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VERTICAL ARCHITECTURE. COMPLEXITY AND SCALE IN CONTEMPORARY CITY

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Summary

The significant increase in population due to technology, agriculture and the specialization of human functions has led to the growth of cities. The distances between city and supply are greater, as well as the displacements. This means that to complete our chain of progress with the elimination of waste is a problem of the same magnitude as the progressive exhaustion of resources.

In response to this urban context, the problem has been approached with proposals on new occupation systems, strategies of growth with minimum impact, superposition of uses or densification of hybrid spaces. These approaches are translated into a built volume: the tower and its vertical architecture. It is not as a unitary object, but an architectural system. It is capable of dealing with urban problems with complex mechanisms that gradually adapt to the changing needs of the city and lay the foundations of a new paradigm: how will cities of the 21st century grow?

Therefore, the objective of this work is to deepen the new vertical architecture that combines densification and complexity. It combines with an exhaustive attention to our changing environment. Moreover, to register the possibilities that derivates from the application of the typology tower in the contemporary city and to adopt historical mechanisms like the control of the information and the power of the symbol in the society.

Keywords: Vertical architecture; Densification; Hybridization; Complexity; Contemporary city.

1. The problem of densification

The emergence of agriculture, the technification and specialization of human functions, and the consequent growth of cities led to a significant increase in population. At the beginning of the industrial revolution, there were 1000 million human beings; by 1930 it was 2000 million. Today the population is around 6000 million and forecasts show that by 2025 will be 8500. In this context, cities will be the place where this increase becomes greater and it is inevitable to think that the demographic curve will continue its trend. Unfortunately many signs tell us that both the source of resources and the scenario where we find ourselves will not accompany this escalation. The conditions of saturation of human life make the contemporary city a victim of this dynamic. It is a reality that the increase of population will imply a proportional and continuous growth of the resulting problems. Most of the resources are renewable and even those that are not –such as fossil fuels– can usually be replaced. However, the consumer trend of our current scenario can make non-renewable the renewable sources, or at best, renewable only after long periods of time. In addition to the environmental degradation, accelerated since 1945 with high percentages of damaged land surface, the quality of the air we breathe has been affected and pollution levels are the highest in history with a drop in crop production levels. Until now, new cropping techniques have allowed us to move forward, but it is estimated that mid-century, world food supplies will be scarce and there is no hope for a new agriculture reversing this trend (Rogers, 2000). The use we make of existing water supplies is irresponsible and our demand has been doubling every twenty years. The distances between city and supply have increased considerably and the displacements are greater for all type of supply. The end of the chain is also a problem; the disposal of waste. It is a complication of the same magnitude as the progressive exhaustion of resources. It shows the limited capacity of the Earth to absorb our waste and close a cycle that, devised by our value system, is dramatic, harmful and unsustainable (Fig. 1).

With these premises, there are many theories that have approached the problem, launching proposals about new systems of occupation in the city, strategies of growth with minimum impact, overlapping

uses in the urban fabric, densification of hybrid spaces, compaction in the building with optimized and efficient transport systems that articulate and activate all the urban machinery. These approaches translate into a built volume: the tower and its vertical architecture. Able to cope with existing problems that, despite having a recent historical journey –from the beginning of the 20th century in the contemporary city– has evolved into forms and mechanisms that could well face the fate of new cities.



Fig. 1 Effect of American Sprawl. Extensive growth of low density and high energy expenditure.

