Vertical Urbanization: The Territorial Crisis of a Universal Model

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Abstract. This research aims to examine, from the perspective of the urban design, the necessity and appropriateness of writing an architectural manifesto that questions, or rethinks, the vertical city model based on the orderly accumulation of slender and free columns – housing towers – where society must fraternize and develop life. The journey through the skyline of the main megalopolitan concentrations in countries such as China, India, Brazil, Mexico or those of the Pacific, shows us a landscape of dense residential conglomerates whose spatial and urban configuration was conceived almost a century ago. Vast extensions of vertical developments conquer, as a final and universal solution, plots without attributes between huge highways, old rice fields, deserts or even impossible topographies. With man's desire to live close to the clouds fulfilled and the technical challenge of rising in a vacuum having been overcome, the challenge should now point to the search for strategies that place the inhabitant again at the centre of the debate. By making the city taller, denser and faster, increases the difficulty of social participation for certain sectors of the population in their environment. Thus, the paper starts analyzing the influence of the precepts of the modern city in the contemporary vertical city. Later, it reflects on the loss of the public space dedicated for people and finally, it will deepen in the experiments of the avant-gardes of the second part of the twentieth-century to find alternatives growth strategies to the city of towers. The results show us that, due to overpopulation and the massive movement towards cities, as well as due to the necessary reduction of our footprint on the planet, is necessary to rethink the urban model of verticalism to get a more human city. As a conclusion, this paper proposes writing an architectural manifesto based on five points to achieve a vertical city for people in our near future.

1. Introduction

According to current UN projections, by the year 2050, the world population will increase from 7.5 billion to 9.7 billion and about 66% of this population will live in cities [1]. The urbanization of the planet will grow by 1.5 million km² by 2030, an area similar to the sum of Spain, France and Germany. If we look at these numbers and aware of an increasingly urbanized world, it seems that tall buildings will be the norm, rather than the exception.

Today we can already see in cities such as Beijing, Tianjin, Seoul, New Delhi, Mexico City or Jakarta, megalopolitan concentrations that seem to lack mechanisms to face such a mass of an urban substance, until now unknown. Planners have followed the modern idea of converting quantity — overpopulation— into quality through abstraction and repetition: residential towers distributed and
repeated in a cartesian way over the territory. Following mechanistic and rationalist programs that have guided us towards the generic city.

As the main objective, the research will reflect on the morphology and typological coincidences between the urban model from Modern Movement and vertical cities today. Also, it will analyze the consequences in the inhabitants as the main wronged and finally, it will recover some ideas from architectural experiments as alternatives capable of approaching the city as an organism of multiple layers and dimensions, resulting in a vertical city more human.

2. The precepts of the modern city in the contemporary vertical city

When we analyze Le Corbusier's concept of the City for Three Million Inhabitants in 1922 (figure 1), we perceive a forest of mechanically arranged cruciform towers. Three years later, in his proposal for the Voisin Plan of Paris, Le Corbusier denied and removed any existing city traces to impose his plan. In the 1930s, he rallied a group of colleagues around him. The precepts of this group (CIAM), which would later found the well-known Charter of Athens (1943), were based on the idea of a city as an efficient machine whose ordering in functions would mark strong segregation: living, working, recreating and circulating. This is the argument that Le Corbusier picked up in a more general way in his book The Radiant City. Once it was established that form should faithfully follow function, CIAM considered that urban planners had the necessary tools for the design of the modern city. Concerning housing, the Charter of Athens followed Le Corbusier's Plan Voisin, placing them in apartment towers distant from each other in order to leave the free ground for large gardens. Regarding work, the objective was to reduce the distances between workplaces and homes as much as possible. It was betting on large highways, separating the flow of cars and pedestrians, and destroying the concept of the street. The problem of the modern city was in the social sphere, in the street and the square, in the spaces of the relationship between the inhabitants of a city. A gap that was already perceived in Le Corbusier's Plan Voisin.

![Figure 1](source: © FLC/ADAGP)

Although the principles of the modern city were conceived before World War II, it would not be until after it, when cities began to implement the model of the Charter of Athens. The extreme
simplification of the modern city was experienced in many parts of the world. Among these cities was Brasilia, the new capital of Brazil, designed by the architect who followed Le Corbusier, Lucio Costa, in the late 1950s. The cited architect designed the new city following the form-function relationship as a dogma, attributing to each building a formal aspect of the power they represented. In a short time, the royal city was growing in the surroundings not planned by Costa, with great social intensity, but too chaotic. In the years after the end of the war, despite the statements, among others, of the critic and historian Lewis Mumford about the fifth function (public places of knowledge production and cultural exchange), which the Charter of Athens lacked and from the postal exchanges between him, JL Sert and S. Giedion, several housing complexes were built following the Corbusian patterns implicit in such urban manifesto, among which we could highlight: the 1966 Co-op City complex in New York's Bronx, the multi-family homes that Mario Pani built in Mexico City between 1948 and 1964, or the famous Pretty-Igoe case of 1955 in San Luis, Missouri. CIAM sought to establish its generic functional city plan in dozens of capitals, leaving aside the more “romantic” and identity concept of each city. The future drew cities that would look more and more like each other. And so the Charter of Athens influenced the urban model that makes a city in the desert of Iran or the interior of China today practically identical.

