The sensitive tower

Architectural and urban design education faced with fragile metropolitan ecologies

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Abstract. Neighborhoods that are still outside the market target can find alternative ways of re-development. Therefore, it is necessary to design architectures compatible with their fragile ecologies. This research benefits from a previous study where we tried to observe the evolution of the uses of buildings and ways of living faced with changes in environmental conditions in a given urban context. Increased automobile traffic has led to changes in the use of residential spaces whose function was gradually replaced by commercial activities. Making use of graphic-oriented interpretation of urban ambiance and landscape analysis methodology applied to the design of different floor levels, this paper aims to introduce the concept of sensitive tower defined on the basis of observations made in our post-occupancy survey as a teaching strategy for the design studio faced with the current challenges of the contemporary metropolis.

Keywords: design process; design education; contemporary metropolis; urban environment.

QUESTIONING AUTISTIC ARCHITECTURE

In his book of the late sixties The Architecture of the Well-tempered Environment, Reyner Banham (1969) describes the historical process by which technology allowed the design of buildings to be more and more autonomous from environmental and contextual concerns. He highlights how the development and integration of building systems contributed to the creation of internal spaces artificially lighted, heated or refrigerated being thus increasingly disconnected from the external environment.

The autistic tower generated by this technological advancement has become a kind of standard of the International Style, but also the paradigm of its own stylistic drift denounced by Charles Jencks (2002). The pregnant values of perfection, efficiency and development, carried forward by this new openly narcissistic tower would later find, in the figure of the ‘neutral zero-emission’ one, its lacking ethical objectiveness. After years of fierce criticism against the glazed curtain walls, there is now a new impulse for it that combines high-tech and eco-tech strategies. The ‘neutral’ tower is not only equipped with intricate environmental control systems to achieve maximum energy efficiency but also to reach a whole aesthetic
expression of such efficiency. We can compare this evolution of the high-tech building with the design improvement of a spacecraft ensuring to all its passengers and crew, satisfactory traveling conditions and comfort on board.

Beyond these appealing objects designed for the headquarters of international banks and other large companies, what can be said of most residential and commercial towers built throughout the world? Despite criticisms that have been made by the advocates of postmodern contextualism, we note that the abstraction and autonomy inherited from the social utopias of modernity have been opportunistically appropriated by the building industry in its large-scale production devoid of any contextual concern. Behind the pathetic decorated facades that seek to soften the inevitable monotony, the principles of cost optimization reign with impunity in order to obtain higher profits. The design process is then founded on the volumetric extrusion practicing the well-known ‘miracle’ of the multiplication of identically repeated floors from first to last level. The product thus formed, refined and adjusted to current laws is then replicated from borough to borough, with minor and superficial changes, resulting in a similar repetition but in a larger scale.

Parallel to this process of standardization of the real estate market, we have seen emerge and consolidate, in the last decade, a new ideal of architectural abstraction. Distancing itself from the current minimalist art, this ideal is linked to the rejection of formalism founded on the desire for expression and communication of the critique of modernism and stimulated by the architecture spectacularization. Theorized, among others, by the New Yorker retroactive manifesto of Rem Koolhaas, this attitude was justified by the need to reconnect the architect of the logics of the built environment in the everyday life.

Figure 2 shows a partial section of the famous Downtown Athletic Club in New York studied by Koolhaas, juxtaposed to the reappropriation of this principle in the OMA’s competition design for the new National Library of France (1989). In this project, the concept of ‘free-section’ allows the programmatic design of space to be developed independently of the external volume but also from the composition of facades transformed into a kind of ‘neutralizer skin’ (Besson, 2009).

In the design for the Y2K house (1998), reproduced in the Casa da Música (1999-2005), the Dutch office proposes an external volume as a direct expression of the programmatic structure of the

Figure 1
Zero-emission Tower Design
in London by Future Systems
- general section and detail
(Source: Steemers et al., 1995)
internal space. Here there is no longer the presence of an abstract and inert image, but, instead, a strictly result of ‘packaging’ the heterogeneous assemblage of programmatic internal volumes (Lucan, 2009). It is important to note that the reuse of the design made for a single-family house in Frankfurt to address the new situation in the Portuguese city is a strong indication of the high degree of autonomy of the formal design for the architectural object. In fact, in Porto, the relationship with certain elements of the site is done only by a orientation strategy of the ‘transplanted’ design.

