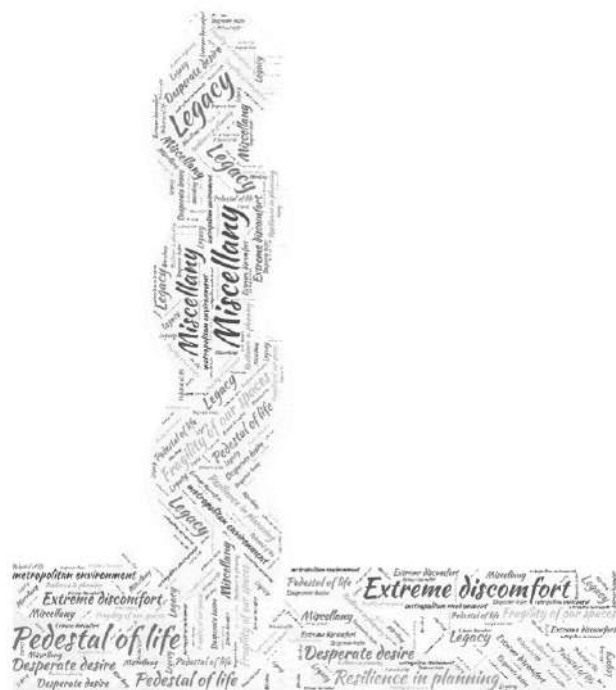
Skyscrapers through history, theory and design

The analysis of the case studies allowed the students to trace the peculiarities of the Italian transposition of this typically American architectural type. In Italy after World War II, tall buildings represented an important opportunity for experimentation and renewal for architects and engineers who produced very interesting and varied solutions. The historical analysis and the critical reading of the selected projects allowed the students to identify and highlight, also through drawings, the specificities of the selected cases and the different approaches that concern structural aspects, compositional logic, but also the relationship with the urban context and tradition.

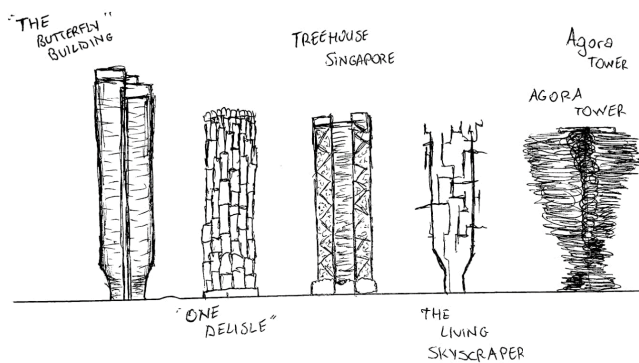
The reading was an intermediate task between two analyses and it created a room of words and ideas in order to go beyond technical issues and deal with the topic from a theoretical point of view. Critical texts underlined the importance of the literature on the skyscraper and opened to the architectural investigation upon the impact of the skyscrapers' type spreading. Some of the considerations are still valid today and linked to the contemporary debate, as in the case of the extract on the Vertical Forest by Studio Boeri Architetti's book.

The reading responds to a cultural engagement – appropriate and useful especially for teaching explorations – which aims at making the critical narrative again at the center of the architectural analysis. At the same time, the reading highlights the interest in the narrative dimension within the architecture realm.

The final step – the exploration of design projects through the comparison tool – showed the experience of skyscrapers in the space of the city. This was developed through selected spatial topics and using synthetic drawings such as sketches and diagrams.



Student's work.



1:10000

Student's work.

Simona Talenti, architect and Ph.D., is an Associate Professor of Architectural History at the Department of Civil Engineering, University of Salerno (Italy). Her current research work concerns modern and contemporary architectural history, especially the origin and development of skyscrapers in Italy as well as company towns and their renewals.

Emergency Architecture in Resilient Times

FRANKLIND JESKU

POLIS University

AVRILI MESHI

POLIS University

MICHELE DI MARCO

World Health Organization

ANNA SILENZI

World Health Organization

Introduction

The increasing transformation of society brings new paradigms both on a global and local level. During the last pandemic, the World Health Organization (WHO) created a network called *Techne* of professionals in order to give an emergent and efficient response to health facilities as a priority.

Architects for the first time achieved a new role in the first line of the pandemic war. The regeneration of existing buildings into Covid19 treatment centers or the construction of new ones was the priority of the architects. The normalization of the pandemic brings out the results but also new questions and paradigms of WHO's network achievements. Despite the pandemics, there are 'new' fields to work on as an emergency: wars. How resilient buildings should be in times of natural and man-made disasters, to give a better response than the one until now? How can institutions in collaboration with WHO contribute with research and workshops, involving students, in order to maximize the efficiency of emergency response?

On 15 May 2022 POLIS University and *Techne* / World Health Organization, stipulate a contract of collaboration that involves the university in the *Techne* network, among other institutions around the world. The aim of the collaboration is to involve Universities in contributions of services and support of WHO in emergency needs. From 26th September 2022 to the 7th October 2022 POLIS University, as part of the Tirana Architecture Weeks (TAW), organized a workshop as the first concretization of the collaboration, held by the Arch. Franklind

Jesku (Lecturer at POLIS University) and Michele Di Marco with Anna Silenzi (part of *Techne*).

Workshop objectives

The purpose of this Workshop is to produce a training kit containing the set up of treatment centers for infection diseases like Ebola, Cholera and SARI (Severe Acute Respiratory Infections), by using 3D printing machines and laser cutting machines. The methodology will focus on understanding the power of digital printing in order to create modular components that will be used in missions by the World Health Organization to explain to nonprofessionals how a recovery treatment center should be organized in case of pandemics/epidemics. The result will underline the importance of the role of the architects to involve technology including non professionals for help in case of emergencies. Theoretically, we will understand how to redefine the hospital or treatment center of the future, according to the World Health Organization guidelines and standards, but also how a set up layout of a treatment center works.

Workshop outcomes

Upon successful completion of this workshop, the participants:

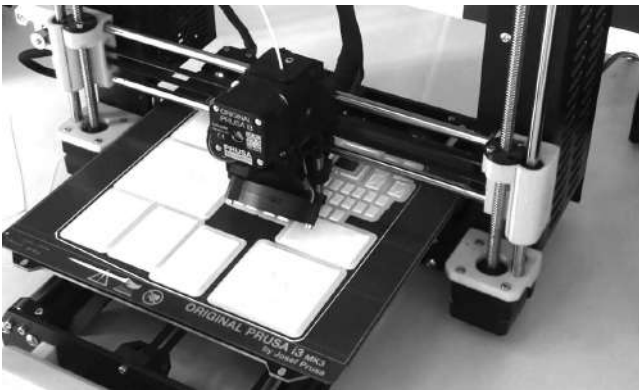
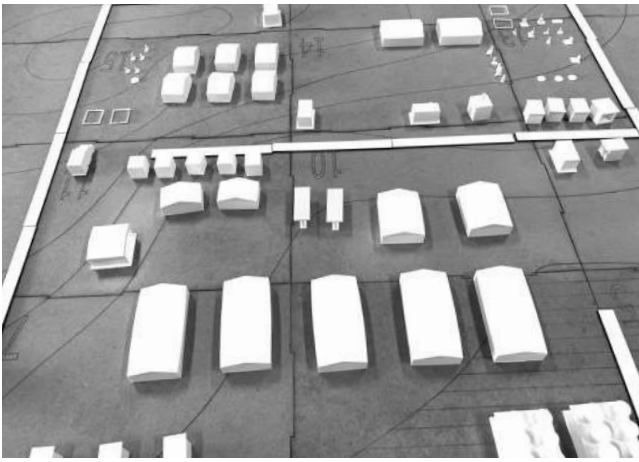
- Have exercised critical thinking about the creation and implementation, or setup, of a recovery and treatment center in case of Cholera, Ebola, and SARI.
- Created modules of tents or other components of a treatment camp and printed them digitally.

- Create physical modular boxes to put all the printed material ready to be sent to the World Health Organization.
- Selected students will travel to Geneva (WHO Headquarters) to bring the training kit box upon request of Techné.

Workshop organization

The workshop was organized from 26 September to 7 October 2022 at the University of POLIS in Tirana, Albania, as part of the Tirana Architecture Weeks 2022 (Tirana, 26 September – 8 October 2022).

Franklind Jesku is an architect graduated at the University of Studies of Trieste, Italy, and assistant lecturer at POLIS University. He is a Ph.D. candidate with field of research "Architecture of Health". His previous international experience focus on emergency architecture for vulnerable communities around the world.



Process of the printing and assembling the elements at Innovation Factory (IF)



Presentation of the product at the World Health Organization (WHO) Headquarters in Geneva, Switzerland.

Morphological Research on Ways of Verticalization. The Case of Tirana

ERMAL HOXHA

POLIS University

GENTI AVDIJA

POLIS University

Abstract

The workshop's main topic is the densification of urban areas. Specifically, the object of study is Tirana. Since the fall of the Communist Regime in the early 90s, the population of Tirana has been seen constantly growing. The process of growth has been for the most part uncontrolled, resulting in the disgregation of the urban patterns of Tirana. We can distinguish four different stages in the development of the city: the first stage is characterized by the medieval-like development of the historical city; the second stage carries a strong geometrical character given by the planning imprint of the Italian tradition; the third stage develops between the will of a strong planning and the economic difficulties to enforce it of the Communist Regime; the fourth stage is characterized by the uncontrolled and informal development.

In this context starting from the administrative reform of 2015 all Albanian regions and cities have developed instruments of government and development of the territory. The main instruments at a national level are the PPV (General Local Plan) and PDV (Detailed Local Plan). Neither of these instruments is provided a clear way, regarding typological and morphological development. Because of the complicated nature of the development and urban condition of "TIRANA ARCHITECTURE WEEK 2022 GOING HIGH! The Pros- & Cons- of City Verticalization". Through this workshop, we propose a different type of development that starts from various typological and morphological models of urban blocks. Starting from the urban condition of the determined areas we hypothesize different ways of urbanizing at different densities.

Objectives

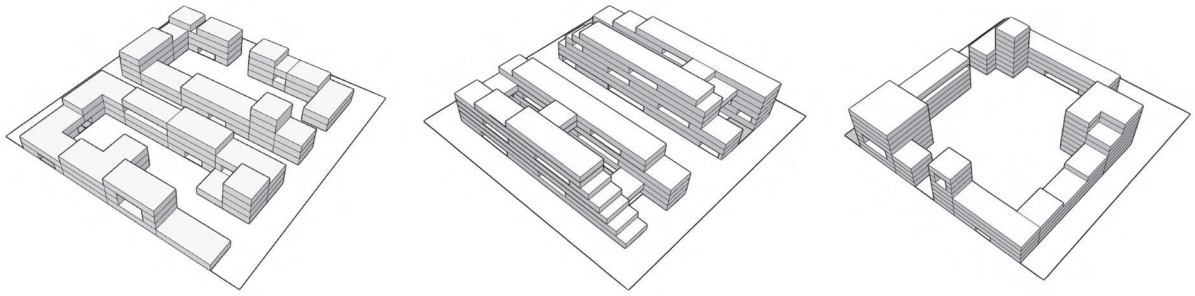
The objectives of the workshop are two-folded. On one side there is the historical and morphological analysis of the determined sites. The goal here is to individuate the strong components that determine the underlying structure of the areas. On the other side, there is the operative part of the workshop which points towards the reinforcements of said structures proposing the densification of the areas based on the virtuous models given.

Methodology

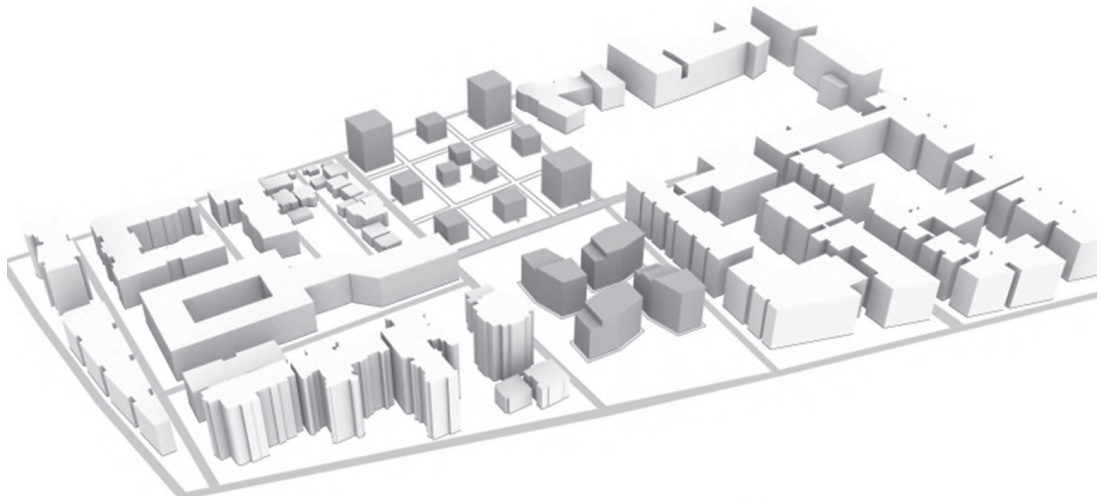
The methodology is empirical and comprises visits on site, and historical and morphological analysis. Through the clashing of the existent condition and development models, we will start a process of experimentation on the urban form and different possible aggregations for the future development of the city.

Conclusions

The results of the workshop are undoubtedly interesting. They show how the possibility of starting the urban design from the morphology of the existing and the models can lead to a new perspective which can complement the directions given by the planning instrument in a way such to valorize the quality of the public space in the continuous development of a complicated city such is Tirana.



Site dimensioning and densification models in different FAR.



Different densities samples of the same model.



Dr. Ermal Hoxha studied first at the University of Ferrara (IT), in the Architecture department, and then at the Polis University (AL) in the Architecture and Urban Design department. He is currently a Doctor of Science in Architecture and Urban Planning, graduated from the University of Ferrara and the University of Polis.

Piloting Citizen Science and other RRI Practices in Ecosystem

KEJT DHRAMI

POLIS University

IMELDI SOKOLI

POLIS University

RUDINA TOTO

POLIS University

RODION GJOKA

POLIS University

Abstract

This workshop aimed to pilot a citizen science process with students of environmental, planning, and architecture studies, by simulating the 2 roles of the process. Firstly, they acted as citizens involved in citizen science, piloting a process where they produced scientific knowledge through a small mapping exercise. Secondly, the students acted as ‘citizen scientists’, by including the community in participatory processes that aimed at producing scientific knowledge. In this case, the students guided the process following the principles of responsible research.

Ultimately this process guided the students throughout their academic and research path during their studies, and behind. Citizen science, as a process, is promoted as a combination of the main ‘dimensions’ of responsible research and innovation, otherwise known as RRI implemented in the pilot area of Kune Vain Lagoon in Lezha Municipality. The pilot area is part of a wider project research conducted by Co-PLAN in cooperation with the Ministry of Tourism and Environment focused on Ecosystem Service Evaluation aiming to develop a cost-benefit analysis in 5 sectors. The students contributed to two of these sectors which are the mitigation of coastal floods and tourism and recreational services. The workshop had 30 participants and was organized into 3 main parts: the didactic/ eco-design part, the survey and experimental part, and the exploitation-dissemination part.

The didactic/eco-design part

The didactic/eco-design part took place on the first and third

days where the students took all the scientific basis and principles of RRI and understood the Ecosystem Services Evaluation.

On the first day, the students took the lectures for methodologies of citizen science and ecosystem service evaluation, also general information about the Kune Vain Lagoon and an informative session for the following day which corresponded with the site visit. On the third day, the students were presented with the methodological multidisciplinary approaches to foster environmental biodiversity and energy in the case of Lezha region to understand what can be the interventions in a wetland to deal with different problems that the ecosystem has. The second lecture of the third day was preparatory work for the fourth day to learn about the flood typologies in Lezha region and in what way can the students identify the cause of the surface and the frequency of the floods by interviewing the inhabitants.

The experimental component

The experimental component was focused on the second and fourth days on developing the tourism and recreation services by sketching, analyzing the area in the role of the citizens in a citizen science process and developing the participatory map of flooding risk through the citizen science with the citizens consisting of the surface, frequency and cause. The experiment had 4 targeted areas in the site of the lagoon divided by four groups of students and guided by the mentors. The targeted areas were different from day two to day four per each student group.

The exploitation and dissemination component

The exploitation and dissemination component was organized

on the last day in which the students were focused on data processing and working for the final presentation by integrating the theory basis with the practical ones to construct the interventions for preventing and minimizing floods. Each group presented sketches that represent the most iconic parts of the lagoon, the mental map. The participatory floods risk map and the interventions to prevent the area from floods are based on nature-based solutions methodology.

Dr. Kejt Dhrami is a spatial planning and regional development expert at Co-PLAN, and lecturer at Polis University. She completed her doctoral studies in 2020, in the IDAUP (Polis / Ferrara) program.



Students in site visit.



Students working in site visit.



Students' results and works

Archipreneurship: Going High! In-Between Pros and Cons of City Verticalization.

MARKUS NEUBER

ALN Architekturbüro Leinhäupl + Neuber

GJERGJI DUSHNIKU

POLIS University

Abstract

The phenomenon of high-rise buildings is being noticed more and more in Tirana. This is for many reasons. Driven by the high value of the property around the center and their large difference from the suburbs make investors push to maximize profits by utilizing as much as possible the properties around the center. The big difference in the value of the property from the center to the suburbs is due to the lack of public transport and public services in the suburbs. So it seems that everything has to do with living near the center, working as close to the center as possible, and building as close to the center as possible. The local government, from the constant pressure of two possible options, one to invest in modern transport such as the metro by relieving this deadlock or the adaptation of urban legislation for higher construction has chosen the latter as a form of less cost but perhaps short-term.

But what is the role of Architects in this? It should be understood that although Architects in their professional circle are treated as superheroes who can change the fate of a city they are in fact part of a market ecosystem. Of course, they have the potential to improve aspects of it on a micro-scale, and for that, a big fight is needed. Once they understand the needs and speak the language of the stakeholders involved, they are more likely to become more important in this segment and change things for the better.

Architecture and entrepreneurship

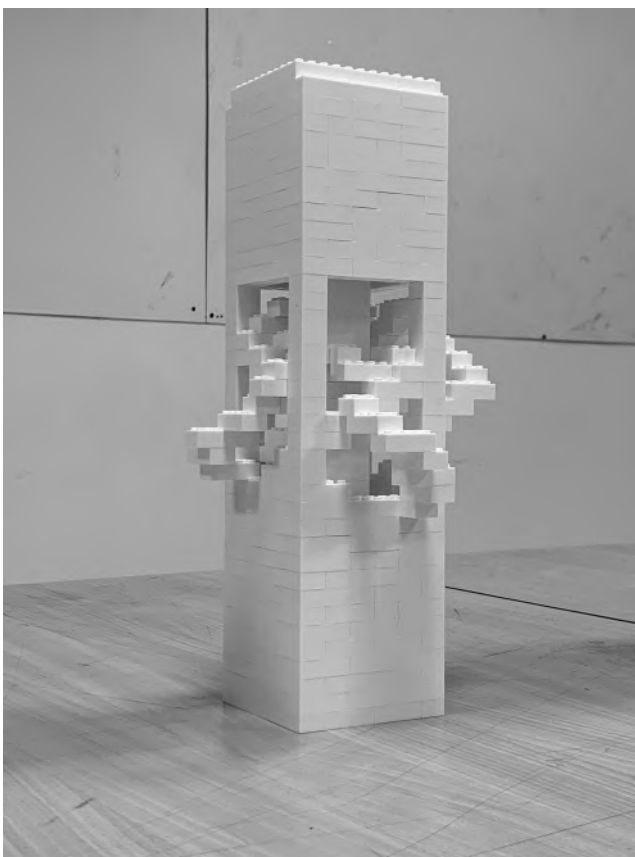
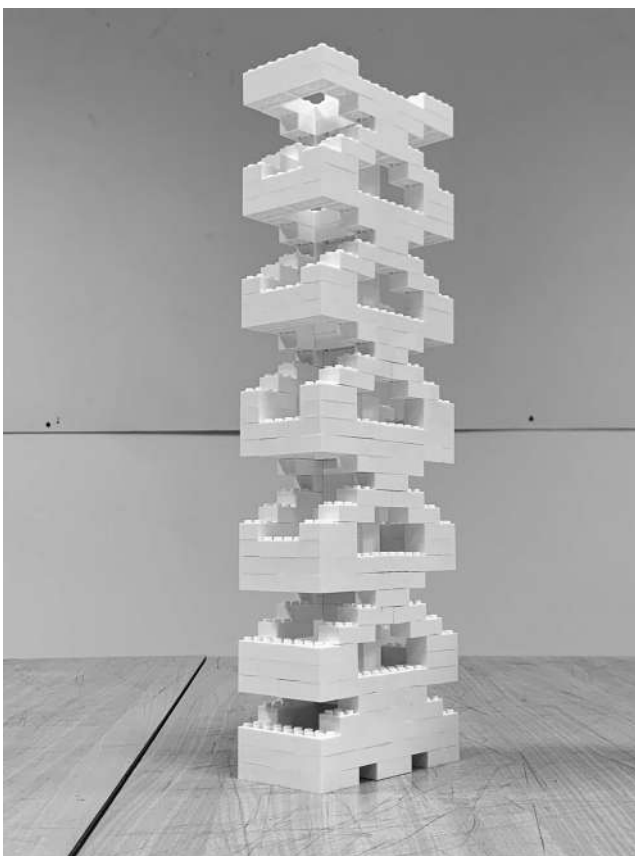
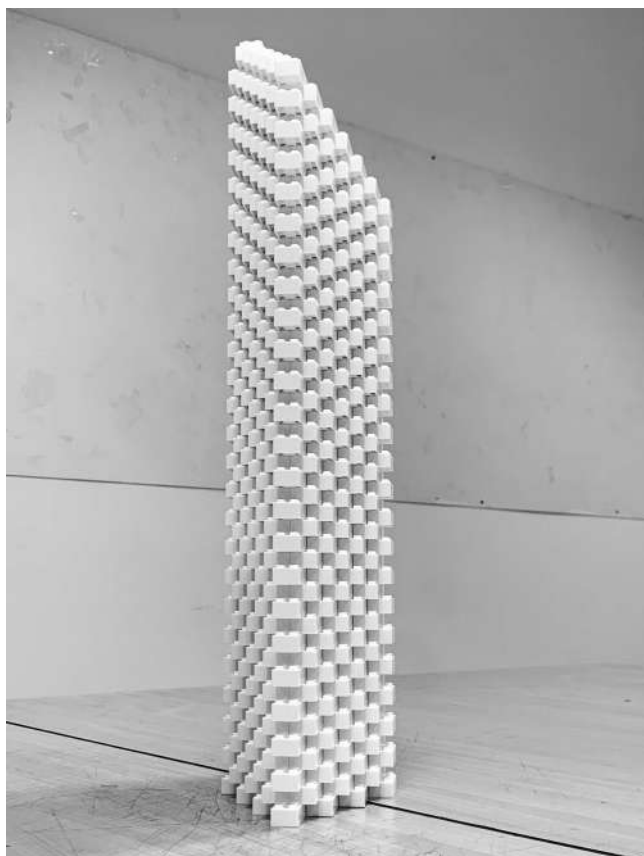
In this workshop, we took the phenomenon for granted and through the lectures, we tried to understand and navigate be

tween architecture and entrepreneurship, the business of architecture, and also the economics of High Rises. Looking at the task from the architect's perspective but also from the developer or city administration. A lecture from Javier Sesna, the director of "TKE elevators", a leader in the elevator field globally, explained the elevators of the future in which the students incorporate those ideas into their project.

We explored how Going high can be more positive for users and the city by analyzing, improving, and modifying the problematic topics, turning them into positive experiences. Our current cities are made up of closed, remote, and introverted architecture just as isolated from urban life and ecological context. The students responded to the task with creativity integrating new ways of vertical communication that can make possible open up these spaces, inserting space pockets capable of promoting social encounters, multiplying circulation, and facilitating the introduction of flora and fauna in a sustainable way.

The final products of the workshop were a model made from white LEGOs and A1 panels.

Markus Neuber is an architect and partner at ALN Architekturbüro Leinhäupl + Neuber based in Germany.



Students' works with LEGO bricks.

Smart Sustainable City Tirana

ARTAN KACANI

POLIS University

ENEIDA MUHAMUCI

POLIS University

ARMELA REKA

POLIS University

Abstract

The workshop is organized by the Polis University Co-PLAN Institute for Habitat Development which hosts the United Nations Economic Commission for Europe (UNECE) Centre of Excellence on Sustainable and Resilient Settlements; the city of Tirana; the UNECE Forests, Land and Housing Division; and in cooperation with UN-Habitat.

The workshop will address two themes: first, challenges of sustainability at the city level; and second, smart sustainable solutions to urban challenges. Under the first theme, the participants will examine the key challenges urban environments face adopting the United Nations Sustainable Development Goals (SDGs). Under the second theme, emerging solutions in place or under development to address such challenges will be presented and discussed.

The workshop will be organized in person with possible online participation. It will include lectures and work in interdisciplinary teams where the students will work together to conceptualize solutions to address a selected challenge.

Objectives

The workshop is aimed to support learning about the key challenges cities face in their efforts to implement global and regional agreements, including the 2030 Agenda for Sustainable Development, the New Urban Agenda, the Paris Agreement on Climate Change, the Geneva UN Charter on Sustainable Housing others; and about cities' actions to address the urban challenges at the local level.

Workshop events

- The workshop started on the 26th of September and finished on Friday for 5 days.
- We can divide the program into 4 core events of the information given and elaborated. Workshop Presentations: Smart sustainable city Tirana. Workshop: Smart sustainable city/ smart solution for a sustainable city.
- Side Event: War in Ukraine and the housing problems and solutions.
- Student's Workshop. Shkoza case study.

Event 1 - Workshop Presentations: Smart sustainable city Tirana

This event session was dedicated to official representatives from Albanian public institutions. The first to present was Mrs Doris Andoni, Director of Housing, Ministry of Finance, Albania and Chair of the UNECE Committee on Housing and Land Management (CHLM) with the title "Urban challenges and solutions". Many challenges were political, like the war in Ukraine and its effect on Western Balkans, or the pandemic situation in the urban areas. In the end, the public officer expressed the need for collaboration with Polis University and Co-Plan Institute for further research and investigations on the territory.

After the presentation from the public officer, Mrs Doris Andoni, a short presentation was followed up by Dr. Kejt Dhrami, from the Co-Plan Institute for Habitat Development, regarding "Challenges and Opportunities of drafting Municipal Social Housing Plans – case of Tirana".

At the end of the session, workshop presentation, Mayors of

Bulqize, Belsh, Berat, Cerrik, Devoll, Elbasan, Fier, Gramsh, Kameez, Kolonje, Korce, Librazhd, Lushnje, Maliq, Mat, Peqin, Pogradec, Roskovec, Sarande, Shkoder, Tirane, Vlore were invited in a discussion. Most of the problems listed by them were connected to the missing capital to invest in social policies.

Event 2 - Workshop: Smart sustainable city/ smart solution for a sustainable city

The workshop's second session was dedicated to the international cases that can open up new solutions for the Albanian housing system. The first to start was Shipra Narang Suri, Chief of, the Urban Practices Branch, Global Solutions Division, UN-Habitat. UN-Habitat activities on smart sustainable cities were presented.

The session continued with Gulnara Roll, Regional Advisor, UNECE Forests, Land and Housing Division, presenting the approach and case studies of UNECE smart sustainable cities profiles.

New international smart sustainable cases were presented by Haris Piplas, Co-Directing Urban Design, Planning and Development, Drees and Sommer, Switzerland, like the EXPO2015 in Milan and the need for Implementation of smart sustainable cities approaches in South-East Europe.

The session continued with Albanian case studies and Polis University experiences. Dr Lllazar Kumaraku, the coordinator at Polis University for the PhD IDAUP program, presented the case of Lezha, and how the region is facing climate change and sea erosion with resilient solutions and actions.

Dr Ledio Allkja, from Co-Plan Institute for Habitat Development, presented adaptive planning tools and Disaster Risk Reduction (DRR) methodologies to prevent negative effects on a regional scale.

Franklin Jesku, from Polis University, and Co-Founder D'ARK Atelier, Tirana, Albania, underlined with a short presentation the importance of design in the common space in the inner city.

Edian Meçe, responsible for the reconstruction at the department of territorial planning for the Municipality of Tirana, Albania, presented the case of "5 Maji" as a good practice to get off the city all those inhabitants that do not have a housing tenure.

Side Event – War in Ukraine and the housing problems and solutions

A third session took place at Polis university on the second day of the workshop, involving students from architecture studies, the planning field, and various international experts. This session, organized in form of a side event, was dedicated to Ukraine and the future need for a rebuilding program. Most of the presentations were of added contribution nature for architecture studies, "what I can do", rather than a first sight of the needs coming from the war and after it.

Students' Workshop

Macro description of the case study

The urban area of Tirana, estimates an urban population of approximately half of the national population, around a million inhabitants. This phenomenon, demographic increase, is reflected as well in the concentration of urban wealth around the city centre. This continuous concentration of inhabitants for more than 30 years in the city centre under a capitalistic regime, has not only changed the nature of the urban wealth but also the spatial distribution of the residential areas. Now shopping malls, museums, and financial districts have taken the place of the residential blocks. More than two hundred villas have been demolished to open space for further densification, and according to the Tirana Municipality, this is only the beginning of what would happen in the next years. For some international architects, such as Stefano Boeri, and Bjarke Ingels, a preferential road has been paved, by the Municipality of Tirana, with the intention to offer speculative projects and renders to add to the vision of the city. Most of these proposals, and projects, are made in open contradiction with the regulatory plan signed in 2017, and its densification criteria. Beyond this contradiction with the regulatory plan, and the development plans, the municipality of Tirana is conducting the administration of architectural proposals without any competition and inclusion of the existing inhabitants. The estranged from the development are the most vulnerable groups, such as inhabitants without proper land tenure, the Roma community, and former workers of the industrial areas that squatted their workplace to live after the collapse of the Communist regime. The confrontation of these two realities, the built environment by the former inhabitants, and the speculative digitalized reality, is being put many times as a wish packet at political stake by the Mayor of Tirana. The digitalized projects are classified as building with high energy efficiency, and good design of the indoor and outdoor spaces and these elements become sustainable and smart characteristics that the Mayor wouldn't forget in any of his appearances on TV. And Indeed, every Christmas, or New Year period, the Municipality delivers new apartments to homeless families. From this perspective, it remains a charitable campaign, aiming to foster political ties, rather than create municipal governance on housing solutions. The political desire to tie interest with primary rights is unconstitutional and should face one day or another the impact of forced eviction and forced deportation at once. Inhabitants are taken by force in the Shkoza neighbourhood to reclaim the ability of the Municipality to deliver primary rights correctly, but what happens next is neither governance nor smart management. The policy of "throwing", and "gettare", the poor into an area is not only against human rights but also according to the principles of so many inhabitants who, forced to live in a suburban apartment, have no chance of economic growth and well-being.

Methodology of observation

For a better understanding of the Janus faces of governance in Tirana, we have decided to get into the area of Shkoza, in one

week's workshop with students in the Architectural studies and Planning field. Students were asked to investigate the origins of the neighbourhood, the various social groups added to the area by the municipal policies, such as homeless citizens and Roma families, and the historic inhabitants settled in the area in early 1990 with single-family houses. Land use and social practices have been seen as the primary combination to read the level of sustainability and smart management reclaimed by the municipality of Tirana as a planning tool to deliver primary rights such as adequate housing. Viewing these dynamisms, land use and social practices, as a palimpsest permits us to understand if there has been or not a process of governance or not, and if principles of sustainability and smart management have been applied or not.

“Viewing the city as a process of continuous, but contested, socio-ecological change ...unlocks new arenas for thinking and acting on the city. The tensions, conflicts and forces that flow with this process through the body, the city, the region and the globe show the cracks in the lines, the meshes in the net, the spaces and plateaus of resistance and power”. (Swyngedouw & Kaika, The Environment of the City ... or the Urbanisation of Nature, 2002).

Students' Results

According to a sustainability degree, students witnessed a bad environment, high fragmentation of land use and strong diversity in the activities among inhabitants, sometimes conflictual. Some of the problems related to the missing sustainability degree are the design issues and the policy ability of the public authorities to offer possibilities for “a jumping solution” to better housing and working conditions.

From a historical point of view, from the policies that created the Social Housing Residences, the territorial results can be summarised as below:

- There has been in 2007 and till nowadays a process of forced eviction which is occurring systematically by the police of Tirana toward inhabitants. Intimidations and threats are a daily routine for the inhabitants living in single houses, self-build, and those living in squatted industrial areas.
- In 2010 the residential complex, was finished and given to the Municipality of Tirana in management for the social policies of housing.
- Inhabitants expropriated and forcibly evicted from the surrounding area have been moved by force to the new apartments, of the social housing without their desire and in contradiction with principles of adequate housing and cultural adequacy.
- A hate condition in the social layers, has been created in the neighbourhood, between those without a proper housing tenure, and the newcomers in the Social Housing residential complex.
- A third group of inhabitants, from the Roma community, will be added to the ground floor, where economic

and social activities were designed to be given as start-ups to those inhabitants in economic difficulties.

- A further hate layer, to racist forms, has been created between the inhabitants of the Social Housing Residential Complex, and the newcomers, the Roma community, now occupying the ground floor where social and economic activities were supposed to take place (figure 1).
- None of the social groups has enough space to integrate them-self into the broader scale of the city services, and there's no physical space to give solutions to the conflicting situation among inhabitants.
- The Shkoza Neighborhood is becoming a ghetto, where new vulnerabilities are emerging, and no solutions to answer the political use of social policies. Inhabitants are damned to remain forever in the same place.

Artan Kacani (1988) is Lecturer and PhD candidate at POLIS University, dealing with projects and academic research on informal housing in Albania, with a specific focus on policy evaluation, governance and territorial impact. He is the Unit Manager of the OMB/UNECE - Sustainability Research Center.



Fig.1 The ground floor of the Social Housing Complex. Picture by Ermal Hoxha



The Roma Municipal market of used clothes. Picture by Ermal Hoxha



Between the open spaces in the Shkoza neighbourhood. Picture by Ermal Hoxha

IoT User Interface Design and Development Applied to Smart Skyscrapers

LUCA LEZZERINI

POLIS University

ARJOLA XHELILI

POLIS University

Abstract

The workshop aimed to provide fundamental knowledge to develop user interfaces (i.e.: client apps) for Internet of Things (IoT) systems. The workshop focused on the rapid application development, using the hybrid app approach, of client apps such as Web applications, Progressive Web Applications, and Hybrid Mobile applications (for both iOS and Android platforms) using the Ionic 6 framework. The workshop included a short section about the use of version control software (Git) in a DevOps approach with Continuous Integration and Continuous Delivery. IoT are today quickly spreading and expert UI developers are requested from the market. The acquired knowledge can also be applied to generic mobile or progressive Web app development. In this sense, the workshop can be considered applicable at 360 degrees in a user interface or client app development.

Objectives

The main purpose of this Workshop is to let the students understand and win the challenges caused by a distributed, reactive and concurrent environment and the principles of good UX design and implementation. The acquired competencies are at an industrial-ready level and are applied in a state-of-the-art environment. Acquired knowledge at the end of the workshop was:

- Design a good User eXperience user interface.
- Design and develop mobile or Web apps to be used as client.
- Understand reactive programming using Rx.js.
- Learn the Ionic 6 framework.
- Interact with RESTful services.

- Understand IoT, distributed, concurrent and reactive environments.
- Read and write industry-level UML documentation.
- Implement automated unit testing.
- Use version control software in a CI/CD context.

Methodology

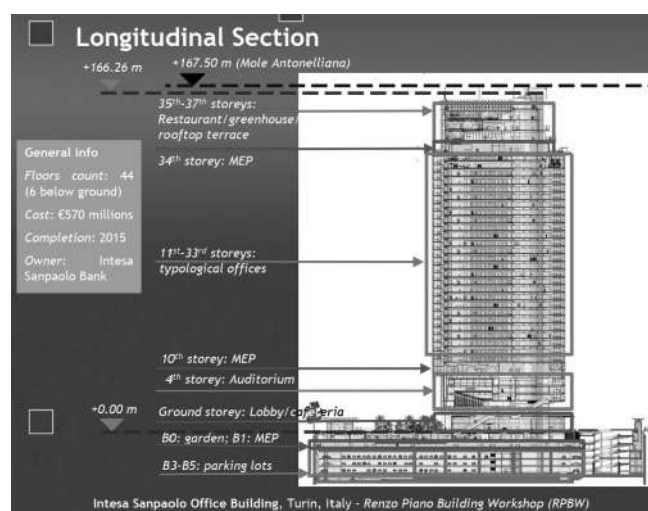
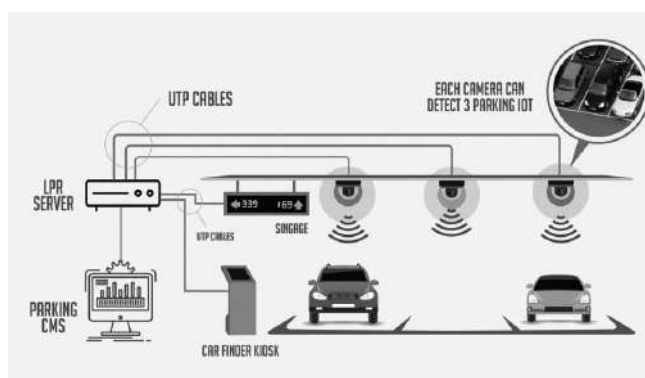
The workshop has been performed through five lessons with both lecturer and assistant present in the classroom (no online teaching) and increasing difficulty level homework, with in-class correction. The lectures have combined the theoretical framework with the practical assignments described below. Assignments also included personal research from each student with the literature or similar case studies. During the workshop hours, presentations have been organized, as well as discussions of ideas related to the progress of the tasks, and presentations related to the experiences of each group. The lecturer has provided some slides to introduce the workshop topics but most of the teaching has been provided by accessing official Web sites of the taught technologies. The application to a skyscraper case has been conducted presenting to students a real existing skyscraper structure (Intesa San Paolo Bank skyscraper in Turin, Italy) and providing them with a list of use cases to be implemented. Students worked as singles to implement these exercises. A minimum level of detail has been requested but students were free to further develop their homework. The minimum requested level of the assignment was to design a user interface using pencil & paper but further development was requested to completely implement the client-side components.

