The concept of sustainability present at Rino Levi’s work case study: Banco Sul Americano Building

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ABSTRACT: Studying the building known as the Banco Sul Americano by architect Rino Levi in São Paulo city, under a contemporary and sustainable approach, aim to verify the embryo of sustainable concepts in building design in the early 60. Although many aspects linked today to ecological architecture could not be labeled as sustainable in those days, most of them were present in architect Rino Levi designs and works. He always looked forward to emphasize innovative and technical improvements in his designs and constructions concerning natural ventilation and lighting, thermal and acoustic insulation. Thus, through this analysis, we try to establish a sustainable concept within design processes as well as a systematization of analysis parameters applied to commercial buildings, hoping to guide future building designs.

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INTRODUCTION

Although the definition of sustainability is most recent, the concept already existed, at least in urban environmental adaptation and building rationalization issues.

This study starts from the hypothesis that since the early 1930 decade, buildings with effective designs in Brazil, and particularly in São Paulo, were already concerned about environmental quality, energy savings and thermal-acoustic efficiency, clearly demonstrating the architects intentions for the local reality fitness.

Such characteristics are also found in Rio de Janeiro architecture among a few good examples as the "Ministério da Educação e Saúde Building, ABI Building - Brazilian Press Association, the "Obra do Berço", the Marquês de Herval Building, the Seguradores Building [2]; in São Paulo, the Esther Building, the Quinta Avenida Building, the Sociedade Plavini Building, and, mainly, the Banco Sul Americano Building [8]". These latest was chosen looking forward to verify such an assertion. Therefore criteria were established in order to define early sustainability concepts applicable to old buildings and further to verify if such criteria are present in this particular case.

Investigations began from the research developed by architect Roberta Kronka Mülfarth in her doctorate thesis intitled of "Arquitetura de baixo impacto humano e ambiental" (Architecture of low human and environmental impact) [6], where she established analysis parameters related to human scenes, recycled materials, energy and urban contexts compatible with the studied building. It also intends to verify, in other temporal context, the relevancy of the parameters launched by Kronka Mülfarth and implement them for analysis of former buildings.

2. ARCHITECTURE AND SUSTAINABILITY

The term "sustainability" first burst in the 80's, specifically within the Brundtland Report, requested for the General meeting of ONU in 1983 and coordinated by Norway's prime minister, Gro Harlem Brundtland. The concept includes actions caring about present needs, without compromising future generations possibilities of handling care of their own ones [4]. The goal was to consider long term, strategies to get a sustainable development beginning on year 2000. The report content was later published in the book Our Common Future in 1987.

The biggest trouble and the greatest challenge of such an issue has been approaching a theme that still does not have scientific endorsement of sustainability and is, in fact, an idea related to a trend, a process that points to reflections and actions. One of its main feature is interdisciplinary, which means that none aspect can be evaluated separately.

At the beginning the sustainable notion was impregnated with matters strictly linked to environmental issues. In the past few years, however, this limitation spread out to economic, social, political and cultural subjects, thus its conceptualization and application became even more ample and complex.
The term “sustainability” also proliferated in architectural and urban disciplines merging in common sense and ready to handle in any situation.

Derivations of this term were soon incorporated to Architecture vocabulary such as: Green architecture, Bioclimatic, Ecological, among others but getting no consensus, these terms are constantly misused bringing more uncertainties. Malaysian architect Ken Yeang, defines the concept as a design that aims ensuring to the next generations a continued access to natural resources [9]. He distinguishes a bioclimatic project from an ecological-sustainable project the former being the first one to outset from a low passive energy project concept, using environmental site’s climate energies to provide welfare conditions to the users, while the second emphasizes interdependences and interconnections of the biosphere and its ecosystems. Its main feature is the connection between all activities, even manufactured or natural, interrelating in an effective way. In ecological projects architects will contemplate and understand the environment as an active natural system, recognizing the entire surroundings depends on it (Yeang, 2001), implying in the minimum ecosystem deterioration, through the cautious use of the not renewable resources, and having to contemplate a symbiotic compatibility between activities associates to the designed system and to the ecosystem processes [9] (Yeang, 2001).

Analyzing buildings under the sustainability optics a proposal of systematization embracing four major groups, that approaches human aspects, the building surroundings, construction materials as well as prospects concerning to the construction itself, was borrowed from architect Roberta Kronka Mülfarth’s work. Parameters to be used as bases for the proposals actions, should consider all the stages of the whole cycle of life of the construction such as constructive materials manufacture, project, construction, use / operation / maintenance and demolition / recycling.

3. THE BANCO SUL AMERICANO BUILDING

The Banco SulAmericano building, conceived by architect Rino Levi in the beginning on 1960 decade, nowadays Itaú bank, situated on the Paulista Avenue, 1938, was designed with the participation of Roberto Cerqueira César and Luiz Roberto Carvalho Franco [5].