2. Hybridization: responses and opportunities

One consequence of the progressive densification of the territory in the last century is the emergence of mega-cities such as Tokyo, founded in the 17th century under the name of Edo as the seat of the Shogunate –Japanese military government– where a cultural process of restructuring and growth has characterized its architecture. Tokyo has been shaped by its history. Due to its urban condition, geographical location and historical evolution, Tokyo is the clear example of hybridization and densification strategies in the contemporary city. Due to its location –territorial context and landscape– border between Eurasian and Pacific tectonic plates, the city is subject to recurrent seismic movements. These circumstances favored that, rather than densifying in height, tend to grow by extension and radially. However, technological advances and the scarcity of urbanized land have led to the construction of towers and hybrid buildings with overlapping programs that cater to urban needs without repairing aesthetic and formal standards. The architecture of Tokyo responds to the urban, chaotic and multiple condition of the current city scene, made up of stacks and fragments. As an incentive to the land occupation, Tokyo has instruments such as the granting of aid on the plot-area-ratio factor (FAR), a basic condition being the transfer of land as an open public space. Usually under the figure of squares (Tella, 2015). The purpose of this policy is to contribute to the mitigation of the environmental burden of the environment. And this is achieved by increasing the building density, while releasing open space for public use. As for building, the Tokyo planning area has control over the maximum height limit in order not to distort the urban landscape or the street scale. There are also incentives to vitalize the central area of the city for those mixed-use developments that incorporate housing in the central districts of Tokyo and are not within the planning areas designated for urban expansion projects –new centrality nodes– nor within traditional neighborhoods with low-density housing. On the other hand, the local government makes flexible the regulations on the building volume, the envelopes of the buildings and the height of the same, in order to achieve large-scale developments with intensive use of open spaces. This seeks to achieve effective and rational land use through the improvement of the urban environment, ensuring spaces open to public use. Finally, the city of Tokyo presents a heterogeneous urban scenario that combines a strong local tradition with buildings and modern infrastructure, organized on an organic plot resulting from that combinatorial process.

The dramatic destruction of Tokyo, first with the Kanto earthquake in 1923 and later with the bombings during World War II, has generated in this city the capacity to rebuild itself. Through general plans of urban renewal of the edificable fabric, favoring the densification and the transfer of public space of free access¹. Boosting a polynuclear urban structure –not centralized– around the railway stations like

¹ The District Improvement Ordinance "City of Tokyo" is the first planning initiative that seeks to provide public equipment to the city. As a result, a low-density suburban development process was triggered on the existing network of small dirt roads in rural areas.

Shinjuku, Shibuya, Akihabara or Ginza. From the planning, projects of intensive use of the ground were promoted, qualifying the territory with public space of quality.

As well as the hybrid architecture catalog made in Tokyo (1998), the Japanese capital has been able to host a series of anonymous buildings, where the high population density and the multiplicity of realities are concentrated in a limited space of soil. Resulting in these adapted and adaptable buildings, a direct result of the urban needs of Tokyo. The city itself becomes the protagonist of a complex inventory of hybrid architecture where urbanism is directly governed by its morphology: the conditions and functions of the place can be interpreted by this formal system. Each building is in total harmony with its surroundings: information, mobility, production, services, housing and are not limited by economic powers or personal desires of the architects themselves; They are not concerned with compositional, historical or cultural aspects. Its architecture, to a large extent, is freed from rigid functionalism.

In this way, the mixture of "types" in a single building, with evident influence of the surroundings, form an unexpected container with meaning of set. This is the case of a mixture of railway rails, freeways, retaining walls and other civil works that results in an architecture without defined limits or the mixture of functions totally opposite, but with similar dimensions and extensions. This is how people and vehicles, people and objects coexist without hierarchies in the same space and form. An architecture that, in order to understand it, we must look at those phenomena that embrace it, regardless of its meaning or value.