Firs homework was quite simple and was about User eXperi-
ence design. The second assignment was about a simple imple-
mentation of a client. The third assignment was a more complex
client and the fourth was the use case implementation (UX/UI
only).

Solutions provided by students have been commented on with
the other students, evidencing what could be improved but,
mainly, highlighting the good aspects of their work.

Results

Most of the students attending the workshop demonstrated an
improvement in designing and developing a UX/UI using Ionic
6 / Angular technologies. Many of them also developed good
designs of UX / UI for the selected use case using CASE tools
chosen by themselves. Most of them didn't know both Angular
and Ionic 6 at the beginning of the workshop but they, in the
end, developed good and finely working UI prototypes.



Theoretical approach to the workshop.

*MSc Luca Lezzerini, Ph.D.c. in architecture and urban planning and
lecturer at Polis, specialized in computer science, organisational en-
gineering, and smart cities, with over 36 years of experience as senior
consultant for industry, defense and public administration.*

Tower Versus Skyscrapers: Verticality in Milan Between Past and Future

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University of Salerno

Introduction

Since the 1930s, Milan has been one of the few Italian cities to embrace tall buildings. And even today, it's essentially the only place in the country where skyscrapers continue to be built. The high-rises were imported to Europe in the first decades of the 20th Century. They were not aimed at solving practical and spatial problems, but rather at satisfying the wish to modernize architecture and cities. Thus, skyscrapers were more a symbol, a metaphor for modernity, than a solution to urban issues.

In Italy, the American typology took on features inspired by traditional history and culture, starting from the medieval patterns of towers. It is no coincidence that the first Italian skyscrapers were called towers or 'torrioni', meaning great towers. Also concerning the materials and the structure, the Italian tall buildings were very different from the American ones: the traditional use of reinforced concrete and a better understanding of its properties than steel, led to constructions with a very different structure to the original Chicago skyscrapers, usually built using a steel skeleton. This paper aims to highlight the distinctive features of the Italian – and therefore Milanese – towers, erected from the Thirties to the present day, focusing on the approach of local culture and indigenous architects to the tall building typology.

Piacentini's first experiments

In Italy, the skyscraper was born during the Fascist period, in the wake of the international influence exercised by the Chicago School. This architectural type found particular impetus in the competition for the Chicago Tribune Tower in 1922.

Many European architects took part in this competition, like Adolf Loos, Walter Gropius, Bruno Taut, as well as some Italian designers as Giuseppe Boni – not very well known but the only Italian one to have received a mention – and the later architect of the Fascist Regime, Marcello Piacentini, who will conceive, at the end of the Twenties, the first Italian skyscraper (Talentì, Teodosio, 2020). The building planned by Piacentini for the Chicago Tribune Tower used classical language and was composed of a combination of stacked blocks. The Italian culture emerged especially in the stylistic and ornamental aspects, like the clock on the facade and the sculptures with bronze horses echoing the Venetian San Marco. Overall, the project combined American and Italian characters by blending the image of the US skyscraper with the European bell tower model.

This competition probably had a great impact also in Italy, where this topic became an object of discussion and not only among specialists. Thus, many architects, such as Piacentini himself, engaged design research on this architectural type. At the beginning, he seemed doubtful about the convenience of building skyscrapers in Italy, where the price of land was not particularly high, whereas the cost of constructing tall buildings was considerable. Moreover, Piacentini underlined some other issues. In Italian cities, the erection of skyscrapers could have altered the appearance of the ancient centers and their perception. The relationship and integration between these new tall buildings and the architectural historical heritage would not have been easy. He thought that even the change in the skyline of these cities might have shocked the Italians' minds. So, in 1923 he wrote: "No skyscrap-

ers in Italy: neither the economic reasons suggest them, nor the aesthetic ones allow them» (Piacentini, 1922-23, 317).

But little by little, he realized that the skyscraper was a great opportunity to change the urban and building regulations of Italian cities, avoiding the boring sequence of identical buildings. Thus, in the early 1930s, he became the designer of the first Italian skyscraper, the 13-story INA Tower building (National Insurance Institute, 1928-1932) in Brescia, a city not far away from Milan (Pacini, 1932). It was one of the several buildings facing the new Victoria's square: a square born from the demolition of a part of the medieval urban neighborhood and used to restore a run-down district as well as to connect the two main areas of the city. The place was not conceived to be a simple transit area, but as a traditional square, dedicated to rest and entertainment. Piacentini adapted his proposal originally submitted in 1922 to the competition for the Chicago Tribune Tower, simplifying lines and ornamentation. He did not want to imitate the American skyscraper, and the different solutions he imagined proved his perplexities and his strong self-critical spirit. Only the volume was inspired by the US examples, while the style and the materials were different. The link with history, as embodied by its inclusion in the urban skyline between medieval towers and Renaissance domes, was also explained by its name, 'Torrione' ('Great tower'), which placed it in the Italian tradition of great medieval towers. This skyscraper was about 57 meters high, had a reinforced concrete structure, and was surrounded on three sides by a covered walkway. Its use was mixed: the ground floor was dedicated to offices, while the body of the tower had a residential function and was crowned by a penthouse with a panoramic restaurant. The main facade, which overlooked the square, was marked by 12 arches that framed two levels. Between the windows were placed 12 terracotta bas-reliefs – now lost – which represented the production activities in Brescia, thus testifying to the constant search for links with the history of the region. A wise choice of colors and materials also showed an attempt to integrate with the context: the ground floor arcade, supported by granite columns, was covered with stone, while the central body was finished with a complex texture of light-colored bricks specially produced for this occasion. The innovative character of the building was due not only to the dimensions but also to some constructive solutions (foundations with insulated monolithic plate, support wall) and technical innovations (four elevators, water pumping systems, lighting) that required the intervention also of some engineers.

This Tower represented Piacentini's approach, his personal Regime's style where classical and monumental elements were combined with modern and functional ones, and it constituted the first authentic interpretation of the theme of the American skyscraper in Italy. This high-rise had a great media impact on the Italian architectural scene, as evidenced by many publications of the period that always emphasized the primacy in height of this building in Italy and in Europe.

Debate shifted to Milan

During the period between the two World Wars, the Italian debate on tall buildings shifted to Milan where it has remained until today (Alfonsi, 1986). The SNIA Viscosa Tower, the first tower in Milan, was built in 1937 and designed by Alessandro Rimini (Disertori, 2002). It displayed the continuity with the tradition and the link with the urban pattern that had inspired Piacentini's design in Brescia. Milan's skyline has been characterized by verticality since the remote past: from the fortified walls of the Roman period to the spire of the Cathedral – to which the Madonnina sculpture had been added in the 18th century – from the Filarete's Tower of the Renaissance Castle to the gasometers and chimneys of the early 20th century, ending with the 108-meter high Littoria Tower (then called Branca Tower) in Parco Sempione, built in 1933. This Tower, which was commissioned by Mussolini and designed in 1932 by Gio Ponti, was an exception in Italy at this time (D'Orazio). It was not a real skyscraper but a symbolic building, designed to celebrate the magnificence and the modernity of the Fascist Regime. The novelty concerned the use of steel – not popular nor well-known in Italy – because the tower employed tubular elements produced by a Milanese Company, although the Regime had always encouraged autochthonous materials.

The first authentic skyscraper was the SNIA Tower, where, to harmonize the new building more closely with the features of Milan's urban characters, the architect opted for lines (the square windows, for example) and materials, which emphasized the tower's horizontality – as in the Piacentini's Brescia tower – while the balconies on the short side stressed the verticality of the volume crowned by two recessed levels which underlined its silhouette and its towered character. Here, the engineer Guido Mettler used reinforced concrete and the journals of the time emphasized the plasticity and versatility of this material.

Even after the Second World War, despite the progress of structural engineering, the Italian skyscrapers were designed employing reinforced concrete structures. Nevertheless, the use of steel or reinforced concrete continued to be one of the major topics and debates about Milanese skyscrapers.

The Milanese post-World War II period

In Milan, more than anywhere else, the tall buildings spread in the post-war period in different areas and not only in the historical center (Coppa, Tenconi, 2015). The skyscraper seemed to be the solution to many of the city's problems, not only allowing air and light to enter the living spaces but also favoring a good orientation of the buildings, freeing up space for urban greenery, traffic and parking. So, the high-rise represented not only modernity but also a possible rational and functional solution to the density of housing in Lombardy's capital city and the unhealthiness of its enclosed courtyard buildings. However, the introduction of this typology did not cause any break with the local traditions – including the constructive materials such as the reinforced concrete, which, for practical and economic reasons, was preferred over steel. The skyscrapers that became popular in Milan from the 1940s

onwards had their physiognomy and were not simple American-style skyscrapers, such as an example Piero Bottoni's Palazzo Argentina (1946-51): a mixed-use building, with stores on the first levels and 11-story residential tower located perpendicular to the street. Set back from the street line but formally linked to the crossroads through the lower part of the building, Bottoni designed the building to free the ground and guarantee more air and light, destroying "both the representative façade facing the street and the closed rear courtyard, typical elements of the 19th-century urban construction" (Veronesi, 1959, 445).

The Breda Tower built between 1953 and 1955 by the architect Luigi Mattioni – and famous for being the first to cross the threshold of the Madonnina high on the cathedral roof – also expressed a strong rejection of monotony (Alfonsi, Zucconi, 1985). The bow windows on one side and the terraces on the other one, the use of color on the facade covered with turquoise ceramic stoneware, and the shades fading towards the top, the building's specific formal identity: all these elements are evidence of the search for an exceptional and original solution that would make it an important landmark. Most of the tall buildings of the post-World War II period in Milan had these peculiarities: such as the unique and atypical experiment of the Park Tower (1953-56) designed by Vico Magistretti, one of the educated architects of the 1950s, endowed with a great civic passion (Pedio, 1960). In his design, Magistretti reinterpreted the principle of 'stacked villas' – a popular housing type in Milan back then where each floor is identical on the outside, but arranged differently inside – and adapted it to the skyscraper's proportions. The four façades are all different from each other thanks to the varied positioning of the living rooms and loggias, which made this skyscraper absolutely different from the system based on the replication of floors typical of American high-rises. The colors planned in the first design – but not achieved – should have also contributed to underlining its difference from the others buildings, making it unique. However, there were also some examples of tall buildings in the post-war reconstructed Milan which tended to be more in line with the American model, especially when they were part of some real estate new projects, linked to the plan of the emerging business centers. The 109-meter Galfa Tower (1956-59) designed by Melchiorre Bega and intended to house offices for an oil company, was formally very similar to the US type (Coppa, 2015; Greco, Mornati, 2012). It was part of the plan for a new business center which was never fully executed. The curtain wall, also used in the corners, created a completely transparent shell, bringing the Milan experiment into line with the spectacular transparencies of American skyscrapers. Even the interior layout, based on open space and the concept of flexibility, was clearly echoing the overseas type. So, in the first design, an American steel frame had been envisaged, but the structural engineer Luigi Antonietti rejected this metal proposal and used the more traditional reinforced concrete.

Towards more complex and attractive shapes

If we consider the skyscrapers built in Milan during the second half of the Fifties, we find more complex and attractive shapes, often the result of sophisticated experimentation on structural frames. This is especially evident in two buildings: the Velasca Tower (1950-58) and the Pirelli skyscraper (1953-60). They can be considered the most important high-rises of the reconstruction period, and today they represent, perhaps even better than the gothic cathedral, the symbols of Milan. They were both designed to be unique and, although extremely different in character, to represent innovation and change. The metaphor of modernity, expressed through new techniques, has in fact here replaced any economic reason linked to high land rent that was the origin of the construction of American skyscrapers.

The Velasca Tower, the most debated skyscraper in Europe, was designed by BBPR, a team of Milanese architects (Banfi, Belgiojoso, Peressutti, Rogers) (Samonà, 1959). Studies for the design of the Velasca Tower began in 1950 with the collaboration of the Turinese engineer Arturo Danusso. The new tall building was erected in a central neighborhood damaged by the bombing of the war, not far from the medieval Cathedral. The first proposal in 1952 envisaged a steel structure, designed by a construction company based in New York, but, due to the high costs, this idea was abandoned (Bordogna, 2017). A reinforced concrete structure was then chosen, because this material was more easily available in Italy, cheaper, and the local experts knew how to use it better than steel. Then, the engineer Arturo Danusso designed a structure in reinforced concrete with a central bracing core, which included stairwells and elevators, and a perimeter frame with rigid knots composed of sixteen jutting pillars that run the entire height of the facades. This structural solution was particularly innovative and it's still considered to be optimal for very tall buildings. In fact, it was also used later for some high-rise buildings in Chicago and more recently for the Burj Khalifa in Dubai (Parker & Wood, 2013).

A series of compressed inclined struts and horizontal elements supported the crowning of the building, consisting of 7 floors and technical volumes, protruding from the main body. The upper part of the building had a larger floor plan than the levels below because it housed the living spaces. According to the architects, the private dwellings needed more floor space than the offices below. But the designers also wanted to create a kind of formal separation between the two different functions – offices and apartments – of the building. All the faces of the tower are similar and marked by the ribs of the load-bearing structure, intentionally highlighted. The walls are punctuated by small rectangular windows arranged according to a grid suggested by the structural frame. The curtain walls are made of prefabricated panels of cement and pink sandstone. Even the use of a specific color was the result of a very particular design choice.

In this building, the search for a relationship with the local context and traditions is evident: the peculiar 'mushroom' morphology of the crowning is intended to recall medieval towers or Filarete's tower in the Sforzesco castle. But the attempt to tie in with the urban center is also clear in the shape

of the windows, the color of the façades, the pitched roof – echoing housing typology – and even the arrangement of the square with a porticoed entrance. So the Velasca's architecture seems to express a clear opposition to the American type and an attempt to overcome the Rationalist movement.

If the design elements of the Velasca Tower arose from the context in which it was placed, the Pirelli skyscraper project – certainly one of the most significant and original Italian skyscrapers – was based on a very different concept, which is evident already from the denomination: tower for Velasca and skyscraper for Pirelli. Gio Ponti, who was the designer working with some engineers, as Pier Luigi Nervi and Arturo Danusso, disregarded the city pattern and designed the building as a thin slab that is placed in an irregular (trapezoidal) area, not aligning it with the existing streets, but in a perpendicular position to the front of the railway station, to declare its urban role and to stand out among the other buildings (Ponti, 1956; Coppa, Tenconi, 2015). The skyscraper with its pure form was intended to represent the powerful Milanese reality of its time. The elegant shape was organized as a tapered slab and had an extremely narrow plan (the width is 18.5m, the length 70.4m). For this reason, the engineers Danusso and Nervi, abandoned the traditional frame, developing an innovative structure with rigid triangular partitions at the ends of the building, some hollow pillars, and four large central pillars with a butterfly section. These big pillars were tapered upwards and were able to withstand even horizontal stresses. The load-bearing structure is perfectly understandable even from the outside. In fact, the pillars reappear in the faces made of glass, aluminum, and small mosaic tiles. Ponti and Nervi's idea was to create an architectural form which was the outcome of the construction itself. So, it is clear that this building is essentially different from all those skyscrapers being built in the US at that time: here the volume cannot be expanded infinitely thanks to the type-plan repetition. In fact, the butterfly pillars taper going up and make the structure and the shape not expandable. The volume is closed: a kind of finished, unchangeable architecture, the result of an idea design that tried to crystallize in a pure diamond shape the equilibrium between form and function.

Although profoundly different, Velasca and Pirelli best represent the Italian approach to the introduction of the American skyscraper typology: on the one hand, there is the importance of the relationship with local history and tradition; on the other, the search for a perfect, unique and finished form that cannot be further developed and would be very difficult to imitate.

After the most significant experiences of the Second Post-war Period, the 1960s saw the construction of various high-rises in Milan, often with a residential function, frequently located outside the historical center, and with an architectural impact not very impressive. Later, the 70s definitively sanctioned the skyscraper's exit from the scene: the demand changed, especially in the residential area, but also the symbolic meaning of the tall building, which by now no longer represented an ideal of modernity or the status symbol of the economic miracle of the Milanese bourgeoisie.

The current Milanese scene

After the millennium eve, since the 2000s there has been a so-called new 'vertical fever' in Milan, especially in some areas completely redeveloped, such as Porta Nuova or City Life districts. In recent decades, the challenges of skyscrapers are not only related to height – which, in Italy, was not so important – but more often to the issue of the sustainability of tall buildings (Talenti, Teodosio, 2021). So far, in Milan, many skyscrapers have been built and many others are under construction, and many designs have been submitted. This great enthusiasm for high-rise typology has also brought foreign, often American, designers onto the field. But one can question the existence or not of a typically Italian skyscraper and whether local architects have a different approach to international ones.

The skyscrapers built by American architects such as Gioia 22 (by the designer Gregg Jones of the studio of César Pelli) (Talenti, 2021) or the Unicredit building designed by Pelli himself are very often a structural or technical challenge (Molinari, 2015). Both are in a new district of Milan, totally transformed, the Porta Nuova District. In Gioia 22, called the 'Shard of glass', we can notice the defiance of gravity. In the Unicredit Tower (2014), the most challenging part of the construction is the pierced steel spire placed at the top in an eccentric position to the body of the building. Its construction needed the use of a helicopter and required considerable static studies. This spiral structure has a strong expressive value, echoing the Madonnina on the top of Milan's cathedral. Looking at sustainability, this building was also the first Italian pilot project to obtain the US Green Building Council's Leed Gold certification. The structural challenge is also clearly evident in the design of the Hadid Tower (2014-2017) (Giuliani, 2017). This skyscraper is placed in another important area of great transformation and where also some skyscrapers were recently built: the City Life District, once a fairground occupied by old buildings. The so-called 'twisted tower' by Zaha Hadid, with its rotation and form that tapers upwards, is a perfect example of the synthesis between an architectural idea and a challenging structural solution and testifies to the ongoing research in innovative structural systems. All these skyscrapers, including the PwC Power (2015-2020), designed by Daniel Libeskind, benefitted from advances in construction technology, improvements to energy performance levels, and more conscious use of environmental resources and choice of materials.

Very often, the Milanese tall buildings designed by foreign architects have a glazed surface and are often based on modular replication, infinitely extendable, as for example in the Allianz Tower (2012-2015) by Arata Isozaki, erected in the same area of the previous two towers (Biagi, 2015). The skyscraper was conceived as a mixed structure in reinforced concrete and steel and it is based on a construction module, indefinitely repeatable, consisting of a 6-story element. This tower would like to be a tribute to Milanese futurism, showing the idea of a 'building as a machine', with exposed gears that are in constant movement. But also some Italian architects were active in these areas, the most remarkable result being Stefano Boeri's Bosco Verticale

(2009-14) in the Porta Nuova district (Boeri, Musante, 2015). It represents the symbol of vertical sustainability played on the use of greenery. In 2014 it was honored with the prestigious International High-rise Award, assigned by the German Architecture Museum of Frankfurt to the most beautiful and innovative tall building in the world and it is still considered one of the most iconic skyscrapers in Italy. For watering, the greenery on the terraces uses rainwater and the greywater produced by the building itself, in addition, an innovative eco-structure monitoring system and a sub-irrigation with independent management for small groups of tanks, allow consumption to be adjusted to real needs, which vary according to exposure and heights. The experience of Boeri's Vertical Forest is considered particularly significant in this regard and has become famous all over the world as the prototype intervention of a new biodiversity architecture since the two residential towers were designed as a noise barrier as well as to improve air quality, reduce pollution, limit radiation by creating a microclimate on a human scale, also affecting urban heat islands. The facades, with large staggered balconies with strong overhangs, host over one hundred plant species, being 800 trees, 4,500 shrubs, and about 15,000 ornamental essences, differentiated according to the exposure: evergreen to the south, stripping to the north and west, with soft shades to the east. This greenery becomes the protagonist of the architectural project, making the faces periodically 'variable' and changeable depending on the season and climate. But if the Bosco Verticale is a "new idea of a skyscraper, in which trees and humans coexist" (Menaldo, 2014) as Boeri has repeatedly emphasized, the residential complex, however, brings up some critical issues. Doubts arise about the actual sustainability of the operation, both in the construction phase, concerning costs and energy for the installation of trees and shrubs, and in the life-long management, but also on the elitist approach of the project which seems to move vegetation from public and shared spaces to those private and used by few, risking to transform it into a simple ornament to be admired. But, despite criticism of its maintenance and flat costs, the Vertical Forest is an innovative Italian idea for the use of greenery, that has now been copied all over the world. Also original is the solution of the double towers, of different shapes and heights, which create a changing play of volumes depending on the selected point of view.

Another building is currently under construction: Mario Cucinella's Unipol Tower, nicknamed the 'vertical nest' (Mario Cucinella, 2017). Inside the building, the vegetation is not only conceived as a 'dressing' designed to refine and embellish the architecture, but it performs a clear and important oxygenating function like a huge 'green lung'. The project develops around a covered square where private and public areas try to merge, creating a large covered winter garden that opens onto the city. The system includes a series of suspended natural spaces (about 445 square meters) and, at the top, a panoramic greenhouse – intended to host exhibitions and events – which will allow the building's internal temperature to be managed without artificial ventilation systems. The landscape project, conceived by the architect Marilena Baggio, collaborator of

the Cucinella studio, constitutes a sort of narration of the various manifestations of the plant world, following the cultural paradigm of the trilogy of Canti described by Dante Alighieri in the Divine Comedy: level +1 represents Paradise, levels +19-21 Purgatory, levels + 22-23 Hell, with the large greenhouse (Baggio, 2017). Going up, in the opposite direction of Dante's route, the Mediterranean scrub is replaced by the tropical one, reaching the sub-desert landscape on the 23rd floor. The Color, size, and shape of the different species, closely related to their location in the tower and to the different functions of the areas, will allow the visitor to locate himself in the altimetric space during his ascent to 'hell'. The complex design choices, obviously, do not neglect a careful search for "performance in terms of hydraulic functionality, water saving, soil management and durability with low maintenance" (Baggio, 2018, 25) to contribute to the sustainability of the skyscraper. But the most important aspect of this skyscraper is the envelope built thanks to the diagrid system: a framework of diagonally intersecting metal that requires less structural steel than a conventional steel frame. These metal rods constitute the perimeter support structure of the building, which is then wrapped externally in a transparent skin designed to reflect light. The structural element thus also becomes an aesthetic element, creating a façade that reminds one of the intertwining of branches in a nest. The quest for integration between art and technique, or rather between form and structure, started by Ponti and Nervi, but also by BBPR with Danusso, still seems to be relevant.

Conclusions

From Piacentini's very first experiments, the Italian skyscraper shows all its distance from the original American typology: neither height, excessive originality of silhouette, nor pure technical and structural challenges, seem to be the hallmarks of the towers/skyscrapers designed by Italian architects. But some distinctive elements seem to appear frequently in the several tall buildings in Milan. First of all, the search for modernity was always combined with the genius loci, which is the pervading spirit of the place. The connection with the urban context through the lower part of the building, often designed with arcades, is a repeated element, especially in the first Italian experiments. Today's Italian trend is to create open ground floors conceived as public spaces.

The choice of reinforced concrete represents another specific feature of the skyscraper erected on Italian soil. Very rare are those made entirely of steel. Concrete continues to dominate for the construction of all structural elements and not just for cores and shear walls even if, increasingly frequent is the mixed structure. The peculiarity of Italian skyscrapers is not limited, however, only to the structural techniques used for the construction of the skeleton. The deep link of the structure with the design language and the adoption of elegant structural solutions also contribute to characterizing these works. The buildings often stand out for their strong but elegant character. In the Velasca tower, for example, the structure plays a key role in defining the characteristic mushroom shape. Although with different formal

results, we found the same connection between advanced engineering solutions and architectural envelope, from the Pirelli skyscraper to the more recent 'nest' by Cucinella. This way of conceiving the design of a tall building may in part stem from the tradition of Italian engineering. In fact, in Italy, Danusso and Nervi were promoters of a renewed unity between the competencies of the architect, engineer, and builder. It was an approach related to the belief that the project was the result of a synthesis process, which required the involvement of the engineer right from the conception phase of the work and not in the mere subsequent verification. So, the value of these buildings, from Velasca to Pirelli, is also that of having put together technical knowledge and skills that had been separated until then (Colaïanni 2002) and of having encouraged the search for innovative solutions able to combine structural, formal and functional aspects. In the USA, on the contrary, after the Second World War, the architect was given the role of coordinator of the design team, where we find the structural engineer together with the plant engineer, the environmental engineer, the expert in estimates and building regulations. Pragmatically, American engineers took on the role of guarantors of the validity of the structural calculation and, above all, of the financial investment, with the consequent complete separation of the professional fields. In short, they were no longer designers, but consultants.

Besides this approach according to engineers a very important role in designing Italian skyscrapers, it's important to remember also the specific methods used by Italian professionals, in the Fifties, for structural design and verification. While engineers who designed American skyscrapers in Chicago or New York used analytical tools for calculating the structures, the Italian approach for structural verification was based on a new methodology based on laboratory tests and the use of model experiments (achieved in a specific laboratory in Bergamo) (Neri, 2014). For Danusso, who had a key role especially in the Velasca skyscraper, "the model was the only means by which to bypass the limits of the theory of construction science and to verify one's own static intuition, an indispensable and preferential skill in the tortuous process of defining a structural form" (Neri, 2015, 315). Danusso aimed to go beyond analytical calculation as the only tool for dimensioning structures. The model tests allowed to avoid the typical simplifications of the purely mathematical approach and to consider all the interactions between the parts of the skeleton (Capurso, 2020).

The American common features of skyscrapers were the steel framework, the curtain wall, and, of course, the search for height. The Italian specificity is that none of these elements were used in the local towers or high-rises until a few decades ago, except in a few, occasional, cases. In fact, even the height, in Italy, was not and is not such an imperative factor. The Italian challenge is not about seeking a stunning height, but the uniqueness of the work. The Park Tower is the perfect example to understand how Italian architects have always kept a close link with the local culture – the stacked villas of the Milanese tradition, in this case – while seeking maximum flexibility and distributive freedom. The anonymous overlapping of identical

floors, the structural challenge, and unbridled height are replaced, in the examples designed by Italian professionals, by the search for original, identifiable, non-repetitive formal solutions, linked to the context and intimately connected to the structure, creating high-rises that stand out from the others, because of details rather than gaudy solutions. But nowadays, increasingly, the designers of Milanese skyscrapers are coming from abroad. Thus, the municipal administration dealing with urban issues fears that foreign artists lose their connection with the context. For this reason, it is trying to have more control over the future construction of high-rises. It aims to make the new skyscrapers fit into their surrounding urban context because the tall building has a kind of extra 'responsibility': standing out in the city, it immediately becomes the icon of a district. So, the current Milanese town planning advisor is convinced that the development of tall buildings must be accompanied by new rules (Venni, 2022). Skyscraper projects for Milan are increasingly flooding the pages of the newspapers, showing how this overseas typology has found fertile ground in Lombardy's capital, without however breaking away from Italian culture and tradition.



Figure 1. Snia Viscosa Tower (Image by Simona Talenti)



Figure 2. Velasca Tower (Image by Simona Talenti)



Figure 3. Park Tower (Image by Simona Talenti)



Figure 4. Park Tower (Image by Simona Talenti)



Figure 5. Bosco Verticale (Image by Simona Talenti)



Figure 6. Unipol Tower (Image by Simona Talenti)

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Invisible Tools: Shaping New York City's Skyscrapers

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As Tirana is experiencing probably the biggest building boom in its history, including the planning and building of a number of high-rise buildings, it seems fitting to find out which lessons can be learned from the city where the building type of the skyscraper originated. New York City hosted the buildings that claimed to be the world's tallest for 66 consecutive years. It began with the Singer Building, followed by the Metropolitan Life, the Woolworth Building and then, of course, after brief interludes from 40 Wall Street and the Chrysler Building, the Empire State Building held the title for 40 years, followed by the World Trade Center. Then the title went to Chicago for 25 years with the Sears (now Willis) Tower, on to Kuala Lumpur with the Petronas Towers and Taipei with Taipei 101 and finally, as we all know, to Dubai.

New York City is also the place where a unique and comprehensive, ever changing legal framework has shaped skyscrapers' forms and urban positions since 1916. That is the year when the Setback Law was introduced as part of the city's Zoning plan. It mandated that floors step back from the cornice height upwards under a certain angle, determined by the width of the street and the particular area of the city, its zone. Imaginary "sky exposure planes" would limit upwards growth, which Hugh Ferriss beautifully illustrated in a sequence of drawings in 1922, as a natural force at work. [Fig. 1, 2]

Fourty years later, architects were tired of those forces and limitations and began to experiment with new approaches. The NY building department was open to new ideas, and, from 1956 onwards, under the leadership of developer James Felt, went to work designing a new Zoning Code, certainly influenced by the plans

for Lever House and the Seagram Building which abandoned the setback for simple slabs rising from a plaza in front. [Fig. 3]

The new building code, directed by James Felt, was put in place in 1961 and brought about a few major ideas that are just as influential as the 1916 code with its setback law had been. The code changed the emphasis of the City's urban renewal plans from demolition to preservation and rehabilitation. It secured large, open, flexible office spaces. It contained four important new concepts which replaced the setback code, allowed greater height and open plazas. These concepts were: 1. FAR - Floor Area Ratio, a numeric measure to flexibly control density - a FAR of 1 can be one story building covering the entire plot or a four story building covering 1/4th of it. 2. TDR - Transferable Development Rights - the air space above a building could be sold to a developer, thus guaranteeing access to light in one area, while a developer could employ that purchased cubage on top of a building elsewhere. This has often been used to provide money for upkeep for historic landmarks. 3. POPS - Privately owned Public Spaces - publicly accessible parks or lobbies created by developers in exchange for additional height on a tall building elsewhere¹. Finally, a regulation intended to give certainty to developers, suggesting that that certain rules could not be challenged. They were "as of right" and did not need a process, no hearings, no applications. The "developers don't need planning permission and they don't need to notify anyone. There was no public review and no community en-

¹Jerrold S. Kayden, *Privately Owned Public Space: The New York City Experience* (New York: Wiley, 2000).

agement, and yet these buildings will be casting huge shadows across Central Park for years to come and impact all of us.”²

Trump Tower on 5th Avenue by Der Scutt (1983) is a good example for this system, as it applied several of the tools that were made available in 1968. By only filling a little more than half its footprint going up on a site that had an FAR of 21.6, it could be almost twice as high. Trump also bought air rights from a neighboring building and provided Privately owned Public Space at the mall’s atrium.³ [Fig. 4]

The building laws that were introduced between 1961 and 1968 law are still in place, although constantly amended, as will be demonstrated by a few more recent examples from New York City. Despite not housing the world’s tallest building anymore, the city still plays a central role in skyscraper development, and currently holds other world records, such as, at least temporarily, the tallest residential tower in the world, or the world’s slimmest building. On the following pages I will focus on a few examples, first from the development of Hudson Yards, the largest real estate development in the history of the US, and then move on to a number of new skyscrapers south of Central Park, ending with two on Park Avenue.

The area of Hudson Yards had long been looked at by eager developers and by the city, as there was a lot of unused space above the many rail lines. First there were plans for the Olympics of 2012 and the area above the railyards was rezoned but then the bid to host the games was not successful. But the rezoning paved the way for this commercial development. Billionaire developer Steven Ross and his Related Companies put a proposal for a cluster of skyscrapers together, at the end of the linear park of the High Line and with a possible connection to the subway system. [Fig. 5].

At a cost of 25 Billion, the project was meant to add 19 Billion to the city’s GDP (Gross Domestic Product) and it was meant to be instant urbanism - providing housing, work, shopping, restaurants, entertainment all in close vicinity and unique thrills. There are currently seven major components: a mall by Elkus Manfredi, a 58 story tower by Norman Foster, a 51 story tower Kevin Roche & John Dinkeloo in partnership with Kohn Pederson Fox, then a 72 story apartment tower by Skidmore Owings and Merrill, and a 73 story apartment tower, 25 Hudson Yards by Diller, Scofidio and Renfro. The two central pieces are 10 and 30 Hudson Yards, 52 and 103 stories tall. The taller tower sports an observation desk - which puts it in direct competition with Rockefeller Center and the Empire State Building nearby. The so called “Edge” is a triangular space that juts out on the 100th and 101st floor of the building at 1.100 (340m) feet, taller than the Eiffel Tower. It allows visitors to lean outwards against the slanted glass walls and also look straight down through a vertical skylight in the floor.

Diller, Scofidio and Renfro, the architects of the above-mentioned linear park, the High Line, designed a flexible theatre at the bottom of their tower, “the Shed,” which can move in and out to provide different space configurations for events. Finally, a gigantic piece of public art was installed at the center of Hudson Yards, the so called “Vessel” by the

British designer Thomas Heatherwick, consisting of 154 intricately interconnecting flights of stairs -- almost 2500 individual steps and 80 landings. It opened to great fanfare in 2019.

Timing could not have been worse for this development, which had been a risky venture from the start. Covid arrived shortly afterwards, visitor numbers plummeted, several suicides at the vessel led to its closure, and major store tenants left. It is easy to agree on the fact that it would be hard to find a similarly uninspired, predictable and boring set of five new skyscrapers anywhere. There is nothing interesting or characteristic about them - an astonishing fact, given that New York City invented and defined the building type. And, of course, this new part of New York City, in its layout, that defies the traditional block structure could not be more atypical for the city. Critics said: “There is no reason for New Yorkers to go to Hudson Yards”⁴ or “Horror on the Hudson: New York’s \$25bn architectural fiasco”⁵

While many critics agreed that that the development would mostly attract tourists and newcomers, economists had other reasons to be concerned. Bridget Fisher Flávia Leite wrote a long report about its economic implications for the New School of Social Research and its Schwartz Center for Economic Policy Analysis⁶. This rather damning report was picked up by the New York Times and its intrepid Critic Michael Kimmelman⁷. He reminded his readers of a recent debate, when Amazon offered to move one of its headquarters to Queens, a part of NY City and asked for a 3 billion tax break in return for the creation of 25000 jobs. It was eventually turned down. But with far less public attention, the city government for more than a decade funneled even more aid to Hudson Yards. In all, the tax breaks and other government assistance for Hudson Yards ended up reaching nearly \$6 billion. He listed additional facts: It cost \$2.4 billion to extend the No. 7 subway line to Hudson Yards. \$1.2 billion was spent on about four acres of parks and open spaces called Hudson Park and Boulevard. The City Council agreed to pay \$359 million in interest payments on bonds when revenue from the development missed projections. Hudson Yards was developed during a time of economic uncertainty,

²Oliver Wainwright, “Super-tall, super-skinny, super-expensive: the ‘pencil towers’ of New York’s super-rich. An extreme concentration of wealth in a city where even the air is for sale has produced a new breed of needle-like tower.” *The Guardian* (February 5, 2019). Online at: <https://www.theguardian.com/cities/2019/feb/05/super-tall-super-skinny-super-expensive-the-pencil-towers-of-new-yorks-super-rich>. Quoted in the article is Telly Mas of the Municipal Art Society.

³Samuel Stein, *Capital City. Gentrification and the Real Estate State* (London: Verso, 2019), 139.

⁴Alexandra Schwartz, “Hudson Yards Is the Hotel California of New York” *New Yorker Magazine* (March 23, 2019), 2019

⁵Oliver Wainwright, “Horror on the Hudson: New York’s \$25bn architectural fiasco” *The Guardian* (April 9, 2019). Online at: <https://www.theguardian.com/artanddesign/2019/apr/09/hudson-yards-new-york-25bn-architectural-fiasco>

⁶Bridget Fisher, Flávia Leite, “The Cost of New York City’s Hudson Yards Redevelopment Project” *Working Paper No. 2* (The New School. Schwartz Center for Economic Policy Analysis, November 2018).

⁷Michael Kimmelman, “Hudson Yards Is Manhattan’s Biggest, Newest, Slickest Gated Community. Is This the Neighborhood New York Deserves?” *New York Times* (March 14, 2019).

with the mayor at the time, Michael R. Bloomberg, vowing to reclaim an unsightly neighborhood of brick warehouses, factories, tenements and a rail yard. In the end, 90% percent of Hudson Yards' office tenants were transfers from Midtown, lured by lucrative tax breaks that New York politicians had provided to the developers. The project simply shifted economic development from other neighborhoods to Hudson Yards but did not create new net growth. One might call it "corporate welfare" or "socialism for billionaires." However, it did encourage more developers to build their own tall towers nearby. As Kimmelman put it: "Over all, Hudson Yards epitomizes a skin-deep view of architecture as luxury branding. Each building exists to act like a logo for itself. The assortment suggests so many crowded perfume bottles vying for attention in a department store window display. [...] It glorifies a kind of surface spectacle — as if the peak ambitions of city life were consuming luxury goods and enjoying a smooth, seductive, mindless materialism. It gives physical form to a crisis of city leadership, asleep at the wheel through two administrations, and to a pernicious theory of civic welfare that presumes private development is New York's primary goal, the truest measure of urban vitality and health, with money the city's only real currency."

Kimmelman ended with a wonderful comparison to a major development project during the 1980s: "It entailed I entailed not a scintilla of public land, public money, or public oversight. It employed a variety of architects. But one of them, Raymond Hood, was very much in charge." The result was an object lesson in urban design and a landmark of modern art and architecture, a development ingeniously, democratically woven into the fabric of the street grid. At first glance, Rockefeller Center looks unified because of all the masonry construction and Art Deco details. But the real source of its coherence is its plan. From his earliest sketches on, Hood made the center's choreography of massing — the dramatic sequencing of low-, medium- and high-rise buildings — the bedrock of that plan. All these parts work together to create a singular place inseparable from the rest of the city. Hood understood the difference between scale and size — how a site with multiple entrances needs to be orchestrated from many angles, how architecture without urban design is just sculpture, how true art enhances the dignity of a place, and how the success of a neighborhood and its retail businesses come down to what's happening at street level. "Hudson Yards barely acknowledges any of these things," Kimmelman concluded. A second part is currently in the works, on the neighboring parcel, calling for 6.2 million additional square foot for residences (including affordable housing), offices and a kindergarden to 8th grade school. Frank Gehry and Herzog & DeMeuron will be among the architects there. Bjarke Ingles designed and built the so called Spiral nearby the only building of any interest in the entire development, as it gives each floor of this office building an outdoor space with a tree.