**Considering the urban environment**

Contrary to what seems to be a work that emphasizes the concept of autonomy of the building, Koolhaas and his team, associated with LMN, a North American office imbued with environmental issues, resume the building relationship with the conditions of the site in the project for the Seattle Central Library (1999-2004). In this project, the architects explore the possibility of affecting the design of the architectural form not only with the program, but also with the contextual conditions dictated by the site. Thus, they say, “by genetically modifying the superposition of floors in the typical American high-rise, a building emerges that is at the same time sensitive (the slopes will admit unusual quantities of daylight where desirable), contextual (each side can react differently to specific urban conditions), iconic” (OMA and LMN, 1999, p. 24). Thus, strong views of the natural landscape, exposition to sunlight or, conversely, protection and shading were some of the key contextual factors considered by the project team (Figure 3).

**Patterns of ecological adjustment**

Every city has places with different intensities and qualities of ambiance and urban life. There is a complex gradient that goes from noisy spaces, congested hubs of activities, to areas reserved and even preserved, situated on the fringes of these centers.

In this sense, a living space on the first floor facing a noisy street may not offer the same use conditions as another one located in an upper floor or facing the interior of a block, a playground or a forested hill. Why then design these spaces with the same attributes, the same facade openings, the same balconies? We think that some little changes could be introduced in these mass production buildings in order to better connect architecture to its environment without necessarily infringing economic logic.

In a previous study (Figueira Lassance 2000) we tried to observe the evolution of the uses of buildings and ways of living faced with changes in environmental conditions in a given urban context. Increased automobile traffic along a street has led to changes in the use of residential spaces whose function was gradually replaced by commercial activities. Those who resisted this
process had to adjust their dwellings to the new conditions. This adjustment took various forms, ranging from simple interference of the occupant, who added an extra curtain, changed the window frame, installed an air conditioning or even closed a balcony, to the total replacement of the existing architecture by another one of better performance (Figure 4).
FRAGILE METROPOLITAN ECOLOGIES
The fragility addressed here is connected to two entities that strongly interrelate. On one hand, the contemporary metropolis whose local characteristics, historical and social identities are somehow threatened by the monoculture of the autistic tower that has propagated the same type of urban landscape and, on the other hand, the inhabitants of these cities, lacking of means to deal with the diversity of urban conditions with which they have to cope with.

This fragility becomes even more striking in the context of the major operations of “urban recycling” driven by the logic of the (short-term) political deadlines as that is now the case for the port area of Rio de Janeiro, in view of the great sporting events of the coming years. How, under these circumstances, can we put forward architecture design concepts that are not only respectful of the conditions of each place, but can also take advantage of what is particular and yet different in our globalized cities? How to reconcile the demands of housing comfort with unfavorable pre-existing conditions (nightlife, industrial activity etc.)? How can we occupy territories crossed by urban expressways without necessarily eliminating them because of an incompatibility with the new intended uses?

By asking ourselves these questions we can find a way of thinking about alternatives to a city produced by the real estate market and paradigmatically illustrated by the concept of gated communities. This kind of urban design artificially recreates context conditions suitable to a particular way of living that has become incompatible with the city social, cultural and environmental diversity. These communities reproduce on a larger scale, the same principle of the autistic and autonomous tower, disconnected from the outside world. Again, in order to maintain architectural standards, the context around it has also to be standardized, thus eliminating what is different and cannot fit urban marketing strategies.

CHALLENGING ARCHITECTURAL AND URBAN DESIGN EDUCATION
This paper elaborates on these issues in the specific context of a design education based on the combined practice of architecture and urbanism put forward, among others, by Chris Younès and Didier Rebois (2009).