Figure 2. Portraits of the contemporary vertical city around the world. Above: Teherán desert, Iran. Below: High-rise towers in the rural land, Seoul . Pictures by Manuel Álvarez Diestro (source:www.manuelediestro.com)
The vertical cities that we inhabit today largely follow that model. Let us focus on the Chinese megalopolises, where this form of planning is being carried out by force, leading us to antihuman environments (figure 2). It seems as if urbanism has been overtaken by a rising real estate market and has given way to architecture en masse, just architecture, and more and more architecture. Architect Rem Koolhaas has studied the Asian urbanization model in his book Content. Koolhaas says that Asia lacks an urban plan adapted to the dizzying pace at which its cities are growing. There is no theoretical support that is capable of addressing a phenomenon of such magnitude. Just at the moment when a theory about the contemporary city is most necessary, it seems that the creativity of architects is focused on keeping the legacy of Le Corbusier alive and making the Charter of Athens a dogma to follow.

On the other hand, we are faced with the following dilemma: there is a tenth of architects in China compared to the United States, earning a tenth of the total cost and designing five times the volume of projects. Serial manufacturing as a working model added to a continuous urgency has become the battalion that accumulates conquered territories regardless of their nature. Koolhaas, in one of his most influential articles, writes: “The generic city is on its way from horizontality to verticality. The skyscraper looks as if it will be the final, definitive typology. It has swallowed everything else. It can exist anywhere: in a rice field, or downtown — it makes no difference anymore. The towers no longer stand together; they are spaced so that they don’t interact. Density in isolation is the ideal” [2]

3. The loss of the human city. The inhabitant as the great forgotten.

In the summer of 2016, the newspaper El País published a review entitled: "China prepares the largest urban area in the world around Beijing." A megacity of 120 million inhabitants that will be called Jingjinji, half the size of Spain, will encompass Beijing, the port city of Tianjin and Hebei, the province that embraces them. This mammoth plan will convert rice fields into high-rise conglomerates crossed by highways.

From an economic point of view, what is happening in cities is unprecedented on this scale. It is often not built to inhabit, but to speculate. Specialists have called it “commodification”. This concept explains to us how in a capitalist system everything is transformed into market objects, from public services, ideas and even people's lives. In Karl Marx's Capital, we find the notion of fetishism for merchandise, for commercializing with everything possible, evoking the disappearance of human interaction.

The rapid urbanization to which cities are being subjected prevents a deep reflection on the model that is being carried out. These growths are radically changing the physical environment and the perception we had of these cities. The population, which had reference points within the city, is in a state of permanent disorientation. A disorder that makes them feel strange in their own city. And not only because of spatial changes but also because of the destruction of the memory and heritage that those places identified. There is a cultural manipulation that is transforming the urban factory, which had its own identity of the place, into artificial towers in series that seem to have their origin in another environment. We would say that the nodes that identified certain areas of the city have been deleted. On the other hand, it is worth noting the high degree of illiteracy of the migrants who are forced to stay in these new neighbourhoods because the agricultural land in which they lived is going to be rapidly urbanized. They become in-inhabitants whose participation in the public is restricted.

In the case of China, the massive scale and high density that characterize these developments are causing extreme sectors of the citizenry —children and the elderly— to suffer a limited social life (figure 3). For example, thirty seconds to cross a crosswalk on a four-lane road may be enough for an adult, but consider an old man or a child. Similarly, thirty seconds to go up to a house on the forty floors in a high-speed elevator can be psychologically challenging for these more fragile sectors. The transformation of the urban scale, making the city ever taller, denser and faster, increases the difficulty of social participation of these sectors in the urban context. This harsh dehumanization leads them to exclusion from city life, leaving them disconnected several meters above the ground. "There is nothing
that creates less urbanity, nothing that produces less cosmopolitan mixture than savage renewal, which displaces, destroys and replaces, in this mechanistic order”[3], wrote Fumihiko Maki in his article *Investigations in collective form* (1964). In certain areas of the city of Shanghai, for example, forests of new towers are still empty or partially inhabited. Entire neighbourhoods of the city show disturbing images, as one can literally walk for hours between spectral towers without a light shining on the itinerary or the movement of people animating this fragment of the city. If we think that one urban development in this city can house three or four million inhabitants, we will be aware of the scale of the challenge.