But now on to other buildings. While Hudson Yards was being completed, there were other things happening, in particular the thinnest skyscrapers ever built. All of them were more interesting architecturally than anything built at Hudson Yards,

but they came with their own problems. The first was nearly 1,400-foot tower at 432 Park Avenue briefly the tallest residential building in the world, was the pinnacle of New York's luxury condo boom half a decade ago, fueled largely by foreign buyers seeking discretion and big returns. Apparently, its simple and elegant geometric façade was inspired by the work of early Viennese modernist Joseph Hoffman and mid-century modernist sculptor Sol LeWitt. At least to my eyes, it is incredibly elegant, expressing the structure of its Vierendeel trusses and providing great ceiling height and uninterrupted views in all directions. There is no other skyscraper in the world that managed to cast modernist minimalism into such successful terms. [Fig. 6] The tower is a marvel of engineering. It offsets the enormous wind pressure up high with open mechanical floors, whose air currents create a buffer against the onslaught of wind. And, at the top, there is a gigantic "Tuned Mass Damper" a heavy lead cube that slows down the swaying at the top by swaying gently in the opposite direction.

But despite all this care, the clarity of its design and the beauty of its interior, six years later, residents of the exclusive tower are now at odds with the developers, and each other, making clear that even multimillion-dollar price tags do not guarantee problem-free living. The claims are all connected to the building's main selling point: its immense height. The condo board at 432 Park Avenue is suing the developers for construction and design defects that have led to floods, faulty elevators, where some of the upper tenants were stuck for hours, and electrical explosions. People heard creaking, banging and clicking noises in their apartments, swoosh of wind through elevators and a trash chute "that sounds like a bomb" when garbage is tossed. Perhaps understandably, none of the reporting newspapers managed to hide their glee and their Schadenfreude upon the misfortune of the fortunate few up at the top who had paid up to 75 million for their apartments⁸. The problems at 432 Park Avenue don't bode well for other super thin skyscrapers, which have already taken the title of the world's skinniest building from Rafael Vinoly's tower⁹.

Even taller is Central Park Tower by Adrian Smith and Gordon Gill, whose claim to fame are many tall towers the world over, most prominently the Burj Khalifa in Dubai. Central Park Tower came with its own set of challenges. Its design as unremarkable as that at Hudson Yards, but it ended up being so close to another tower, Robert A. M. Stern's 15 Central Park South, which has 50 stories, so that the inhabitants

⁸See for example: "The Downside to Life in a Supertall Tower: Leaks, Creaks, Breaks" *New York Times* (September 23, 2021); Victoria Bekiempis, "High anxiety: super-rich find supertall skyscraper an uncomfortable perch." *The Guardian*, February 7, 2021 (online at: <https://www.theguardian.com/artanddesign/2021/feb/07/supertall-skyscraper-new-york-432-park-avenue-rich>); David Guzman, "The Risks of Living in This Super-Tall, Ultra-Thin Skyscraper" *The New Yorker* (November 2, 2021); "Residents of troubled Supertall Towers seek \$ 125 million in damages". *Business Times* (September 25, 2021);

⁹Matthew Soules, *Icebergs, Zombies, and the Ultra Thin. Architecture and Capitalism in the Twenty-First Century* (New York City, Princeton Architectural Press, 2021), 169-188.

of the lower floors will have a somewhat limited view of Central Park, while the inhabitants of Stern's tower, will have a somewhat limited view to the skyline further south. In order to avoid this unfortunate fact (which only became obvious when the building was already under way) a wing was cantilevered out over the adjacent Art Student League, whose air rights the developer had already acquired. With 98 stories it is currently the tallest residential tower in the world. [Fig. 7]

The most elegant and fascinating among the new buildings is the one that is just being finished as we speak. The firm SHoP designed 111 West, 57th Street, also known as Steinway Hall, which currently holds the title of the skinniest skyscraper in the world. Its floor to height ratio is an incredible 23. It references the setback law of 1916 and its applications and it also pays homage to the Woolworth Building in its details. While breaking new ground, it also clearly is an homage to the history of the skyscraper in New York City. [Fig. 8]

Let me end with two skyscrapers on Park Avenue, that are not residential, but are being mindful of the history of the skyscraper in New York. Both are by Lord Norman Foster.

The first one is the new headquarters of J. P. Morgan Chase at 270 Park Ave, just starting construction, it is 60 stories tall, and references the setback aesthetic and the aesthetic of earlier skyscrapers and a luminous appearance at night. It replaced a very elegant earlier building at the same address for the same client, an immediate follower of the Seagram Building, similarly conscious of its structure and embracing the new thinking around placement of high rises as a sheer slab rising from a plaza. It was designed by Natalie de Blois at Skidmore Owings and Merrill. Despite many protests it was demolished and is now replaced by a much taller, 60 story building by Norman Foster. The site was complicated due to subway tunnels underneath, which led to diagonal supports at the ground. The client bought the air rights above nearby St. Bartholomews Church on Park Avenue to achieve the needed height. There are references to the setback aesthetic and the luminous crown that many skyscrapers had in the 1920s. A sheer Miesian slab was replaced by the aesthetic that that slab had originally set out to replace. [Fig. 9]

Many observers' favorite among the recent new skyscrapers is 425 Park Ave. by Norman Foster. It deliberately embraces the setback aesthetics and its lobby directly refers back to the Seagram Building. The luminous spire refers to luminous Art Deco Spires and an "Architecture of the Night" that came with that territory in the 1930s. [Fig. 10]

These elegant new towers stand in the long tradition of the New York City skyscraper, and they make a convincing case that good design honors its context as deeply as possible. Both the legal frameworks that formed them and the romantic enthusiasm they inspired are clearly evoked here. These buildings make the most sense right there, in New York City. For Tirana, similar formulas should be found, that would help to make any skyscraper a true product of its legal, functional and aesthetic context.



Figure 1. Setback Law, Illustrated by Hugh Ferriss, (1922), © Public Domain



Figure 2. Chrysler Building and Midtown Manhattan, Samuel Gottscho, (1932), © Library of Congress



Figure 3. New York City Seagram Building, Ludwig Mies van der Rohe (1958), © CC Ken OHYAMA



Figure 4. New York City, Trump Tower, Der Scutt (1983), © CC Jorge Láscar



Figure 5. New York City, Hudson Yards (2020), © CC Rhododendrites



Figure 7. New York City, Central Park Tower (2022), Adrian Smith and Gordon Gill, © CC Percival Kestreltail



Figure 6. New York City, 432 Park Ave., Rafael Vinoly (2018), © CC Epistola8



Figure 8. New York City, Steinway Tower 111 W 57th Street, SHoP (2022), © CC Kidfly182



Figure 9. New York City, J. Morgan Chase Park Avenue, (2024), © CC CrossingLights



Figure 10. New York City, 425 Park Avenue, Norman Foster (2022), © CC DXVWFR

The Balkan Skyscraper: How Tall is Tall Enough?

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The beginning of the skyscraper era was made possible by some key innovations that occurred in the late 19th century. Generally, steel frames and lifts were considered the key technologies, but a third was mentioned by witnesses of the time and then forgotten: the 'flat-arch' system to protect steel beams from fire. Now, The race for the sky is supported by innovation in the two main fields, which would otherwise represent a bottleneck in increasing the height of tall buildings. Fire safety, and safety in general, is probably the hardest barrier to unlimited height growth.

Vertical transportation technologies

The taller the building, the larger the population that must be transported efficiently. Illinois, the mile-high tower conceived by F. L. Wright, would have required 76 five-floor lifts to operate efficiently (Fortune, 1997). Quintuple-decker didn't come, and even the double-decker was never used extensively. Instead, traffic control systems and algorithms have allowed much more efficient use of elevators, thus allowing a large number of passengers to be transported without taking up too much space in the lower part of the building. Thanks to computerised systems combined with sky lobbies, a building of any height can be efficiently served without the need for the oversized cabins envisioned by Wright.

The problem is thus more technical with the excessive weight and size of elevator steel ropes that make travels exceeding about 500 meters quite impractical. With this length, the cable weight far exceeds the cab one, and counterweighting is almost impossible.

Innovation has also arrived in this sector, either with alterna-

tive materials (for instance, the use of carbon fibre instead of steel cables) or with the research conducted to eliminate cables with linear induction drives on each cabin. Although no commercial ropeless lifts are yet available, several companies are making significant investments in this technology, which is likely to eliminate any height restrictions due to lifts (Belmonte et al. 2019).

Structural systems

The advancement of both concrete and steel technologies has been significant in the past, both in the material properties and in the production chain for these materials. Also, construction improved significantly, with most of the supertall buildings now built with composite systems, used to build mega frames that subdivide tall buildings in a series of superimposed smaller ones (Ali & Moon 2007). The assembly of the structural part of a building is now assisted by ultra-precise sensors that are able to adapt the geometry of the building part under construction with the settlement of the previously constructed parts.

The increased height of the buildings results in an augmented sway and torsion due to lateral forces that may cause structural failure, serviceability issues and discomfort for the occupants. Damping technologies, introduced in the 60s, have now allowed the construction of ultra-slender buildings with ratios down to 1:25th, an unprecedented value that allows new heights keeping floor plates to a manageable size, functionally exploitable for residential super slim luxurious towers.

Fire safety and general building security

Despite the innovations in this field and the possibilities to real-

time monitor and detect the building thanks to IT technologies, tall buildings still are massive structures with only one escape route (Ahrens & Field, 2019). This was demonstrated by the collapse of the WTC in New York, where most of the casualties occurred in the part of the buildings where the escape routes had been damaged by aircraft impacts. It is somehow a limitation embedded in the tall building DNA, and alternatives are difficult except when multiple towers are built within a single development and a single owner. When this happens, several tall buildings can be connected in height by connecting bridges, which can serve to provide alternative evacuation routes. Skybridges built for this purpose (such as in the Petronas Towers) can only help the evacuation of the building in specific cases although the problem remains unresolved and the threat of being trapped in the event of an accident arises.

New aspirations

The search for the sky and the aspiration to get to the 'highest building of something' fuelled the adoption of bizarre solutions to get as high as possible. Architectural spires, not to be confused with technical masts that are not counted when determining the height of a building, have become a constant feature of buildings that win the height competition. The flat-rooftop "boxes" of the International Style have been replaced by more organic shapes with pointed spires, which have grown taller and taller to reach new heights.

In 2013 CTBUH (CTBUH, 2013) released a very debated study on "Vanity Height", defined as the height difference between the highest occupiable floor and the architectural tip of the building. The paper caused so much negative feedback from developers that the study was not carried on in the later years. It showed that approximately 30% of the Burj Khalifa's height (244 meters of the 828 total) is non-occupiable and is a massive useless addition on top of what would already be the tallest building in the world.

With growing attention to sustainability and efficient use of resources and materials, it is clear that the materials used for the sake of nothing but height are a total waste of valuable resources.

Why not build taller?

Tall buildings are expensive structures that require an increasingly high amount of building materials as they grow taller and taller. The first one to carefully describe this was F. Khan, the SOM engineer that in the '60 advanced the structural systems so much to enable the construction of some of the masterpieces of that period, including the world-famous John Hancock Center in Chicago and, a few years later, the Sears Tower. The principle emphasised by Kahn is that when a tall building structure grows in height, there is a 'premium' in its structural weight, i.e. an extra amount of concrete or steel that must be added to resist the increasing lateral forces due to wind and seismic activity, which grow exponentially with increasing height. According to this definition, engineers establish the difference between a conventional structure and a tall building at the point where the lateral loads acting on it exceed the vertical loads

due to gravity, which, on the contrary, increase according to a linear function. Now, that extra amount of structural materials is commonly referred to as "premium for height" (Khan, 1973). Building a building of 80 stories requires way more than the materials needed to build two 40-stories buildings with an equivalent cumulative floor area (Trabucco 2010). [Figure 1.]

In a period of scarcity like the one the world will face in the future due to its increased population, augmented wealth, and limited resources, it is clear that the abundance of materials required by a tall building in comparison with an equivalent low-rise structure is becoming more and more a problem (Trabucco et al. 2015). This is not just due to the economic and environmental cost that many extra materials imply but also to a social pressure that is starting to appear against unjustifiable wastes.

Being continuously requested with austerity and savings, public opinion is starting to react negatively to the ostentation of abundance and wealth. In France, for instance, there is a fierce debate on the use of private jets by wealthy individuals: in times of scarcity and restrictions, with governments asking to limit the energy consumption of families and businesses, a growing part of the population (including some representatives of the French government) is asking to limit "by law" the extravagant behaviours of those who can afford, from an economic standpoint, to use in a month the equivalent amount of energy used by the average French citizen in 17 years. The principle of this is that if the individual can afford it, society can not.

Tall buildings were thus born in American society as a display of economic wealth and strength by individuals and companies in a period of growth when wealth and abundance were available to anyone, limited only by ambition, personal capacity and opportunities. When this building type made its appearance in Europe, it faced the opposition of the leftwing part of the society, which was pointing at tall buildings as the material representation of a capitalist society where the privileged opportunities of a few prevailed over those that only had ambition and personal capacity. This social conflict is likely the underlying reason for the scarce number of tall buildings in Europe and their limited height if compared with the continent's wealth.

However, the current economic situation and the expectation for the future are different. Wealth is now so widespread in the world that natural resources are not abundant anymore. Tall buildings are thus starting to be seen, even beyond European borders, as a problem rather than a solution. Their energy and material intensity represent an unnecessary concentration of resources that drain away the capacity of other less-impacting businesses. [Figure 2.] The question that is important to answer and on which a debate is urgently needed is "what is Abstract:

Tall buildings started to be built by wealthy individuals and powerful companies as a declaration of economic strength and political power as corporate headquarters. Quickly, however, they became speculative assets meant to generate money as a real estate investment. During the last century and a half, the "tall building business model" has been replicated thousands of times, virtually everywhere in the world, though adapted in

multiple variations. Despite the emergence of new technologies and the continuous growth of the world economies and super-companies, the race to the sky seems to have come to an end. New parameters are now being brought into the equation leading to the creation of more sensible projects. The analysis of the international trends and drivers offers an interesting perspective on the new developments being built in the Balkan Region.

Birth and growth of the skyscraper

Despite the debate on what has been the first tall building in the world has not been able to come to a final answer on this, there is little to argue on the fact that this building type started to become a common feature of North American cities, New York and Chicago specifically, since the late '60s of the 19th century. Initially, newspaper companies were the first enthusiastic promoters of the growth in verticality, to accommodate the journalist work and the printing facilities in the same building, and locating this building close to where the news about finance and trade were collected and the newspapers sold. The relevance of the scenic presence of tall buildings in the skyline was then understood by insurance companies that used tall towers not only to accommodate their growing staff and archival needs but also as a signal of their financial stability (physically represented by the heavy shapes and monolithic architectural styles tall buildings had at the end of the 19th century). The growth in the size of tall buildings connected with the evolution of the enabling technologies (most importantly, vertical transportation, fire safety and lighting) created the possibility to increase the built space beyond the needs of a specific company, turning tall buildings not just in the "locus of business but in business themselves" (Willis, 1995), giving birth to the speculative nature that still dominates tall building development today.

The architects of that time debated in magazines (such as the *Architectural Record* or the *Architectural Review*) on the logic and technologies behind the construction of tall buildings, discussing topics that ranged from architectural styles, massing and aesthetics, to technical aspects that included construction technologies, new materials, the new "elevator" science, and fire safety. This genuine sharing of knowledge and collaborative spirit among professionals confronting this new building type contributed to the growth of tall buildings, fueling what soon became not only a race for the sky but also a competition between Chicago and New York for the ambitious title of the tallest building worldwide.

The first race to the sky

The quest for the sky quickly became evident among wealthy individuals and company boards. Initially, neither Chicago nor New York had codes that dealt with the height of buildings. The reason was that until the development of steel construction and the invention of the safe passenger elevator, there was no need for such a control; buildings were naturally limited to 6-8 stories by the decreasing value of space built at height, due to the physical effort needed to climb many flights of stairs. In the '80s, the height of buildings started to grow exponentially in

both cities despite the skeleton construction system being exploited at its best in Chicago, which outnumbered New York in both height and quantity of tall office towers. In 1893, a height cap was introduced in Chicago to limit real estate speculation that had caused several financial problems in the previous few years. The height cap, which varied several times in the coming decades, limited the height of buildings to about 90 meters, an effect that is still well visible today in several areas of the city. With Chicago out of the competition, the race for the sky was now an internal New York dispute, with the title of "tallest building in the world" passing very quickly from one building to another. The 1916 Zoning Law, the first regulation that tried to limit the laissez-faire that characterized New York till that point, did not introduce a height cap but allowed the construction of an unrestricted tower only a limited fraction of the building lot area (Willis, 1986). The effects of this are so visible in the setback towers that are still recognizable today in the New York skyline by endless examples of buildings exploiting 100% of the allowed buildable volume (e.g. the Chrysler building, probably the most famous representative).

The unregulated height of the tower was therefore limited only by profit, where the final shape of the building was just the architectural expression of a real estate formula. Land and construction costs, loans and rentals were the key dominant factors. In this, being "the tallest" (e.g. in the world, in the neighbourhood or just in the street) was a premium in terms of rental value, demonstrating the "testosterone" value of height.

Further proof of how much height was relevant comes from the super slim towers that a slight modification in the Chicago height cap occurred in the late 1920s caused. Between 1926 and 1929, a small cluster of towers (Jewelers building, Roanoke Tower, Mather Tower, etc.) were allowed to exceed the 90m height cap with a tower, with the condition that this tower protruding from the bulky lower portion had not to exceed the 1/6 of the volume of the part below. These buildings tried to go as tall as possible, leading to very unusual shapes and almost non-occupiable floor plans in the tower portion, whose main aim was to reach the skies as high as possible. [Figure 3.]

The race in New York concluded with the competition happening, almost overnight, between the Empire State building and the Chrysler building. The Empire finally took the crown of the tallest building in the world and kept it for 40 years, not only because of the 1929 recession but also because it was so large that it remained mostly empty for many years (Bascomb 2003). Despite this, the Empire corporation remained profitable, with the tickets sold to the visitors of the viewing deck on its top generating more revenue than the rentals of the 80 stories of offices below: again, the value of height.

The change in the key parameters

The title of the tallest building in the world remained in New York in the early 70s but moved from the Empire State Building to the former WTC Twin Towers. After 40 years of rest due to the great recession first and the second World War then, the race for the sky was starting again. Signs of this had already

appeared in the late 1950s and 1960s, with the construction of some ambitious buildings in Chicago (e.g. the John Hancock Center) and other US cities. But the title of the Twin Towers was already challenged, during construction, by the Sears tower in Chicago. Although it was reported that the title of world tallest was not explicitly the developer's goal, the competition was taken into consideration, and Sears retained the title for the next 25 years. In the following years, no one knew who would have been the next contestant for the competition as other taller buildings were proposed, mostly in Chicago and New York. However, for a while, everyone was sure that, no matter what, it would be an office building, certainly in the United States and probably in New York or Chicago, and that it would be a steel building. But it did not happen. The competition moved away from the United States to eastern countries, with the roaring economies that used corporate building height as a landmark of their new economic status. The Petronas towers won the title in 1998 and were described as 'cheating', as only the architectural height was higher than the Sears tower, while all other parameters were not as high as the previous title holder (Wood, 1996). A significant change occurred with the subsequent title holder, the Taipei 101. Chicago, New York and even Kuala Lumpur were very dense cities, and the world's tallest buildings were only the highest point of a predominantly vertical skyline. When Taipei 101 was completed, only low buildings were around. The title of the world's tallest building was used to mark a political and geographical role on the globe, like a mark denoting a city's presence in an international competition to attract business and wealth. A new paradigm was created using tall buildings only for their landmark role.

When experts from around the world gathered in Dubai for the 2008 CTBUH conference, Burj Khalifa was about to top out. Although the actual height of the building is kept secret, the steel structure has already exceeded 800 metres in height and is therefore by far the tallest building in the world by any standards. With a final elevation of 827 metres when it was inaugurated in 2010, it exceeded the Taipei 101 height by over 60%.

Enabling technologies

The construction of the Burj Khalifa marks a relevant leap in tall buildings that allowed them to exceed the 500-meter threshold considered as a height barrier. The innovations in the tower design (for instance, with the invention of the "buttressed core" structural system) and especially in the construction process itself were signs of the advancement in tall building construction. The sustainable height of a tall building? The answer varies over time and depends on the geographical location being considered. A 200m tall building would be the tallest in the Balkan region but would hardly be noticed in New York or Hong Kong, where vertical is virtually the only direction where it is still possible to grow. However, it is interesting to note how some bans are starting to be implemented, mostly for economic reasons and to prevent the bursting of real estate bubbles in several countries. The most noticeable of them all is being implemented by China, the country that represented over 50% of the

tall buildings (above 200 meters in height) that had been constructed in the last ten years. In 2021, China, which many believed to be the strongest participant in hosting the world's next tallest building, announced a new regulation to limit buildings to 150 metres for cities with a population of less than 3 million (with the possibility of allowing exceptions up to 250 metres) and a 250 metres height limit (with a hard cap at 500 for well-justified exceptions) for larger cities. Consequently, it looks like the Shanghai Tower, the current tallest building in China at 632 meters will remain the tallest building in the country as long as this regulating scheme on buildings remains in place.

The ban, which seems to limit only the construction of megatallic buildings by imposing a mandatory 500-metre limit, is also seriously affecting the lower end of the spectrum, as many very tall towers are being built in relatively small towns. Now, these are limited by default to a very conservative 150 height. The reasons for the ban have multiple facets: the fear of real estate excesses (in a country where the construction sector represents 20% of the GDP), the poor quality of some of the most speculative developments that caused embarrassment at the local level, etc., but it is clear that the long-term capacity of the Chinese government to plan in the future is also considering the need to preserve resources without concentrating too many efforts on a few shiny landmarks.

The Balkan perspective

The Balkan region is divided into numerous countries with very different social, cultural and economic backgrounds. Turkey, with its main city Istanbul, is embracing the tall building type extensively for the same reason this architec-tonic type was created in the 19th century in New York: limited land availability, high density and fast economic growth. Tall buildings in this city represent thus a kind on their own in the Balkan perspective and need to be discussed separately. But many other cities in the Balkan region have built, or are building, towers with a very different intent.

Outside Turkey, the Sky Fort tower in Sofia is the only building exceeding the 200m mark in the region. With the structural works finished, the building is due for completion and occupancy in early 2023, and it will become the centrepiece of new financial development in Bulgaria's capital city. The tower rises next to the 125m tall Capital Fort tower A, and the development includes future high-rise buildings to create a new business district. The tower has been designed by the local firm AAA Architecture and engineered by Bulgarian-based Strukto.

The 168m tall Kula Belgrade is the tallest building in Serbia. Completed in 2022, it marks the Sava river waterfront with a mix of hotel and serviced residential units. The tower is inserted into a cluster of multiple apartment high-rise buildings, which create a new residential district in the river area. The tower has been designed by the international firm SOM and the participation of multiple international construction companies. Belgrade is also the home of the second tallest building in Serbia, the West 65 Tower, a residential building of 40 stories completed in 2021.

The tallest building in Bosnia and Herzegovina is slightly

older than the other regional tall buildings: the Avaz Twist tower of Sarajevo was completed in 2008 with a design by the local ADS studio of Sarajevo. The 142 office building sits in a low-rise neighbourhood punctuated by a few other high-rise hotels but without creating a real connection with them but not with the rest of the area.

Romania's capital Bucharest is home to the Floreasca City Center, a 137-meter-tall office building that is part of a new development composed of a cluster of smaller towers and other low-rise buildings,

The tallest building in Macedonia is represented by a cluster of four towers, the Cevahir Towers in Skopje. The complex is fully residential and has been built thanks to an investor out of Turkey. The towers are 130 meters in height and form a small cluster of buildings in a new part of the city.

Albania's tallest building is the 112 m tall tower of the Arena Kombëtare, which offers prime views of the adjacent Air Albania stadium, the largest in Albania. In Tirana, however, there is rather widespread adoption of tall buildings with multiple, mostly residential towers dotting the city's historic centre. These new developments, while creating a lively debate in the local community, can be seen as interesting opportunities to revitalise and enhance parts of the city, satisfying a growing demand for luxury flats.

Each of the countries mentioned above developed in the last couple of decades (but most of these towers are much more recent) other tall buildings, which competed with each other to create a landmark in the local area. The height of these buildings is frequently used in their dedicated websites to underline their uniqueness in the local market.

Except for Istanbul, the Balkan region has not had a real need for very tall buildings, as the land values and relatively low urban density don't require going tall to meet the market needs. And in fact, these towers stem from relatively low-density neighbourhoods, and even when clustered with other high-rises, the ideal common design principle is more the creation of a business park rather than an increase in urban density. The business case for these projects is thus height for height's sake and the possibility to put on the market something unique. Most of these buildings have residential functions and aimed to attract with a unique product the growing group of wealthy local young entrepreneurs, sports and media celebrities.

Conclusions

The title of "tallest building in ..." was born almost 150 years ago and was used by developers to increase the value of their investments. The race for the sky fueled the development of new technologies in an era of an abundance of resources and materials. With the growing concerns about environmental sustainability and the depletion of energy and material resources, tall buildings are now being seen – even more than in the past – as a waste of valuable and scarce resources that society can not afford anymore. Of course, tall buildings will continue to be built, as they represent the ultimate form of urban development, but more moderate and conscious towers are needed.

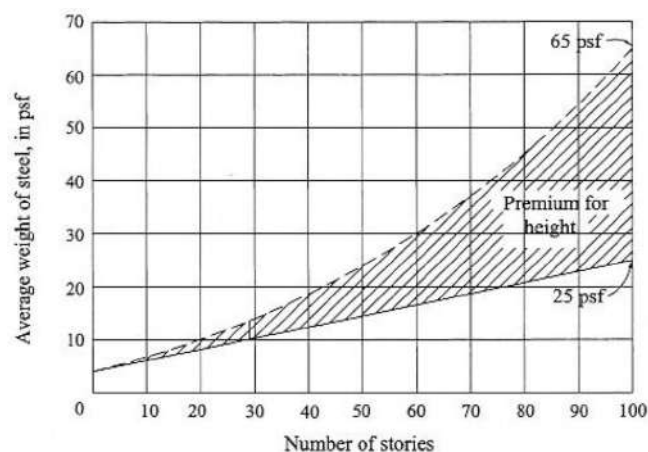


Figure 1. Premium for height. (Source: Ali&Moon 2007)



Figure 2. Jeddah Tower. (Source: Creative Commons)



Figure 3. Chicago skyline 1927. (Source: Library of Congress <https://lcen.loc.gov/2007660836>)

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Thoughts on Urban Verticalization. Going Up and Building High for the Future City: Learning from Israel and Beyond.

HQ ARCHITECTS

Tel Aviv, Israel

From utopia to reality: Urban vertical aspiration and the evolution of the city

Urban verticalization has shaped most cities around the world in the 20th century, playing a big part in the conception, creation and expansion of the Metropolis and the new cityscape that continuously aims for the sky. The vertical city as a concept has been provoking the creativity of architects and planners for over a century, mainly as the solution to the urban challenges that emerged after the industrial revolution, a time when the city was being rapidly transformed, and a new socioeconomic model appeared together with the new era.

The intense vertical growth of our cities in the 20th century has formed the way our cities look and function, ultimately it has shaped what we consider as the modern city and urbanity, as well as the way we imagine the city of the future. Aesthetics aside, vertical building agglomeration has been a widespread solution to the growing demand for various different spaces in many cities of various scales all around the world. The evolution of the high-rise has had a huge impact on the image and experience of the city, shaping both the cities' skylines, but also ground level neighborhoods and public spaces, impacting how people move and interact within the urban setting.

Data and the city

Currently, architects and planners are called to respond to issues of migration and integration, facing challenges such as rapid urbanization, climate change, capitalism and pandemics. In response to this, in the era of information, we, planners and designers, take advantage of technology and data to help us

manage urban risk and design resilient neighborhoods and cities that are responsive to these issues. Through our work we investigate how we can use data in various aspects of urban planning, which will uniform the research, and will help us gain a better understanding of the needs of the communities and areas that are to be developed. Data offers a pool of information that helps us create sustainable smart neighborhoods, improving the quality of urban life while providing opportunities for all.

High-rise development – a creation of capitalism

Undeniably the high rise has become an icon of capitalism, being synonymous with economic prosperity and ambition. Capitalism by definition is a financial operating system. High-rise development has always been a tool for capitalism to duplicate the ground and extract better revenue from each piece of land. From a more symbolic view, the high-rise became also an icon of progress and technology, a methodology to show strength and pride. Notably, the new ground zero WTC 1 tower by SOM was built higher than its predecessor, and to the symbolic height of 1776 feet to show the world that America returned stronger and taller.

During the 20th century the high-rise structure followed the need to maximize the plot's area by extending vertically, duplicating the ground as a typical floor. At the same time, it missed the opportunity to maximize its potential and properly assess vertical spaces in order to identify and utilize the new possibilities that come with this new space arrangement. However, structural engineering advancement and new technologies together with the growth and integration of infrastructure, sustainability and community-led initiatives, allowed architecture to rethink verti-

cal possibilities and reevaluate its urban and ecological impact.

Nowadays, the high-rise typology has a new responsibility: due to the climate crisis, densification has become the need of the hour and the high-rise has the potential to help create more sustainable urban environments. First though, we need to rethink a few issues in the core of the typology of vertical architecture, such as the typical floor, the program repetition, the relationship and interface with its surroundings and the facade, to name a few.

Infrastructure and vertical development

One of the key issues of our cities today is the development and growth of infrastructure. As our cities grow and expand all around the world, while in many cases, such as in Israel, new cities are being born to accommodate a growing population, it means that new urban territories need to rethink the design of infrastructure, its vertical possibilities and its integration within the urban fabric.

We realize that in the contemporary urban setting, infrastructure – whether it is an empty territory in anticipation to be developed or an existing urban setting with its complexities and density, it has a pivotal role in the urban development and particularly in urban verticality. Notably, HQ Architects are currently developing several multi-modal Transportation Hubs in and around Tel Aviv, where we work on how to integrate large scale infrastructure developments while working within densely populated built environments. In these cases, vertical development is not only desirable but it is the only way forward, while having to integrate various mixed uses, provide quality public spaces for both the residents, the local community who see and experience the transformation of their neighborhood, for business people who work in the area, as well as ensure that the transportation hubs are efficient and provide a pleasant and efficient traveler experience. Moreover, transportation overbuild presents several solutions to the urban density and to the challenge of large scale infrastructure interventions in a dense urban environment.

Transportation Hubs – a vertical meeting point of departure or a destination?

Transportation Hubs are often buildings that present a vertical spatial synthesis due to the programs they need to incorporate, as they have to interconnect multiple modes of transportation, and ultimately improve the efficiency and speed of movement, providing clear way-finding and fast and smooth transit for passengers. The transportation Hub, independent of its scale, has traditionally some retail attached to it, from a sole metro station to an inter-modal inner/ intercity hub, there is always some retail use that is incorporated as it needs to cater for travelers' needs. Transportation Hubs are the backbone of urban life, and as cities grow bigger so do they, resulting in more complex and dense structures, presenting programmatic diversity and complexity. They also present an exciting challenge on how to make not just efficient transit spaces but also spaces that are both efficient and enjoyable, and in many cases they can become a destination in their own right.

Can Transportation Hubs – a chance for underground verticality?

'If the 20th century is largely agreed to have witnessed a decentring of the underground from our imaginations – as Western eyes and minds were turned up and out (...) – there is ample evidence within and beyond geography that a new wave of going underground is beginning to swell' (Hawkins, 2019, 2, in Lidsky, 2022, 67).

'...Regarded as an effective and sustainable solution to address the issues of climate change and land scarcity, underground planning has increasingly gained credibility as an option for future urban expansion. Therefore, if yesterday's concept of verticality revolved around the idea of looking upwards and building skyscrapers, contemporary urban challenges are now driving it to open up to other perspectives and envision "groundscrapers" downwards (Labbé, 2016, 14, in Lidsky, 2022, 68).

While high-rise buildings are still likely to dominate the skyline in the near horizon, underground spaces seem to have a promising future ahead of them. As such, as new initiatives give up on conquering the skylines and move towards the exploration of subsoils, can the future of our cities be written underground? Could exploring the subsurface become a credible alternative to the outwards and upwards visions of the city?'¹

Transportation hubs due to their nature, usually incorporating several different levels to accommodate different transit uses, they extend in different layers and depths, both vertically and horizontally. Therefore, in this case we are presented with the possibility to explore the verticalization downwards, where several programs are extended below ground, freeing up valuable space on the ground floor, hence creating milder building volumes with a smaller footprint, while increasing public spaces and green pockets' availability. In an attempt to explore underground urbanization, the transportation hub seems to be a great vehicle to explore the underground verticalization. Can the overbuild that follows transportation architecture and engineering flip underground? We believe that architecture and urban planning needs to explore more the urban expansion both towards the sky and towards the underground. Obviously the underground usage is more limited to the programs it can accommodate. These programs include functions such as transportation, digital infrastructure and underground farming, yet it can play crucial role in shaping the underground living conditions, as well as the public urban space above ground.

Case study: Petah Tikva Transportation Hub

The Petah Tikva Transportation Hub is a building that integrates various programs in different levels, designed to reach a balance between the need of the passenger to reach the platform as fast and efficiently as possible, and the developer's desire to encourage the visitor's journey through the retail space. The transportation hub is located at the intersection of Petah Tikva's central streets connecting the old and the new city and connecting the city with other major cities such as Tel Aviv. By utilizing the natural topography of the site, the structure keeps a continuous connection with nearby urban focal points such as

the main street intersection, as well as work, retail and entertainment areas. This allows for quick and convenient entrances for all users of the complex, including buses, light rail, train, taxis, bicycles and private cars dropping off passengers. The design provides clear and articulate circulation and a sense of orientation for passengers reaching their platforms efficiently, as well as having easy access to retail space in the Hub.

By breaking the massive rectangular shape into smaller fractions, HQ Architects enable the creation of squares, urban spaces and retail facades towards the surrounding streets. The design turns the retail spaces to face outwards and connect with the city. The building's extroverted design also creates urban spaces suitable for socializing outside the building, serving both the surrounding streets and the city.

The new Transportation Hub will rejuvenate the old city center providing it with a new, dynamic transport environment. The Hub will also accommodate much needed office and retail spaces suitable to the growing metropolitan city of Petah Tikva, while enhancing passengers' experience and comfort.

Vertical urbanity: integration, intensity & interaction

Mixed use environments – connectivity, social and spatial interaction.

Urban vertical development in highly populated cities presents high intensity, both spatial and programmatic. As the result of that, we need to rethink what a planning area means in a vertical development, which is different from the usual low scale development. This vertical urban setting suggests a highly integrated environment where transportation, infrastructure, residential, commercial, public and civic use, retail, and various other programs coexist and cross interact, presenting a highly dense mixed – use environment. On top of the above, we need to take into consideration additional uses that service the city and its residents, which enhance connectivity within the urban setting. These include pedestrian uses (over and underground) as well as infrastructure and inter-modal hubs, which add another level of complexity on the inter-connectivity of the vertical development. It is, if you like, a mini city within a city.

Re-imagining vertical ownership in 3D

With the growth of urban verticalization it is essential to not just re-imagine structural and architectural solutions but there is a series of other surrounding matters that need to be addressed, including issues of ownership and the relevant legal context. Questions such as the following, quickly arise: Can the public own properties on upper levels? How do we accommodate both private and public usage in vertical environments? How do we create a safe and operative way that the general public can climb up, and enjoy different functions on several floors up on a private tall building? These are questions that we need to provide answers to, in order to ensure that vertical urbanization maximizes its capacity to provide integrated environments that cater for various societal groups, adding to the socioeconomic diversity and richness of our cities.

We have been investigating some of these issues through some

of our projects, such as the recently completed Bezalel Academy of Art & Design New Campus in Jerusalem, (in collaboration with SANAA), where the building offers an open route and several areas, including cafe, and gallery spaces for the public to use freely. There are several other tall buildings in our portfolio where we have explored this concept of integrated public usage within privately owned high-rise, providing several spaces that are open to the public, integrating several a wide range of uses including and social care spaces such as kindergarten, leisure and entertainment, open air areas, among others. Accommodating 3D ownership in urban verticalization will soon become an essential element in the growth of our cities, where private use overlaps with private ownership creating a mixed-use environment that resembles the one we are used to meet on the ground level. Once public entities stop looking at the tall development as fully private, the typology will change from super efficient “duplication of the site” to a 3D urban environment offering free and public functions on top of privately owned spaces.

Case study: Givatayim City Hall – vertical mixed use with an open public roof

Consolidating activities from 16 different municipal buildings currently scattered around the city, the new Givatayim City Hall focused on the municipality's interaction with the public. The building's programs are categorized based on levels of accessibility to the public, and introduce the concept of the "Urban Salon", while it allows public access to the open public roof, creating a mixed use environment that accommodates different private and public uses in the heart of the city.

Located next to the historical city hall building, the project is a new building which unites all of the municipal departments into a complex that is clear and accessible to the citizen. The building consists of seven floors above the ground, the first five floors are occupied by the municipality and the upper two levels are planned for office letting. On the ground floor is planned an open coffee space and a public square at the street level – making a smooth transition between the exterior and the interiors of the building.

The building will include a wide variety of functions including the municipal office, the city administrative functions, the archives, the waiting areas, an urban center, a service center for the residents, a plenary hall and an emergency control center (first basement floor).

The public spaces concentrate all the services and activities. The program is not only organized according to departments, but also by means of accessibility to the user, enabling direct communication between citizens and the authorities. This scheme enables the municipal departments to organize effectively along with the building – the circulation leads visitors along with the public program without interruptions.

Tall buildings: Lifespan and demolition, the long-term impact

One aspect of vertical urbanization that is usually ignored is the lifespan of tall buildings, which is an average of 50 years, and what happens when we need to either renew or demolish them? What is the impact of the disposal of tall buildings in the urban

fabric and our cities? We believe this is a pressing issue that we are already pushing us to think through the challenges of a limited lifespan of buildings, as well as posing questions regarding the impact of demolition and building methods. In Tel Aviv for example, we can see that the city is suffering tremendously in this area with renewal interventions taking place in buildings of much lower scale, such as 4-5 stories high. What happens when several skyscrapers need to be renewed or demolished in a city? Can we foresee what the impact to our cities and quality of life in the next 50 – 60 years, will be when we will need to renew or demolish buildings of much greater scale and durability? Is the city doomed to be a never-ending construction site?