Each of these cases occurs in a specific way in different areas of the Tokyo network, but it could be a system that can be extended to the entire territory. A growth strategy that responds to the new urban condition of the contemporary city, which leads to the loss of the meaning of architectural typologies and infrastructures, where the first reason for which they were created is overcome by the needs of the environment that occur of his future life. They are samples of this process of hybridization: *Bus housing, golf taxi building, sex building, karaoke hotel, car tower, cinebridge, highway department store, electric passage, warehouse court, delivery spiral, super car school, truck tower, rail museum, retaining wall apartments, ghost train factory, diving tower, ventilator obelisk, interchange court, double layer petrol station.*

An important difference between the hybrid architecture of the city of Tokyo and the other cases that have gradually taken place in Europe² is its spontaneous nature and lacking –to some extent– planning. The reasons that guide these constructions attend to the needs that the city, in a progressive way, demands with the passage of time, as a result of the complexity, ambiguity and contradiction that supposes the life in the contemporary city. These arguments for city growth are not part of any medium or long-term strategic plan and the ambitions and desires of architects do not affect Tokyo's multi-faceted development.

3. Megastructures: road to verticality

To these anonymous and spontaneous mechanisms - also, to a lesser extent, signed and planned - of the city of Tokyo, is added the Dutch tradition of the megaobject³, a result of the urban complexity of the experiences of Jacob Bakema and Aldo Van Eyck, who would give way to the more evolved three-dimensional systems of Rem Koolhaas and the MVRDV group, in order to group the diversity, fragmentation and dispersion in mega objects. The first reference was the Pompidou Center in Paris, followed by the Silodam of MVRDV (1995-2002) and the Seattle Library of Koolhaas (2000-2004). In short, it is about incorporating complexity: achieving the object of diversity that contributes relationships between buildings and adds value to the empty space between them. Encourage the infiltration of nature and the transformation of architectural objects into urban systems that adapt to the human scale and the context.

The megastructural forms had already been imagined by the Japanese metabolists, where they established the integration between architecture and urbanism; "Isolated sets should not be projected, but sets of relations"; "The city as a gigantic architectural whole containing work and housing" (Kisho Kurokawa). And in the situationist approaches of Constant with its nomadic and aerial cities. Also imagined by the Archigram group as a shed of high-tech architecture. The city-buildings of the Dutch architect Constant Nieuwenhuys are lightweight, expanding and expansive structures for a world without frontiers, a proposal for a utopian world. This is the case of New Babylon, an urban proposal

² In Europe, housing complexes, shops, facilities and leisure services, such as the Odhams Walk housing complex in London, located on a shopping mall (1974-1981) or the Schots 1 and 2 in Groningen, Holland (1994-2002), consisting of two residential blocks interconnected with each other and semi-public spaces in the form of terraces on car parks, shops and supermarkets.

³ One of the fundamental typologies in the evolution of Rem Koolhaas's research has been the mass-building, which reinterprets the technological megastructures –Pompidou Center in Paris– and is defined by the plant and free sections, spatial overlap and multiple connections. It is, then, of the appearance of the postmodern object, a collage in three dimensions that includes great diversity of objects.

based on a world without consumption, without cars, with spaces based on the stimulation of the senses through architecture. New Babylon has a cluster typology⁴ that extends without limits as a free mega structure and complex forms that favor *dejerarquización*. They differ from high-tech structures, in fact, emerged as criticism of the inability of modern architecture to cater to individual freedom. They also differ from the mega objects, which will later be proposed by the teams of Rem Koolhaas and Winy Maas, although the work of these architects has roots in the visionary architecture of Constant (Montaner, 2008).

The proposal of the group SITE (Sculpture In The Environment) for a habitable vertical tower: Highrise of Home (1981), is an intermediate step between Constant and OMA-MVRDV. James Wines, a founding member in 1970, described the project as a "vertical community that could satisfy the personal desire to enjoy the cultural benefits of an urban center without sacrificing the identity of the private home and the garden space associated with the suburbs".

The proposal consisted of the construction of a structure of steel and concrete, from ten to twelve floors, in a high density urban environment. Each level housed different plots, which were offered for sale with the possibility of building a house linked to a garden, both in the style chosen by the buyer –customizing the domestic space–. The result would be a vertical community of "villas" different on each floor, with inner streets for proper functioning. A central mechanical core, of elevators and forklifts, would serve these homes and gardens. While shops, offices and other facilities are located on ground floor, at street level. Intermediate levels are intended for the needs of residents (Fig. 2).