![Figure 3](image)

**Figure 3.** The loss of the space for people. Left: Hutong in the centre of Shanghai [4]. Right: High-rise housing block in Hong Kong (source: picture by the author).

### 4. New vertical geographies such as the residential typology in height

Urban developments that reward density and verticality within a super-block cut out in the city lack a planning in which public space becomes that essential buffer element in which people can meet, socialize and, in general, seek momentary refuge from an environment that pressures them. The numbers and ratios with which the planners design the new Asian cities indicate that this public space should appear at ground level, where the "archipelago blocks" are planted, following the model of the Charter of Athens (1943). This model makes the inhabitants isolate themselves in a kind of mega block that absorbs them in the hall on the ground floor and transports them to the door of their home.

There is no true reflection on how cities should face the challenge of verticalism. It seems that the modern zoning model and serial repetition is far from generating coexistence environments. A “horizontal” city has a weft with voids, like squares, sewn through a warp of streets. A certain porosity that allows citizens to oxygenate and enjoy the public. If we think of a "vertical" city, it could be built based on the same principles. A structure of concatenated voids should pierce the body of the blocks, almost like organs in a human body. Airy and sunny voids connected to internal circulations and evenly distributed. This would prevent the relationship between the street and the house from being limited to a high-speed elevator, but there would be a gradation of spaces in the path of the inhabitant when passing through some of these “pores”, where there would also be room for encounters with other neighbours. Intermediate places between the street and the house, which would act as an
articulation between the outside and the inside, between one reality and another. These would be the spaces in which the social and the relational would have a place.

An imaginary cutout of a horizontal city fragment could be shot to analyze these questions. The sun and the air would cross that perforated tapestry where the squares used to be located, now converted into public trays in height. Possibly the streets, when they collapse, would transform into semi-closed communication flows, just as in the horizontal city there are passages and arcades. Some groups of houses would enjoy a network of common spaces available for children's games, gardens, rooms for celebrations and meetings, etc.

Alison and Peter Smithson reflected on how to move the street beyond the ground level in the Golden Lane project (1952) (figure 4). In the memory that accompanied this project, they collected ideas that are interesting when thinking about a vertical city model. Especially the one that proposed the understanding of the street as an extension of the house, as the place where children come into contact with what is outside the home. In the current residential towers, outdoor development and contact with other families become difficult, if not impossible. The communication possibilities in high-rise buildings are limited, normally to three or four, to the neighbours with whom the floor is shared. Horizontal communication has completely disappeared, the idea of "the street" in height has been forgotten. "The streets should be places and not corridors or galleries" [4], wrote the Smithson couple.

In 1956, CIAM X was held in Dubrovnik. At that time, the arrival of a group of architects around the age of 40 changed the course of the meetings and meant a break with Corbusian ideas of city planning. That group of young people known as Team X, which included architects such as Bakema, Berend, Candilis, Gutman, Alison and Peter Smithson, Howell, Aldo van Eyck and Voelcker among others, took a position against the Charter of Athens. Four years later, Kenzo Tange, one of the attendees at CIAM X, presented the project for Tokyo Bay (1960) (figure 5), which reflected many of the concerns of this group of emerging architects. That meeting was also attended by the architect Yona Friedman, who presented his innovative ideas of Mobile Architecture, which were not well seen at first.

Kenzo Tange presented the project for the renovation of the Tsukiji District in Tokyo in 1963. This development, located between the Ginza neighbourhood and the port, is after the Plan for Tokyo Bay (1960). According to Tange's analysis, this district was designed for a population of 100,000 people and conceived the relationship with highways, minor roads and even facilities. Tange breaks with the modern aspect of organizing identical towers in an isolated superblock and proposes a spatial volumetric organization. Starting from an elongated prism, he rotates them ninety degrees in space, leaving horizontal gills, all supported by a network of communication columns. Those spaces on or under the bridge pieces are what interest us, allowing free movement from one tower to another and providing a great spatial richness to the whole.
A year later, Fumihiko Maki (1964) introduced the concept of the “public space of mediation”, of the urban room. Maki, contrary to understanding the city as a composition of objects, defended a model based on intertwined accumulation, giving great importance to connections, leaving some of them "available" for future growth. A progressive model with a series of rooms, corridors and urban interchanges as strategic points that would become air pockets where citizens could enjoy the public.