While construction standards are continuously raised to meet several requirements and high engineering standards in response to resilience to natural and human phenomena including earthquakes, terrorism etc., we need to seriously question what will be the consequences of demolishing tall buildings. There are buildings in Tel Aviv, which are of massive in scale – not only in height but also width and urban footprint, such as the old Central Station, which cannot be demolished due to its largeness and construction. This is a challenge that we need to deal with today, in order to be prepared to take action in the next decades. Thinking about a building's demolition or how it will be handled in the future years should be part of its sustainable identity and it is something that architects and engineers need to consider while they design it.

Case study: Soho Tel Aviv. Integrating live, work and hospitality spaces to cater for a varied demographic in the heart of Tel Aviv

The high density that verticalization suggests has a great effect in the creation of various programs and how they are organized and interact within the same structure. In the case of one of our projects, the Soho Tel Aviv Boutique Hotel, we created a mixed use residential and hospitality building, which promotes a socioeconomic ecosystem that embraces community and sharing. The 24 story building introduces a variety of housing typologies with various micro-units and shared facilities that allows different communities to live side-by-side in the heart of the city. Soho Tel Aviv sits in an empty space, currently a parking lot in the center of Tel Aviv. The idea of having a hotel in this area stems from the work that is currently happening at the triangle of Montefiore neighborhood and the market as well as the entire surrounding area which is undergoing a face-lift as part of the Tel Aviv municipality's vision to make it the next business area of the city, both in terms of high-rise construction, infrastructure and public transport (both underground and overground).

This new hotel and office tower, unlike the hotel strip along the city's coastline which is mainly tourist oriented, will cater for business oriented people traveling to and working in the business center in this area. The building comprises a set of hotel, leisure and business oriented spaces. The tower building incorporates a lobby, a lounge space and backyard on the ground floor level, as well as gym facilities on the lower ground floor. The building aims to include 248 rooms total and shared

office spaces within the hotel operation. It contains approximately 2,000 m² of office space, 248 hotel units, an outdoor pool on the 10th floor and a rooftop bar on the 24th floor offering great views over Tel Aviv. Each floor will have 22 rooms. The building will also include underground parking and storage spaces. Adjusting to the new needs of the area and business center, the hotel offers a wide variety of spaces in order to accommodate the different needs of a versatile and demanding international clientele. In this spirit, the hotel rooms are split between two categories: Short-term rooms, with a typical room size of 11.9 m², which are located in the lower body of the tower, whereas the Mid-term rooms situated on the upper floors, offer a mix of different spaces ranging between 20 m² – 35 m².

The building's facade is constructed of 5 different cubes stuck irregularly on top of each other, in order to create spaces which are tailored to the needs of each program contained within the cubes. Each cube features specific window openings, varying in sizes suitable for the room size of the relevant floor. The facade of the lower part in which the hotel contains the short-term room, features a unique set of bowl-shaped windows that extend towards the outside. This window design enlarges the size of the room and creates a comfortable vibe in the interior by extending the room towards the city.

Case study: HaHarash Tower. Vertical multi-use interactivity

The 24,079 m² multi-use high-rise tower incorporates a wide range of different uses including a hotel, office spaces, residential apartments and a Sky Lobby designed to host communal and leisure activities overlooking the city. The multi-use building is located in Tel Aviv, in a prime location situated close to the Haganah Station and the Ayalon Highway, and will contain a hotel, residential and office space and a raised lobby space. The building is a synthesis of program diversity from underground to the top. On the ground level it features an open air area which contains accessibility areas such as drop off for cars and escalators. The eight storeys high hotel, sits right above the ground level.

On top of the hotel floors sits the sky lobby – a unique raised lobby space, which includes a wide range of communal and leisure areas and serves as the main infrastructure landing core, serving all areas of the building. The lobby features gym facilities, an indoor pool, a restaurant/cafe. The building is almost 'cut' in the middle by the Sky Lobby, a space which is being moved from its usual ground floor position and is being raised in the middle of the building, providing a lobby of great views and a unique feel. Above the lobby space sits a 12 storey high commercial space and on top of it 6 storeys of residential use, featuring apartments with unparalleled views of Tel Aviv.

The design illustrates simple and clean lines where the infrastructure acts almost as an ornament to the facade. The sky lobby also differentiates from the other floors and programs which is also illustrated in the facade through its curved glass windows.

The exposed elevators from both sides of the building communicate the circulation and how the building is serviced for different uses. The tower is designed in a way that it not only communicates its complexity but it also celebrates this program-

matic and user interaction, exposing its character to the city.

Urban design – a mobilizing factor for Urban verticalization?

Vast urban growth and regeneration has introduced a set of new spaces, while also re-distributed spaces of various programs and uses, both built and open, including residential, commercial and public usage. Urban verticalization is not only about building in high density or creating the tallest structure possible, but it also responds to the quality of life in contemporary metropolises - to each one with each own urban idiosyncrasy. This includes the interaction of different layers of space, including ecology, infrastructure, mobility and culture. New urban design solutions need to provide new spaces that are both integrated and flexible, and create urban networks that can adopt to contemporary social, political and ecological conditions all around the world. Urban verticality is taking over our cities all around the world, and urban planning conditions are influencing heavily the design of tall buildings in addition to the spaces around then and between them.

As Zongjie Lin writes in the book – ‘China perspectives: Vertical Urbanism – re-conceptualizing the compact city’, vertical urbanism is not just about the tall structure anymore, it has become inextricably linked to its surroundings and thus heavily contextualized. “Although the term ‘compact city’ appears frequently in academic accounts of sustainable urbanism as well as in professional documents for planning projects, it is often used in a manner generally linked to certain well-established principles including high-density, mixed uses, walkability and transit-oriented development (TOD)... The compact city actually possesses the power to generate dynamic forms, utilize cutting-edge technologies, address pressing environmental issues, and respond to distinctive geographical and cultural contexts – thus enabling it to challenge conventional notions of urbanism....Vertical urbanism distinguishes itself from the nostalgic idea of Neo-traditional urbanism on one hand and the static Modernist notion promoting tall buildings as dominant urban typology on the other. In contrast, it advocates physically interactive and socially engaged forms addressing the city as a multilayered and multidimensional organism.”

Our experience in urban planning and regeneration suggests that high rise mixed use developments can create the right conditions for the successful development of vertical urbanization. Meanwhile, there is a growing interest in Urban verticalization integrated within transit-oriented development that are currently creating a new way of developing urbanized areas simultaneously with the development of infrastructure zones and new public spaces. The wider Tel Aviv Metropolitan area is a relevant example of how new urban development together with transit oriented development are creating new urban areas that extend the urban fabric, with a focus on urban verticalization. Thanks to the creation of new metro infrastructure and the extension of existing railway systems and their integration, new areas are being transformed and other are being born, with the high rise having a prominent role in its design and realization.

Tel Aviv’s urban fabric is currently undergoing a huge transformation with evident urban verticalization in many areas of the city’, both in its centre and the wider metropolitan area. The inevitable urban verticalization of Tel Aviv partly relies on its intense infrastructural and transit development as well as to another key factor that little other developed countries are currently facing – the rapid population growth, with a prediction to double its population in the next 20 years. The projection from Tel Aviv is clearly a ‘city packed with skyscrapers’. “Tel Aviv has produced a major update to its master plan for the city in recent weeks in a bid to cope with an expected population growth of up to half a million residents by 2025. It proposes making the city landscape much denser, with dozens of new skyscrapers between 20 and 80 stories high. The plan would direct increased building to corridors served by rail and metro lines. In the area of the now-closed Sde Dov airport, there are plans for nearly 13,000 housing units based in multiple apartment towers.”

Mobility and Transit-oriented development is influencing heavily urban development and will eventually establish urban verticalization in a faster pace than expected, as it creates integrated environments that not only produce mixed-use high rise structures but also define the very important public spaces around them, creating new neighborhoods and in some cases even new cities. HQ Architects are currently working on several transportation hubs in Tel Aviv Metropolitan that also showcase a wider urban planning ambition in order to create an integrated urban environment. One of them, in Rishon LeZion, will create a new hub that will bring heavy rail, light rail, and multiple bus routes together—a key interchange on the Ayalon Highway that dominates Metropolitan Tel Aviv. It will serve as both a transfer point and a terminal, helping to catalyze the burgeoning business districts as transit-oriented high-rise developments. The new Hub and the surrounding developments will also have as a focal point a main Plaza that will be created at the heart of the new transit focus masterplan. This is a key example on how urban verticalization of various programs – be it transit, commercial, residential etc., has a major role to play in the creation of public spaces and elevating the value of a whole urban experience and quality of living in cities.

The discussion of urban verticalization suggests a more dynamic and complex urban synthesis of just a vertical expansion of high rise structures. Therefore it is essential to include not only transit -oriented urban developments which are defined by urban verticalization – see the Canary Wharf development in east London, which created a whole new city within London that was initially built as sparsely populated financial center and gradually developed into a new compact and high density and dominated by high-rise structure London area.

Urban gardens – a new green space in the city?

Beyond transit and infrastructural development which can define the need for urban verticalization, there is another important dimension to it, that is worth investigating and taking into consideration. The growing interest in urban ecology and landscape adds another important dimension of the urban system

calling for vertical urbanization. Can the growing interest in vertical 'urban gardens' or 'urban forests' promote the growth and expansion of urban verticalization? There is a growing interest in 'urban biophilia' and the urge to reconnect the high-rise urban density with nature, in an attempt to recreate the feeling of being surrounded by nature in vertical living. It is still a concept that has not taken off massively, although there have been a few successful attempts world-widely, such as the famous Bosco Verticale in Milano by Stefano Boeri and One Central Park apartments in Sydney by French Architect Jean Nouvel, among others, both examples of high rise gardens that have fulfilled their mission, whereas there have been other examples, mainly in Asia, which they haven't passed the test of time.

In conclusion, when we discuss urban verticalization, we need to consider several other aspects that go beyond the vertical standalone structure and tall buildings. We need to see urban verticalization as a set of elements that can promote a healthy and well integrated urban environment that will not just accommodate needs of housing or mobility, but also as the future growth of cities that encourage well-being and raise the standards of everyday living.

Conclusion

The way forward -vertical urbanization: opportunities and challenges of a vertical urban future

As technology increasingly connects and optimizes cities and the urban experience, we will witness the verticalization of our cities taking over and the skyline becoming more dense. It is the time we need to investigate the capabilities of technology to influence and shape the high-rise, and how it can reach its true potential by creating sustainable, resilient and human-centric vertical architecture that responds to the needs of future living.

Surely, we see the opportunities and the exciting prospects of vertical urbanization, but we also need to face the challenges that come with it. It is essential to have an in-depth understanding of the failed examples of the not so distant past, in order to avoid future failures that can adversely impact our cities and our societies. The high rise has the potential to introduce truly innovative ways of living and shape living and public use. Also, it has the dangerous possibility of becoming a ghost of ambition, exactly as it fails to meet the needs of the rapid urban, societal and economic transformations that are taking place.

While we are designing vertical structures and exploring urban scenarios, we also need to face the challenges that could threaten the long term sustainability of such projects. It is crucial to understand the importance of designing high-rise not as a sole individual building, but as a part of an urban puzzle that will heavily influence the built environment around it, local communities and their social life, the quality and usability of public space, as well as the well-being of neighborhoods and their residents. Building for the future, also means thinking not just for the day after but for the decade after. Maintenance and resilience are key aspects in the design of vertical structures that will need to respond to climatic, demographic and socioeconomic changes. We have witnessed in the past in-

novative concepts of compact vertical living spaces that have failed to respond to the zeitgeist and contemporary needs. Most notably the social housing in the 60's and 70's, which failed in many places to respond to the true needs of the people it was meant to serve. Modernism promoted the duplication of the structure, which ultimately brought isolation and neglect to the buildings and urban areas, making them inhumane places to live, and failing tremendously to accomplish their mission.

We believe that data and technology can influence vertical architecture to a high degree that extends beyond engineering and structural innovation. Due to the very nature of the vertical structure, it has been vastly duplicated and copied around the world, very often without being integrated with the local urban setting and without responding to socio-economic and geopolitical particularities. Data has the power to inform us about the current needs and issues and thus, shape the vertical structure from the bottom up. It should be less about the obsession to touch the sky, but more about improving our well-being and living on the ground upwards, focusing on urban verticalization that offers smart solutions, moves away from dullness and that is playful and well-integrated. It should encourage public and social activity – not isolation, as well as well-being and health, promote and activate green and open spaces that are important to the long term sustainability of the buildings and their urban setting.



Soho Boutique Hotel Tel Aviv



Petah Tikva Office Complex



Petah Tikva Transportation Hub

Vertical Farm: from Agriculture to a New City Architecture

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Abstract

The paper deals with the architectural theme of high-rise construction by cross-referencing it with that of soilless agriculture, recognizing new typologies and critically identifying the strengths and weaknesses of a new relationship between architecture, city and agriculture.

From a disciplinary point of view, the text is organized in four distinct topics. The first part deals with height construction from a theoretical and disciplinary point of view. An excursus identifies in the high-rise buildings a human archetype that today defines certain features of architecture and landscapes in the age of globalization. The second part delves into the subject of soilless agriculture in terms of agronomic technique, with the aim of understanding its origin, efficiency and potential, but also its limits and weaknesses. The analysis is carried out by investigating the production factors at play, such as land, labor and capital, in relation to the revolutions that have characterized the agricultural production sector since the 16th century. The third part analyses three different cases of vertical farms from an architectural perspective because they are alternative to each other and paradigmatic.

The skyscraper model is transformed. Agricultural activity, housing models and aggregated urban functions give rise to complex buildings. The first case is Richard Rogers' 2015 Skyfarm, the second is Carlo Ratti's Jian Mu Tower designed in Shenzhen in 2021, the third example is Chris Precht's 2019 Farmhouse. The last part addresses a broader picture: food, cities, social justice, but also urban regeneration, recovery and recycling. Vertical farms are observed from an urban planning angle and considered as a useful element for guiding development and growth in cities and rewriting the relationship between architecture and the countryside. An opportunity to reinvent the multifunctional tall building, open to new ways of living and to redefine the design of the city.

Keywords

Architecture, city, agriculture, high-rise buildings, soilless cultivation, vertical farm

Text contribution: Thomas Bisiani

A vertical history

The tendency to build in height is a characteristic that could be defined as “primary” and which has manifested itself since human beings lived in a nomadic universe. The raising of the menhirs can be considered the first action that defines a “situated object”. It is the result of a physical transformation, a “voluntary intention” that, through a change of position, an immediate and intuitive syntactic procedure, transfigures matter from a natural state to the condition of artificial element.

The rotation, from horizontal to vertical, immediately gives the natural object symbolic, religious, geometric and geographical meanings. The erected entity establishes an origin, an element to measure time and space. This simple action, applied to simple objects, is then amplified by its rhythmic repetition, which allows for the development of the complete spatial articulations of the “cromlech” up to great alignments. In Carnac, the system of prehistoric megaliths has a total length of 4,000 meters and is originally composed of over 10,000 menhirs. Verticality represents growth and therefore fertility, the erection of vertical totems in many cultures is the expression of faith in the human being’s ability to live in harmony with nature and its divinities.

Human beings continued to build in height, the Great Pyramids of Cheops, the gardens of Babylon, the Lighthouse of Alexandria, all the way to the spiers of the cathedrals, and the towers of medieval cities. The history of architecture is often characterized by the challenge of building in height, fueled by symbolic reasons, not only religious but also economic and political.

For Le Corbusier, in the “Poème de l’angle droit”, the ninety-degree rotation connects the world of natural dimensions, governed by the stability of the horizon, with that of the human being, characterized by the verticality of the upright posture. The construction in height is therefore a consolidated figure, which has always been present in the history of architecture and has a highly symbolic value.

Discontinuity – the long century of the skyscraper

In 1896 Henry Sullivan published the famous article “The tall office building artistically considered”, introducing a strong discontinuity with the significance of the meaning of vertical construction.

The skyscraper is represented by Sullivan as a completely new type of manufacture, as the optimistic expression of the future of technology.

An architectural object that synthesizes in built form, the convergence of different technologies (supporting steel structures, electric light, the lift...) and specialist knowledge. During the 1900, the skyscraper, thanks to this ability to represent the future, has embodied both, the image of the dense metropolis, which grows in height, and its opposite. The skyscraper was in fact also the element around which to construct antiurban visions. This is the case of the prairie skyscraper of the Price Corporation in Bartlesville, Oklahoma by Frank Lloyd Wright.

An isolated tower that combined living and office spaces, seen by Wright as “a tree that escaped the forest”.

The skyscraper continued to develop in an unrelenting manner until the 1970s. The 1973 energy crisis in particular, begun to underline a series of weaknesses, implicit in the very concept of tall buildings. It is a highly energy-intensive type of building. In fact, much more energy is needed both to build in height and to sustain the building efficiency over time. Furthermore, beyond a certain size, air-conditioned environments are no longer just an opportunity but become a necessary choice.

Once the energy contingency was overcome, however, several health issues remained on the table. The limited availability of natural light, artificial ventilation, the presence in the environment of substances emitted by building materials that have been proven toxic, begun to feed an architectonic culture oriented towards the search for healthier and more sustainable buildings. However, a constructive debate did not arise, but rather radical positions were taken, that have arranged the capitalist interests of exploiting height opposite of cultural opinions of blame and presumption.

Crisis 01

This climate preludes some of the most famous catastrophic representations of the skyscraper crisis. The 1974 Hollywood colossal “The Towering Inferno” stages the burning of the tallest skyscraper in the world during its inauguration, due to the construction materials’ poor quality. While “High Rise”, novel by J.G. Ballard of 1975, recognizes in the architectural project, the very DNA of the skyscraper, the premise of its demise for having challenged the natural order of things. Modern Babel Towers, contemporary sacred mountains, destroyed due to the same ambition that generated them.

Big and Green

In this complex picture, James Wines recognized a tendency that he has called “Vertiscapes” (Wines, 2002). A sort of ecological design that can become a driving force of architectonic innovation, a form of inspiration for new forms and the future of high-rise buildings. This first generation includes the “green”, tall buildings designed by Roger Ferri (New York Skyscraper, 1976), by SITE (High-rise of Homes, 1982), by Emilio Ambasz (ACROS Fukuoka, 1995).

Crisis 02

Twenty years later, the dystopic visions of the 70s have become reality. The attacks on the Twin Towers of September 11th, 2001, have transformed buildings into targets and highlighted the danger and fragility of “extreme” high-rise buildings, seemingly decreeing the failure of the most representative typology of the twentieth century, in favor of suburban scenarios, safer and of higher quality. It was a limited, partial and temporary discontinuity with respect to an evolutionary line of the skyscraper, also considered a “trophy building”. New towers have in fact replaced the destroyed ones and the race for growth has not stopped. Contrary to belief, the skyscraper has continued to

be the typology that best represents the most rich and modern urban realities, particularly thriving in Asia.

Crisis 03

The most recent Covid 19 pandemic, which has spread starting from the populous Chinese Cities, has called into question not so much the tall building as an artifact, but rather one of the principles that underline and define its nature and reason for existence: density. It is not yet possible to determine if this could be considered the last, definitive blow to the skyscraper. After more than a century of development and growth, it is not known if these crises will start to develop new alternative typologies, safer and more efficient. Digitalization and dematerialization of the office building will hardly erase the attraction force of the city, as a place of human contact and gathering. It is possible that tall buildings will continue to be built, although different from the contemporary ones, because the search for verticality is a distinctive anthropologic trait that is not possible to erase.

Types and character of Globalization

From optimistic symbol of modern technology, the skyscraper has progressively become a manifestation of financial strength. Globalization has mutated its meaning by effecting one character in particular, dimension (size). Starting from the 1990s, in fact, some considerations were made about the reasoning and consequence of the unstoppable growth trend of buildings. Mario Gandelsonas writes the essay “Conditions for a Colossal Architecture” (Gandelsonas, 1990) and subsequently Rem Koolhaas publishes his famous text on “Bigness” (Koolhaas, 1995). Large architecture, thanks to – or because of – its size, takes on a neutral character with respect to the context. It is one of the characteristics of globalization, indifference towards the specificity of places. Generality and self-referentiality of buildings, whose values reside in measurable dimensions, therefore go beyond any qualitative and merit assessment.

Another typical feature of globalization is the inversion of the relationship between city, architecture and infrastructure. The urban quality of large cities is measured in terms of connections, links, infrastructural equipment, the ability to communicate and build networks with other, equally large cities. Logistics and the interfaces between infrastructures establish needs, forms of value and wealth, but they also define new physical spaces to support material and immaterial flows. These spaces are the result of a new dimension of technology. Technology can be considered the original medium between human and nature. Over time this relationship has grown in terms of complexity. Today the world is facing a third order of technological development, in which artifacts need an intermediate technology to relate to each other, as in the case of the Internet of Things.

The resulting physical spaces are a form of architecture without man, places designed to meet the needs of other entities, where the presence of the human being is limited in time and space. These spaces are developing, attracting the attention of critics and scholars and are evolving, acquiring the dignity of architectural artifacts. Jenny Odell has recognized them by observing

the planet from above, through google maps. It is possible to find many similar examples, the Amazon’s Robotics Fulfillment Centers are logistic centers where most of the space is forbidden to humans, except for the technicians in charge of robot maintenance. Data centers, “the home of internet”, cover thousands of square meters but host only a few technicians necessary for their operation. These are new types, apparently without architectural qualities, where parking is almost unnecessary, where glass surfaces are minimized, as robots do not need light. Fundamentally anti-urban buildings inhabited by things, whose natural location is peripheral, far from the densities of human-inhabited centers.

A first example of building that applies these principals is the robotic intensive warehouse of the Benetton group in Castrette di Villorba, built starting from 1979, designed by Afra and Tobia Scarpa. The production model envisages that garments are made in delocalized factories and the products are all sent to a single warehouse in the Treviso countryside. Managing a single warehouse for an international brand, located in the Veneto landscape, posed infrastructural problems, as shipments to 5,000 international points of sale all depart from this single hub. However, this solution allows to exercise direct control over the products and therefore over their value with the help of only 28 employees.

The 2001 Pig City project, by MVRDV, belongs to a second generation of “architecture without man”, which imagines a high-density organic pig farm housed in tall buildings. This model, based on a principle of ecological density, allows to limit land consumption in a country, Holland, where this resource is particularly limited. Pig City not only optimizes the space dedicated to breeding but also poses a “chain” problem, analyzing the needs of processing space and for the agricultural production of forage. The Pig Palace, a 26-storey building recently built in Ezhou, in the Chinese province of Hubei, appears to be less noble in its results. A mammoth intensive farm that, with its 390,000 m² of surface area, is the largest in China and the highest in the world.

Dark ecologies

Thus, a new relationship between man and nature begins to be traced, in 2007 Timoty Morton coins the term “dark ecology”. A dark ecology, in the shadow, but not completely devoid of light. Morton’s ecological model predicts that systems are open, linked to each other but with conditional margins, that do not allow for a rigid consequentiality between cause and effect. According to Morton, life prospers precisely in these ambiguous spaces between rigid categories. Conflicting scenarios lead to this horizon, of an open and irregular, indeterminate peri-urban world. The exploration of a new nature, in relation to the human inhabitation and less adherent to an ecological orthodoxy, which becomes for Manuel Gausa black, therefore even more obscure, because it explores those ambiguous environments that typically belong to the periphery (Gausa et al., 2019).

Verticalism

Another trend that characterizes large buildings, is the hybrid character. Their dimension allows to accommodate a variety of functions in their interior. This is a significant feature that calls into question the very origin of the vertical building that in Sullivan's seminal essay was identified with a monofunctional type for offices.

Based on these premises, the building can be developed in height in order to respond to typically urban needs. The city and its complex programs, usually handled bi-dimensionally, can be solved by exploiting a new "verticalism" (Abalos et al., 2011). Multifunctional combinations in height that constitute complete parts of the city, where the articulation of the building's section becomes the equivalent of the ground design for the urban space.

Some risks, greenwashing e biomonotony

On one side, the skyscraper continues to be a current, effective and representative typology, despite the weaknesses linked to sustainability and safety. Current researches are moving towards more efficient solutions and models, aimed at reducing the ecological footprint of new buildings, energy consumptions and favoring natural forms of internal microclimate control. In some cases, these approaches risk turning into "greenwashing"; façade mitigations or compensations, which do not have a significant influence on the environmental impact of these buildings.

Vertical farm

Globalization can be defined as the unprecedented extension of spaces of circulation, consumption, and communication. If globalization presupposes a world without borders, it is possible to imagine frontiers, intermediate spaces, as alternatives, as less defined margins, where differences come into contact and can mix, promoting evolutionary phenomena.

Among these hybridization phenomena, this study focuses on the one between nature and architecture through the typology of the "vertical farm", as it seems to be a form of convergence of different tendencies of contemporary architecture.

On one hand, the tendency towards growth, of which the tall building is a typical phenomenology, on the other, a more recent trend, linked to large buildings, new habitats, functional not so much to host human beings, but rather to be inhabited by "other" agents or forms of life. There is no shortage of sustainability aspects linked to factors of ecological density, reduction of supply chains, reuse of obsolete buildings or abandoned urban areas, reduction of soil consumption and landscape impacts.

All these factors compete to highlight a further, new, profile of the relationship between artifice and nature that characterizes architecture as knowledge. A "para-artificial" nature, unprecedented, contaminated in its development in "hard" contexts. An ambiguous condition, intermediate, hybrid between object and environment, where it begins to appear with some sometimes-disturbing nuances, an architecture with metabolic traits, that seems to begin to "live". The interest of the theme lies precisely

in this conflicting condition, of intersection, because it explores those "contact" areas where architectural biodiversity is greatest.

Text contribution: Pierluigi Martorana

Agriculture: from fallow to vertical farm

Agriculture is the main actor in territorial transformations: it manages open spaces and modifies their characteristics according to production needs.

The territory evolves over the centuries in parallel with the development of agricultural activity. The first great agricultural revolution took place at the end of the 18th century. Alongside the introduction of some operating machines (seeder, threshing machine, heavy plough), it codified agricultural rotation, which allowed for a consistent increase in land productivity.

Historically, the progenitor of agricultural rotation is considered to be the Norfolk rotation. It is a four-year rotation (turnip-wheat-meadow-barley) that, together with the introduction of operating machines, determines an increase in land productivity of 30% over 50 years.

The birth of a new cultivation model vs. new landscapes: the closed field

The introduction of new agronomic techniques profoundly transformed the territory. In addition to the progressive abandonment of fallow the disappearance of open fields and collective properties, the formation of closed fields, the reduction of the farm mesh and the introduction of greater crop variability, were also witnessed.

The new production model developed until the mid-1900s handed down the characteristics of the traditional agricultural territory to the present day. In this period agriculture aimed to satisfy the needs related to the sustenance of the farming family and livestock, used both as a food source and as a workforce, with respect to the mercantile component. It was an agriculture where the use of labor prevailed, as the only resource available in abundance, and replaced the productive factors and capital. In the mid-1900s, the second agricultural revolution took place.

Prodromes of an agriculture without soil: towards the revolutionary mercantile model

Agriculture finds itself without resources. In many countries, the number of employees in the sector has significantly reduced: in Italy, for example, in the short period of time from 1951 to 1971 the numbers went from about 8.2 million to 3.2 million, with a reduction of over 60%. The effects of this transformation are enormous: the primary sector is deprived of its fundamental resource (labor), as well as of generational turnover. Not only that: the employees who migrate to industry jobs, go from being producers-consumers of foodstuffs to consumers-non producers, therefore the agricultural sector needs to also ensure food sustenance for this segment of the population. Given the scarcity of manpower, the slogans of the entire productive sector become "crop simplification" and "mechanization": the farming family no longer has the manpower to support a great variety of

crops, nor the internal consumption needed. The crops linked to the sustenance economy were abandoned and the autarkic agriculture was definitively transformed into a mercantile one.

The territory was consequently transformed, often according to the rational use of the machines: the size and regularity of the fields increase; hedges and rows that can hinder the movement of vehicles are eliminated. Productive specialization increases, triggering a trivialization of the territory, the drive towards desertification of rural areas and, from an environmental point of view, a reduction in biodiversity.

It can be said that there has been a replacement of the labor factor of production for the benefit of capital, largely represented by increasingly driven mechanization. The land factor plays an ambiguous role: the overall availability of areas to cultivate does not increase, on the contrary it is eroded by urban development and the abandonment of marginal surfaces, poorly suited to mechanized cultivation. The large companies tend to expand further by purchasing new land: this expansion occurs mainly at the expense of medium-sized farms, while the small companies resist by resorting to subcontracting and family part-time work.

From the gardens of Babylon to the vertical farms

In this scenario, the production technique today generically defined as “soilless cultivation”, or “vertical farm” appears and takes hold when conducted in a specialized structure, in a closed and controlled environment, where the production and transformation processes take place. This technique effectively eliminates the land factor of production, replacing it with greater intensification of capital. Landless cultivation is not a recent novelty: it was already known in antiquity, the Hanging Gardens of Babylon for example, and it was constantly practiced in subsequent eras, even if on a smaller scale or on an experimental basis. The first commercial applications were recorded in California in the 1990s and then, towards the end of the century, the technique began to spread in Europe, first in the northern regions and subsequently in the Mediterranean basin.

The most recent evolution of soilless cultivation has led to the differentiation of two large groups in cultivation systems: cultivation systems on substrate and cultivation systems without substrate.

In the first case, the plant has a certain volume of substrate available which guarantees the anchoring of the roots, as well as a water and nutritional supply which reduces the causes of risk in the production phase.

The substrates used can be of organic or inorganic nature, but in any case, they only have a support function and do not contribute to plant nutrition. They are mainly differentiated, according to their water holding capacity, into fibrous substrates (for example straw, coconut fiber, rock wool) and granular substrates (such as sand, perlite or expanded clay). Plant nutrition is ensured by an irrigation system that delivers a fertilizing solution, usually through drippers. More recently, and especially in “vertical farm” plants, cultivation techniques without substrate have established themselves, they are systems that do not involve the use of organic or inorganic materials for anchoring

the roots of plants.

The most used of these techniques is NFT (Nutrient Film Technique) hydroponics: a thin layer of nutrient solution flows inside channels where the plants are placed in such a way to have the root system partially immersed in the liquid.

A second type of hydroponic technique is represented by the “Floating System”, where the plants are supported by high-density polystyrene panels that float in tanks filled with nutrient solution.

Finally, aeroponic cultivation must be considered, a technique that finds application on species with limited growth, such as lettuces, strawberries and some flowers. The plants are supported by plastic material panels, arranged horizontally or on inclined planes and anchored to a support structure, to form a closed box with a rectangular or triangular section.

All the techniques listed highlight, as a common factor, the characteristic of being freed from the agricultural land as a source of support and nourishment for the plants.

From the gardens of Babylon to the vertical farms

If these techniques are implemented by traditional structures, like greenhouses and tunnels, a particularly significant saving in land consumption is not achieved, this is because plants need to occupy the necessary space for their development anyway. In order to evaluate the actual saving in land consumption it is necessary to consider that, compared to a cultivation on farmland, soilless agriculture allows for faster productive cycles and a higher productivity: the comparison then, has to be conducted calculating the obtainable production by year and by surface unit invested and comparing this data with the same parameter calculated by the obtainable production by traditional techniques.

The most evident advantages of soilless agriculture involve the reduction in consumption of water resources, that in hydroponic agriculture is of about 90% and in aeroponic it can even be higher than 95%. Furthermore, it results in the obtainment of a healthier product, because of the presence of a more controlled environment and the absence of contact between plant and soil limits the presence of pathogens and so reduces in considerable measure the necessity to use pesticides.

The reached significant advantages in terms of soil consumption are linked to a further sophistication of the production process, that implies the control of the microclimate and of its environmental parameters. Natural light is substituted by LED illumination that reproduces solar radiation; the air is treated with filtering systems that don't allow the diffusion of pathogenic microorganisms and fungal spores; the temperature is controlled through conditioning systems. These characteristics can also be obtained inside dedicated structures, that allow the organization of agriculture on a series of stacked floors or on vertical walls; they also lend themselves to robotization of various operations of the productive cycle that leads to a drastic reduction in the need for manpower.

Advantages and disadvantages of vertical farms for the future of urban agriculture

Ultimately, the vertical farm makes it possible to effectively release the production of agricultural commodities from the consumption of the soil: the dedicated spaces are reduced to the site of the structure that hosts the process and these spaces do not necessarily have to have an agricultural purpose or be made up of agricultural land. A scenario of great interest opens up in terms of urbanization of agriculture or, at least, of some agricultural sectors: new production structures can be built within the urban fabric, or abandoned buildings, previously used for other activities, can be recovered. In both cases, the advantage obtained is closeness between production and consumption, with clear benefits in terms of transport flows, logistics and organization of the supply chain of the products produced.

The trend towards urbanization of agricultural cultivation and, consequently, towards the simplification of the chain linked to the distribution of products, acquires particular interest in the case of large residential agglomerations, where the contiguity between production and consumption translates into a substantial saving of resources for the community.

If the described picture highlights a series of positive aspects, some critical issues concerning the application of production techniques related to vertical farm cannot be overlooked.

It must be observed that these techniques require very high investment volumes, above all, if a high level of automation of the process is planned. The necessary investments concern all phases of the process, from the construction of the structures to the hardware control and software management systems. The installation and fine-tuning of the control systems of the environmental and microclimatic characteristics are also necessary and, finally, highly specialized personnel must be found and trained, not only able to follow the development of the crops from a strictly agronomic point of view, but also to govern the complex mechanical systems that operate within the structure.

Finally, it should not be overlooked that the operation of the machines, as well as the maintenance of the environmental and climatic conditions inside the structures, require a substantial expenditure of energy. Optimal levels of temperature, humidity and lighting must be maintained; to prevent parasitic attacks, it is necessary to install air filtering systems that prevent the entry of pathogenic microorganisms and fungal spores.

Vertical farm, a real revolution?

In the general context, the vertical farm is often considered the new agricultural revolution, but this interpretation probably needs to be scaled down. It is undoubtedly a management model that frees production from the availability of land and allows supply and demand to be physically brought together, transferring the production function within the urban context. However, this is a model limited to specific production sectors, such as horticulture and nursery gardening; the space saved by moving these productions to the cities remains available and is used by traditional agriculture, which manages it to cultivate the arable land and tree species characteristic of the other pro-

duction sectors.

Perhaps the real revolution underway, intimately linked to what happened in the 1900s, is represented by an increase in intensity of capital in the production process, which manifests itself with the adoption and use of increasingly sophisticated automation systems (the so-called "Farm Bots"). In this sense, remaining within the classical macroeconomic categories, the productive factor replaced by the greater capital intensity is not land, but once again labor.

Text contribution: Adriano Venudo

Involution, evolution and revolution introduced by vertical farms. Case studies and "leaps of species".

The proposed cases are paradigmatic because if seen together, they prepare for the leap of typological species, like it was for Sullivan's first skyscraper and mega-structuralist experiments of the 60s.

The vertical farm could represent a sort of "urban revolution" because it would bring factories back to the city, reinserting production within the urban fabric and the city's architecture, obviously with expectations and "effects" or impacts that are completely different from nineteenth-century industrialization of some cities.

The vertical farm is an interesting phenomenon to study because it integrates agriculture into the form of the city and contemporary architecture, a new type of agriculture. It hybridizes typically extra-urban soil and materials with urban ones, the typology of the skyscraper becomes the vector of a new urban form.

These three cases show different levels of transformation of the skyscraper into a complex urban structure: from the "simple" one: Rogers' Skyfarm, where the skyscraper is a real monofunctional vertical farm that only includes functional and public relations in the base with the city; to the Farmhouse in Precth which, although it only has spaces open to the city on the ground floor, it introduces forms of semi-public space shared between the apartments on the various floors, as well as being an experimental model of a vertical agricultural community; to reach a more complex and hybrid model, Ratti's Farmscraper that also includes public spaces inside, on the various floors, and mixes the agricultural production unit with other functions, giving rise to new "agro-urban spaces...".

These three cases are examples of different and possible aggregation models and combinations of the vertical farm with architectural and urban functions of the traditional skyscraper: on the one hand the centralized farm combined with a set of other functions, and on the other the farm from the sum of many small production centers corresponding to the individual residential units.

The results? Similar but different. Definitely something new to investigate.

Innovative architectural conformations also correspond to these two vertical agricultural models which translate the different functions into the "skyscraper shape" both at a purely compositional level and at the level of architectural language, but above

all translate the “skyscraper shape” into new functional, perceptive, connective, social, economic and of meaning relations between architecture and the city.

The proposed consideration on the skyscraper is that it becomes vertical farm, but also becomes a new social model: it is the birth of “vertical urban agricultural communities”. It also becomes a new urban item, genetically modified, just as it has been since its first appearance in cities. When it began to spread at the end of the 19th century, it soon became an urban icon and the new vertical architectural model was transformed into an economic symbol, into a social scheme, into a status and finally into a cultural phenomenon. The architecture that stratified vertically, condensing the city one floor above the other, marked the paradigm shift. The way of thinking and seeing architecture and experiencing the city changed. Perhaps today it is possible to say that the modifications, transformations and mutations that vertical farms induce and will induce in the traditional skyscraper (and in agriculture), will certainly produce something new and disruptive, similar to the leap of species... not just typological? Perhaps yes, because the skyscraper is also and above all a “cultural fact”.

Case study 1: Skyfarm

This is a prototype of a vertical farm, which can be applied to different urban and environmental contexts and on different scales of intervention, developed by Richard Rogers (RSHP) as a research project for the 2015 Milan Expo “Feeding the planet”. It is designed according to the standard agricultural factory model, redesigned however, on the vertical farm and then developed over the typology of the skyscraper. This skyfarm model elaborated by Rogers presents various possibilities of applicability, adaptation and flexibility.

It is a “pure” vertical farm, entirely dedicated to indoor agricultural production, conceived as an architectural machine. The functional and architectural concept stems from the assumption that by 2050, 80% of the world’s population will live in cities. It is therefore essential to think about alternative agricultural methods to the traditional ones on land and in the open field to feed the inhabitants of the city, and at the same time it is also necessary to identify methods with low impact of emissions and low use of energy. These assumptions inevitably lead to think about urban agriculture and the possible forms of integration with the city towards the self-sufficiency of buildings, not only in terms of energy, but also in terms of food. The vertical farm is a possible answer because it satisfies both needs. Rogers’ Skyfarm – RSHP is a skyscraper almost entirely dedicated to agricultural production, and only a small portion is dedicated to the public and to commercial, recreational and hospitality activities.