The importance of this scheme lies in its rupture with the image of the urban skyscraper, usually composed of identical units, stacked as boxes. The Highrise of Home would allow flexibility and individual choice. Like Constant's ideas, these proposals are born as a criticism of the dehumanization of modern architecture and the use of power of the individual. The James Wine team offered a catalog of styles of houses, gardens and furnishings that users could choose. This, added a sense of personal identity and human connection that were generally eliminated by the repetitive and austere modern architectural formalism. At the same time, it placed the sociological and psychological needs of the user on the aesthetic pretensions of the architect. The SITE team merges suburb and city, a collage of architectures created collectively by its inhabitants, responding to the multiple, variable and complex demands of postmodern society⁵.

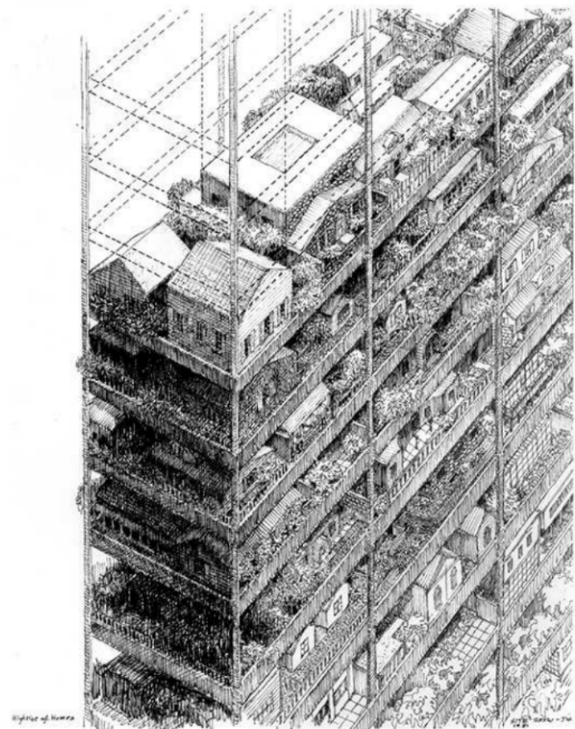


Fig. 2 Highrise of Homes. Theoretical project of the group SITE for vertical communities in the USA, 1981. Axonometric drawing of J. Wines. Property of SITE New York.

We must not forget the embryo of these approaches, remarked in *Delirium of New York* by Rem Koolhaas, in the visionary comic *Life* magazine published in 1909. Here is a steel infrastructure that houses 84 levels of housing, linked by an elevator . It was accompanied by a caption that suggested, as if it were a real estate agency: *"Buy a cozy cottage in our steel constructed choice lots. Less than a mille above Broadway, only ten minutes by elevator. All the comforts of the country with none of its disadvantages"*

Rem Koolhaas raises the idea of superposition, where the eclecticism and verticality of Manhattan skyscrapers take place. Within this approach there is a defense of the culture of congestion⁶, which involves the vertical stratification of programs in a container not formally defined: it would be the result

⁴ In the late 1950s, Peter and Alison Smithson –influenced by Team X– are leading a key moment with experimentation in urban-scale forms with greater versatility that give identity to each building and adapt to different fabrics, urban preexisting and topography. They are the cluster: complex and large-scale systems, capable of adapting to the existing reality of the city and the landscape.

⁵ It responds to the urban context in which postmodern cities move, posed by Robert Venturi, Denise Scott Brown and Steven Izenour in *Learning Las Vegas*.