We thus intend to show that the design of a city is intrinsically related to the definition of its architecture and that, conversely, the design of a building can offer much to the city as to their own residents if the designer is able to consider the context with which this building relates. So instead of continuing the process of urban monoculture that replicates standardized and homogenizing towers and neighborhoods, we have a chance for us to ensure some ‘biodiversity’ for our cities. Neighborhoods that are still outside the market target can find alternative ways of re-development. We must thus be able to design architectures compatible with these fragile ecologies.

Therefore, we believe it is necessary to address design education. In a previous text (Lassance et al., 2010), we had the opportunity to introduce some of the issues that currently involve the teaching of architecture when confronted with the conditions of the contemporary metropolis, linking them to different strategies of graphic representation. Continuing this study, we will mention two pedagogical strategies related to the implementation of the concept of the ‘sensitive tower’ in design education when confronted with the need to discuss the paradigm of an autonomous and generic building.

The first of these experiments can be considered as an exploratory process to raise awareness and introduce novice students to the problem of programmatic diversity that inhabits many of today’s multi-storey buildings in our cities. It appears, therefore, more as a critical paradigm declared against the impunity of abstract form that pushes its complex programs without revealing them externally.

The second strategy deepens this exploration, by conditioning it to the more detailed study of the relationships that architecture establishes with each
‘layer of the city’. It combines methods of representation manipulated by contextual analysis of landscape and environmental components, replicating it vertically at different levels of reference.

**A tower for night and day**
The chosen context was Hong Kong, a city surprisingly characterized by the principle of a vertical urbanism. Various programs are stacked on top of each other within generic structures; elevators are part of the public space and very often, it is on top floors that you will find the best bars, restaurants and karaoke’s, surrounded with housing, hotels and office spaces. This observation of a mixed-use tri-dimensional architectonic device was the starting point for an architectural fiction developed by first year students at the École Spéciale d’Architecture in Paris.

Around a minimum circulation and structural core, a surface of 150m² with an available 6m height was the plot dedicated to an urban program, developed independently by each student through a model - scale 1:20. The tower itself was later constructed from the superposition of singular strata: a love-hotel on top of a sightseeing platform on top of a city-farmhouse on top of a cemetery on top of a cinema on top of a bowling on top of a prison on top of a hanging garden on top of a(nother) cemetery on top of an art gallery on top of a kindergarten on top of a chapel on top of a fitness center on top of a sushi bar on top of a night-club on top of a library on top of a house on top of a wellness hotel (Figure 5).

**Multi-level landscape analysis**
Our research also benefits from another previous study where we made use of graphic-oriented interpretation of urban ambiance and landscape design methodology (Feghali and Lassance, 2007).

For this purpose, we defined some concepts called landscape component identifier and the landscape quality indicators. These concepts enable the integration of different analytical dimensions of space - morphological, behavioral and sensorial - relevant to the seizure of the surroundings, allowing the designer to develop an analysis not only...
interpretive but also evaluative of the contexts of intervention at different levels of the building.

The identifiers are based on conceptual support developed, among others, by Gordon Cullen (1971) - barriers, focal points, details etc. - and the indicators which assign a degree of intensity - density, permeability, roughness etc.

The designer is therefore conducted, mainly during the first contacts with the site, to “manage” a complex network of data and constraints. Among such information, some of them are explicitly provided by the different agents related to the project, while others are instead implicitly integrated. This complex network of data is then transformed into a set of information, a temporary abstraction - the ‘synthesis map’ - made for each strata and respecting a hierarchy defined by the designer, thus implying a first choice of issues and elements that will be implemented for the project. We think that if we could apply this methodology of representation to the design of different floor levels, as shown through some exemples of student work in figure 6, we would be able to better consider different strategies at different levels of the building, thus avoiding the monoculture of the autistic tower in our cities.

REFERENCES

Figure 6
Multi-level landscape analysis conceptual diagram (top left) and some exemples of student work done at the Federal University of Rio de Janeiro: hybrid complex near downtown Rio showing formal and spatial complexity generated by multi-level analysis (top right and center); concept diagram for the design of a housing block in the port area of Rio (bottom left).

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