The tower develops an interesting structural scheme, a hyperboloid, which can take on different scalar variations in relation to the morphological conditions of the context, and the façade solutions could be different in relation to the climatic sunshine conditions of the site. This vertical farm offers a wide and diversified crop production, but also a hybridization of the types of

cultivation, a principle which is also at the origin of the formal and structural choices.

The multi-floor tensegrity structure (compressive isolated components outlined by pre-stressed tension elements) is designed in light bamboo in order to build a rigid but slender circular structure (hyperboloid), maximizing the sun exposure of the mirrors on the “interior fields” of cultivation.

The hyperboloid shape of this skyscraper allows for easy scalability. In fact, the model allows various alternatives: from versions that can be installed in medium-small cities, to versions for denser urban areas. The particular hyperboloid geometry adopted can be easily altered also in relation to the terrestrial latitude and the amount of sunlight available.

This vertical farm supports various layers of agricultural cultivation and an aquaponic system which allows the growth of vegetable crops and fish together, according to a system of recirculation and mutual collaboration: the nutrients derived from fish waste feed the plants as a filter for fish habitat. The main production derives from hydroponic cultivation inside a large tank placed above the entrance base, which also gives stability to the structure and which is counterbalanced by a tank placed on the top. The tank above the public entrance spaces is also used for integrated fish farming with hydroponic crops. The tank at the top, which is transparent and lets the light pass to the floors, collects rainwater that is used for freshwater fish farming. The floors between these two tanks instead, house the spaces for pure hydroponic and aeroponic cultivation. The energy self-production systems are installed on the top: wind turbines and mobile solar panel systems.

The structure is divided into vertically layered “productive zones” to make the best use of water and nutrients, and to efficiently distribute the weight of the water across the supporting skeleton of the tower. The particular hyperboloid structure obviously determines the shape, but also the treatment of the façade texture, becoming a synthesis of the productive-agricultural, architectural-functional needs and also of formal linguistic expression.

The only spaces open to the public are located on the ground floor: a market, a bar and a restaurant that use the products of the vertical farm, a visitor center with an exhibition and an educational space, a social center and a covered square. This covered square, located at the center of the commercial activities, is a large full-height void that makes the entire structure, the various activities and the machines for this new urban agriculture, visible. The tower has a very high technological content, which is clearly visible in the shapes, spaces and architectural language.

Case study 2: Farmscraper

The Jian Mu Tower is an experimental skyscraper that hybrids different functions and spaces, integrating the vertical farm with other urban activities. It is a skyscraper designed by Carlo Ratti along with Italo Rota (structures by Arup and Hydroponic Farming System of the Zero society) in 2021 for the Wumart chain in Shenzhen, a Chinese metropolis of over 12 million in-

habitants close to Hong Kong, in one of the most densely populated areas of the world. It will be a 51 storey building, 218 meters high with a very articulated functional program that not only foresees indoor cultivation but also the transformation of the raw materials and their sale, residential units, offices, grocery stores, shops and public spaces. The skyscraper will occupy the last free block of the business neighborhood of Shenzhen and for this reason it is also a great opportunity for the urban asset and dotation, social life services, and for its architectural role in the city skyline. For this reason, it will not only be a “tall building”, but a real piece of the city with many functions, social values and economic implications. The surplus value with which this architectonic and urban theme develops is precisely in the typological integration of the “classic skyscraper” with that of the agricultural farm and urban agriculture. The driving agricultural typology will be the hydroponic one (vertical hydroponic farm), to which one eighth of the skyscraper surface will be dedicated. A further quantity, about 10.000 sqm, will be dedicated to microcultures diffused on various floors, but with differentiated modalities of cultivation. These further diffused cultures inside the tower will be integrated with other spaces and hybridized with other activities, like for example the vertical green houses on the façade or the citrus groves in the halls, the food court, introducing this way an almost new idea of “widespread vegetable garden” integrated with the common and distribution spaces inside the tower.

The estimated food production of this vertical farm will be of 270 tons per year, covering for the needs of about 40.000 people. This agricultural-architectural model configuration will create an urban self-sufficient food chain that will manage the cultivation, harvest, sale and consumption within a single building, which will contribute to save a lot of energy for the distribution and logistics of the food. All of the production will be managed by a “virtual agronomist” supported by artificial intelligence that will regulate the daily agricultural activities (irrigation, environmental control, nutrition, harvest, etc...). This is a sort of adaptation of the traditional robotized hydroponic farm model to the vertical façade model of the tower building.

The shape of the skyscraper will refer to an ancient Chinese philosophy of Tian Yuan Di Fang – “round sky and square earth”, where the base of the tower is rectangular, and the top is cylindrical. The architectonic and compositive development of the skyscraper then is a complex volume that arises from the gradual transformation from a solid with a square section to one with a circular section (“loft” solid). According to this logic of formal complexity, the facades are spaces. They are inhabited diaphragms that contain the greenhouses and the vegetation (which also function as a climatic autoregulation for the building) and thus characterize the architectonic language and the urban facades of the tower. The vertical development is also highlighted by the five “loggia floors” (about one every 10 floors) that contain gardens, vegetable gardens and common spaces. These “loggia floors” are composite nodes because they mark both, the outside and the inside of the building: they overlook large internal halls, winter gardens on several levels,

onto which offices, commercial spaces and the common terraces open. They are therefore architectonic devices that not only guarantee the necessary space for vegetation and cultivations, but they constitute the internal spatial continuity, characterizing at the same time also the compositive development of the skyscraper. The space necessity for indoor agriculture becomes the compositive principle of the tower and also of the characterization of its architectonic language.

Case Study 3: Farmhouse

In some way, indebted to the idea of Le Corbusier’s Immeubles-villas for the distributive articulation, in 2009 Chris Precht’s studio designs a vertical farm that proposes a complex scheme of a modular aggregation system on a tower typology of residential units, each one integrated with a private productive portion. It is a sort of highly specialized vertical vegetable garden connected to the residential units. This “agricultural space”, integral part of the accommodation, has been sized and designed to produce and satisfy the food needs of the tenants of each housing unit. The base model for the project then is very different from the “traditional” vertical farms, experimented in the metropolis. The skyscraper is not a single central farm, but a collection of many small gardens. They are many small specialized productive centers that utilize and combine different agricultural techniques and technologies in order to satisfy micro-needs. This produces an overall productive surplus which is collected, possibly exchanged and shared among the tenants or sold in a fruit and vegetable market located on the ground floor of the skyscraper, in the entrance hall, which also serves as a square and public space. The principle a self-sufficient system made up of the sum of many small autonomous production centers, the farm-apartments, which obviously provide for a particular lifestyle, the tenant also becomes a farmer and is part of an urban farming community: The Farmhouse. It is an agricultural community that lives vertically. Also in this case, the places of production, transformation and consumption coincide, because they remain in the same tower, reducing impacts, costs and emissions do to the transformation and transportation of food.

The tower is modular and flexible in terms of height. It is designed for the large Chinese metropolis, but also for the medium-small European cities.

The tower is constructed with a prefabricated system of housing modules in laminated wood with an “A” shaped structural scheme. The module is designed to allow multiple joints and flexible combinations both in plan and in section according to a very free system that allows to stack more modules on top of each other and to develop the apartments as duplex. Every duplex has an open plan living room and kitchen on the first floor, with tent shaped bedrooms on the upper floors. The duplex aggregation system allows to optimize the common access spaces on every two levels. By aggregating empty spaces on the external edges, every residence has its own balconies available to cultivate the common central nucleus both towards the outside, on the façade and towards the inside. These empty modules,

the “agricultural balconies” are equipped for traditional agriculture with soil, therefore in pots or tanks or even for hydroponic techniques. The balconies also have a rainwater recovery system, a system of solar panels and micro wind turbines to meet the energy needs of each unit. This aggregation makes both the internal and external spatial articulation of the tower very complex. The combined interlocking modules build a very unitary whole that works on the structural principle of the diagrids and on the compositional principle of the “filled trellis”, recovering the capsular architecture of the Metabolists of the 60s.

In addition to the production modules, the aggregation of a garden module is foreseen for each accommodation, which is an external green space. On each floor there will also be common ones. These private and common gardens are V-shaped buffer zones between the apartments, because they derive from the interlocking, inverted spaces left free between the modules. These common modules pierce the body of the tower, opening up views and letting light and air pass through this complex three-dimensional grid, indispensable condition for plant nutrition and growth.

This construction system is also flexible in height and can vary from 18 to 30 floors.

Besides the public spaces and the market on the ground floor, underground cellars are planned for the more perishable fruit and vegetables, for the storage of seeds and for the common composting of waste, which is then reused as fertilizer for the vegetable gardens throughout the Farmhouse.

Text contribution: Sara Basso

Vertical farm, food and the city: rewriting the relationship between city and countryside

The attention of the urban discipline for the vertical farms inserts itself in the broader and bigger debate that rewrites the relationship between food and city, more specifically, it is one of the possible solutions to address the problem of food security (Al-Kodmany, 2018; Despommier 2010). To date, it seems difficult to achieve objective 2, “zero hunger” of the Global Goals (GG) established by the 2030 United Nations Agenda. Pursuing this objective requires acting on several fronts and implementing multidimensional policies and projects, which intervene both on the food, environmental and welfare systems, as well as on people’s styles and habits (Willett et alii, 2019; HLPE, 2022; FAO 2019).

Within this framework of conditions, the city continues to remain a privileged field of intervention for policies and projects aimed at achieving the sustainability objectives indicated by the GGs (Sonnino, Tegoni & De Cunto, 2019). The reasons are clear: today, 55% of the population lives in urban areas and this percentage is expected to increase by 2050 (FAO, 2019). Furthermore, cities consume about 80% of the total energy produced globally and produce 70% of the global waste: overall they absorb 70% of food resources. If “feeding the city” becomes an imperative, it becomes equally important to understand how this can be achieved by guaranteeing sustainability of food systems and, at the same time, a more general and wide-

spread right to food (Rodotà, 2014).

Food and city. Is the vertical farm a possible answer?

Since the beginning of the new millennium, the need to consider food as a theme of urban planning and urban design has been recognized (Viljoen et alii, 2015; Viljoen, Wiskerke, 2012; Lohrberg et alii, 2016). From a design perspective, this has involved efforts to reconfigure the boundary between urban and rural as a generative place for activities and practices aimed at reapproximating city and countryside (Donadieu, 1998; Mininni, 2012). Widely debated is the role that agriculture can hold in redesigning the urban borders, recovering abandoned places and buildings, regenerating and enhancing natural forms in the city. It is, in the multiple forms of urban and peri-urban agriculture that it is possible to recognize the potential to make agricultural production systems more sustainable and cities more resilient (de Zeeuw, Drechsel, 2015; Mougeot 2005). Urban projects that include traditional forms of agriculture can improve the ecological conditions of urban spaces, contribute to guarantee the health of inhabitants, contrasting social inequalities (Basso, Di Biagi, Crupi, 2020; Marino et alii, 2020).

Looking at the European context, the debate on forms of intensive urban and indoor agriculture, free from the land factor, that utilize height density as a productivity aspect, appears less evolved. With the exception of some more famous proposals –like *PIG City* by MVRDV (2001), or *Tour Vivante* by SOA Architects for Plateau Saclay (2006), in the Parisian periphery – The debate on vertical farming (vertical Farm) as an opportunity for reflection on the urban form, still appears weak, perhaps also undermined by the contradictory results of experiences in the more mature Asian and American contexts.

The recovery of an old but still good idea

The idea to integrate nature into building typologies that develop in height is obviously not new. The disciplinary references are widely known and discussed: from the hanging gardens of Babylon to Le Corbusier’s *Immuebles Villas* of the 1920s (Al-Kodmany, 2018; Sommariva, 2014), there are several projects that have tried to replicate productive nature inside towers or high-density typologies. These are examples that prelude the more recent efforts to combine agricultural production with the extreme symbol of urban technological modernization and efficiency, the skyscraper. However, it is possible to observe, especially in the more well-known and recent experimentations of vertical farms, how the building can still be isolated, or, not be able to relate to the urban fabric, unable to generate a settlement principle capable of rewriting the form of the city. One wonders: can vertical farms really integrate in urban fabrics generating new habitable spaces and at the same time, answer to the food needs of the city?

Vertical farm as an urban issue: socio-spatial justice and city design.

It may be helpful, from an urban planning perspective, to better articulate the consideration on vertical farms on points that intertwine themes of food production in the city with issues of

social justice and public health.

A useful premise to better frame the vertical farm as an “urban question” should be made recalling how the issue of food safety has progressively refined into “nutritional security” (FAO et alii, 2018). Helped by the theories of Amartya Sen (1981), “accessibility of food” has today been attributed an increasingly significant weight. Food security and foodability are concepts that redirect to a food accessibility concept that keeps into consideration, besides the physical distance from the places of food production and distribution, the economic conditions of the users and their individual ability to recognize and obtain healthy and appropriate food (Rodotà, 2014), and that the environment where people live allows them to live a health lifestyle. This conceptual shift is significant, because it transfers attention from food to the context in which it is distributed, consumed, recycled. It is not a coincidence that the themes of food and nutritional security have intertwined with those of the healthy city (de Leeuw, Simos, 2017; Dorato, 2021), where the entire urban space is called upon playing a decisive role in ensuring accessibility to food in environmental conditions favorable to human care.

Read through the issues of food safety, the right to food and public health, vertical farms show some limitations. They seem to respond, at least partially, to the issues brought forward by accessibility of food, by bringing food production to the city in intensive forms, independent from the availability of the land factor. Vertical farms are, to all intents and purposes, among the forms of urban agriculture; however, the highly entrepreneurial nature of the initiatives underlying this activity, and the risks it entails, make it difficult to recognize, at least at the moment, its social potential.

This is because of some critical factors linked to the cost of technology, to the high level of specialization that affect the production costs and as a consequence, the cost of food, making it less accessible (Butturini, Marcellis, 2020; Despommier, 2020; Steel, 2021; Stringer et alii, 2020).

The absence of the land factor in this type of production is, from a social perspective, a further critical element. Indeed, it is clear that in a context like that of the vertical farms, what is missing is contact with nature, in its authentic dimension, or rather, it is re-proposed in a technocratic emulation.

Further considerations can be made if one looks at the agricultural production spaces as elements of the urban composition or, in other words, of the city project. The urban and peri-urban spaces within which agriculture has been practiced, have always represented an important “material” through which to compose the city or its parts. It is possible to think, for example, of the fundamental role that spaces and places for the production and preparation of food played in the twentieth century in improving people’s living conditions. From family gardens in working-class neighborhoods to the functional kitchen in Frankfurt, “food spaces” have been seen as areas of experimentation for research into living space and public housing (Di Biagi, 2016; Panzini, 2020; Parham, 2020). A theme, that of the relationship with the context, which could open to reflections

and experiments useful for rethinking the typology of the vertical farm in new forms where, the attachment to the ground can be reconfigured as a space of mediation with the city.

The vertical farm as an occasion for urban regeneration, between recovery and recycle.

Instead of liquidating Vertical Farms as too bold or controversial a solution, to address the issue of food production in the city and, more generally, that of food security, it is important to try to understand the possible way forward to make this solution feasible in order to “feed the city”, besides being a design innovative field for new skyscrapers.

It is important to specify how the vertical farms represent a large category of urban agriculture; some authors, including Despommier (2010) himself, propose to distinguish at least three typologies of vertical farm: the first foresees the use of controlled buildings of different heights with exclusive farming functions, that can derive from the reconversion of abandoned buildings; the second which involves the reuse of old and new buildings’ roofs; and the last typology, the one that imagines indoor forms of agriculture inside visionary buildings with multiple floors (various proposals have been designed but none have been built). In synthesis, these are three typologies that make way for the “skyline farm”. Making this distinction is important because it allows to individuate possible strategies of intervention in order to mutate the image of the city and relate to its design.

This distance between visions and realizations offers however, the opportunity to think about the idea of the vertical farm, not only as a simple building developed in height but as a more complex food infrastructure, shifting the attention from the skyscraper machine to its ability to spark virtuous relationships with the urban context, first of all in rethinking the design of the city in the prospective of regeneration and urban metabolism (Gasparrini, 2016; Grulois, Tosi, Crosas, 2018; Dal Ri, Farvaigiotti, Albatici, 2020).

For this reason, those examples where the birth of indoor agricultural forms is accompanied with recovery of abandoned buildings and with more complex urban regeneration processes, appear to definitely be more interesting. The Plant, for example, is a vertical farm that takes up residence in a building that was once dedicated to the aging of meats in the meatpacking district of Chicago (Despommier, 2020). Besides the productive diversification (fish are raised, beer is brewed, Kombucha is produced and mushrooms are grown), what appears to be interesting is the attempt to make everything sustainable, through recycling trash, even that of surrounding establishments, thanks to a biogas anaerobic digester. The involvement of small local producers in the yearlong open market appears to be urgently important, just like the commercial activities related to kitchens, breweries etc... In conclusion, the numerous activities are

¹Cfr. <https://www.fao.org/green-cities-initiative/en>

²<https://www.archdaily.com/231844/the-plant-an-old-chicago-factory-is-converted-into-a-no-waste-food-factory>

what makes the operation “sustainable”, the idea that the vertical farm is an element of a more complex “social condenser” based on “sustainable” agricultural forms.

In the wake of this and other experiences, it is possible to obtain some elements to reflect on the design of “vertical farms” that reorient the design of the city.

The first consideration is in recognition of contexts like the European one, where the most plausible typology of vertical farm to be included inside the city is the one that points at the recovery and the recycle of discarded containers and/or abandoned areas. The vertical farm can then, become the spark to more complex operations of regeneration for abandoned areas, like in some places, even in Italy, efforts have begun to be made.

A second consideration is the possibility for vertical farms to enter in synergy with, rather than compete with, more traditional forms of agriculture. The modalities to construct these synergies are different. It is possible, to think of the vertical farm as a system of trash and waste recycling for agriculture businesses (and maybe even cities), just like in The Plant. This could be a way to make vertical agriculture part of the urban metabolism, with an active role in configuring urban and agricultural cycles in a sustainable way.

Some experiments, even in less mature contexts like the Italian one, deal with this theme. The project Team PineCube, for example, involves the recovery of an old school in Orzes (Belluno), through vertical agricultural production that introduce water recycling. The objective is, in this case, to grow niche products to support agriculture in innovative forms, without forgetting about the possibility to involve fragile and/or disadvantaged subjects (Colucci et alii, 2020; Orsini et alii, 2020). From a design point of view, this recalls a multifunctionality of buildings that still allow many margins of experimentation within the typology.

Lastly, a final argument, related to the previous one, concerns the ability of the vertical farm to trigger transformations able to favor more structured forms of relationships with the urban context through agriculture. The reference, in particular, regards all those induced activities related to production, but also to education, sale, consumption of food, even to research. A theme that also, calls into question the project of the “level zero”, or ground relationship, of the vertical farm, that can be thought of as “space of connection” and mediation between the buildings themselves and the context (Dal Ri, Favargiotti, Albatici, 2020). The challenge for the project of the vertical farm is open, and it presents itself as an opportunity to reinvent the multifunctional tall building, open to new ways of inhabiting, and the project of the city.

Translation: Arch. Vittoria Umani

³In Veneto, the Ri-Genera project promoted by Enea will target decommissioned warehouses and abandoned buildings such as barracks and roadman's houses by creating vertical greenhouses for hydroponic cultivation, that is soilless, which will guarantee a greater production of vegetables with minimum water consumption and without the use of pesticides: <https://www.enea.it/it/vertical-farm/la-vertical-farm-enea/la-vertical-farm-negli-edifici-dismessi-arkeofarm>

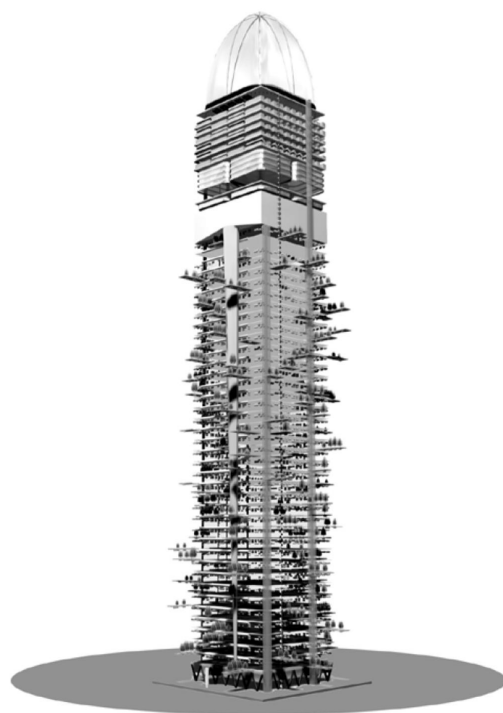
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Gardens of Babylon. According to tradition they were built around 590 BC by King Nebuchadnezzar II.



PigCity, vertical farm prototype, MVRDV, Holland, 2001



Farmscraper, vertical farm project, Carlo Ratti, Italo Rota, Arup, Farming System and Zero srl, Shenzhen (China), 2016



Farmhouse, vertical farm prototype, Chris Precht, 2019



Vertical Cemeteries: a Changing Paradigm

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Abstract

Humans use architecture as both their first and last stop. A newborn is honored and welcomed into the new world in the hospital. The final stage is to take the deceased to the cemetery, where they rest in peace. Death cannot be avoided. To cope with and minimize the great pain caused by the death of our loved ones, a wide range of afterlife beliefs and stories have been developed on cultural, spiritual, geographical, and other levels. Religion and culture are two underlying themes in these afterlife spirits and beliefs. With the continuous increase of the world population and the demographic crisis of megacities, the theme of the cemetery and burial space becomes crucial to dispel the gap between necessary living space and density. Can a new way of burial solve these questions by adapting to various customs and various social and political contexts? Can architecture solve and intervene in the gap that exists between the world of the living and the world of the dead? This paper will explore the notion of "Vertical Cemeteries" throughout history and throughout visionary architectural projects that propose a new way of burial in a fast changing world.

Keywords

Emergency architecture, resilience, social, cemetery, verticalism, death

Verticality and density

Verticality as a typology has been changing and adapting to new functions. The affirmation “the form follows the function” (Sullivan, 1896) or “the function follows the form” is not enough in terms of typological paradigms in the last century and in modern or postmodern architecture. The “form follows function” changed to “form follows finance” (Willis, 1995).

With the verticality and increasing urban and social complexity, typology has been adapting to the new paradigms of architecture, where multifunctionality often responds to building solutions. Different functions nowadays coexist in tall buildings. In terms of habitation typology, density is the key that can justify the sense of “Going High”¹.

The side effect of the population explosion is the city’s rise in space demands. Verticality has become the practical solution to answer land needs in urban areas. In the nineteenth century, with the elevator’s invention, skyscrapers became an expression of the future and technology (Sullivan, 1896). But what happens if we increase density to the densest part of the city, which is the cemetery?

Cemeteries and death practices

There is archaeological evidence that in the distant past, burial was the norm, and subsequently, cremation with a secondary burial became prevalent, giving way to cremation, which is now the dominating habit. It is unclear why cremation became popular; some claim it is a method of cleansing, freeing the soul from a filthy body; 2) it represents the transitory aspect of life, of destruction and rebirth; or 3) it eliminates the body as a health risk and does not take up valuable land. This is how and why the practice of cremation developed. It was an established tradition by the time the first Hindu scriptures were published, about 1,200 B.C. There are several beliefs on the origins of cremation and its usage as a technique for disposing of deceased remains. Cremation is said to have developed in Europe and the Near East during the Stone Age, about 3000 B.C. It seemed to have spread over northern Europe in the late Stone Age. It was firmly embedded in Grecian burial practices during the Mycenaean Age and was also embraced by the early Romans around 600 B.C. Throughout history, one death ritual has been preferred over another, with burial and cremation being alternated. Both burial and cremation are customary in various regions, such as the Middle East and Europe. In the Middle Ages, cremation was punished by death and was used to punish sinners. After a conflict, epidemic, or hunger, mass cremations were also performed to limit the spread of infectious illnesses. Cremation has been used as a form of punishment up to the present day. This was demonstrated when the corpses of 12 men convicted of war crimes in the Nuremberg Trials were incinerated rather than returned to their families and disposed of in a secret location, preventing the place from being used as a memorial

site. In Japan, however, the erection of a memorial structure for the remains of executed war criminals has been permitted (History of cremation, n.d.). With the introduction of Arab traders on Kerala’s Malabar Coast in the early seventh century, Islam first appeared in India. The Sufi tradition greatly promoted the development of the Islamic religion throughout the Delhi Sultanate (1206-1526) and the Mughal Empire (1526-1858). The funerary custom and method of disposal of the dead body followed by Islam significantly diversified from that appreciated by the traditional Indian culture. The practice of retaining a person’s memory after death was executed in the form of architecture which led to the construction of structures like the Taj Mahal, Gol Gumbaz, and Humayun’s tomb, which are regarded as architectural wonders in the current day world. Thomas the Apostle is credited with introducing Christianity to India. By the 6th century AD, the Catholic faith had taken root in India. Through the conversion of religion by missionaries, it became a dominating religion. Various other faiths arrived and established themselves in India to varying degrees. They brought with them their own set of traditions and culture for the ultimate remembrance of the deceased.

Funeral rituals serve different purposes depending on religion and time and place. Historically, the aim of most religious funerals was to assist the departed in their journey to the next life, and this is still an integral part of many.

Cemeteries in the city

Talking about density means talking about land usage. The typological controversy of cemeteries has been studied for centuries. Intellectual and social concerns about the Architecture of Death (Etlin, 1987) brought about the transformation of the cemetery in the last centuries. Cemeteries are a relatively new way of disposing of bodies.

Prior to burial, the dead of ancient times were often left in caves, disposed of in lakes or oceans, burned, and even left in trees. The Greeks first built cemeteries outside the city and created the term “cemetery”. In the 18th century in the United States, public park areas began to become more popular as cemeteries. From industrialization, cemeteries become more popular for the middle to lower classes. Today many cemeteries in the world’s largest cities have become full, and the available space is too valuable to be used for burying the dead. Along with taking up space, traditional burials can lead to groundwater contamination.

To understand how much space we need for burial nowadays we need a calculation of mortality and population by death rate (Porta, 2014). From the research made by Wahyu P. Hariyana at Delft University of Technology, using those data, with a 17.23 death rate in South Africa (CIA 2013), they have to deal with 930.454 death people per year, meaning that the amount of land they need for burial is 17.4 square kilometers, more than 5 times New York’s Central Park size. In 2050 the required land will be expanded to 104.7 square kilometers, around the size of Paris. Therefore there is a need of rethinking the land as a burial site.

¹ “Going High” was used as a title for the international architecture event “Tirana Architecture Weeks” held at POLIS University, Tirana, Albania, in October 2022. The meaning of title is a reference to the city’s verticalization.

As cemeteries have less priority to be designed, it is almost forgotten that they are increasing in size. We can have adaptation or reintegration other typologies, but a cemetery remains a unique one and difficult to be integrated into the urban complexity. Cemetery has no other option than extending and increasing, becoming a real problem, mainly in urban areas and metropolis.

How can this issue be solved and rethought? Verticalism (Ábalos, 2003) can be seen as the only alternative to burying a dead body. Throughout history, this method was method in some religious/cultural motivations like pyramids, Taraja Burial in Indonesia, and Cave Burial in Hawaii. Urban high-rise cemeteries provide a space for people to visit loved ones in cities and areas of urban density. As a result, it could allow the deceased to be laid to rest in relatively close proximity to their loved ones. This model addresses the challenges of displacement and distance between the living and the dead created by urban sprawl, population growth, and governance issues. The vertical cemetery is a new concept to solve land shortage issues for the urban cemetery. The “existing cemeteries will slowly be removed to provide land to the city’s living souls. The vertical cemetery will become a significant part of the city and a daily reminder of death’s existence. In time, the city’s tallest and largest building will become a grave for all its citizens – the city’s ever-changing monument.” (Song, 2017) The first real architectural design of a vertical cemetery was made by Aldo Rossi in the extension of the San Cataldo Cemetery in Modena, Italy. Initially contested by society and institutions, the cemetery has now become a symbol. Starting from this project, how can a “Vertical Cemetery” affect the religious rules and the social and intellectual impact of nowadays society?

The extreme case of Manila

Density and densification refer to the number of people living in a particular urban area, and the way to calculate it is by dividing the population by the size of the area. Densification comes by choosing the typology of skyscrapers as we have a large population in a small footprint. But in major cities around the world, where density reaches its peak, the typology doesn’t correspond to the needs of the population.

In extreme cases like Manila, density takes extreme land and area extension, making the city increasingly unsustainable in every aspect. Manila is the capital of the Philippines, and in 2019 was the densest city in the world, with 70.000 inhabitants/km². The extreme poverty and underdevelopment brought during the years governmental and social decisions to the creation of high inequality and disparity, creating vulnerable communities forced on sharing shelters and homes. The typology of the big land extension of the city is mainly based on 2-3 floors of buildings attached to each other, creating a lack of common spaces, green areas, and public spaces. Manila extends for more than 40 km², and, even if the urban structure follows the Cardo and Decumano conformation, public and private transportation seems to be extremely unsustainable. If we think about the death rate in Manila (7.3 on 1.000 inhabitants) and we think about

the extension of its cemeteries, we can fully understand the extreme conditions that coexist in the city. Manila’s cemeteries are examples of the largest cemeteries in the world, occupying an important and central urban area. The North Cemetery of Manila is the perfect example to understand the controversies (Figure 1). As the cemetery is commonly the densest part of the city (dead people included), and Manila is one of the densest cities in human history, we can affirm that the North Cemetery of Manila is the densest area in the world. But what makes this cemetery so controversial?

The vertical cemetery of Manila

As the demographic numbers of the city started increasing rapidly and density reached its peak, the lack of space brought people to move to the cemeteries, creating their own habitats directly above the graves. Entire families live in the North Cemetery of Manila by creating their autonomous microeconomy system. The tendency of the people to build high above the graves creates an autopoietic² act that remembers how architecture and death should be strictly correlated.

Aldo Rossi put his ecstasy of this correlation in San Cataldo’s cemetery, where architecture and death coexist, life and death coexist in the same big house (Figure2). “Tomba Brion” by Carlo Scarpa shows how architecture is the “terminal” and the connection between life and death, between two opposite worlds. Then how can we integrate architecture into the cemetery of Manila? How can we use architecture to reduce inequality in vulnerable communities? How can we mediate and make possible the coevolution of the inhabitants of the cemetery and the inhabitants of the graves?

At the University of Trieste, Italy, in 2019, the students Franklind Jesku and Ivan Bello proposed as their master’s thesis in Architecture a Vertical Cemetery located in the North Cemetery of Manila (Figure 3). Manila, the capital of the Philippines, is the densest city in the world. A cemetery is the densest part of the city. The North Cemetery of Manila is the ecstasy of density. The social, political, and economic history of the city brought a new reality paradigm: cohabitation of life and death, of people living in cemeteries. The thesis focuses on the study of this contradiction and its relation to architecture. The “+1” in the vertical cemetery of Manila, brings together living inhabitants and dead inhabitants with precise rules that must be respected. An iron skyscraper called “The Machine” is the new home with new rules. The description of the project is a manifesto, articulated to provide guidelines for understanding. Composition of the Machine:

- The Machine is self-sufficient.
- The Machine has a height of 319 m.
- The cells of the machine are 4 m in diameter.

²Autopoiesis describes the capacity of an entity to reproduce itself. As a concept, it was first introduced in theoretical biology to explain cognition and the essence of life (see Maturana and Varela, 1980) and was then further developed in general systems theory (for example, von Förster, 1984).

- The floors are divided into 25 modules of 16 square meters each.
- The cells consist of a living area and a sleeping area arranged upside down.
- The cells rotate 180 ° altogether at the times set by the machine with a chain system.
- 06:00 the cell turns 180 ° (from the sleeping area to the living area).
- 22:00 the cell turns 180 ° (from the living area to the sleeping area).
- The machine is composed of a pillar and beam structure with section a +.
- The machine is provided with a system of pipes (pillars placed in the middle of the modules) for the supply and discharge of water.
- Organic waste is conveyed to drains and turned into energy to power the operation of the machine.
- The elevator is the only vertical connection element for accessing the rest of the city.
- The elevator is powered by organically produced energy.
- The elevator is made of mirrors and counterbalanced by a guillotine.
- The lift runs on the 4 pillars placed at the corners of the building with a pressure system.
- The lift builds the spaces of the machine.
- Neither the supply of electricity nor the supply of gas is envisaged.

Rules of residence

- Each family must dismantle their shed in the existing cemetery and turn it into a vegetable garden in exchange for receiving a living cell in the Machine.
- Each inhabitant living and dead has an entry pass.
- Each family has a 4x4 m living area at its disposal.

Time rules

- Each family must submit to the time of the Machine.
- 07:00 the lift begins its descent.
- 07:17 arrival on the ground floor.
- 09:00 funeral service (ceremony on the ground floor with marking of the deceased at the machine).
- 12:00 the lift begins the ascent.
- 12:17 the elevator reaches the 70th floor.
- 13:30 the lift begins its descent.
- 13:47 arrival on the ground floor.
- 18:00 the lift begins the ascent.
- 18:17 the lift reaches the 70th floor.
- Each month the cell arrangement changes algorithmically according to the inhabitants.
- Every 5 years, residents must reuse the remains of the deceased to serve the community.

The disregard of the time rules involves the loss of the plot of land. The repeated neglect of the temporal rules leads to the

loss of the living unit. “+1” is set in the year 3019 A.C. and will never be finished ; only when Firmitas and Utilitas cease to exist can Venustas actually be complete. The shape that the cemetery assume derives from mechanistic movements that have put humanity in front of scenarios of continuous and multiple contradictions. “+1” will be the symbolic architecture of an era with unknown limits and an uncertain future. “+1” becomes a polyphonic narrative full of senses and symbols, it brings to light the sacredness of the human right to inhabit a home through emotions and memory. “+1” leaves interpretations open. Disorientation. There are no long-lived references, only fragments over time. It is impossible to take root and look for a linear meaning. The pace of +1 does not admit asymmetries. The creation of Metropoli led to new lifestyles and cultures. New cuts and polycentric alignments come together in the Machine, which becomes the beating heart of thought. Ties are broken and maintained. Where the Metropolis acts with them shock, with high-speed stimuli, the confined space forces co-existence; a coexistence of living and dead: the Necropolis fills with memory and experience. The loss of meaning in living in the city is a human condition that seeks to distinguish itself and recognize itself in the experience and the search for stimuli. +1 puts in relation disorder with the order, achieving satisfying forms and eternal in their osmosis.+1 demonizes the thought system by defining boundaries, breaking down walls, and setting up a new spatial form, in which everything is destined to move. Movement is assumed as a necessary and indisputable value for a man-indeterminacy-time posture. Relationships are created and broken down quickly, every month the clusters of inhabitants are destined to be recomposed in a different way for the next move. Individualism flows into the mass episodically, in repetitively rigorous individual situations. Its movements are the pace set for the inhabitants who live in the +1.

The satisfaction of +1 deviates from its content by appropriating itself around. It is the awareness that takes on meaning through a plot of land. The content is its development. +1 will not be finished; the forms, linked to a specific function, will turn into ruin before they get to where everything is started.

The discontinuous time of the Machine unhinges an obsession with the past by declining to a future-projection-in-constructed-memory with ruins and scraps of a dead age, through the profound uncertainty of the present. It is the end that never ceases to end. Ruin is the tool that allows the human to gain experience of himself as a mortal individual; welcomes death and rubble. Only when Firmitas and Utilitas cease to exist can Venustas actually complete oneself, an indispensable process for the ultimate goal and primordial to embark on a journey.

Other vertical cemeteries projects

With the growth of population and urban expansion, today many countries are facing the problem of scarcity of available land. It's not just a problem for the living, but also for the dead, some countries like England, Norway, and Greece are running out of available burial plots. In other countries where available

land is abundant, a shortage of available burial plots is still a problem in some large cities. To address the shortage of available grave plots, authorities are encouraging citizens to choose cremation instead of burial, as cremated ashes require much smaller space. However, cremation is discouraged and even opposed by some religions, it conflicts with the believers' faith in the resurrection. In Greece, a country in which Orthodox is the prevalent religion, cremation was not allowed. The situation changed several years ago when the local authority lifted the restriction on options of disposal of the dead, allowing dead bodies to be cremated so that the shortage of burial space can be solved. The Church of Orthodox accused the decision of the authorities and suggests placing coffins vertically to minimize the space needed for each dead body. Are there any other ways to address the problem of scarcity of available land? When a city is getting very dense, skyscrapers will be built to offer more spaces for the living, but can skyscrapers be used to accommodate the dead? If a believer doesn't mind being cremated or vertically buried, then he or she may not mind being buried in a skyscraper, in which the grave plots are closer to heaven compared to graveyards on the ground, and the views are better. Some architects and cemetery operators have already come up with the idea of a vertical cemetery.

In 2013 at the Oslo Conference for Nordic Cemeteries and Graveyards, a local architecture student named Martin McSherry proposed a high-rise cemetery to be built in Oslo (Figure 4). The purpose is to save the precious land in the city for living. According to the design he presented, the high-rise cemetery is comprised of a series of graveyards with square floor plates, each of these graveyards is stacked over a lower one. The vertical cemetery is structurally supported by an exoskeleton instead of traditional columns, this maximizes the floor space of those graveyards. Without traditional columns, the graveyards in the building appear more like traditional graveyards. Another significant feature of the design is a crane adjoined to the building. The crane is designed to be permanently set there, its function is to lift coffins into slots inside the structure, and over time, more floors of grave plots will be added to the building with help of the crane. Of course, the building will stop rising once it reached its ultimate height, but it would definitely become the tallest building in the city. Currently, Martin McSherry's design remains a vision, there are no plans to put the design into practice. However, eventually, one day it will become a serious proposal, as land scarcity is already a serious issue in Norway and many other countries. In many countries like Norway, every grave spot is not permanently preserved for one body but will be recycled to be reused for other bodies after twenty years when the body is decomposed to bones. Then the family of the dead will either relocate the bones to a smaller space or pay to preserve the grave spot for longer. Even with this measure, the grave spots are still being quickly run out.