⁶ Rem Koolhaas's studies on urban density and exploitation on congestion boundaries: one of the case studies is the Nigerian city of Lagos, which since the beginning of the last decade has experienced a growth that has led it to become one of the largest urban concentrations in the world. The complexity with which this city works and how the urban logics of the West seem already obsolete when working on this scale and with such congestion.

of applying those complex and changing needs of the current city. The solution provided is a variant of the building-mass⁷, where the conditions of diversity and fragmentation are added verticality and compactness. These two factions of the urban, traditionally, have been exclusive, but now the interrelation of both concepts is raised.

Three OMA projects, such as the ZKM Center (1989-1990) for the Center for Arts and Technology in Karlsruhe, Germany, the competition for the Library of France in Paris (1989) and the two Libraries in Jussieu (1992); None of them built, which programmatically hold a potentially additive, stratified and light space, which is not articulated but subdivided. Composed of individual fragments that create a puff pastry interrupted by different vertical or horizontal elements. These projects represent a further step in the development of key concepts for the understanding of "the new verticality": complexity and densification

As a result of these investigations, OMA, in collaboration with Joshua Ramus, managed to capture the image of urban overlap and complexity at the Seattle Public Library (2000-2004). Where the intermediate emptiness generated between the bodies acquires protagonism to articulate, in vertical and always concatenated, the public uses. The heavy boxes solve the structure, intentionally torsionada, and manage the most exclusive areas of the project. The apparent chaos of the Library responds to the diversity of uses and users of the environment. OMA has been the inspiration for many young people, including those of MVRDV, who are characterized by the most daring formal investigation, search based on fragmentation and disjunction taken to the extreme. Stacking and overlapping of fragments in space is one of the key processes. The verticality, so far, has been achieved by repeating the same plants in height - extruding the unit-. However, MVRDV projects buildings in height conformed by the diversity of each plant⁸.

In the mega-structural experiences shown, as a conceptual germ, a new verticality emerges, one aspect is the inability to grow and absorb new needs of projects with a vertical component - mega objects. In contrast, open and free horizontal structures, even more invasive, admit future growth. Therefore, mega-structures should be seen as ingenious, theoretically interesting and above all critical exercises towards new paths, but they do not end up relating to our technical and social context. Ultimately, they may be irresponsible about the real and pertinent problems of the contemporary city (Venturi, et al., 2016).

4. Adapted Metropolitanism: tower systems

The way to the new vertical architecture is a consequence of the investigations exposed. This architecture, consciously or unconsciously, appropriates those mechanisms –hybridization, superposition and complexity– and free growth systems –*mat-building and cluster*–. It increases adaptability and flexibility to the changing environment. Namely, systems perfectly defined in their operation, as a complex high-tech machinery, but not closed, they are open.

They are towers of minimum environmental impact, maximum release of ground, due, in part, to their optimized morphology of extremely slender bodies (15 to 20 meters). It presupposes an intense speculative exercise, but not always. The importance of these models lies in the reduction of construction costs by the strengthening of new techniques –standardization and technological development– and the obtainment of non-exclusive architectures, destined to large corporations or minority sectors, but extendable to all contemporary urban territory.

4.1 Information towers: from San Gimignano to Japan

The particularity of the landscape of the Tuscan city of San Gimignano represents a unique testimony of the power fight between the different political factions of medieval Italy. This political rivalry led to an architectural contest. However, there was no centrality of defined power, the wealth of each family – Ardinghelli, Salvucci, Cugnesani or Becci– were autonomous and independent against the Comune. Only through a municipal edict, which forbade any tower to rise in height to the Palazzo Comunale, could contain this fight. Each tower represented the aspirations of a specific community where, in addition to the disputes between families for their riches, the fundamental goal of the uprising of the tower was the power of information. Namely, the empowerment that supposed having a direct control on the territory and the policy coming from the town and not from the Comune,(Fig.3).

This situation does not differ much from the current one. The biggest corporations in the world are linked to the traffic and storage of information - Facebook, Google or Amazon. And just as each Tuscan family of San Gimignano built their tower, each of these companies will compete for the best location, next to nuclei with high traffic intensity, to project their Big Data Tower. These are the power

⁷ A concept treated by Josep Maria Montaner when he investigates the dispersion and fragmentation in the architectural systems of the twentieth century: the mass-building consists of the heaping and superposition of fragments in three dimensions.

