Towards the performative architecture through the tectonic vision.

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Abstract— The purpose of this paper is to discuss questions that indicate a direction for a good life in contemporary cities and a new action by architects and planners, promoting the concept of performative architecture through the tectonic vision. Tectonics, often known as the “construction art”, cannot be defined as a sole matter. In this work will be applied the concept’s definition capable to join the material aspects of architecture with the cultural aspects where it is inserted, aiming to provide examples that cover the precepts of performative architecture. The contemporary landscape is highly diversified due to the unrestrained growth of big centers, also urban and architectural spaces of diverse use need specific solutions for the new demands. The building performance is relevant for architectural and engineering practices, and it can be used as design principle and as a new approach to the demand of the built environment. The architectural solutions presently used are based on the culture of eclecticism and commercialism and seem to have the intention of reviving and re-building past models as an attribution of aesthetic value to heterogeneity, as well as the practice of the commercial agents and builders that turn our cities into spaces of consumption, control and social fragmentation. Therefore, one of the consequences is that contemporary cities are transformed into business cities where the majority of them are empty of meaning. Through tectonics, it is possible to overcome some critical points of contemporary cities, redefining the essence of the architecture, re-inserting it into social fabric and promoting the concept of the potential of the constructive expression. It also gives an orientation in architectural theory and practice from what the building is to what it does, through the works of architects who have presented an attitude of composing with different and new architectural systems, and the capacity of their work to adapt into place where it is inserted, also considering the particularities of each context. This approach shows how the “poetics of construction” is capable of resisting and overcoming the challenges of the commercialization of architecture and urban planning in order to pursue a performative architecture.

Keywords: tectonics; contemporary architecture, performative architecture.

I. INTRODUCTION

Tectonics, often known as the construction art, cannot be defined as a sole matter. In this document will be applied the concept’s definition capable to join the architecture material aspects with the cultural and aesthetic aspects where it is inserted. It be applied to the sustainable aspect.

Frampton’s [1] contribution must be reminded, and as it promotes its constructive expression potential, it will be applied to the work of some architects, which demonstrate the use of this concept, raising architecture (again according to Frampton) to the concept known as the “poetry of construction”.

The idea here is to show examples of the work of some architects that allow the constructive system to be seen in the art of the building’s fabrication, through the materials used in order to promote the concept of the cities based on the constructive expression.

The formation of the urban landscape has yet to be elucidated through the insertion of these works on the pre-existent urban context and how they are capable of enhancing or weakening the eclectic architectonic and urban spaces built under the so common speculation seen in our commercial cities.

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This work briefly clears out the concept of tectonics applied to architecture, and its insertion into the architecture’s history with real examples of notorious previous and current works. Finally, will be raised perspectives regarding the performative aspect, aiming to answer whether the construction or reconstruction has promoted the performative architecture.

II. DEVELOPMENT OF THE WORK

A. Recovering the meaning of tectonics

The recovery of the real meaning of tectonics is shown in the first part of this work because it is important to demystify its usual understanding as synonymous of construction. Etymologically it derives from the Greek “tektón”, which means carpenter or constructor. This term was historically incorporated into the poetic potential by meaning construction notion. In architecture it is described by Roberto Conduru [2] as:

(... not only the physical manifestation of the structural component, but the formal amplification of its presence in relation to all other parts.

and:

As an approach to the architectural composition, the tectonic potential of a building can be fully achieved through the mutual and harmonic interdependence between structure, form and construction, conditioning its visual manifestation, or it’s appealing.

Conduru also states that:

The complete liberation of this potential comes from the expressive force deployment of the whole building towards its constructive content, seeking its presence amplification in relation to the other parts, in conjunction to the cognitive and poetic aspects of its own essence.

Kate Nesbitt [3] emphasizes that tectonics appears in the architecture critics at the end of the modernist period, when its crisis brought back the discussion concerning the symbolic aspects of architecture, very well explained by Rossi and Venturi. These arguments bring back the term “tectonics”, as mentioned in the work of Peter Collins [4] (1960), Eduard Sekler [5], and Stanford Andersen (1968). According to Sekler [5] (1995), tectonic expression means an indivisible relation between artistic expression and constructive logic, and it must be as emphasized as the concepts of space and function, very much observed so far.