Moksha Tower is a vertical cemetery proposed to be built in Mumbai, one of the most populous cities in the world (Figure 5). Finding an available grave plot in such a dense city is never an easy thing, this is why the idea of Moksha Tower is

proposed, the tower will create a temporary place to accommodate dead bodies. Compared to traditional cemeteries, Moksha Tower saves a large amount of ground space, since the space for graves is piled within the same area, not to be expanded to the surrounding areas. Moksha Tower provides burial space for four major religions in Mumbai: Hindus, Muslims, Christians, and Parsis. As these religions practice different funerals and methods of disposal for the dead, the tower is designed to meet the needs of all these religions. For Hindus, facilities for cremation are equipped, and new technologies are adopted to decrease the pollution caused by activities like the open burning of bodies; For Muslims and Christians, the tower provides areas for burial and garden burial and funerals; For Parsis, a structure called Tower of Silence is located on the roof of the tower, used for bodies to be exposed to vultures. Besides the basic facilities for the burial process, Moksha Tower also features public green spaces throughout the entire building, allowing families of the dead to pray, worship, and meditate, these green spaces also help reduce pollution of the city, improving the environment of the city. As mentioned earlier, the tower is a temporary place for the disposal of the dead, it only provides storage of the dead for up to 10 years, in this way the tower can offer the service to most people in the city.

A radical proposal is the high-rise tower is a part of a cemetery complex in Santos, Brazil, called "Memorial Necropole Ecumenica" (Figure 6). Many articles on the web claim this tower is completed, in fact, it's not really built yet in 2018. The planned Memorial Necropole Ecumenica III will have 32 floors, capable of holding about 25,000 dead bodies, each floor contains 150 tombs that are offered with an aerial view of the city, and each tomb can accommodate six bodies. Aside from tombs, the tower also contains a chapel and a restaurant on the top, and there's a garden and a lagoon outside the buildings, the cemetery is also a popular tourist attraction in Santos.

Conclusions

Although the theme of death and architecture is not dealt with in-depth, there are sporadic attempts to offer an alternative point of view. However, there is a lack of a real manifestation of these visions which, without the involvement of an institutional regulation that encourages research in this field, remain abstract and speculative projects. Sustainability has become a global and interdisciplinary theme. But why don't we talk about sustainability in terms of death and land use? Architects have a key and fundamental role in undertaking an even more serious phase of dissemination of ideas and projects that can solve this great but "invisible" problem. The vertical cemetery will become not only a new paradigm in architectural and social terms but a concrete solution with which man will have to live with it, gradually. Thus the horizons open for research where the various actors collaborate so that man, both as an institution and as an individual, can open up to this new paradigm.

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Figure 1. North Cemetery of Manila (Picture by New York Times)



Figure 2. Cemetery of San Cataldo, Italy, by Aldo Rossi (Picture by Andrea Pirisi)



Figure 3. Vertical Cemetery of Manila, Philippines (Project by Franklind Jesku and Ivan Bello)



Figure 5. Moksha Tower, India (Project by Yalin Fu & Ihsuan Lin)



Figure 4. Vertical Graveyard, Oslo, Norway (Project by Martin McSherry)



Figure 6. Memorial Necrópole Ecumênica III, Santos, Brasil

Fear and Awe in the Vertical City: the Affective Space of “Going High”

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Abstract

Vertical cities are the hallmark of modern urbanization, and since their origin have represented the global places of progress, power and affluency. As skyscrapers and towers soar around the world, in an ever-increasing quest for height, the space of cities changes, affording its inhabitants with new, powerful affects. Yet not all emotions produced by the verticality of buildings are positive: together with the awe and wonder of the challenge to the sky, fear and anxiety also make their way into the urban subjects' embodied experiences. In this paper, I enucleate some of the spatial dynamics of verticality, and discuss the pros and cons of this model of urbanization, together with some of its further implications, such as the repercussions on density and sustainability.

Keywords

Vertical city, affective space, phenomenology of the city

The vertical city-beautiful

The Vertical City is quite obviously one of the great inventions of modern architecture. Few other urban models can compare to it in terms of visionary power, symbolic dimension, future-oriented dynamism. All of the world's "capital" cities – and I mean those that are most economically relevant rather than the seats of politics and administration – have pursued a quest for height: from New York and Chicago, which were the earliest to espouse this model, to London and Frankfurt, Shanghai and Tokyo, Beirut and Moscow.

Paris is so in love with its low skyline that the only vertical neighborhood – La Défense – has been built far and away, beyond the psychological boundaries of the Périphérique, and the Tour Montparnasse, the sole tower within the city's center, is certainly the one building Parisians hate the most. In Italy, Rome's backward architectural milieu has only spawned a few timid towers far south of the historic center beyond EUR, while Milano has complemented its once lonesome Pirelli Tower and Torre Velasca with a bunch of near-skyscrapers.

What we understand right away from this summary list of vertical cities is that "going high" is not just about the economically more efficient use of the land. The space a vertical city establishes "feels" in an altogether different way: what we are speaking of is the undeniable sense of awe and power that high buildings inspire in the human subjects who inhabit or visit these cities.

The connection between height and sense of power is easily explained in terms of proxemics, i.e. the relationship existing between spatial arrangements and social structures (Hall, 1966). Just to make a few examples: superheroes brood over the city they protect from the top of skyscrapers rather than from a basement. The abode of the Greek gods is on the peak of Mount Olympus, while Mount Kailash is the home of Hinduist Shiva and doubles as the sacred Mount Meru for Buddhists. Medieval castles typically reside on their surrounding territory's highest peak, and within their throne-room the ruler occupies the highest position. In his last film *Game of Thrones*, Bruce Lee must battle his way upwards of a tall pagoda, encountering ever more powerful opponents along the way, and the evil boss at the very top – a topological model that has been widely adopted also by video game narration. Closer to our days, global hubs such as Dubai or Seoul battle to boast the world's tallest buildings, and major corporations once placed their headquarters inside skyscrapers, as also transposed in *Iron Man's* Stark Industries tower – although quite tellingly today's tech giants all reside in low and sprawling Californian campuses rather than in Manhattan's skyscrapers. The list could go on forever, and the association between the vertical city and terms like success, power, affluence, wealth, dynamism, progress etc. clearly demonstrates that we could almost reconceive the vertical city as the city-beautiful of the late 20th / early 21st centuries.

To further sustain this argument, we can consider the extent to which utopian or otherwise future-oriented anticipations of urbanity have relied on the visionary energy of verticality: this iconic power has been widely leveraged by architects (Figure

1). Consider, as examples, Antonio Sant'Elia's futuristic infrastructures, or Arata Isozaki's Metabolist plan for Tokyo's Shinjuku area – and in cinema, where the galactic cities in the *Star Wars* universe reach all the way into the sky. The future may be green and happy or dark and uncannily dystopian, terrestrial or celestial, but in any case, it will take place in a vertical city.

The vertical body

One question we might want to ask at this point regards the evolutionary roots of our relationship to vertical spaces. It is perhaps not enough to say that vertical cities embody the sense of awe and power that we have just described: we should look a bit closer at the reasons for this preference. Does it have to do with the "glamour" embedded in any vertical city – New York first and above all – and the symbolic dimension of power they convey? Or is there something else at work, something that is inherently connected to the way we "function" as human beings, and how we go about in the spaces and cities we inhabit? Let's try to explore this point a bit further.

Today, there is a widely shared notion concerning the role of the body in the experience of spaces. Across the disciplines of architecture, urban studies, philosophy, neurosciences, and humanities such as social studies, geography, and others, scholars agree on the fact that human subjects "resonate" with their ambient environment (De Matteis, 2021a, 36). They respond to whatever they encounter in the world: other people, objects, buildings, trees and animals, but also to transient conditions such as sound and noises, smells, the wind, sunlight, the sky, etc. To "respond" means not just a mechanical cause-and-effect relation, but a more nuanced form of relationship, where we are struck both in our way of moving about and in our emotions. The space of a city can elicit powerful emotions: joy and awe, but also fear and disgust. Indeed, the history of modern urbanization, from the industrial revolution onwards, has shown us how we both love and loathe our cities, how we are fatally attracted by them but at the same time periodically seek to escape, perhaps looking for a refuge in closer contact with nature and the ground. There is not much more to explain because you all know what I'm speaking about, the way a city can make us feel when it delights us or just becomes too much, is something we feel in our bodies, in their contracting when fear or stress takes over, or how they expand when, on the other hand, a pleasant urban scenery or a familiar setting we love to return to makes our body relax (Hasse, 2012).

These responses to urban space are not just arbitrary, they don't simply depend on who I am, on what type of city I prefer, or if this is the city I was born and raised in or just a place I visit as a tourist. There are some aspects of space that strike us all the same, independently of our disposition and preferences. One of these is certainly relatable to factors such as the morphology of buildings, their density, the layout and dimension of streets: in short, all those geometric factors that prompt us to move in a certain way, look in certain directions more than in others, and allows us to see certain things while cloaking away others.

For example: if I walk in the narrow streets of a typical his-

toric center, such as those that can be found in Italy, my gaze will often be shortened by the curving irregularity of the streets and facades, allowing little distant view. The narrow streets will also reduce the vision of the sky while putting me in close contact with a myriad of openings – windows, doors, galleries, intersections – from where I can look “into” the buildings’ interior spaces, while at the same time being observed (De Matteis, 2018). This is the typical dense city model which favors the unfolding of a certain way of urban life, the one for example advocated by Jane Jacobs in her celebrated 1960 book *The Death and Life of Great American Cities*, but also in Camillo Sitte’s late 19th-century urban design classic *City Planning according to Artistic Principles*.

Second example: a wide boulevard shelters me from unwanted gazes and affords a lot of air, sunlight, and where applicable, greenery. These are all features largely absent in the traditional, dense city core, but that can be found in many examples of planned 20th century city. Is this better or worse than the previous example? It might be both, depending on several other factors, but what I do know is that this urban scenario makes me feel altogether differently. While the first was intimate and protective but exposed me to a direct – and perhaps unwanted – eye and physical contact with other people, here I am more master of my own space, and can dominate it with my gaze. Nevertheless, I’m also more exposed and perhaps might even feel a bit lonely.

Thirdly, we come to the vertical city. Obviously, not all vertical cities are the same, as this is a very generic term: one thing is the skyscraper city, which can only be found in selected neighborhoods of a few world-leading metropolises, another thing is the more common lower-density city where occasional tall buildings populate the skyline; in addition, in both categories, we can find a multiplicity of variations and declinations. But we’re not here to make a taxonomy, but rather understand what it feels like to be here. In a city where tall buildings are the rule – and which are also frequently associated with a grid-plan layout – there is a very specific corporeal sense deriving from the presence of the gigantic, vertical towers. It might be because we are almost instinctively pulled to look upwards, to observe the buildings’ top, forced to perform a certain torsion with our back that we know very well. Or perhaps it’s the very reduced relationship with the sky, which is largely cut off by the tall buildings. Or, finally, it is a matter of the skyscrapers’ sheer size, the way we “feel” their presence, not unlike the way a large, monumental ancient tree makes itself felt (Böhme, 2017, 26).

Perhaps it is a combination of all these factors, of what we are allowed to see and what we are not, and the way our own body resonates with the physical objects that occupy this urban space.

We could almost claim that there is a “vertical feeling” that is associated to a certain type of urban space. But I wish to be a bit more precise, to articulate this emotional condition afforded by high-rising cities a little further. How we perceive a certain space, and how we resonate to its qualities, can differ radically depending on where I am observing it from. In the city there is

always a dialectic between inside and outside – I’m safe inside the building and I’m exposed in the open space. But the vertical organization of spaces adds something more to this divide: the higher the spot you occupy, the stronger your dominance upon the urban space, and, consequently, upon the other citizens. No one can feel as powerful and protected as “the man in the high castle”, and there is no equality in the spatial relationship that is established. Whoever resides at the very top of the tower is the lord of the land, a Foucaultian position of power well depicted in Sauron’s eye floating at the summit of an ominous building, master of a “scopic regime”.

It’s indeed interesting to observe how the vertical city is represented in media, and how the different representations account for a certain perspective not only upon urban space, but also on how the city’s denizens interact with this space. To return to the world’s most celebrated vertical city – Manhattan (Figure 2) – we know of an infinity of films where the opening sequence is shot from a helicopter flight along its glorious, unmistakable skyline. This often doubles with high-end lawyers’ offices, Wall Street titans, and the rich and prosperous dwelling in their 5th Avenue attics-cum-view.

But there is also another Manhattan, the seedy and dark labyrinth of back-alleys, and forgotten fire-stairs, where the street space is perpetually overshadowed by some looming, dark skyscraper – the atmospheric grounds that spawned Batman’s Gotham City (Figure 3). There is nothing lofty or luminous here, rather the shady dealings of an urban low-life that finds its space in the darker edges of the grid plan, and whoever happens to get lost here at the wrong time of day may end up in trouble.

The vertical inequality of a city like Manhattan thus tells us of something else that is at stake here: to occupy the top floors of the towers represents a condition of privilege, of well-being and safety, while whoever is forced to reside in the city’s cellars and basements is as far removed as possible from this happy situation. A vertical division related to wealth and census is something quite common to find – remember, for example, the topological metaphor in Bong Joon-ho’s *Parasite*, where the rich Park family’s abode is a modernist villa sitting in Seoul’s hilly outcroppings, while the poor Kim inhabit a lowly basement that gets flooded at every heavy rain. But in the case of the vertical city, the inequality is artificially extended, adding a layer of physical dominance that is expressed by the controlling gaze by which the attic-dweller enforces his power over those who are not entitled to leave the ground. There is a political dimension in the vertical city that is hard to ignore, and that the regulatory framework that allows for tall buildings to rise entirely overlooks.

The topological articulation of the vertical city establishes bodily regimes: it allows the fortunate ones who occupy the top floors to relax, as from their aerial refuges they can contemplate the vastness of the sky, while keeping at bay the congestion, the traffic and the disease dwelling on the street and in basements. It is not a matter of density alone: even when the tall buildings are distanced from each other rather than side-by-side as in the hyper-dense agglomerations that we can find in throughout the

globe, all the filth that urban life inevitably conjures is left on the ground, to be dealt with only by those who are not allowed into the marble lobbies and mirror-clad elevators.

Fear of heights

This double-faced nature of vertical cities prompts further considerations. Where tall buildings rise, we may have the city of awe, of progress, sunlight and air, a sort of *ville radieuse*. But it can also become the place of fear and anxiety, of terror and of the uncontrollable urban space that prowls the streets like a man-eating beast (De Matteis, 2021b). It may sound a bit excessive, but what we do know for sure is that verticality affords no bland emotions: it can delight us with the highest thrill of world-domination, but also crush us with the pressure of an overwhelming bodily contraction, largely depending on what floor you live in. Fear of heights is thus not just the terror elicited by vertigo, but also what may happen if the higher levels remain inaccessible.

Building high has some obvious advantages, but also brings along several disturbances. Returning to proxemics, and to the way social life unfolds amidst the vertical city, one could turn to Jan Gehl (2010) to observe how the interaction between people is hindered by distance and height (Figure 4). Beyond a certain measure, the recognizability of a face becomes difficult, and a building taller than four floors makes it impossible to interact vocally with the street level. Quite obviously these are all interpersonal exchanges that are more likely to occur in the traditional urban fabric than in the modern city, but for this same reason, we usually consider the skyscraper-laden central business district as a place of isolation rather than integration, where public life in the street drops to zero when offices close. This type of space certainly appeals more to capital markets and real estate speculation – which both benefit from the concentration of financial activities and specialized workforce – than to active urban life.

Once again, we are considering the political dimension of verticality: tall buildings make urban spaces that are exclusive rather than inclusive, that mark clear boundaries and perform a strict selection upon who has access to their spaces. No wonder then that realtors market residential towers as luxury spaces both for the breathtaking view to be had in their attics, and for the security afforded by a building with a centralized entrance and closely controlled perimeters. But is it entirely true that tall buildings give us such a strong sense of safety? After all, one of the archetypal myths is that of Icarus, who found his death while challenging the height of the sky with his man-made wings. Cinema, once again, provides us with some useful insight: the action-movie classic *Die Hard* sets the entire narrative inside a skyscraper that has been taken over by terrorists, and due to its very height and fortress-like configuration cannot be stormed and rescued. In *The Matrix*, a significant part of the narrative is articulated on the high buildings vs. low street duality, and the main character's process of liberation unfolds also through the loss of sense of vertigo weakening him before his release. In all these representations, the skyscraper becomes

a place that is inhospitable, almost inhabitable, in any case uncanny. Its very height, the scarce relationship with the horizontal freedom of the ground, and the “locked-in syndrome” purported by the inoperability of the windows transform it into the ultimate space of fear. The vertical city can elicit fear in its being totally an artificial space: even more than the traditional, horizontal city, here construction is pushed to its limits to maximize the Floor Area Ratio introduces a condition that goes beyond the normal feeling of inhabitation. Buildings are usually shelters, but they can indeed become traps: and in the vertical city this becomes even more evident when things go awry. A burning skyscraper is not just like any other building that is on fire: it becomes a fiendish torch from where escape is much harder and where firefighters are often unable to arrive. The 2017 incident at the London Grenfell tower (Figure 5), a disaster that has prompted a tough revision of fire safety regulations in Britain, was a national shock. But quite obviously the one event that is most closely tied to the idea of the vertical city and the disaster that can strike it is the incident that inaugurated the 21st century, something so deeply embedded in our contemporary culture, imaginary and conscience that it is not even necessary to name it. The famous photograph by Richard Drew simply titled *Falling Man* (Figure 6) fully embodies the terror and despair that deflagrated after the airplanes hit the towers. To build into the air, challenging the sky just like Icarus did, is not something that inspires awe alone: it can turn into terror when our ability of technical control over space fails, when something unexpected blocks the machinery of a complex building such as a skyscraper.

Urban density

Quite obviously, the emotions that a vertical city affords are not given only by the vertical morphology. Tall buildings are not only born just because somebody decides that it's time to “take off”: there is always an economic reason propelling the growth in height, the ballooning of land prices that occurs in cities that are growing and where everybody would want to live.

Attractive cities have a greater tendency to go high, to “make space” for as many people as possible. It is, in a way, like a popular restaurant that to accommodate more guests will pack the tables closer and closer, until you can easily participate in the conversation of the people sitting just next to you.

What we are speaking of is clearly a matter of density. Density has been a popular topic of investigation for architects and planners over the past few years, as FAR is an indicator that, utilizing a rather simple number, can give us a lot of clues about the nature of the city that we are observing (Reale, 2008). Some Asian cities, for example, have super-high densities where the FAR reaches into the double digits, whereas the typical North-American suburban sprawl has a density so far beyond “one” that it is hard to call that type of development “city” at all. European cities sit somewhere in between, although their once typical compact-city model has been progressively eroded by urban dispersion and “sprinkle”, a phenomenon that especially along the Mediterranean is hardly giving up.

Yet the question of density, which is directly connected to that of vertical cities, is somewhat more complex. After all, FAR is a numerical indicator that reveals things but also cloaks others, and as any statistical device may prove highly reliable but also totally inexact, depending on the granularity of the considered sample. Just to give an example: a portion of urban fabric with a high FAR can both show the delightful vitality of urban cores, or the wild congestion and traffic that is just not as pleasing: beyond the amount of built substance, an urban space's character is also given by the way this space is used and managed, aspects that mere density indicators are pretty much blind to. In addition, the increased density produced by the presence of tall buildings may create a "disruption" of urban life, both because of the increased traffic flows, but perhaps more likely due to the inequality that is produced by the urban conflict between the attic dwellers and the pavement dwellers.

Density factors are loved by planners and administrations because – differently from many other devices to control development – they are hard to dispute, and give a rather clear indication of how things are expected to run once the building is completed. Nevertheless, experience also shows us how a hyper-dense city like Hong Kong can run much more smoothly than another with a lower density – take, for example, Rome – because of the way the public space is arranged, managed and used.

Green propaganda

So far, we have spoken of the emotions that strike us very directly, affecting the way our body resonates with its ambient environment. We have seen how urban space can inspire awe or generate fear, and how vertical buildings give their contribution to either one – or sometimes both – of these affective dynamics. My concern is that these topics are constantly under-addressed when it comes to discussions about our contemporary cities, which are always drowned in arguments that are primarily of economic nature, and only eventually engage the political dimension. Nonetheless, there is one important topic which, although not directly speaking to the corporeal sphere, appears as very relevant when it comes to how our cities and our buildings are made.

Among the multiple crises we are facing in this opening sequence of the 21st century, the climate emergency seems to be one of the most urgent. The promise we receive on a daily basis is pretty much that of planetary destruction, to happen sometimes within the next decades unless drastic changes to our way of living are made, with remarkable previews that take the form of extreme weather, drought, inundations, storms, wildfires, etc. Despite this rather bleak outlook, it seems that there is indeed quite little being done to counter this tendency: if cities and communities should rather responsibly review their modes of development and find new ways to create wealth that guarantee a gentler impact on the environment, what we do see is that besides a veneer of environmental friendliness – that sometimes outright borders into "greenwashing" practices – the ways of doing are almost invariably the same as a few decades ago.

Tall buildings have always been considered among the main culprits for the lack of sustainability in the construction sector: they consume a huge amount of resources and embodied energy to build and run, and their height and generally strong transparency makes it difficult to heat and cool them without a huge energy expenditure – something that becomes even more relevant in these days, where energy costs are just soaring.

These topics began to be addressed already in the 1990s, when talk about sustainability in architecture was starting to be a more common topic (Herzog, 2000). Tall buildings with sealed envelopes – the typical, hyper-mechanized solution of North American skyscrapers – could not be naturally ventilated due to the fact that strong winds, unimpeded by the urban fabric or trees, would basically blow through them like a storm. Eventually, technical solutions with double or triple facades were introduced to allow passive cooling, at the expense of increased building costs and consumption of raw materials. In order to reduce the operational environmental impact of a skyscraper, it was necessary to front-load more complex constructive solutions, with an overall environmental balance that would still not prove to be effective.

A further problem is that wood construction, the most sustainable in terms of resources, is applied to tall buildings only in a limited way, and mostly in places where the wood industry is already well developed. In any case, it is by now common knowledge that trying to solve a complex problem such as that of a building's environmental impact by introducing more complexity – for example, cutting-edge technologies meant to mitigate energy consumption – usually backfires, creating further issues that only additional complexity can address, thereby initiating a vicious circle. In a nutshell: due to their very nature and the type of urban spaces they establish, tall buildings are not sustainable, unless... unless they are made to seem to be more sustainable.

Even without delving into the technical datum, it could be easy to dismiss this kind of architecture as a superficial, fully green-washed practice that cunning real estate developers espouse to appeal to foolish clients with absolutely no competence and the naïve imaginary of a child, all performed with the complicity of administrations who see in economic development – and on its repercussions, which are all too optimistically expected – the only reason for their existence. No major city in the world is today entirely free of this type of "green propaganda", a way of developing urban space that attempts to cloak the fact that to all ends, development is not sustainable, no matter how cleverly it can be done, or how many potted plants you can place on the balconies. To put plants on a balcony may well be a primary anthropological drive, descending from an old modernist tradition, but it is also the most naïve and degrading architectural invention of our times. The common objection to the conundrum of development is that sustainable thought is a by-product of Western capitalism, which attempts to sabotage the rise of emergent and competing economies, by claiming that they are affecting the planet's fragile global ecological balance. While this argument can be easily countered – it is, after all,

the rich Western world that largely contributes to pollution and climate change, despite all attempts at being sustainable – it is indeed true that there should exist a shared, global agenda towards whatever actions might mitigate human impact on ecosystems. If it is highly unlikely that development can be halted in any way, lest we dive head-first into a colossal and global economic and humanitarian crisis, then we can perhaps activate more reasonable ways of going about our cities and buildings.

In this sense, the vertical city model is by no means the best way to address such problems: a more sophisticated approach that contemplates a wider array of questions and possible answers, is probably more indicated. Alongside the usual matters that architects and planners incorporate in their thinking – design aesthetics, urban morphology, functionality –, what investors consider their priorities – cost efficiency, investment leverage and marketability –, and what finally administrations factor as crucial for their action – economic development, compliance with regulations and political return –, I would also add the fact that cities are the space of collective emotions, where individuals dwell and communities unfold, flourish or wither. Which of these will be the final destiny of urban space depends on a variety of factors that can be hardly controlled: in any case, where the designer is called to implement an expertise, there can be a contribution that goes beyond just the mere epidemic rhetoric that we so often witness in contemporary architecture.

The vertical city of tomorrow

The final queue we may derive from the topics we have articulated is that “building high” is not simply “to build more”: this may be an illusion summoned by the sorcerers of turbo-capitalist gain and by the shamans of hyper-liberalist politics. To raise buildings against the sky challenges a much more complex order of things, engaging the political sphere of the city, and meddling with emotions that are sometimes best left undisturbed.

As Tirana pursues its growth and development, shedding decades of urban stagnation and advancing to become a major metropolis in the Balcanic region but also the South of Europe, its community of designers, planners and administrators might well reflect on what kind of vision they are expecting for the next three, four, five decades. What we do know – because economic cycles are not entirely unpredictable – is that at some point the dynamic growth will slow: the city has been exploding for the past three decades and might grow further perhaps for ten or twenty more years, but the impulse will eventually come to an end, leaving an urban structure that will then remain in place for a much longer timespan. What will happen once the construction sites have gone, once the easy profit of real estate speculation has been reinvested in some other part of the world, and the business dynamism no longer provides benefit to a large swath of the city’s population? What will happen when citizens will be left with an urban fabric that has been shaped according to the demands of the market rather than to that of their daily life? Will the city’s space survive if it is taken over by an atmosphere of anxiety and darkness, just as it has happened so many other times in recent urban history? And although we

are not here to teach lessons – for every city in the world has witnessed its successes and its failures, its days of splendor and its times of sadness, we just mean to invite those who are somehow in charge of what will happen to remember that cities can be places of joy, of wealth, capable of inspiring awe, but can also be full of fear and anxiety.

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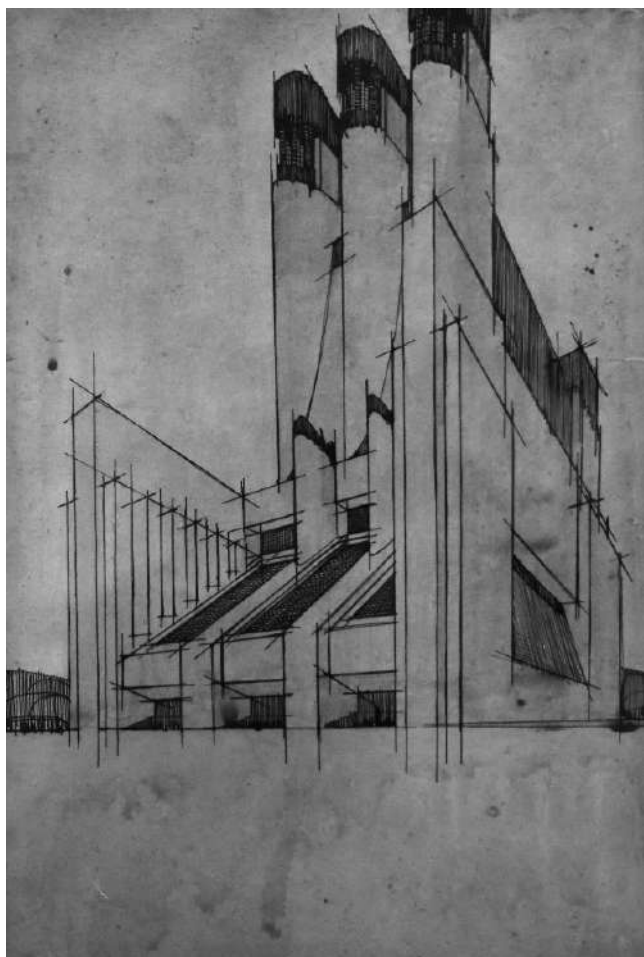


Figure 1. Antonio Sant'Elia, Preparatory study for a building, 1914



Figure 2. The Manhattan Skyline (Wikimedia Commons/Rhododendrites)



Figure 3. A Manhattan back alley



Figure 5. Fire at the Grenfell tower, London, 2017

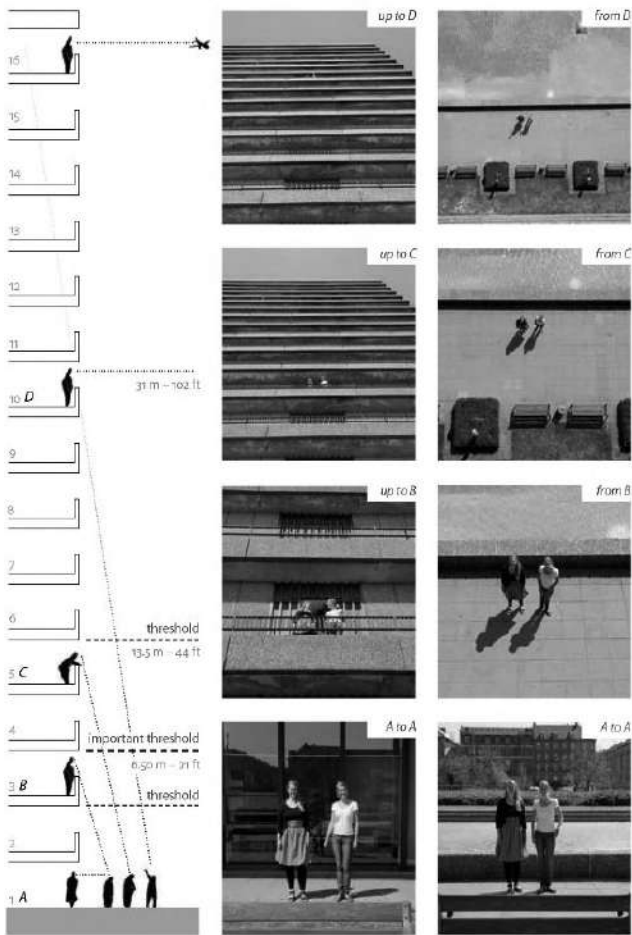


Figure 4. Senses and tall buildings. From J. Gehl, *Cities for People*, 2010



Figure 6. Richard Drew, *Falling Man*, 2001

Housing and High-Rise Building: a Longstanding Love-Hate Story

Is there an Upper Limit to Living on High Ground?

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Abstract

Climate change and the global pandemic seem to be pushing urbanization in opposite directions: the opposition between densification and distancing could open up, in the coming years, an increasingly frequent collision between the conflicting demands of climate and public health issues. However, the push for new concentration, after several decades in which low- and medium-density settlement patterns were favored, is now seen not only as a necessity on the urban level, but also as a fertile architectural design opportunity. In the housing towers of modernity, the living experience has often clashed with the monofunctionality of buildings and the problem of the loss of any relationship with the street and the ground. Many architects since the 1960s have attempted to bring some common spaces, intermediate between public and private into elevation, but this has often been insufficient to transfer urban vitality within a residential building and ensure the connection of housing to the ground and street-life. Today there is an attempt to recover the "streets on the air" through the Hong Kong lesson of an integrated and connected city, or there is a return to experimenting on the urban block and Medium-rise blocks by attempting to simultaneously generate high-density and human scale, better connecting people with the urban ground and with each other. Finally, we try to prefigure a new kind of multilevel city, in which a common dimension of many functions related to living is shared in spaces distributed along the height of high-rise buildings, also taking inspiration from the spontaneous power of informal associations that teach us to foster relationships among people, variety and flexibility of spaces, leading the experience of living back to an idea of domesticity thus overcoming the modern idea of the machine city.

Keywords

Housing, urban density, multilevel city, Hong Kong, common

Densification vs. distancing

The epidemic that swept the planet in the early 2020s, and which still threatens global health, has profoundly transformed the way we perceive space, both domestic and urban. Forced isolation for long periods in our homes and strict norms of spacing in urban spaces have on the one hand highlighted the stark inequalities relative to our private conditions, on the other altered even more radically the public dimension of the city. In recent years, ecological instances related to climate change and global warming have pushed us toward increasingly concentrated and compact city models, in which collective urban residence is preferred over the suburban single-family residence. That's to have more energy-efficient cities, accessibility and public services, vitality, cultural and social richness. So, the achievement of ever-higher density thresholds in human settlements-which in the early 1990s represented a minority trend in urban theories and early tentative attempts at anti-sprawl regulations-has become (before the covid 19 virus outbreak) the only possible attitude to ensure the environmental sustainability of the planet.

With the pandemic, and with the idea that we are likely to be in a condition that may happen again and again in the future, the social distance and physical disaggregation of people, imposed to limit the transmission of infection, have led to attempts to reduce densities wherever possible, running counter to what has just been stated.

This opposition between densification and distancing I believe that in a long-term perspective will open a conflict between the opposing demands of climate issues and public health. Above all, the coming future of our cities will be played out in the space between these two needs and in the new balance that architects will be able to find on the level of living and urban space.

Trying now to get out of the current pandemic conjuncture, let us then return to the idea that high-density housing is the most sustainable option for the future of our cities and that, by now, this approach is universally accepted. This is demonstrated even by the most extreme and controversial urban experiments: the recent "The Line", a linear city (170 km long, 200 m wide, and 500 m high) designed for 9 million inhabitants in the Saudi desert, on which work began this year, is based precisely on the idea of vertical living (Figure.1).

Modern times

Focusing now on the topic of dwelling, the high-rise building, and even more so the skyscraper, still struggles today to establish themselves as the housing type of the future. Indeed, as a building type emblematic of the globalized city, it has become a symbol of the inequalities between the city of capital and the slums that besiege the planned city. And so even the linear city along a railway line (The line, in fact), an urban model already envisioned by Arturo Soria y Mata in the late 1800s, is back in vogue. In this short text, we first ask these simple questions: can there be a skyscraper set on equity and social justice? Can the vertically built city still relate its inhabitants to the idea of domesticity and daily living? What is the height-boundary above

which the relationship between home and city, between residence and public space, loses value?

Contemporary trends related to inhabiting a higher-density city have created and continue to create new housing models. Working on density means shifting the focus from quantitative data to qualitative aspects, focusing on experimentation and typological hybridization, on the flexibility (spatial and temporal) of housing, on the search for the permeability of blocks and building porosity, and on the reactivation of urban systems and fabrics through the presence of collective residence and the inclusion of new functions and ways of living (Reale 2015).

Public opinion has historically established a love-hate relationship even before towards the high-rise building, towards the metropolis itself. Even the classical metaphors of urban sociology, in fact, consider the city according to images with a predominantly positive or decidedly negative value. Especially in the North American tradition, the city is seen as a place of dirt, discomfort, danger, and pollution or, conversely, as a center of wealth, culture, sociability and change (Rodwin, Hollister, 1984, 97-117). This assessment, almost aprioristic, sometimes true pre-judgment, has produced interpretive syntheses that have, from time to time, depicted a "bazaar city", a center of exchanges but also of different experiences and cultures; a "jungle city", crowded, intricate and potentially dangerous; an "organism city", a collection of parts, endowed with heart and brain, in which each part functions for the common welfare; a "machine city", in which this operating mechanism is not aimed at the common good but at producing the wealth of a small part of the population. The machine city, an illustrative figure of modernity, arises precisely from the idea of the division of labor, which produces a condition of subservience of the citizen in the metropolis, embodied by the Charlie Chaplin of *Modern Times* (1936), in which the protagonist is alienated because he is physically subordinated to the machine itself, which is organized instead to guarantee the economic interest of its owners exclusively.

But the myth of the modern city soon tends to reverse this image of the city, in the name of progress. No longer a negative metaphor, in the hygienist vision of the avant-garde architects of the 1920s, the machine city is a metaphor for an efficient and rational, and consequently healthy, city. The rationalist city of Gropius or Le Corbusier claims light, air and space and is based on the high-rise building, but appropriately spaced, "resting" on neutral ground, hardly ever stratified and complex in operation and activity. However, the relationship between height and density is a fundamental fact to be taken into account and we will discuss this later.

Amsterdam vs. Johannesburg

Going beyond these classical metaphors, at bottom so schematic and imperfect, the modern city is nonetheless (optimistically) perceived as a protected territory, the site of innovation and social integration, the place par excellence of cultural and economic development. In the urban context, the social classes, at least until the last century, could easily meet, confront each

other, and sometimes even clash to the point of staging the dialectical conflict of democracy, but always with a view to the social emancipation of the most disadvantaged classes. However, in the last two decades, the distance between the city of the rich and the city of the poor seems to have become unbridgeable: urban space is physically separated, characterized by boundaries and fences, and less and less used for collective purposes (Secchi 2013). And urban design tends to reinforce this increasingly polarized condition, which divides places, activities, human and social categories that are not homogeneous with each other.

Synthesizing even excessively, we could say that contemporary urban space tends to lose all its potential for urbanity. According to geographer Jacques Lévy, urbanity is, in fact, everything that characterizes the richness and complexity of urban experience. The division of labor and the consequent separation of activities and functions, as well as the increasingly extreme polarization between the haves and have-nots, have increasingly undermined the condition of urbanity, coming today to contrast, on the one hand, a city that is based on intermixing, and on the other on a city that tends to separate. Lévy calls these two urban forms the “Amsterdam model” and the “Johannesburg model”.

The debate on desirable urbanity has become polarized around two models of urbanity: one is the “Amsterdam model”, which accepts urbanity and the exposure to otherness this implies, while the other - the “Johannesburg model” - rejects it, accepting urbanity only reluctantly by seeking to privatize everything that can be privatized. [...] the first model, if adopted by inhabitants, tends to produce a “collected city” one finds mainly in large city centers in Europe and Asia. The second model, on the other hand, produces the “scattered and fragmented urbanity” often found in small towns and city outskirts in North America and Africa (Lévy 2013)

But beyond these simplifications, what the recent global pandemic has taught us is that the thing we absolutely cannot give up is relationships with other people, which means being able to meet each other, even accidentally, and having the opportunity to share with others, physically, the space of the city. To do this, we also need to bring our differences into play and “practice a certain kind of modesty: to live one among many, involved in a world that does not reflect only oneself. In Robert Venturi’s words, living one among many allows for ‘richness of meaning rather than clarity of meaning.’ This is the ethics of the open city” (Sennet 2018). If we remove this, the city simply becomes, at best, convenient in its being efficient, a machine precisely.

Above the canopy

After the revolution of modernity, the contemporary city is in a constant quest to recapture somehow “the exciting concentration of street and dwelling that was accomplished in 19th-century Paris” (Benjamin 2000, 474).