The experience that Tange and Maki bring us, both belonging to the group of Japanese Metabolists, together with that of a few years before the hand of Team X, is highly relevant if we compare their projects and writings with developing Asian cities. They are two radically opposite models. While developments in China, for example, continue to use concise planning according to the canons of ventilation, lighting and vegetation (at ground zero), Metabolists add a long list of actions and activities with which to enrich their artefacts. It seems appropriate to start a new period of reflection on the vertical city model with which we should build our surroundings. We could refer to it as "vertical geographies" [7], that is, once the typology of the residential skyscraper has been overcome, let's go back to those ideas that proposed a reflection in two registers, one that links it to life in the city and hyperconnects it with her, and the other one that makes him withdraw on himself to build an internal community at the service of its residents.
5. Results and discussions
The idea posed by this paper does not intend to revive projects or authors nostalgically, but to rethink them and use them as points from which to “reset” the problems that concern the contemporary vertical city of our days and the near future. A research that has reflected on how the vertical is being built in cities, mainly in Asia, returning to urban models devised by the Modern Movement, to find clear influences. Later, the strong dehumanization that these new cities are creating in the inhabitants who live in them has been put on the table, relating the lack of public spaces with the urban model. Finally, an attempt has been made to rescue the spirit of the sixties, led by Team X, Yona Friedman and the later Japanese avant-garde —Metabolism—, as the state from which to start to rethink the organization of density, complexity and verticality.

Crossing data, it can be observed that some projects from the sixties might answer in a better way the requirements of the contemporary city concerning design, public spaces and spatial richness (figure 6). The discussion has been suggested, since we must build towards the clouds but with the inhabitant at the centre of the debate [9]. Maybe, as in past occasions in history, an architectural manifesto that condenses ideas clearly would support this necessity.

6. Conclusions
As a conclusion, this paper proposes that, in order to achieve a more human construction of the city in height as an alternative to that city of infinite towers, an approximation of the following manifesto based on five architectural points should be a good beginning:

1. Skyways, bridges and jumps in the air: The largest megalopolitan concentrations will require the establishment of mobility plans where hyperconnection, far from its digital meanings here, fosters a multiplication of movement options in space to the benefit of flexibility, with greater alternatives for the inhabitants through bridges and elevated streets disconnected from the road traffic.

2. Multiplication of the zero level: The vertical construction has always faced as one of its greatest challenges the relationship with the ground and the interest in moving it beyond the ground level of the city. At a time when overcrowded cities need to be built vertically on a massive scale and with great density, it is appropriate to rescue a series of projects that imagined ways of reproducing the most public and social level of the city in the heights, imitating its spatial and environmental conditions. Megastructures that dreamed of literally bringing the street and the square closer to the clouds, producing elevations of urban strata several meters from the mass of the Earth to create a multi-ground zero city.

3. Spatial rooting with the city: Beyond the spatial and social limitations posed by the lobbies on the ground floors of the towers, this principle seeks to explore the relationships between the base of the megastructures and the ground level of the city in which they are inserted. In the model of city-towers, one lives physically close to many, but in practice, he simply pushes a button to mark the level of his house and close the door. This point will search for spaces that belong to both the vertical structure and the city.

4. Polyvolumetric design: Faced with the colonization of the territory based on the type of residential tower, this principle will look for poly-volumetric designs, almost like geographies in height, that organize density and verticality in a richer, freer and more spontaneous way. We could refer to it as the spatial typology of contemporary vertical urbanization of the next decades.

5. Porosity: A structure of concatenated voids should pierce the body of the blocks, almost like organs in a human body: airy and sunny cavities connected to internal circulations and distributed equally. The relationship between the street and the house, today limited to a high-speed elevator,
would begin to expand in space by proposing a gradation in the path of the inhabitant when passing through some of these “pores”. Well, humanizing spaces has to do with accommodating those encounters between neighbours in the same environment.

It seems appropriate to start over a new period of reflection on the vertical city model with which we should project our surroundings. Architectures that, even having to respond to high density and height demands, build habitats with a certain porosity of public spaces in the air. Places of coexistence that are necessarily connected with the life of the city and accessible by all people. It is not about creating exclusive disconnection complexes in height, but a more human response to the phenomenon of building vertically. Otherwise, concepts such as community, social cohesion and urban fabric will gradually disappear from our cities, losing the greatest value we have as a society: the collective [10].

Acknowledgment(s)
Acknowledgments to the Ministry of Education, Culture and Sports of the Government of Spain, main funder of the research work through a FPU Scholarship.

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