⁸ The project for the Holland Pavilion at the Universal Exhibition in Hannover, Germany in 2000, where a tour brings you to the various Dutch landscapes. It has its seed in the projects of the Plan Obús para Algiers of Le Corbusier or the project, mentioned above, of the group SITE, Highrise of Home.

towers of the 21st century. Instead of a large time-controlled clock or a watchman receiving information, computers inhabit the building. There are no employees or employers, only machines⁹.



Fig. 3 San Gimignano's skyline, Tuscany, Italy.

Micro-skyscraper housing in Aomori

It is no coincidence that the micro-skyscraper proposal, or "soft metropolitanism" of Amid 09, is located in the city of Aomori. As mentioned above, the mechanisms of agglutination and densification are typical of Japanese culture, with their authentic cities being manifested as Tokyo or Osaka. But it is the subtle play of juxtaposition, the sensitivity and care for quiet beauty –the power of the sacred in cities like Kyoto–, which allows the high Japanese complexity and overlapping does not take over the chaos¹⁰. Science and philosophy have long admitted that an excess of order leads to asphyxia by paralysis; In this area moves Japan: a complex metropolitan system meticulously structured. A methodical chaos.

A purely natural scenario is presented to us as non-habitable, in the same way as a frantic metropolitanism. The Spanish of AMID 09 try to modify and adjust the effects of reality, and adjust the parameters of the project to adapt it to the location and needs. The project also needed buildings and metropolitan programs to function as a biological community does in the natural world: through cooperation and interrelation.

The objective of the project is to achieve a metropolitan image for the city of Amoiri and to make it compatible in uses and scale with the proposed domestic program. That is, to provide an intense level of connection and high density of metropolitan character leaving aside its worst effects. They propose a system capable of altering the city, rather than of producing it.

It is a set of micro-skyscrapers whose position is determined by multiple operations that will shape their volume and that try to optimize the relationship of slender pieces with the light, views, orientation and cold winds of the north. In addition to attending to the normative conditions of the city. The towers are tilted as a result of the application of the regulations, height restrictions and mandatory inclinations in relation to streets and adjacent buildings. The adaptation to this norm produces a metropolitan silhouette at city scale, built with domestic spaces and medium density (Fig. 4).

The maximum slenderness, combined with the density of proposed dwellings, produces a minimum land occupation in response to the lack of public spaces in the city and poor soil conditions. The verticality of the houses allows free space at street level for public purposes. This space is activated by the presence of commercial areas and restaurants located at the bases of the towers.

⁹ There are several projects in New York currently under development at Big Data Tower: the new Verizon Building at 375th Pearl Street for Savey Data Centers. Google recently purchased a building on 111th, 8th Avenue. Newcomer DataGryd at 60th Hudson Street and Data Center NYC Group has opened its new headquarters at 121st Varick Street.

¹⁰ Guilles Deleuze and Félix Guattari pointed out that science would give all the rational unity to which it aspires in exchange for a bit of chaos that it could explore. Cities like Caracas, Lima, Lagos, Manila or Calcutta represent the disorder and metropolitan chaos with a polarization in two types: isolated and autonomous skyscrapers and the immense carpet of self-built Slums inhabited by misery and pollution.

At higher and higher levels, replicates of the public land are placed at superimposed levels, as suspended public-domestic spaces. These "fingers", which connect the towers with each other, house communal programs: nurseries and day centers, as well as typically private programs: living rooms, services, saunas and kitchens that provide a social structure to the community. These pieces unite all the vertical elements and assemble them in a three-dimensional network that reduces the slenderness of the housing towers.