Perhaps the most glaring attempt to compensate for this loss

is the idea of “streets on the air” conceived by the Smithsons in the 1960s. In a sketch published in 1967 in *Urban structuring*, Alison and Peter Smithson considering mature trees as an element of structuring a site “as found”, note this consideration: above the 6th floor “it can be accepted that old forms of contact with the ground are no longer valid” (Figure.2). The concept of threshold, so dear to the Smithsons, is here “translated” from a planimetric condition to sectional representation, again within their research on the intermediate space between home and city (Smithson 1967). Above the canopies of a huge tree, at the height of about twenty meters, the direct perceptual link between dwelling and urban space is thus lost. And where the relationship between the street and the ground is lost, the architects attempt to bring up some intermediate spaces between public and private, spaces that the Smithsons call “streets on the air”. It is like admitting the impossibility of establishing a relationship of domesticity and familiarity with outdoor space above a certain altitude. It is the same issue that Gropius noted many years earlier (Gropius 1962, 103-115) when, developing the theme of the high house, he points out the difficulty of child supervision as the dwellings lose contact with the ground.

Where architecture has attempted (with little success, to be sure) to transfer properly public, or at least not directly residential, spaces to height, something has always been lacking. The streets on the air of Robin Hood Gardens as well as the empty floor of Corviale in Rome have, for example, failed in different ways. In the Smithsons’ landmark work in London - designed in 1968 by Alison and Peter Smithson and completed in 1972 - the condition of uniformity and social poverty and, above all, the economic pressure on an all-too-central area of the city has, after much controversy and attempts at rescue, led to the demolition of the intervention. This, paradoxically, occurred in the same year that the Grafton-curated Venice Biennale Freespace celebrated the building as a masterpiece of modern living¹ (Figure.3). Nowadays, the western portion of the complex has already been replaced by a series of “respectable” and anonymous residential and office buildings, while the eastern portion is waiting to be replaced in the same manner.

In Rome, after years of discussion about possible demolition of the very long Corviale building-neighborhood, the decision was made instead to retain the architectural organism (11 levels high), which, however, has been completely distorted by the transformation of the so-called “free floor” into simple apartments. The fourth floor of Corviale should have constituted a “street at height” with stores and services, thus establishing that link with the urban street that on the lower levels is instead deliberately (ideologically) denied. In fact, the Corviale building has a ground floor with garages for cars and a first level of cellars, the large macro-stairways (5 for the whole building almost a kilometer long) would have, in the intention of the planners, instead directly connected the public “little squares” with bus stops to the street at height.

¹*Robin Hood Gardens. A Ruin in Reverse. 16th International Architecture Exhibition - Venice Biennale, Freespace. Special Project of La Biennale di Venezia with the Victoria & Albert Museum.*

The more recent suspended plaza of the Mirador building in Sanchinarro near Madrid, designed by the Dutch MVRDV with Blanca Leó in 2005, attempts another route. Through the creation of an urban landmark that differs from the repetitive development of the city by compact six-story blocks, they envision a building that, by forgoing the traditional condominium courtyard, on the one hand preserves a much more generous portion of public space at the urban level, and on the other hand "restores" the public dimension of the courtyard in a semi-public sky plaza forty meters above ground level. The suspended plaza, directly accessible by an elevator from the plaza surrounding the building, is a belvedere (mirador) towards the landscape of the Guadarrama Mountains. In the design idea, it was supposed to be a space available to condominium residents but also to neighborhood residents. Unanimously considered a fiasco, it actually (in an early version of the design) would have provided a direct escalator from the urban elevation; who knows if it would have worked if it had been built as in this preliminary design?

Reflecting on these repeated failures, it also comes to mind that many experiments on collective residence between the 1960s and 1980s are indebted to Le Corbusier's *unité d'habitations*. A synthesis of architecture and urban planning, conceived as actual vertical cities (about 50 m high) founded on the idea of the living machine, *unités* were thus explored, extolled, and criticized (and five examples were built in Europe), while the other figure of collective living that the Swiss master had been working on since the 1920s was soon set aside and never experimented with realization. We are talking about the *immeuble villas*, a project that remained on paper, much less radical at heart than the *unités* because it would have been a mediation between the idea of the traditional urban fabric and modern innovations in terms of sunlight and ventilation. The height of the *immeuble villas* would not have exceeded 10 levels, preserving, despite the height, the relationship with the courtyard and the double-height terraces/roof gardens adjacent to each dwelling. This model would certainly have better embodied the contemporary needs for outdoor and appurtenant housing spaces (public and private) with direct accessibility at height, and as such, its rapid eclipse seems almost paradoxical.

Learning from Hong Kong

So the idea of bringing people to live at height, and with them, some collective functions would seem to come out defeated by the experiences carried out in the Western world. Yet, in very distant and different contexts, something different has happened. The contexts in which the transfer of collective spaces from the urban height upwards has shown its effectiveness, and also a new "historicized" experimentation, are the Asian hyperdense city, particularly the unique and very peculiar one of Hong Kong. Indeed, in this metropolis inhabited by more than 7 million people, the question of space (public or private) is an extremely critical issue. Hong Kong is one of the cities with the highest population density in the world and the least available building space. For this reason, public streets have a layering

of paths that are duplicated underground and at an elevation of about 10 meters above the ground. This suspended pedestrian viability, linked to elevators and escalators, is not a simple connection between one building body and another but makes up a veritable network of paths that sometimes enter high-rise buildings at a commercial elevation or intersect the cores of residential blocks, or remain tangential to some entrances or even come out onto roof gardens or microscopic public spaces. Squeezed between the sea and the mountains, Hong Kong thus constitutes a laboratory of urban experimentation where housing, protected natural areas, spaces and public mobility interact in sometimes surprising ways.

The elevated passages, called skywalks, reminiscent of the pedestrian paths of Smithson's *Hauptstadt Berlin* (1957-1958), increase in some cases their section and thus become transit systems and places of staying. It is not uncommon on festive days to encounter Hong Kongers, or more often, immigrant communities (Filipinos, Indonesians, etc.) who pause on this network of pedestrian structures (almost always covered but in the open air thanks to the always mild climate) for birthday parties, communal lunches with family and friends, dancing and chatting, collective viewings of TV series, etc. (Figure.4).

This is also because Hong Kong is the city in the world with the least living space per inhabitant, and it is, therefore, natural that social and convivial activities can never take place within the domestic walls but must necessarily take place in urban space. A city without ground (Frampton, Solomon, Wong 2012) that cannot be mapped traditionally but is understood through axonometric cutaway rather than floor plan (Figure.5). The dense network of street-level, elevated, and underground walkways, though limited to the skywalk network of Hong Kong's central business district (CBD) are thus effective-compared to, for example, the 1960s-70s European experiments-at least for two other reasons. First, they constitute a network and not individual chunks isolated from each other. Second, this network is grafted onto a very high-density city with great proximity between business and the built environment. So these spaces are always very busy and are sized to accommodate incredibly high flows of pedestrians (Wai, Wan 2007), especially during weekday daylight hours, partly because they directly connect predominantly commercial and tertiary buildings.

Dwelling and revenge of the common

In the last 20 years, experimentation on the presence of common spaces distributed throughout the height of residential buildings (and not only at the lower levels) has been more directed at particular types of housing. On the one hand, referring to the type of families that will inhabit these complexes (e.g., the *Baugruppen* in Berlin or other forms of cooperative living), which are generally chosen before the buildings are constructed, imagining together with the designers new "ways of living." On the other hand, by involving certain categories of users who share specific needs and inhabit these structures for a specific time (temporary collective housing). In particular, we are thinking of student residences and specific residences for the

elderly. In these facilities some common functions are necessarily shared among all inhabitants (laundries, garbage disposal, gymnasium, bar, study rooms, outpatient clinics, etc.). Others may be shared in a single environment for the whole building (cafeteria, library, common rooms/living rooms), or they may be located "on the floor," in several smaller rooms; or again, in intermediate situations, they may serve two or three levels of the building. In any case, the presence of functions that promote sociability and encounters on the upper levels of the building mitigates that detachment from the urban ground that seemed to have cut off any "urban" type of relationship. Obviously, we cannot speak of "public spaces at height" because these spaces are not properly public but simply common to the residents of that particular structure. On the difference between public, private and common much has been written in the field of urban studies. It is clear that urban space is based on very specific characteristics: anonymity, the possibility of encounters or unplanned stops, an albeit small component of risk, etc. But as Jane Jacobs teaches us, there is also a natural surveillance (the eyes of the street) and spontaneous discretion that characterizes relationships between acquaintances.

And to achieve this, one cannot ignore the "need for concentration" that, since the early 1960s, in an almost heretical but agreeable way, Jane Jacobs suggested as an essential precondition for having rich, diverse, mixed-use cities (Jacobs 1961). On the contrary, the common declines so many different situations that lie between the fully public dimension and the private condition of housing. Reactions to contagion during the global pandemic, especially in the lockdown phases, have revived this idea, shifting, in a non-painful way, some actions and practices from the public to the common.

In public space, the citizen, relating to the physical space and the local community, expresses their way of inhabiting the city. At the moment when a completely free and uncontrolled use of space is precluded, public space loses attractiveness in favor of the common, which is based instead on the activation of spaces with limited access for certain groups of inhabitants, places of sharing, therefore, but also of exclusion. At the same time, also thanks to the spread of remote work that the pandemic has rapidly extended, the dimension of the public tends to translocate some functions into the private. Although these two processes, already in place even before the pandemic, but accelerated by it, have contributed to exacerbating the loss of the public dimension of urban space. Nevertheless, they have also brought within the collective housing, especially when it is developed in height, vital spaces of service, meeting and sociability, often modifying its typological and distributive rigidities in innovative ways.

Let us then consider two recent special housing projects carried out in Spain: the first, 118 Apartments for Young People in Coslada, near Madrid (2013), is an example of social housing; the second, Julia tower in Barcelona (2009 - 2011), is a residence for the elderly.

In the Coslada building, designed by Amann Cánovas & Maruri, without erasing the achievements related to health-

fulness and distributive rationality introduced by the Modern Movement, an attempt is made to incorporate the complexity and functional richness of the pre-industrial city into the architecture of the dwelling. The project is based on collective space, an intermediate space between the all-public and private dimensions. In Coslada, the low plaza is completely open to the city, and the high plaza - the collective space on the fourth level - is accessible from the offices and residential towers and from the low plaza via flights of stairs that have a door (Figure.6). This collective space can be used by the citizenry in the same way as a park or public villa. The building, a public initiative with an extremely low construction price (435€/sqm), aims to provide housing in an area that is developing fast and where affordable housing for young people is scarce. In this residential development, 70 percent of the 118 units are for rent, and the rest are for sale. The lower plaza is connected by a suspended staircase and elevator with a second plaza that, rising ten meters above the first, connects the four towers and separates commercial and office uses from residential areas. The upper public plaza, partly covered, is the heart of the project. All communication routes are connected to this equipped space that becomes an area for leisure and community socialization, a common space at the service of the city. (Amann, Cánovas, Maruri 2015).

In the smaller 40-square-meter apartments, the opposite is reasoned: privacy is provided by a continuous system of closets to the outside and a core of bathrooms and kitchens on the side of the main access corridor, which insulates from noise and centralizes technical services. The basic type of apartment is configured as an open space separated by large sliding doors. All apartments have a seven-square-meter terrace protected from the outside, so it can be used year-round.

In the Julia tower in Barcelona, designed by Pau Vidal, Sergi Pons, and Ricard Galiana, a 17-story sheltered housing tower for the elderly, the search for common spaces is distributed along the entire height of the building, which is divided into three distinct communities (Figure.7). Each of them has at its disposal a large double-height common space, used by the residents for their common activities and clearly evident in the building's facade. The tower forms a landmark and is also equipped with general services (maintenance and cleaning) and social support for elders. The idea is for the building to be related to the urban context, but at the same time to be equipped with communal spaces, capable of triggering interaction among the residents and with the inhabitants of the city; social supports related to health aspects and user monitoring; activities, such as arts and crafts workshops, cinema, computing and memory workshops; general services.

Death and life of the multilevel city

The idea of the vertically developed city descends from Italian futurism (Sant'Elia) and constitutes a model to be utopically aimed at all architects of early modernity, also founding its fortune on a rich tradition of cultural and artistic contributions, consider for example the film *Metropolis* by Fritz Lang (1927).

In addition to the already indicated needs for proximity (be-

tween buildings, activities and people) and for the effectiveness of connections at height only if they are structured "in a network" and in the presence of an albeit "delimited" sociality, an issue that has emerged in recent years, even in the city that develops at height, is that of vegetation presence.

The level of "pulverization" of urban areas on the territory, the awareness of environmental and climate crises, loss of biodiversity and global warming, and the need to safeguard natural areas in the face of the raging population growth and the consequent land consumption, have led in recent decades to the affirmation of a sustainability paradigm based on the high-density / eco-cities pair. This new alliance between urban density and nature determines new and experimental forms of living, both in the compact city (Vertical Garden House by Ryue Nishizawa in Tokyo, 2011), and in the suburban sphere (Mountain Dwellings by BIG / JDS Architects in Copenhagen, 2008), also recovering the utopian-ecological paradigm of the 1960s and 1970s, which is back today as relevant as ever. Not only in ordinary or social housing interventions, but also in projects referring to high-density but luxury living: e.g., Stefano Boeri's Bosco verticale tower in Milan (2014); Big's "hybridized" courtyard with a highrise building (courtscraper, skyscraper + courtyard) in Manhattan (2016); OMA and Ole Scheeren's The Interlace in Singapore (2013), in which the isolated tower model is replaced with a complex system of interconnected blocks 6 stories high and stacked to form courtyards, common spaces, gardens, and rooftop terraces both public and private.

Even the issue of housing emergency was recently declined in height, with the occupation/self-construction intervention of the David Tower, an unfinished 45-story skyscraper in the center of the Venezuelan capital Caracas. Originally intended to become the headquarters of the financial group Confinanzas and Banco Metropolitano, its construction was halted in 1994. Since 1995 (until its eviction in 2014) the building began to be occupied and "reconstructed" by local residents. The structure has become a kind of "vertical slum" whose vitality is sustained by the co-presence of residences (more than 750 households), resident services, gyms, stores and informal medical offices, etc., which give rise to a vertical informal community (Brillembourg, Klumpner 2013). For these reasons, the "reconversion" of the building was awarded the Golden Lion for Architecture in 2012 by the jury of the Venice Biennale, as an emblematic example of collective and informal living in relation to the theme of the exhibition directed by David Chipperfield, which was precisely the Common Ground².

The spontaneous and providential use of condominium terraces during the lockdown took us back to the rooftop of Le Corbusier's *unité d'habitation* in Marseille, to the idea of autonomy of the living machine in which social activities and neighborhood functions all coexist in the same architecture. But once

we return to living freely in urban space, what are today's compact, high-density housing solutions as alternatives to isolation in the territory of modernist living machines?

The first looks to the past, the model of the European city, and the present in the reinvention of the urban block through the experiments of recent decades on social housing in Europe (Reale 2012), and more recently, also in the United States. This model, again starting from Jane Jacobs' idea of privileging a high-density urban fabric along with the "need for small blocks" (Jacobs 1961, 178), leads to the revaluation of the direct street/housing relationship and the courtyard-garden, not necessarily enclosed on the four sides of the perimeter. This is the soft city model (Dim 2019) in which medium-rise blocks (between 5 to 12 floors) are preferable to high-rise buildings (13 floors or above) and skyscrapers (over 40 floors). In the soft city, medium-rise blocks are the key to simultaneously providing high density and human scale, better connecting people with the urban ground and each other, adapting the city's fabric to our evolving needs, and nurturing the relationships that indulge the pleasures of daily life.

Instead, the second contemporary alternative is contained in the revival of the multilevel city model. It is a choice that certainly reconnects with the architectural thinking of the second modernity, thinking of the idea of "visual groups" developed by Bakema with the open society proposal in the 1960s (Bakema 2018), but which then arrives, as we have seen above, at the need to provide for common spaces and shared actions throughout the development of the building. These collective spaces, which are also understood as internal porosities of the architectural organism, conceived as a real urban infrastructure, and which almost always arise from the experiments on special collective housing, also question the typological layout of the high-rise building, thus finding ways to experiment with new ways of living. There are many interesting examples realized recently, from projects in France by Sophie Delay working on spatial and typological flexibility, to Berlin realizations by Heide & von Beckerath focused on cooperative living and the presence of activities open to the city, to "cluster housing" experiments, such as the Haus A, a project in Zurich by Duplex Architekten (2017). The cluster housing model, which refers to the Smithsons' urban model, is slowly spreading across North Central Europe, definitively challenging the pattern of the bourgeois house. The apartments in Haus A can accommodate 10 to 12 people per apartment, and the living and kitchen areas, freely arranged on the flat, are generously sized and form a common connective within which private cores with bedrooms and bathrooms "float."

So turning back to the questions we were asking at the beginning of this text, we can, at this point, say that a skyscraper set on equity and social justice can only take the spontaneous strength of informal associations as its inspiration as well. This, in addition to fostering relationships between people and the variety of spaces, easily leads the design of the residence back to the domestic space of the home and moves us forever away from the modern idea of the machine city.

²Torre David gran horizonte by Urban Think Tank, Justin McGuirk, Alfredo Brillembourg and Hubert Klumpner with photographer Iwan Baan is a project to reuse the existing structure from observing the organization that the community has demonstrated, without receiving government subsidies, creating an urban community within the city in just eight years.

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An Integrated Inhabiting: What are we Talking About When we Talk About it.

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Abstract

Starting from the consideration of (also) verticalization processes as one of the expressions of a declining, dis-integrating way to conceive human settlements, and based on two fundamental premises - (i) the long-lasting crisis of functionalist housing, and (ii) the emerging fading of the clear distinction between town and countryside - the paper proposes instead the prospect of a re-integration and reticularization of living-production-enjoying places. Concerning the above prospect, some relevant practices are treated, which show more or less significant traces of self-sustainable developments, able to strictly relate the housing with a range of other integrated activities.

Keywords

Inhabiting, sign-object, urban, urbanity, urban bioregion

Introduction

This paper stems from the participation of the authors in the 2022 Tirana Architecture Week, in which they co-tutored the workshop “High-rise buildings vs. an integrated inhabiting”, focused on (trying to) revealing the possibilities to integrate and reintegrate multifunctionality in the Tirana conurbation, where the current verticalization trend can, on the contrary, be read as one of the expressions of the monofunctional approach to human settlement, that is towards the disarticulation of the living, producing and enjoying activities occurring within a territorial context. In particular, as seen in the workshop report, the selected study area shows a co-presence of informal housing and various activities, but also increasing pressures towards ‘modern’ developments, according to models that tend to the complete dis-integrating of the inhabiting processes.

Design as semiurgic dissociation between subject and object

We will discuss here about an ‘integrated inhabiting’, to offer a minimal contribution to overcoming the reduction of the world of design/planning activities - still ongoing even post the architectural postmodernism (and what followed) - into (designed/planned) ‘objects’ on the one hand and ‘environment’ on the other, and the related dissociation and opposition not only between the two terms/concepts, but also between Human Beings and Nature in our everyday experience.

But, while we can say that this last dissociation/contraposition is deeply rooted in Western civilization since its origins, we must also point out that, according to Baudrillard, objects only begin to exist at the time of the mutation of the industrial society into our current techno-culture, i.e. from the passage out of a metallurgic into what he calls a ‘semiurgic’ society (Baudrillard, 1981, p. 185). That is, “the object only appears when the problem of its finality of meaning, of its status as message and as sign begins to be posed beyond its status as product and as commodity” (ibidem).

It is, therefore, a real mutation of the status of the former industrial ‘product’: before the advent of this object form, nothing is an object, while after that, everything is (ibidem), in the sense that every-thing signifies its function, i.e., “becomes the object of a calculus of function and of signification” (ibidem).

Baudrillard having so posed the question - in a way that evidently concerns us very closely as planners/designers - it is easy to understand why he, while tracing the embryos of the above mutation in the 19th century, attributes to the Bauhaus the responsibility of having theoretically consolidated what he calls the ‘revolution of objects’ (ibidem): “Before the Bauhaus, there were, properly speaking, no objects; subsequently, and according to an irreversible logic, everything potentially participates in the category of objects and will be produced as such” (ibidem).

It can therefore be traced back to the Bauhaus that universal ‘semantization’ of the environment, in which total functionality also means a total ‘semiurgic’ dissociation upsetting the traditional mode, in which objects were bound together, had no sta-

tus of their own and did not form a system among themselves based on a finality coinciding with functionality (ivi, pp. 185-186). Functionality, or simply the function, that in the semiological (dis)articulation of the sign-object into a ‘signifier’ and a ‘signified’ becomes the rational, objectifiable signified of the object signifier (ivi, p. 187). The sign-object completely obeys, therefore, the linguistic schema, and in fact design emerges simultaneously with this semiotic splitting in two terms, “as the project of their ideal articulation and the aesthetics of resolution of their equation” (ibidem).

If the function is the objective signified of every object, then: i) the signified of sign-objects is denotative (not connotative); ii) the thing denoted (functional) is beautiful, the connoted (parasitical) is ugly; iii) the thing denoted (objective) is true, the connoted is false (ideological) (ivi, p. 196).

Behind the equation object-function takes place, according to Baudrillard, a whole labor of dissociation and abstract restructuring “of every complex subject-object relation into simple, analytic, rational elements that can be recombined in functional ensembles and which then take on status as the environment” (ivi, p. 187). It is only on that basis that “man is separated from something he calls the environment, and confronted with the task of controlling it” (ibidem).

Unfortunately for us (designers, architects, planners, engineers, etc.), according to Baudrillard, “this split, this fundamentally broken and dissociated relationship (...) between man and his environment is the *raison d’être* and the site of design” (ivi, p. 201).

City/countryside dissociation

In our opinion, splitting the sign-object in two terms, signifier and signified, evidently corresponds to (or perhaps confirm and deepen) not only the split between human being and the environment, but also many other forms of persisting dualism, beginning from the city/countryside dissociation, as well as, conversely, the complementary long-lasting association between the term ‘city’ and the term ‘urban’.

According to Choay (1994), in today’s common language, the French word *ville* (city) - from the Latin *villa*, which also means village (both in French and English), we add - continues to designate the place or static support of a triple communication involving the exchange of goods, information and affections. In other terms, it remains associated with the concept of an inseparable union of what the Romans called *urbs* (physical territory of the city) and *civitas* (community of the citizens who inhabited it), i.e., it stays anchored to the reciprocal belonging of a discrete and fixed spatial entity and a population.

But, according to Choay (1994) again, such a kind of city not only is by now dead but above all, it no longer coincides with the ‘urban’. In fact: i) the interaction of individuals is now both multiplied and delocalized; ii) belonging to communities of different interests is no longer based on proximity or local population density; iii) transport and telecommunications involve us in ever more numerous and diverse relationships, as members of abstract communities or whose spatial locations no longer

coincide and no longer have stability over time (Choay, 1994). We can then define the 'current urban' as a system of references, physical and mental, constituted by material and immaterial networks as well as by technical objects, whose manipulation involves the resounding in a looped circuit of a stock of images and information, regarding the relationships that our societies have with space, time and human being. In other terms, the 'urban' can be seen by now as a kind of 'operating system', valid and developable in all places, cities and countrysides, villages and suburbs (Choay, 1994).

An urban without outside (or withoutside)

Consistently with the interpretation as mentioned above of the urban by Choay, we should also recognize that it "can no longer be understood with reference to a particular 'type' of settlement space, whether defined as a city, a city-region, a metropolis, a metropolitan region, a megalopolis, an edge city, or otherwise" (Brenner&Schmid, 2011, p. 12), and that "it is no longer plausible to characterise the differences between densely agglomerated zones and the less densely settled zones of a region, a national territory, a continent, or the globe through the inherited urban/rural (or urban/non-urban) distinction" (ibidem). Although it can still be considered true that the processes of agglomeration remain essential for also generating this new 'urban' (Soja, 2000; Scott, 1988), the current urban system can no longer be treated as if it was composed "of discrete, distinct, and universal 'types' of settlement" (Brenner&Schmid, 2011, p. 12), as opposed to the rural 'surroundings'.

The assumption that the world is divided into discrete types of settlement is at the core of the hegemonic 'urban age thesis', as is the urban/rural opposition, in turn "understood in zero-sum terms: all of settlement space must be classified as either urban or rural; the extension of the former thus entails the shrinkage of the latter." (Brenner&Schmid, 2014, p. 744).

But it is quite clear, on the contrary, that we are now experiencing a situation of 'planetary urbanization', where "even spaces that lie well beyond the traditional city cores and sub-urban peripheries (...) have become integral parts of the worldwide urban fabric" (Brenner&Schmid, 2011, p. 12), which by now includes "transoceanic shipping lanes, transcontinental highway and railway networks, and worldwide communications infrastructures to alpine and coastal tourist enclaves, 'nature' parks, offshore financial centers, agro-industrial catchment zones and erstwhile 'natural' spaces such as the world's oceans, deserts, jungles, mountain ranges, tundra, and atmosphere" (ibidem).

Brenner calls these pieces of the new urban fabric 'operational landscapes', intending them as non-city spaces of high intensity, large scale industrial infrastructure (Brenner, 2016, p. 125), as for example: the desert agro-industrial infrastructures in Saudi Arabia, supported for several decades by subterranean water wells causing the depletion of aquifers; the swathes of the Amazon cleared since the 1990s to facilitate industrial agriculture and expanded long-distance logistics infrastructures; the regional landscapes in Central Florida infrastructuralized by

the large mines of phosphate used as fertilizers in industrial agriculture; the industrialized agriculture in Minnesota, where the widespread adoption of precision farming techniques, industrial planting, fertilization and harvesting technologies have been customized to locational conditions at the scale of individual fields; the colossal, high-technology industrial infrastructure of the Chuquicamata copper mine in Northern Chile, that supplies essential materials and minerals to the world's megacities; the soya-bean production in the Cordoba Province (Argentina), that contributed to an infrastructural standardization of the landscape (Brenner, 2016, pp. 119-127).

Integrated inhabiting as a new form of urbanity

The reason why, according to us, it is essential to recognize the emerging forms of the 'urban fabric' lies in its relationship with 'urbanity'. Although urban fabric and urbanity are evidently interconnected, they do not automatically coincide with each other. According to Choay (1994), urbanity has to be seen as a reciprocal adjustment of a form of the urban fabric and a form of conviviality. In the absence of some form of conviviality, there is then no urbanity, even in the presence of an urban fabric. And on the other hand, the urban fabric with which to interact convivially can no longer be sought exclusively in the historic and modern city; if we don't want very large portions of the terrestrial globe to be covered, as it has already been happening for some time, with 'operational landscapes' (see above examples) devoid of any urbanity embryo.

But, many other and different urbanizations are possible (Brenner, 2016, p. 127) that, "insofar (...) challenge the dogma of the hypertrophic city (...) they also open up a horizon for imagining an alter-urbanisation" (Brenner, 2016, p. 126-127). Or rather, many alter-urbanizations, unlike operational landscapes oriented to capital accumulation, can constitute the outcome of processes of reorganizing non-city urban spaces for collective uses and the common good (Brenner, 2016, p. 126). In order not to leave the term landscape exclusively to the 'operational' dimension, and keeping in mind the almost poetic definition of urbanity by Choay (1994), we would suggest here to conceive such alter-urbanizations, or more generally all the possible new convivial urbanizations, as 'relational urban landscapes': neither regressively nostalgic, nor progressively escaping from 'actuality' - to paraphrase Choay herself (1965) - but 'virtually' (Lévy, 1995) capable of integrating cities and countryside, as well as overcoming several other dualisms, such as Human Being/Nature, Nature/Society, City/Countryside, Urban/Rural, Internal/External, Citizens/Foreigners, etc.

But what could be the role of designers/planners within such kinds of 'alter-urbanization' or 'relational urban landscaping' processes? To avoid any neo-demiurgic temptation, we think it is better to follow again the suggestion of Brenner to "constructing new cognitive maps of the planet's unevenly woven urban fabric", to "provide much-needed orientation for all who aspire to redesign that fabric in more socially progressive, politically inclusive, egalitarian and ecological ways" (Brenner, 2016, p. 126).

In this regard, Brenner obviously introduces the political dimension of the question, affirming that “urbanisation projects are collective political choices” (Brenner, 2016, 127).

We do not have enough space here to deal exhaustively with this question. We will therefore limit ourselves to referring to Magnaghi (2020), who, recalling the ‘territorial principle’ of Adriano Olivetti, identifies the first level of political decision with the concrete community of inhabitants-producers in a synergistic relationship with a reference territory for the local closure of the cycles of food, water, waste, energy; concrete community, therefore, as a community committed to enhancing the heritage of that same territory (‘territorial heritage’), consisting of the set of values produced, through the different civilizations that have occurred over time, by the processes of co-evolutionary inter-relationship between human settlement and nature.

But what is the ‘reference territory’ of the ‘concrete communities’ of ‘inhabitants-producers’? In this regard, Magnaghi (2014) first of all recognizes that the expansion of the spatial dimension of contemporary urbanizations and the dominant role of telematic hyperspace imply an anthropological mutation of the relationship between human settlement and the environment and that, consequently, it is not today a question of returning to the historic city, nor the rural village, nor to the historical concepts of polis and civitas, but to seek a new form of urbanity starting from the new geographical dimension of inhabiting and from its multi-scalar relationships, as well as the different possibilities of interaction between physical space and space or networks, or space of the flows in general. According to Magnaghi (2014), this new geographical dimension has to be identified with the ‘urban bioregion’, whose governance should be, however, translated into an interpretative and project tool at the level of the minimum units of territorial and landscape planning of a large area of a region, where to integrate the aspects of housing, productive, infrastructural, environmental, and landscape.

Searching for integrated inhabiting practices

It is precisely by thinking of Magnaghi’s minimal but trans-scalar bioregional planning units that we searched for some relevant practices in which it can be found, at least in the embryo, an effort to develop self-sustainable cycles that strictly relate the housing with a wide range of integrated activities (f.e. food supply and other agro-forestry-pastoral activities, etc.) as well as embedded forms of adaptation to climate change effects.

The first experience that we think of interest is the creation, in 2005 in France, of a planning tool called “Perimeters of protection and enhancement of peri-urban agricultural and natural spaces”, with the primary objective of overcoming the simple environmental protection provided by the Sensitive Natural Areas. In the urban area of Bordeaux, an historic green corridor became one of these ‘Perimeters’. It establishes some parts of the peri-urban territory for agricultural and farming purposes, in integration with environmental protection, avoiding construction processes. The main positive factors of the tool are that it: integrates productive uses in the metropolitan area, syn-

thesizes environmental protection, open-air leisure and primary production, contributes to the preservation of short food chains in the metropolitan area, and supports the active creation of valuable landscapes. On the other hand, it considers a limited multi-functionality, as the only productive uses are agriculture and farming. It also does not allow direct integration between housing and productive use of the territory. Furthermore, only coercive tools are provided to reach the objectives, and there are no processes for the participation of people in designing the shape of the area.

Another experience in France that deserves attention is the system of urban farmers’ markets developed in Marseille through the years. The first step of its implementation was the match between an association of small local producers and the association of residents/storekeepers of a square, which led to the rise of the first market. It produced the rebirth of the area, both in a material and relational sense, as it created relational spaces in a high-density urban area. In a broader sense, as the system of urban farmers’ markets reduces the length of food chains, it also reduces the environmental impact of food production. It contributes to the food resilience of the city/region, also allowing direct involvement of people (producers and consumers) in the reactivation of urban spaces. The limiting factors are the small impact on the main food chains, the persisting separation between the places of production and the places of consumption (and living), and the lack of integration in a broader strategy of the institutional frameworks.

The latter is, conversely, the main focus of the experience of the Stuttgart Region Landscape Park. In the context of a metropolitan area characterized by high pressure from the market for densification, scarce spaces, fast-growing low(er)-density settlements in the suburban area and environmental issues (also related to climate change), from 2006 the Verband Region Stuttgart developed the ‘Landschaftspark’ (‘Landscape park’), to connect the still existing open areas in a general framework of multifunctional spaces. The municipalities in that Region developed six masterplans to implement, in detail, the general provisions of the Landscape Park. In the framework of the masterplans, the municipalities realized 120 small-scale interventions. We can observe that the Landscape Park is conceived as a multilevel and multiscale approach to planning the regional area, in which the process can be developed voluntarily by the municipalities. The project forecasts the multifunctionality of the spaces at a regional scale, “from parks, fields, vineyards, orchards, meadows, ravines and river banks to forests and valleys. Panoramic viewpoints, leisure areas and sights”. The more critical aspects of the processes are that both the definition of the Landscape Park project and the master plans are basically expressions of a top-down approach, even if the stakeholders are involved, and that the general framework of the Landscape Park is conceived as a ‘green counterbalance’ to the ‘gray’ part of the territory, without overcoming the dichotomy between them.

Another comprehensive institutional action that is worth noting is that of the City of Barcelona, whose City Council devel-

oped strategies to make the city more liveable, also in adverse climate conditions: Green Infrastructure and Biodiversity Plan 2020; Tree Master Plan; Nature Plan 2030; Superblock Plan; Superilla project. The plans have the general common purpose of increasing the urban green infrastructure, also through a part of farming and gardening plots, and they paid specific attention to reducing the risk of green gentrification and social injustice. The Barcelona Green Strategy is composed of several different plans that draw a relevant retrofitting operation on the built environment, even in the very core of the city, also enabling a large participatory process through the involvement of the Citizen Council for Sustainability. The main weaknesses of the strategy, however, are that the relationship between the city and its region is not clearly taken into account, and the role of the productive plots is mainly for leisure and social cohesion, without significantly addressing the patterns of food production-consuming.

On the contrary, an experience ongoing in Porto aims to reactivate (part of) the productive landscapes of the city. Fontinha and Doze Casas are two of the largest city blocks, and have vast inner open spaces. The City Plan defines them as areas for 'urban development', that is, building sites. Research revealed that they are an expression of the 19th century city structure, in which each block had inner plots used for food production for the inhabitants. Pilot projects ('Quinta da Fontinha' and 'FARM') arose in the two blocks for reactivating (part of) productive urban landscapes, for a total surface area of about 11500 m², resulting in a way to reintroduce the 'original' integrated inhabiting of the city. The plots are directly created and managed by the inhabitants, allowing active participation in the continuous reproduction of the urban (productive) landscape, partially reducing the dependence of the blocks from the main food chains. As the scale of the case study is relatively small and the projects are not integrated into a broader public policy to preserve and restore productive urban landscapes, the impact is quite limited. Moreover, the 'integration of inhabiting' is only related to food production.

The last example is the restoration of the San Pedro Tláhuac settlement in Xochimilco, an area recognized as a UNESCO site (World Heritage) and an example of a landscape created through a very long interactive adaptation between man and (water) environment in the context of the metropolitan area of Mexico City. The project aimed at improving the water management for inhabiting and agriculture, through interventions regarding water supply, wastewater treatment and control of extreme climatic events, with extensive use of nature-based solutions (NbS). The project considers both the innovative approach of NbS and the traditional way of managing the territory, integrating them with gray infrastructures. It combines the prosecution of agriculture with improved resilience to climate change effects, resulting in a way to overcome the separation between the built environment and the natural environment.

Conclusions

Although in the 'urban studies' and the so-called 'sciences of design', as well in the associated techniques, the 'modern' and 'modernism' have been subjected to intense criticism for a long time now, the design/planning activities, at the various scales to which they apply, seem not yet able to escape from a sort of impasse, probably a symptom of what F. Choay (2006) defines a progressive loss of the ability to build and inhabit of our current culture (in an anthropological sense).

However, it is also probable that one of the aspects of this incapacity is connected to what J. Baudrillard (1981) considered a kind of universal 'semantization' of the environment, i.e. the reduction to a purely linguistic scheme of the fundamental interaction between human beings and their physical environment (De Bonis, 2002). A reduction in the separation between signifier and (semantic) signified seems to correspond to a series of other hindering separations, starting from that between city and countryside.

It is, therefore, more than ever necessary to finally access a new conception of the 'urban', capable of acknowledging the 'death of the city' (Choay, 1994) and the new, emerging forms of 'non-city urban' (Brenner, 2016).

With respect to the latter, it is equally urgent to make design skills available in the direction of unprecedented forms of conjugation between new urban fabrics and possible forms of conviviality integrable with them, capable of reconstituting a real new 'urbanity'.

It is our opinion that the integration of these possible forms of conviviality in the new urban fabrics must necessarily involve, in turn, some form of integration between housing and other co-evolutionary interrelationship activities between human beings and the natural environment.

In this sense, some interesting experiences can already be traced, but certainly, they are only the embryos of a new urbanity still far from a consolidated and pervasive affirmation.

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Does the High-Rise Building Typology meet the needs for City Densification? The case of Tirana, Albania

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The first high-rise building ever in Tirana and Albania was built during the 70-s. This was Hotel Tirana or “15-kateshi” as it was nicknamed. At that time, Tirana was building not more than six floors high due to limitations in finances, technology, as well as seismic regulations. Hotel Tirana was an exception for ideological and symbolic reasons of the regime.

After the ‘change’ of the early 90-s and the return of the market economy, several private construction companies came up by developing ‘tower’ typology buildings of 7-9 floors. In the second decade of transformations, the municipality developed several international architectural competitions, including a masterplan for the city centre (2003) and other specific construction sites, mainly for strategic high-rise building purposes. During these years, Tirana was densified by tripling its population thanks to a typology of towers of 9-11 floors. There has been a lot of criticism of the respective municipal decision-making procedures, allegedly related to the politicization and corruption of the verticalization and densification process via control of the building permissions system.

The new municipal plans since then continued with the logic of densification, especially in the city centre. However, the last municipal development plan (2016) came up also with a proposal for verticalization, which reached the climax of implementation, especially during the Covid-19 pandemic. Active citizens, intellectuals and professionals complain that in such conditions of total isolation, the decision-making was non-transparent at all, and everything became a matter of fact.

Nowadays, several international monitoring agencies speak for indicators that show a worsening in terms of life quality in

Tirana. Most of the worsening indicators such as traffic, air pollution, flooding, loss of green areas and public space, deteriorating infrastructure, and loss of visual contact with surrounding landscapes, among others, are devoted to the sudden verticalization and densification of the city by local and central authorities.