According to Frampton [1], the concept of tectonics can also be used in criticism of the post-modern historicist architecture. This author pinpoints the material, constructive, and tactile dimension of architecture as representative of a form of opposition to the scenery approach of post-modernism. In his book, Frampton unveils these concepts, based on the study of six architecture masters: Frank Lloyd Wright, August Perret, Mies Van der Rohe, Louis Kahn, John Utzon, and Carlo Scarpa. Frampton establishes his argument on the topography dimension, and on the notion of place, including the role of the body on the perception of the environment and architecture. Frampton also states that architecture not only is related to the structure, but to the building skin, bolding the value of representational aspect, and considering architecture as a complex assemblage of several elements. Architecture is empirically located between human realization and technology development. Therefore tectonics is able to accommodate the numerous related and coexisted architecture conditions.

It is worth reminding that the tectonic concept of architectural materiality was raised in a situation of a disciplinary and polemic crisis on the cultural environment. Semper’s [6] Greek architecture works, along with Frampton’s [1] work on modern architecture, locate the tectonic notion inside the core of a critical debate, concerning not only the post-modernism, but also the eclectic movement. This concern was leaded to legitimating the relationships between architectural form and physical form. Summarizing the actual concern about both authors related to the contemporary picture of our cities is about the question of architectural quality and of what is a good architect’s work, which means the aesthetic must be viewed as an ethical issue with the constructive matter, and it can be achieved throughout the tectonic view. Noteworthy, both authors were worried about the legitimate relationships of the architectural forms with its physical matter, comprehending the material, physical, and symbolic aspects.

At this point, the importance of the material aspects of architecture must be valued under the tectonic view, also cited by Frampton [1] as an existing phenomenon on the human living and existence. The material aspect has a straight influence on the contemporary architecture, since its relevance is linked to the sustainable and digital concept of architecture. This is, indeed, a matter of debate since many do not give much importance to the material experience in front of the virtual reality experience, and its constructive potentials, interspersed by computational technologies. Shall we have more virtual cities? Would virtual approaches be a disrupting factor for people to get along? Would technology facility restrict, expedite, or destroy urban centers?

Fig. 1 unveils the relationship between the virtual and the traditional city, in shaping the contemporary city.
The fundamental idea is not to change the subject, but to correlate the importance of the real agents and architecture custumers of built architecture to the tectonic sustainable arguments. If our urban centers die, there will be no architecture to be built for, no one to use, inhabit or live under the tectonic, performative or any other concept.

B. The contemporary picture

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It can be said that, under the tectonic aspect, the contemporary picture inherited the concepts overcome. According to Frampton [1], new perspectives of analysis surpassed the modernism’s notion of common space, as well as the notion about image and meaning, incorporated into the post-modernism.

Current examples can be seen on the direct or indirect influence of the tectonic sustainable concepts upon architecture works. The contemporary picture mirrors the quest for the current spirit and to overcome the historicism, using the sustainable architecture to adapt to the present through the use of elements and systems consistent to the current period.

Recent compositions incorporate diverse styles, and in a few examples look for membership in the valuation of different systems from diverse contexts and cultures.

In the international scenario sustainable tectonics has lost its critical speech and assumed a diverse scope. The deeper understanding of the inner mechanisms of a project’s conceiving and the suggestion of a relationship between the material and the symbolic form have been summoned from a panel of texts about digital ways of architecture conception, going through works that promote the environmental speech, up to investigative essays of constructive materiality.

As in works from James Stirling (1926-1992), the architect adjusts the placing program, enhances construction potentialities and technological innovations owing to the system workflow, its combination and synthesis to achieve contemporary and unexpected solutions.
In fact, the tectonic aspect seems to be an alternative way to explore the constructive methods. Frampton [1] also considered the eclecticism and the spectacle as a brief conservative language that do not represent the complex world and contemporary cities. The answer to this question would be the contribution of constructive tectonics, which delivers essence to architecture.

The concept of performative architecture practice is obtained through new creation processes, where resources are used more purposefully, deliberately and systematically.

The following example express the fact that the tectonic promotes the thermal comfort, the energy expense reduction and preservation of the natural resources, based itself on questions of the material and structural form, also the constructive expression, in order to achieve the performative architecture.