The exterior skin is a vertical synthetic garden that climbs the façades, like a huge living and energetic lattice: They are hydroponic crops with systems of purification and filtration of rainwater –energy and synthetic solar– control bamboo with green neon that form commercials towards the exterior and lights towards the interior of the houses. A vertical garden that collects energy and dissipates it in the form of information.

The project proposes to exploit the housing in all the scope of the action. If this is made up of parts that are not necessarily grouped together, this allows it to be arranged throughout the three – dimensional network, such as the mat-building of Alison and Peter Smithson–, according to the programs: From an opaque life to publicity to the greatest neighborliness. The houses that the program demands are developed in two or three levels, are composed of independent spaces and joined by a private staircase. They are vertical houses that can be used in multiple ways.



Fig. 4 *Soft Metropolitanism*: micro-skycraper housing. amid.cero 9, Aomori, Japón, 2001. El Croquis. In progress II, 2002-2003

4.2 The power of the symbol: Luis Barragán and Steven Holl

Nothing new will be discovered here about the well-known project of the Satellite Towers. They are denominated as "the most important urban sculpture of the 20th century". But it is important to point out that Luis Barragán originally proposed the idea of making a fountain as a commercial strategy –it was shown in advertising spots that promoted the new urbanization– convincing potential buyers that Ciudad Satélite had plenty of water. That was a relevant issue at that time. Finally that was not the way, but there was speculation about turning the towers into huge water tanks. Undoubtedly, it was a very interesting idea that would have increased the symbolic value of the project, becoming an urban infrastructure with identity over the territory.

Consequence of the sculptural role of the towers is their emptiness, literally, because they are empty concrete objects. They are only recordable for maintenance, as happens, in fact, in any sculpture. But could it really not be? What would be the meaning of the Satellite towers housing defined and fully inhabited uses?. The symbolic power of the tower must be an argument for new architectural systems, without losing the urban function that, eminently necessary, has vertical architecture (Fig.5).

In words of Luis Barragán talking about the genesis of the project: *"I went to see the terrain at the exit of the road to Querétaro, with a very strong slope [...] we had to do something there that was a symbol of the city and, over all, to the scale of the city. It must be a point of reference, something that told everyone where they were both day and night. [...] Even now, when the days are clear, the Satellite Towers are visible from a good part of the city"*.

The sculptor Mathias Goeritz, spoke about the spiritual perception of the towers pointing to the sky. *"The whole structure is raised on a large concrete plate that has a slight inclination, which allows the principle of the fourth dimension to be used. The prisms seem to change their size as the gaze passes in place"*. It is a "plastic prayer".



Fig. 5 Interior of one of the Towers of Satellite, Luis Barragán and Mathias Goeritz. Naucalpan de Juárez, Mexico, 1958

Able Orientalism in the Shan-Shui project

Steven Holl's project for the city of Hangzhou in China, like Efrén García and Cristina Díaz (amid.cero 9) in their Soft metropolitanism, deepens into the articulation of object systems with each other, as they reach higher degrees of complexity; not objects, but systems; not individuals, but societies. This means opposing all reductionism, mechanics, trying to approach a thought of complexity and networks, reveal complex structures on urban and territorial scales. Redefine the architecture from the emphasis on systems that overcome the crises of the object. Although the project processes of Steven Holl differs from amid.cero9 as a lesser scientific-experimental burden, in favor of greater symbolism. It is supported by the abstraction and cultural references of Hangzhou¹¹. They are also complementary visions when facing the current urban complexity (Fig. 6).

The project proposes a general management plan –system– for this site in Hangzhou, located at a crossroads between the project to reuse a boiler plant located in the south created by David Chipperfield and the rehabilitation of an old oxygen plant to the north, by Herzog & de Meuron. The central knot of this plant is formed by a Water Tower and a Mountain Tower, alluding to two concepts that constitute the spirit of Hangzhou. The Water Tower branches in a few tributary forms that connect with the north, while the Mountain Tower connects with the south by landscape forms.