Therefore, it is interesting to understand the main reasons for the attractiveness of this type of building from a theoretical and practical perspective. It is also a fact that Tirana inherited from the times of the centralized economy was not so much efficient in terms of image, buildings and infrastructure, and something had to be done. Meantime, some of the main arguments mentioned in favour of verticalization and densification are as below:

- Land scarcity and territorial constraints – In Albania, land scarcity and territorial constraints are linked to the existence of a high percentage of mountains and numerous hills (almost 70% of the territory). Such conditions limit the cities from expanding in width, thus leading to the densification that supports development at higher floors. However, this cannot be done by harming the public, green and sports spaces that ensure the revival of community spirit and health. The emergence of pandemics and the number of deaths proved that Tirana is no more a healthy and sustainable city.
- Urbanization and re-urbanization – Cities are at the heart of economic life for a country. They also play a pivotal role in social, cultural, and political life. They provide access to a higher quality of life, especially thanks to the proximity of infrastructures and access to a richer ‘menu’ of services. Of course, this increases the

demand for housing in urban centres, and thus the construction of this type of building, as well. Albania and Tirana lived through a radical process of urbanization from early 1990 up to 2010. The impact of the global financial and real estate crisis, and the limit of growth related to the moderate scale of the country, somehow completed the phase of urbanization. The need for getting out of the economic crisis, as well as the national project to join the EU somehow pushed for a kind of re-urbanization process of the city centres, but the decay and dryness of other regions of the country.

- Population growth/decay – INSTAT Albania has undertaken several national censuses and planned different scenarios for the evolution of the Albanian population between now and the future. Albania reached almost 4 million inhabitants by the end of the 80-s after 4-5 decades of self-isolation. During the early 90-s, the country lost almost one million inhabitants due to massive emigration after the ‘change’. The second decade of the transition was a time of growth in all aspects, but the third decade suffered again massive escape of youngsters and a “brain drain”. At this point, Albania is evaluated to have around 2 million people living in the country. Most of them dream of better ‘housing’ conditions, while many emigrated families want to have their second houses in their home country when they come to meet families and for holidays. Also, the number of foreigners and expats living in Albania is increasing, while the percentage of the grey economy has flourished during the last decade as well. It provokes (artificially or not) demand for new houses, but in order to meet the needs, supply should, therefore, develop vertically due to the territorial constraints mentioned above.
- Architecture quality – It is a fact that Architecture in Tirana is used as a tool for building the new city/country image if one considers the “grey-sad images” of cities inherited from the communist past. However, the evolution of construction techniques and technologies has, therefore, made it possible to build buildings that are taller, more robust, dynamic, and beautiful; and often considering better integration into the city environment. Contrary to the boom of the 90-s and wild informality, when the quality of architecture and building materials was inferior to today, techniques have largely evolved and “tower” projects started to consider integration into the local context, facilitating acceptance by the population, despite the specific complaints in the case of Tirana. The presence of well-known international architects contributes as a “guarantee brand” for quality pushed further in this development direction.
- Benefits from the rents – The more dwellings are located on the upper floors, the more the landlords will have the possibility to adjust the rent or the selling price upwards, thus bringing to them and the municipal tax office a better return on the investments. Coupled with

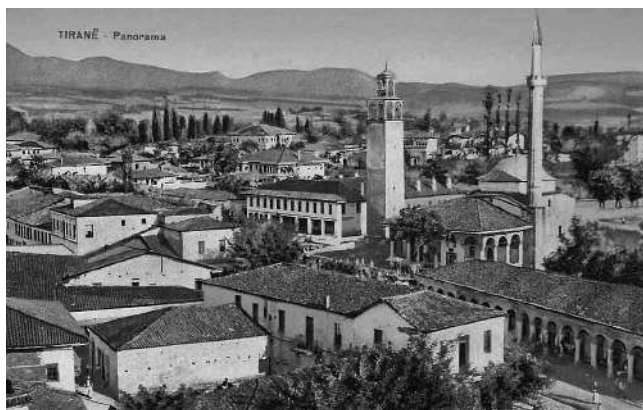
the fact that land is becoming increasingly scarce and more expensive (not to mention the legal complexity of ownership in Tirana), developers have higher incentives to build high-rises, especially in the city centre and the main gravity areas and access roads. It is, at present times, the main development trend for Tirana.

- The evolution of lifestyle – The traditional couples based on the man who works and the woman who stays at home are over. Meantime, there is a real growing trend for youngsters who want to live alone for a longer period; young people who are extending their studies; couples who are postponing the arrival of a child; or those who simply do not wish to have children. Thus, the desire to live better and alone, more than a constraint, intensifies and supports the need to densify cities to meet the demand.
- The emergence of a collaborative economy – The last decades brought many changes in the mentality and models of lifework in the cities. Supported by technology, the “sharing economy” facilitated the arrival of working and living concepts like Airbnb, Uber, and other digital companies. This trend has increased the autonomy and accustomed residents to share their daily lives; by taking advantage of significant discounts - whether in sports common halls, laundries or other services or on sharing rooftop terraces and balconies, for example. Thus, to take full advantage of such benefits, residents are more inclined to reside in urban centres rather than periphery or rural areas. It is also becoming a matter of social and economic “status”.
- Regulation after a long period of deregulation – Finally, there is also a political desire for densification at the height that is promoted by local regulators in order to conserve and preserve, among other things, a minimum of agricultural land and green spaces within and around cities, but also to meet the growing need for central housing by maximizing infrastructure efficiency. It is also stimulated further because of a kind of “fed up” of the public with the long transition and wild informality. However, a combination of verticalization and densification could also result in very bad outcomes if planning processes are not transparent or worst manipulated by local political and economic lobbies as it is the criticism in the case of Tirana.

In conclusion, we can say that there are positive arguments, as well as negative impacts on the cities concerning verticalization and densification processes. Although this has played a significant role in changing the image of the capital and country in Albania, the resulting outcome also shows many problems in reality and deformations or deviations from the constructive arguments that are brought in theory and public discourse.

Verticalization, in the conditions of rapid urbanization, is considered as the rapid increase of inner-city apartments via high-rise buildings, resulting in the development of “vertical” city parts, as well as urban densification in general. Al-

though both verticalization and densification processes in cities can provide several advantages, such modifications in the urban landscape are usually implemented extremely fast, especially after World War II (in the case of Western Europe and Latin Americas), or after the “Berlin Wall fall” (in the case of former socialist cities/countries – Eastern Europe).



Tirana during the 1920s.



Tirana during the Communist period in the 1980s.



Tirana in the 2010s.

TAW 2022 as a Vantage Observatory of an International Phenomenon. The Horizontal Dimension of Verticality.

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Tirana Architecture Weeks (TAW) is an international academic, professional, cultural, and social event, organized every two years by POLIS University, which aims to promote international knowledge related to art and architectural practices, sciences of the city, and research activities, starting from the Albanian context, reaching the international stage across Europe and other countries.

The edition of this year was focused on the thematic “Going High! The pros- and cons- of City verticalization”, related to the recent development of the urban context of Tirana, through the rapid increase of the high-rise buildings in the urban landscape, a phenomena-taking place worldwide. As a result, the main scope of this event was to exchange knowledge with international experience, which primarily resulted in creating a professional network of different backgrounds to analyze each of the components impacted by this phenomenon. One of the main objectives of Tirana Architecture Weeks 2022 was the exchange of academic experience between international universities and professionals, through the organization of 26 workshops in the disciplines of architecture, urban planning, engineering, environmental studies, and art design, focusing on the role of tall buildings as place-making components in the urban landscape. The output of workshops was developing new concepts from the analysis of different urban contexts, proposing several solutions, and elaborating project ideas, detailed solutions, or models.

The workshops were a collaboration between international professors and students, such as “Università degli Studi del Molise”, “Università degli Studi di Salerno” from Italy; “Ionian University”, “The University of Ioannina”, “National Techni-

cal University of Athens” from Greece; “The University of Minho” from Portugal; “Epoka University” from Albania, etc. The exchange of academic experience resulted in the development of different concepts to be applied in the Albanian context and opened academic debates not only between national and international academics but also between students, which were engaged with unknown urban landscapes, enabling the elaboration of a set of analysis and conclusions to be implemented in the case of Tirana. Other workshops were a collaboration of the academics of POLIS University and other professionals and organizations, such as the World Health Organization (WHO), UN-Habitat, United Nations Economic Commission for Europe (UNECE); and international firms of architecture and engineering discipline. Such collaboration provided the students with the knowledge of project elaboration and implementation in other European countries, or even the presentation of new technologies and materials applied in buildings and skyscrapers taking into consideration several aspects of their structure.

This edition of the Tirana Architecture Weeks aimed to promote academic collaboration through workshops, but also to encourage cooperation between different disciplines, by mixing the students and combining them with students from other fields of study. This collaboration not only prepares the students by exchanging knowledge with other profiles and using it for their professional growth but also prepares them with the practice of multidisciplinary teamwork for the development of a complete project.

The main achievement of these workshops was taking cognizance of high-rise structures and their role in placemak-

ing within the urban pattern. Primarily, by acknowledging their presence in the image of the city, serving as strong visual landmarks in the mental map of urban exploration, along with the importance of human scale relationship. Careful attention was given to the role of such structures in an existing urban context, by influencing several components of a city, such as a climate, territory, and social structure, resulting in alternating the dynamics of the city, an aspect that was further investigated to provide a set of principles to be executed in the building's architecture and reflected on the design quality, to be further investigated for the future of our cities.

During two intense weeks, where open lectures by prestigious keynote speakers in the field of architecture, planning and urban design were alternated together with international workshops, which also include empirical research on the topics of engineering, technology, the environment or even urban morphology, we achieved (just as successfully) to add another dimension to the TAW platform. We thought that the discussion at the theoretical level and the research at the practical level on the topic of verticalization in the city also needed a confrontation with other groups of interest, which share the same professional passion, but also the same professional doubts and civic concerns.

So, within this general framework on verticalization, we conceived and realized a round table, entitled "The Object and the Space" – the Vertical Dimension and the Horizontal Dimension. This free space of discussion gathered thoughts and professional opinions of architects, local architecture studios, lecturers, academics, urban planners, engineers, critics, publicists, anthropologists, researchers, journalists, activists, sociologists, lawyers and environmental experts. This constructive debate brought other professional viewpoints about the topic of verticality, a phenomenon that is drawing very strong traces at an incredible speed in a context as primitive, in terms of morphological articulation, as complex, in terms of cultural-social-economic, and the urban stratification of Tirana.

The purpose of the discussion was not to stigmatize the tower or the skyscraper, as a building (housing) typology in itself, but to discuss the relationship between Object (building/tower/verticality) - Space (environment/surroundings/plot/landscape), especially in the context of Tirana, where land speculation is starting to take on "pharaonic" (almost ideological) proportions. Even though the theme "object-space" for the architect may sound a bit out-of-date, almost modernist or post-modern, for professionals and other actors of the urban dimension this theme takes on another connotation, that of policies for the city.

Contrary to what is commonly thought and said, that the architect is the protagonist of the shape of an urban context/landscape, he, in an almost global scenario, remains a figure who puts his profession at the disposal of other powerful actors, such as builders, investors, owners, or the municipality. So the act of designing, and then placing/embedding/rooting a vertical object in a certain context (space/land/plot), therefore brings about the change in the social, economic, and cultural scenario of a certain group or community in its horizontal dimension.

The conclusions of this discussion between the profession-

als of the physical dimension of the city and those actors of its social-cultural dimension will be summarized in another special publication by POLIS University and POLIS_Press. It will probably be the first time, that for the situation and the current urban environment of Tirana in the last twenty-thirty years, such an open public discussion will also remain in written material. Let this be the beginning of a healthy tradition of discussions on the transformations of the city, and in our case, Tirana.

During two weeks, TAW also managed to organize a series of social-cultural events, which were again related to the theme of verticalization "Going High!" and the social and cultural phenomena related to it. This series began with the screening of the film "A Pile of Ghost", directed by Ella Raidel. As referred on the website of IHRFFA: "Dead new buildings and ruins, brokers and actors, documentation and fiction, simulation and lived experience: A Pile of Ghosts layers the seemingly disparate building blocks to form the title's "pile." In the end, one ghost story absorbs the other". The human dimension of the phenomenon of extreme verticalization is the main axis of the film, around which both the dramatic and funny stories of the characters revolve. The film was shown in collaboration with the "Marubi Film Academy", as part of the International Human Rights Film Festival Albania (IHRFFA), at the "Destil Creative Hub" in Tirana, whose premises have been recovered from a historic building from the 1930s.

The setting of almost all social events in buildings that belong to the heritage of the urban and architectural identity of Tirana was a deliberate choice. The social events had to emphasize the human dimension (in the social and cultural aspect) that such architectural objects and urban contexts offer, a dimension which is seriously at risk of disappearing due to the rapid urban transformations in Tirana in recent decades. Thus, "Polis Social Gathering" at "Bar Hemingway", "Alumnæ Social Night" at "Vila Bunkeri" and Photo Exhibition "Urbanity in Verticalization Times" at "Banesa Begeja", were organized precisely in such contexts, bringing classical music in the courtyards of old historical houses and photographic exhibitions that emphasize the low surrounding walls of these courtyards. Non-professional photographers, such as Artan Rama, Jora Vaso, Doriana Musaj and Sabian Hasani, exhibited photos from the everyday urbanity of Tirana, often viewed from a critical perspective.

But, at the end of this part, as a conclusion, we would also like to bring here the interesting interpretation that Jora Vaso makes of this reality, as strange as it is stimulating: "I see connections between elements that perhaps cannot, or should not, be connected, but now it seems to me that this task has been assigned to me, by myself. Not to survive, but for much more. To preserve the desire for life, for nature, for beauty, especially in cases where they are threatened". To live, regardless of everything, trying to find a beautiful human dimension, even though it seems impossible!

To sum up, it is possible to affirm that TAW 2022 proposed a multifocal and international analysis of the phenomenon of urban verticality through the intellectual cataloguing of experiences, the summation of whose chapters proved fruitful in defining a common substratum beneficial for its decoding.

However, several limitations have emerged in this multicultural expression as a result of the atypicality and absoluteness, in some respects reactionary, of this urban manifestation.

From the keynote speakers' presentations during the TAW days and the discussions that emerged because of their interventions, skyscrapers seem to pose as adaptive to the expressive language of each era. They have moved from incarnating historicism as an aesthetic-formal quotation to an antihistoricism that reflects current times, where decontextualisation and designer-supplied experientiality act as context, replacing it.

The tall building and the skyscraper thus seem to be the result of the economic accumulation of capital in a given place and period and, consequently, a 'litmus test' of the wealth status of a city or country. Thus, a sort of index for anyone trying to infer its internal dynamics from an external point of view, albeit in a simplistic way. This sharpens its dissonance with the dense but informal context in which such objects are placed, as in the case of Tirana, the capital of Albania. In the Balkan city, the desire to enter an international discourse on capital allocation seems to willingly accept visual and factual homologation to this recognisable global linguistic syntax. At the altar of development appears to be sacrificed the so-called 'minute life' of the neighbourhood, which is redefined and reshaped by a kind of aporia, where the new demands require gentrification, expulsion, and relocation for its fulfilment.

Further, dilemmas also seem to open up concerning the true sustainability of the same, not only in economic or climate-related performance but also in terms of form and relations with land use in an urban context. In the latter case, dimensional differences emerge between European and American skyscrapers where, for the European ones, land occupation is only a few parcels while, in the American ones, it requires the replacement of the urban block with significant effects on the neighbourhood itself.

Net of these considerations, their realisation coincides with the exaltation of applied design technique in all its forms and fields. From the functional architectural programme, multifunctionality is a consolidated design practice. The hybridisation of functions occurs in the building's verticality and not only in specific areas, as was previously the case in the podium located at their base. Technological and structural solutions become distinctive and characterising, with effects on local and regional know-how in terms of realisation and stimulus in their application to more ordinary building types.

The technical fact, therefore, seems to be consummated if one considers the architect as a service provider rather than as the one who humanistically responds technically to questions of various kinds related to the above. Among the debatable questions of growing international media interest, one could mention the origin and ethical conditions of the workers engaged in the construction phases, the source of the capital invested in the real estate operation, etc.

The above seems to offer a fertile substratum for the germination of some critical questions, which nevertheless seem pressing in a contemporary historical period to which relativism, political apathy and indifference are blamed. First and foremost,

is it possible to channel the scope of these urban facts within a local or regional cultural discourse without the risk of bias and loss of richness in the social discussion? Is the architect still interested in embracing the ethical component in design practice, or do ethics only exist within the project without therefore contemplating the influence of boundary conditions? Given the increasing national and international criticality, volatility, and structural instability, is it still appropriate to build skyscrapers as a dichotomous symbol of immanence and duration? If the answer to the previous question does not immediately spring to mind for the reader, one wonders what the urban symbols of the future might be, towards which hyper-digitalisation seems to be leading to a continuous dematerialisation of the tangible.



Photo by Ermal Hoxha.

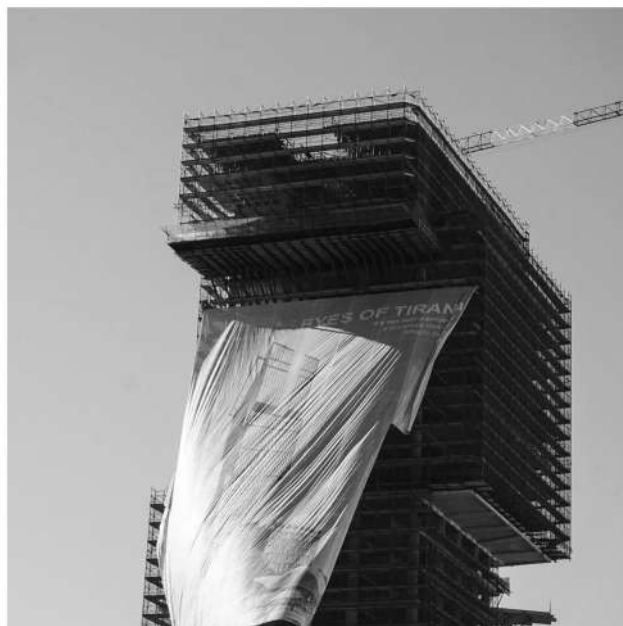


Photo by Ermal Hoxha.

Theory of Restauration

LLAZAR KUMARAKU

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Author: Cesare Brandi
Publisher: Einaudi Editore (2nd edition)
Pages: 168
Year: 2000
ISBN: 978-8806155650

Cesare Brandi was born in Siena in 1906 and it seems as if the place of birth had a radical influence on his future. Siena has been one of the main centers of art from the end of the Middle Age to the beginning of the Baroque period. In fact, the Sienese art school is very famous for its initiators such as Duccio di Buoninsegna, Niccolò di Segna or Ambrogio Lorenzetti. Probably Brandi would be inspired by these painters in the moments of his childhood when he started painting. But it is certain that Brandi has studied and restored the works of these authors, by including them in the book "Teoria del Restauro" in which the restorations of the works of artists of the Sienese school make up a significant part.

"Teoria del Restauro" contains Brandi's writings made during the twenty years he directed the Central Institute of Restoration in Rome from 1939, which was the year when he founded this institute, until 1960 when Brandi left to take up the Chair of Art History in Palermo in 1961 and then in Rome in 1967.

These writings were articulated during the years of the destructions of the Second World War and the rapid post-war reconstruction and contain Brandi's concern to preserve the cultural and artistic heritage, without destroying it, with harmful interventions or reconstructions. From this point of view, the book "Theory of Restoration" constitutes a kind of guardrail that does not allow us to fall into the abyss of tragic mistakes the moment we intervene in a work of art.

The book gives us instructions on how to interfere with the work of art without damaging it. While the instructions can be considered valid at all times, the techniques of how to intervene in the work of art do not have the same value. The techniques proposed by Brandi in this book, such as the graphic technique of "tratteggio", neutral color, or the reversibility of a restoration intervention, may seem outdated nowadays.

For instance, nowadays, old cars belonging to a bygone industrial history are considered works of art, and they certainly are. If these cars were to lose part of their original paint due to a possible accident, no one would restore it with the line tech-

nique or neutral color. Likewise, an intervention to consolidate the material of the work of art, which must be reversible, can be viewed with skepticism, because if the work needs intervention in its support, which guarantees the stability of the work, then the removal of this consolidation will again harm the work from the point of view of sustainability.

However, the guidelines and principles remain valid and, moreover, they can also justify the new intervention techniques since Brandi describes the restoration as a "methodological moment of the recognition of the work of art" and adds later that the restoration will be conditioned precisely by this moment, including here the intervention techniques, always if they preserve and respect the general principles.

The first edition of 1963, which was also translated into English in 2005 by the Central Restoration Institute and Nardini Editore, is divided into two main parts: the first deals with the theory of restoration unfolded in eight chapters, while the second part consists of seven annexes that deal with practical problems related to the restoration of works of art. In the second edition, the one published in 1977 by the publishing house Einaudi, the Carta del Restauro of 1972 is added to these two parts. The relevance of this book, beyond the English translation of 2005, is emphasized by the reprint of 2022 made by the publishing house La Nave di Teseo. In fact, in parallel with the new edition of 2022 by the above-mentioned publisher, the work was also elaborated in Albania to adapt the book into the Albanian language by Daniela Kavaja and Lllazar Kumaraku. The publication in the Albanian language has been taken over by the Polis Press publishing house, which is part of the Resource and Information Center at the Faculty of Research and Development at Polis University.

According to Jokilehto (1999), the subject of the book is the definition of a work of art. It is true that in Brandi's book, defining the work of art and recognizing it are the key points of starting the restoration process, but the rest of the book revolves around the issue of preserving the originality of the work of art. In the chapters that Brandi talks about the matter, that of the time of the work or that of the restoration according to two values, the emphasis is placed on the preservation of the work of art as it has been recognized by consciousness as such and its transmission to future generations without committing aesthetic or historical forgery.

The definition of the work of art in this book is based on the phenomenological approach. Brandi (1977: 4) directly quotes John Devvey referring that a work of art is such at the moment it exists in the consciousness of an individual. For Brandi, it is precisely this awareness that has the moral obligation to pass on the work of art to future generations.

The purpose of the book, which is directly related to restoration, is revealed immediately in the first chapter of the Theory of Restoration, where Brandi (2005: 48) states that "Restoration consists of the methodological moment in which the work of art is recognized, in its physical being, and in its dual aesthetic and historical nature, in view of its transmission to the future." The transmission of the work in the future, in the state that we know

as such, is precisely the purpose of the restoration of the works of art and also of the book itself. The definition of restoration in this chapter is accompanied by two important axioms which make up the essence of this book. The first axiom (Brandi 2005: 48) quotes that "any way of acting in relation to the work of art, including restoration treatment, depends on its being recognized as a work of art." While the second axiom (Brandi 2005: 49) states that "Only the material of a work of art is restored". On the basis of the above definition and the mentioned two axioms, Cesare Brandi's Restoration Theory is built.

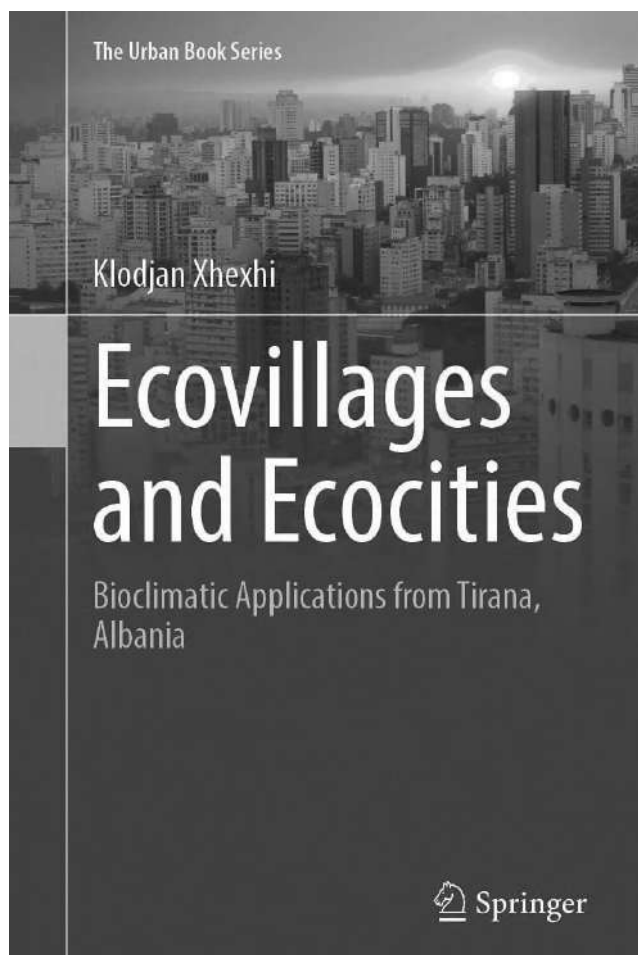
After this definition, the book continues with the clarification of the theory of restoration, detailing the chapters on the matter, the times of the work, and the historical and aesthetic value, ending with a chapter on preventive restoration.

Most part of the book focuses on the two main aspects mentioned above which make up the essence of restoration. These two aspects are the preservation of the originality of the work of art and its transmission to future generations. These two aspects must accompany the work of every restorer in such a way that we preserve the historical and cultural heritage of a people and for this reason, Cesare Brandi's book appears valuable not only today but contains in its essence an eternal validity.

Ecovillages and Ecocities. Bioclimatic Applications from Tirana, Albania

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Author: Klodjan Xhexhi
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ISBN: 978-3-031-20959-8

Introduction

The book “Ecovillages and Ecocities. Bioclimatic application from Tirana, Albania” focuses on the latest technological advances in bioclimatic architecture at a global level, starting with the description of the characteristics of ecovillages and eco-cities, and ending with the case of Tirana, the capital of Albania. The author, Klodjan Xhexhi, Ph.D., Head of the Applied Research Department of the Polis University of Tirana, highlights the relevance of the holistic approach to the scientific investigation of the factors and mechanisms that determine the degree of performance of the building envelope, starting from types of ancient building systems and proceeding with the consequent development of technologies for the exploitation of energy resources at no cost, with particular attention to the application to the building system of the city of Tirana. In this regard, global evaluations were made on ten case studies, to determine the advantages of bioclimatic architecture thanks to the use of passive resources for lighting, heating, and passive cooling. The book is a comparative study that represents the result of several years of research by the author in this field and is divided into 9 chapters. Each chapter has an introductory abstract and conclusions that facilitate reading and results, with bibliographic references that help to understand the research and experimental path.

Contents

In the first chapter, the author provides the selection criteria of the 10 case studies, chosen based on comprehensive geographical coverage, to have a clear vision of different continents in cities with a high population rate. Therefore, 5 Ecovillages are selected: 1. Auroville, India 2. Sieben Linden, Europe 3. Eco villages at Ithaca, U.S. 4. Ecoovila, Brazil 5. Mbam and Faoune, Senegal. And 5 ecocities: 1. Dongfang, Shanghai, China; 2. Masdar, Abu Dhabi, United Arab Emirates; 3. Arcosanti, Arizona, USA); 4. Chang Chun, China; 5. Zira island, Baku Azerbaijan 6. Globe Town, Nizhny Novgorod, Russia. For both groups, ecovillages, and eco-cities, matrix tables are

constructed to better understand their potential and functionality as well as the particularities and characteristics related to biodiversity, health, energy, urban planning, costs and projects, project surfaces, transport, water, project time, population. The comparative study also includes a neighborhood chosen in Tirana, concerning the potential of the city to become an ecocity based on carbon-neutral policies with the attempt to evaluate and improve the lives of the citizens of Tirana.

Therefore, in the second chapter, the author gives an overview of the city of Tirana and the relevant ecological potential, starting from the geographical and climatic description. Actually, flora and fauna contain different typologies of species and plants. Tirana benefits from a temperate Mediterranean climate and, despite knowing the benefits of solar radiation, the urban structure of the city does not take advantage of it, suffering from different types of pollution such as air and noise with values far above the limit imposed by EU and WHO (World Health Organization) standards. In order to understand the choice of certain types of construction, the author describes the legislative, at the level of the general regulatory plans, to collect useful information for a correct bioclimatic eco-restructuring. Particular attention is given to the construction type of underground tunnels built during the communist regime throughout the city between 1945 and 1983 in response to a hypothetical nuclear attack to repair the town from bombing. Here the author notes how, typologically, these underground tunnels represent a natural solution that exploits convective air motions and geothermal principles to lower the temperature and have sustainability characteristics of passive cooling systems, with zero energy expenses for the inhabitants.

To establish what the parameters must be to build a sustainable building, in the third chapter, the reference is made to the two environmental certification protocols of the most adopted buildings in the world: LEED and BREEAM. These protocols are relevant because they transparently measure and declare the building's sustainability performance. Similarities and differences between the two protocols reflect the cultural, legislative, and economic context in which they originated. Of British origin, the BREEAM scoring method reflects the peculiarities and different approaches to the green building sector. While credits for each area apply globally in LEED, BREEAM has developed flexibility through a national weight system adapted to local geographic specifications and regulations. The list of requirements is very articulated and is aimed at giving each building a global score. The author points out that, currently, Tirana does not follow either protocol but highlights the need to adapt both new and existing buildings to these standards to achieve good energy consumption levels for typical use. The building is considered a zero-energy building when very low or almost zero energy needs are covered in a very significant way by energy from renewable sources, including energy from renewable sources, produced on-site or nearby.

The central part of this work constitutes the fourth chapter concerning the experimental analysis carried out in a specific district of Tirana, located on the outskirts of the historical in-

ner ring of the city, characterized by buildings built in the period 1965-1980. In particular, these are five buildings all the same, with retaining walls that follow the technical construction parameters of the time. Here the author assesses the social impact of the energy behavior of buildings on the inhabitants. Through a questionnaire to the inhabitants of the buildings in the neighborhood to have a better understanding of the social, economic, and housing behavior in the site, data were collected on lifestyle, level of satisfaction, actual conditions of buildings, electricity and water consumption, heating and cooling tools, ventilation systems, the degree of pollution of the area, etc. The results showed that the level of satisfaction with life in the neighborhood is surprisingly above average, despite the physical condition of the buildings being precarious and energy consumption very high.

In the fifth chapter, the author describes the benefits of the reduction of energy needs for heating, cooling, and lighting and how the exploitation of passive resources can improve the quality of life in the city by providing comfortable conditions throughout the year. The data collected during the analysis of the case studies give a better understanding of the general approach of the bioclimatic project and that the management of energy flows also depends on construction elements as walls, windows, roofs, and floors, to collect, store and distribute solar thermal energy and prevent overheating. Today, simulations through specific software help designers in designing a sustainable building, and the results show that, as much as we try to evaluate all the parameters, the use of the principles of bioclimatic design is still a challenge to achieve the goals of a functional bioclimatic house.

The sixth chapter confirms the importance of urban morphology and materials of the built environment on the trend of the heat island phenomenon in cities characterized by the Mediterranean climate. Specifically, the city of Tirana has a Mediterranean climate characterized by hot and dry summers and mild and cold humid winters with high daily temperature ranges and an average annual temperature of 15.4 ° C. In the city center, there are areas with a high percentage of commercial and industrial activities characterized by various settlements and traffic, the so-called sealed areas with high noise and air pollution. In these areas, heat islands are formed since the temperature is higher than in nearby rural areas. Heat islands can affect communities by increasing energy demand during the summer season, also increasing the costs of air conditioning systems, air pollution, greenhouse gas emissions, heat-related disease, mortality and water quality. The choice of materials with different energy absorption capacities and the densification and integration of green spaces in the urban context, following the principles of bioclimatic design, can help mitigate the effects of overheating on the microclimate.

The seventh chapter deals with the analysis of the site within which the underground tunnels are located and of the physical conditions of the structures and materials of the buildings under study. The arrangement of buildings concerning the city's urban structure is random since the socialist regime and profes-

sionals of the time did not consider the orientation of buildings to benefit from solar radiation. Regardless, the comparative analysis of the window-to-wall ratio (WWR) and window-to-floor ratio (WFR) showed relatively good results compared to international case studies. Data from thermographic analysis on buildings and the determination of the effectiveness of materials as insulators (u-value) showed poor results compared to the international and national standards. Based on this, it emerges the need to consider energy requalification strategies to include buildings within the comfort zone, increasing the degree of thermal potential and avoiding thermal bridges due to current construction materials as much as possible. For this reason, it is essential to use specific instruments Testo 882 for thermal photographs and Testo 435-2 for measuring the heat transfer coefficient (masonry).

In actual fact, through the eighth chapter, the author aims to create awareness in the community about the great benefits of such bioclimatic design strategies and the need to implement them, not only in Tirana but also throughout the region. As for traditional materials, the use of materials with high heat capacity, such as stone or water, is becoming known nowadays in the bioclimatic and passive design approach of buildings. These materials are efficient when they have large surfaces and cope with strong solar radiation. Hence, the author goes into the heart of innovative materials emphasizing their importance in terms of solar gain, materials such as PCMs, piezoelectrics, the implementation of the wall of trumpets, and EFTes allow obtaining the maximum benefits from the exploitation of passive resources for lighting, heating and cooling. The techniques of exploitation of clean energy allow comfort and economic advantages, avoiding the use of traditional air conditioning systems.

For this purpose, the important example of the Empathic House, which was exhibited in Saint Etienne for the France Biennale, is cited, which aims to raise awareness about significant issues and facilitate the potential for change through the integration of new systems and concepts in our lives. Nano-Ordinaire by Matali Crasset is a key example that is important to mention because it focuses on the current way in which people generate, store, transmit and use energy, proposing different frameworks in which nano energy becomes the key actor in providing clean energy to a household, exploited and stored through simple daily actions. The concept aims to shift the user's condition from consumer to energy producer. Living actions every day can generate energy for local consumption through ultra-low energy consumption appliances that use smart materials. These materials are mini-energy producers that indicate the first inputs that the inhabitant must face to change the way the people perceive the objects around us, considering alternative physical relationships with them. Similarly, in the case of Tirana, exploiting underground tunnels would mean obtaining fresh air since the temperature of the subsoil remains constant, minimizing the use of mechanical systems in summer. Of course, it is also necessary to choose suitable thermal insulation materials, a complex and sometimes decisive issue, in order to reduce heat gain. The best insulation material most used

in Tirana is expanded polystyrene (EPS). The energy required for its production is relatively low compared to other insulating materials, so the exploitation of this type of material would help reduce the ecological footprint of buildings. One aspect of bioclimatic design also concerns the use of specific materials to recycle rainwater through drainage. Another relevant aspect in the management of energy flows concerns the design of windows from the point of view of dimensions, material characteristics and thermal performance.

In the ninth and final chapter, the author describes in detail the passive systems and applies them to the case study of the buildings of Tirana, comparing them with data obtained using traditional tools and materials that exploit the principles of bioclimatic design. It evaluates the average annual temperature of the city and the orientation of the different areas of the building, also considering the glazed areas, the use of various shielding devices, the heat trap area, the thermal masses, and the ventilation systems. The current orientation of the sampled buildings does not meet the criteria of bioclimatic design but can be adapted so that they can use energy intelligently. In an experiment, greenhouses are applied to buildings designed according to international standards, also considering the climatic characteristics of the geographical context. It is estimated that the average temperature of Tirana is 15.4 degrees, like the temperature of the subsoil that remains constant up to 6 meters.

Greenhouses represent one of the base systems of passive strategies designed to conduct the desired air to other spaces through the direct opening having the character of a transitional space between the indoor and outdoor environment. During the winter, their internal temperature is higher due to the heat trap, while in the summer, such structures need ventilation. Thermal mass is usually applied to the floor. The use of shading devices and planting vegetation helps reduce the penetration of solar radiation into the building. In another experiment, it is shown that the application of the passive system of solar chimneys is used to accelerate the flow of fresh air from the underground tunnels, thanks to the differences in temperature and pressure, to the outside bringing it to the residents. The advantages of the solar fireplace/tunnel combination are fundamental to ensure cooling and comfort characteristics inside buildings without the use of mechanical systems. In addition, based on the electricity demand, specific calculations are made using the application of the Canadian expert Retscreen in order to meet the electricity requirements of one of the buildings sampled. The data showed that implementing photovoltaic panels to convert solar radiation into electricity can help reduce greenhouse gas emissions, hence air pollution.

Even the technology of solar collectors applied in buildings to illuminate areas that cannot be reached directly by sunlight has proved to have an excellent performance, with a considerable saving of electricity. As a passive strategy, recycling rainwater and wastewater is also considered using the reed bed strategy and fertilization of bathtubs. Based on the results obtained, the author makes a specific and unique proposal to graphically realize the proposed ideas in combination with a

software simulation application, MEEC (Montenegrin Energy Efficiency Certification), which is finally used as a tool to better understand the thermal performance of the building considered, to improve the degree of thermal performance of the building.

Conclusions

In conclusion to the arguments and indications given by the author, it is clear that Tirana has all the potential to be an ecocity, a case for implementing processes for bioclimatic eco-renovation in every cell of the city, both in existing and new buildings. Reducing energy demand can lead to the creation of zero-energy buildings. This analysis represents the starting point for a comprehensive program of gradual ecological restructuring of the city. There are many areas or neighborhoods in Tirana that lack such advantages offered by underground tunnels or proper orientation. For these areas, other strategies can be implemented to enable buildings to function better by exploiting natural systems. Therefore, this book is of interest to both academics and professionals because it represents a reference point to address the challenges that characterize the complexity of cities in expansion such as Tirana, and develop interdisciplinary strategies to implement the energy transition process in progress.

/Imagine.

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«The limits of my language mean the limits of my world». Wittgenstein's famous quote refers to the belief that if something cannot be described in words, then it does not exist in the realm of conscience. The capacity of using verbal language to transmit ideas, feelings, relations, etc., it is something that it is given to us at birth and marks a difference between humans and other species. On the other hand, architecture has been always considered as a form of non-verbal communication when a project should be narrated through specific scientific apparatus such as plans, sections, perspectives, etc. Many times, we have heard that in architecture 'words are pointless, a project should speak for itself. If not, it is not a clear one'. Suddenly, in the last two years, we have seen a broader diffusion of artificial intelligence-based system in architecture through which, using specific prompts, the system could give back an image starting from a textual command. The position of every single word, the spaces among them, their spelling, create a syntax-based relationship with the intelligence at the other side of screen changing irrevocably the results of that singular communication. For those who know, /Imagine seems to be the keyword to explore the limits of this possible exciting new world.

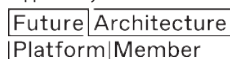
Drawing. Original artwork by Valerio Perna, generated with Midjourney AI





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