The project in Tenerife’s island of 25 bioclimatics houses were built in the world’s first sustainable residential complex. The building incorporates renewable energies into architecture. The houses are located on Tenerife’s Institute for Technology and Renewable Energies (ITER) land in the south of Tenerife. The houses were designed by architects selected by ITER and each house reflects each architect's individual sustainable solution. The houses were built following bioclimatic criteria, taking into account the climatic conditions of the place, using recycled and recyclable materials, and optimizing the environmental conditions with renewable energy integration, water and waste processing. The main aim of the project is finding a combination of strategies that allow achieving sustainable solutions to the energy problem in buildings. The solutions presented by each bioclimatic design open new ways to get the maximum integration of renewable energy systems in habitable structures.
considered the climatic characteristics of the localities since the preliminary project phase, locating the building “half” buried in the land in order to permit the protection from the winds and providing equilibrium of humidity in the interior. The house walls gather around and protect the occupants. The omnipresent pumice stone and wood give warmth to the house. The living room is connected to the front and back gardens where the dining room is situated. The house is perfect for a family or a group of friends who want to share common spaces together but at the same time enjoy some privacy. A relaxing bathroom with garden views will be an unforgettable experience. It also considered natural resources of the island through the use of volcanic stones.

The contemporary architecture has presented interesting bioclimatic solutions by using the renewable sources of energy. The bioclimatic and sustainable approach have been used with frequency in order to justify projects with good level of adaptation to the climate and real energy efficiency. Several technologies directed for the sustainability were incorporated to the project of Norman Foster for Commerzbank, shown in the figures 13, 14, 15, 16. The use of the natural light and the thermal capacity of the floor aim to minimize the demand of electric energy for conditioning.
C. A Brazilian example

In the Brazilian field there is a good example in the sustainable tectonic and performative view. The geographical and climatic diversity, the availability of material, as well the specificities of each region are translated through the tectonic sustainable concept in perfect tools to design performative architecture.

The residence Helio Olga, located in São Paulo, designed by Marcos Acayaba, is a good example of what the sustainable tectonic architecture can be. The building shows up the small impact in the land, since it is rested on six pikes, liberating the land and permitting permeable area. The respect to the topography causes a form of pyramid reversed allocating the social area and the service in the ground floor and the rooms under it. This way it reverses the traditional formula of the houses in Brazil.
Figure 17 – Residence Helio Olga, Marcos Acayaba, São Paulo, Brazil. Source: http://pef2603g03.wordpress.com/2011/05/30/aspectos-historicos-30-05/ Access: May 2011.

Figure 18 – Residence Helio Olga, Marcos Acayaba, São Paulo, Brazil. Structure perspective. Source: http://www.itaconstrutora.com.br.

Figure 19 – Residence Helio Olga, Marcos Acayaba, São Paulo, Brazil. Source: http://pef2603g03.wordpress.com/2011/05/30/aspectos-historicos-30-05/ Access: May 2011.

Figure 20 – Residence Helio Olga, Marcos Acayaba, São Paulo, Brazil. Source: Personal file of the architect.

Figure 21 – Residence Helio Olga, Marcos Acayaba, São Paulo, Brazil. Constructive detail. Source: http://www.itaconstrutora.com.br.
Also, the industrialization gives through the tectonic constructive a repetition of pieces and systems of assembly. The building was designed with passive ventilation techniques: the cold air enters through the lower floors and goes up through the openings in the upper floors. Few years later the house incorporated the solar heating and has been prepared to produce its own energy through the implementation of photovoltaic cells.

III. CONCLUSIONS

The aim of the contemporary picture discussion is to invoke the dematerialization questions, digital conception, new materials design and new construction technologies, all of it applied to the sustainable and performative aspect.

The sustainable tectonic architecture seeks to identify a coherent strategy towards a new tectonically sustainable building culture and the increasing emphasis on building performance. The subprojects look at partial issues and go into specific questions dealing with central aspects of the overall project: tectonics, identity creation, cultural heritage/recycling, sustainability and performance.

Through the tectonic aspect it is possible to overcome a few critical points where the contemporary cities are inserted, redefining the essence or architecture, relocating it into a complex form on the social fabric, promoting the constructive expression potential.

Therefore, tectonics rather rehearse the old debate between works that are useful, beautiful or not, seeking for poorly answers, it asks not about the work but about the way the work works.

It also is possible to promote requalification, rehabilitation, and revitalization of the built environment, keeping the historical, architectonical, and cultural values as mainstays of new constructions, also taking into account the singularities of each context and social or urban reality. The “construction poetry” is capable of joining the material, cultural, aesthetic and sustainable aspects, withstanding and overcoming the challenges of speculation of architecture and urbanism.

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