The project consists of five large scale elements, which fluctuate between landscape and architecture. They establish connection with the factory buildings located at each end of the lot. The Circular Water Tower rises on a plate of water, and from it leaves a bridge –"Linkage" typical of Steven Holl– that draws a curve on the road to the north. The volume, made of diffused glass, houses apartments and offices, with commercial premises at the base and a restaurant and space for events at the top.

An existing channel makes the transition between the two ends of the project. It is accompanied with new hybrid volumes. These "channel diffusers" characterize a new living area at the water's edge, located along the public roads of the bank.

The Lantern Towers are inspired by the ancient stone lanterns of the West Lake made by Hangzhou, which ignite "fire on the water". Curtain walls of photovoltaic glass accumulate sunlight during the day, and later, at night, reflect the energy captured on the surface of the water. Each floor houses a loft-type apartment, connected by an elevator with public lobbies located under the pond.

In the center of the site, the Tower Mountain connects, using a bridge with escalator, to the top of the Water Tower. This tower, with translucent ceramic skin and landscaped roof, branches towards the landscape of the park. It is usual in Steven Holl's "linkage" mechanisms: he provides connections between different areas of the project –drafts and folds– not as an extension of space, but as a conceptual and formal continuity of the project.

The fusion between landscape and architecture that takes place in the 3D park is achieved by public roofs landscaped in which excavated openings become "gardens within gardens" and allow the passage of nature and light to lower levels.

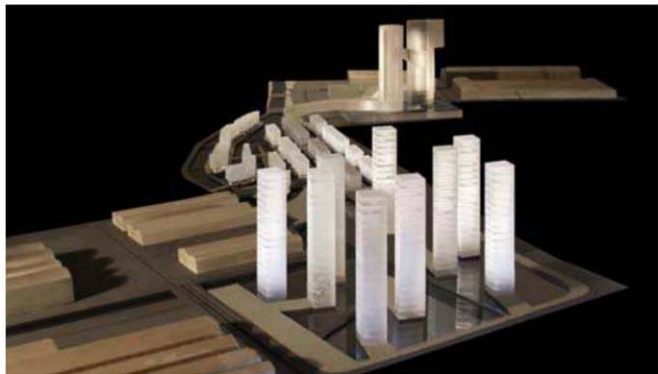


Fig. 6 Shan-Shui Project, Steven Holl. Hangzhou, China, 2009. (First Prize Contest). Image: El Croquis, nº 172.

5. Conclusions

The way to the new vertical architecture is a consequence of the investigations exposed. This architecture, consciously or unconsciously, appropriates those mechanisms –hybridization, superposition and complexity– and free growth systems –*mat-building and cluster*–. It increases adaptability and flexibility to the changing environment. Namely, systems perfectly defined in their operation, as a complex high-tech machinery, but not closed, they are open. They do not respond to monofunctional and specialized schemes, but to the mixture of "types" in a single building. It is obviously influenced by the environment and makes up an unexpected container with meaning as a whole. This is the way how people and vehicles, people and objects, coexist without hierarchies in the

¹¹ In an interview in El Croquis nº 172, Steven Holl talks about the digital overfeeding of the current architecture, stripped of all reflection, depth and sense of reality. He talks about the importance of being able to stop to question things and understand architecture as an art capable of giving life to this incredible and programmatic world.

same space and form. It is an architecture that, in order to be understood, we must look at those phenomena that embrace it, regardless of its meaning or value.

Vertical architecture is the urban response to the multiple, changing and complex context in which we find ourselves. They are towers of minimum environmental impact, maximum release of ground, due, in part, to their optimized morphology of extremely slender bodies. It presupposes an intense speculative exercise, but not always. The importance of these models lies in the reduction of construction costs by the strengthening of new techniques –standardization and technological development– and the obtainment of non-exclusive architectures, destined to large corporations or minority sectors, but extendable to all contemporary urban territory.

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