Rino Levi pursued his graduation in Architecture in Italy during the 1920 decade. He witnessed a deeply tumultuous postwar period, exposed to deep changes in knowledge field, mainly in construction and architecture. His importance in European territory is determinant to understand the path of his career, as well as the strong believes practiced during all his professional and academic life.

His first public expression was reveled in 1925, in writing an article entitled “Architecture and Esthetic of the Cities” [1], precisely when the first frenetic modernist manifestations questing for a national, contemporary and own language in arts were popping out in São Paulo and Rio de Janeiro. Rino’s concerns with the urban matters are unquestionable as he enforces a commitment between design, landscape and environmental comfort achievement. Architectural solutions regarding natural lighting, thermal procedures and acoustic concerns rule his whole architectural production, bursting either in his previous architectural definition, or in constructive details development.

![Figure 1 - Banco Sul-Americano building in 1964](image1)

The Banco Sul Americano building is, no doubt, a meaning lesson in the architect’s workmanship. Located at Paulista avenue, one of the major axis within the city, running from SE to NW, at 815.6 m quota, enclosed in a climate realm considered one of the best of the world. Architects, however, should pay attention to warm summer season. Rino Levi proves this knowledge wrapping the NW and SE façades (those that receives direct solar radiation on summer) with shading devices.

Astonishing financial speculations on land values, beginning in the 1960 decade, stimulated skyscrapers rising replacing houses and invading almost the whole avenue. The Banco SulAmericano Building, in the past isolated (e.g. Fig. 1), was soon surrounded by high buildings shading its façades (e.g. Fig. 2). Louvers designed for both façades had lost their original function.

The population overgrowth, building rising which configures a barrier against winds reduces green areas as well as traffic growth came to alter local microclimatic conditions increasing temperature and pollution (air and sound), thus making unpredictable air conditioned use.

![Figure 2 - Panoramic view from the Paulista Avenue in 2003](image2)

The street tracing system is basically the same from the avenue inauguration in 1902. A widening
was achieved in the avenue during the 70’s stoling area from the lots and eliminating most of the trees. In 1991 a subway line was implanted, the entrance of Consolação station being one block away from Banco Sul Americano building (current Itaú). Business offices, shops and services invaded the neighborhood that became the most valued area of the city.

Two overlapped volumes compose the building, a three floors base sheltering a bank, and a 14 floors offices tower. Each floor, measuring 680 square meters, possess free plant, and the structure is withdrawn from the window frames; stairs and elevators are located in the central part of the plan, bathrooms in the extremities, against the smaller façades. Ventilation is achieved through ducts, probably to avoid any intervention on the façades.

The concrete structure was scaled for maximum material saving in detriment of wooden forms used to mold the most varied beam dimensions. Brick masonry closed the bathrooms and ducts. Others partitions, within the free plant floors, were soft.

The floor-type, with rectangular shape, has northwest (to Frei Caneca street) façade and southeast orientation in its wider dimensions. The blind façades, coated with clear marble, are narrower and have northeast and southwestern orientation. Main façades are closed with glass on aluminum windows frames from floor to slab, and are shaded by horizontal aluminum made mobile louvers. In the northwest façade, these shading devices protect the whole opening, but in the southeast façade, it only protects the superior part. This mobile protection forms an external texture that marks visually the building. The luminous environment in the floor-type is pleasant and clear.

In a way, the building placement on lot surprises because of its non-commercial configuration as usually the major façade faces the main avenue. In this case, it is turned to a secondary street (Frei Caneca street). Protecting the northeast and southeast façades with a system of brises correctly calculated and efficient demonstrates the technical environment knowledge of Rino Levi and his team (e.g. Fig. 4 and 5). The southwestern blind elevation, toward the Paulista avenue, certainly stimulates his formal speeches, but also reveals an acoustic concern compelling to open the offices to Frei Caneca street, with much less intense traffic, and even a concern related with sun stroke as this southwest façade receives intense direct solar radiation in the afternoon, during the summer season. This plan configuration also benefited crossed ventilation in each office floor and at the same time it searches for a reduction of the thermal heating due beam radiation. A study of these thermal loads in each façade proves the correct choice of the site plan (e.g. Fig. 3).
4. ANALYSIS THROUGH A SUSTAINABLE APPROACH

The first conflicts to be appeared during analysis of an existing building, in the case the Building of the Banco Sul Americano, are in contextualization of the raised parameters and in paradigmatic differences between the design and construction time and current points of view. Is important to consider with clarity the diverse phases of building lifetime since its construction in urban, environmental, economics, human (social) and materials contexts, as well as understanding the complex interaction nature of great number of varying factors implicit in sustainability concepts.

Availing sustainability in concluded buildings must conceive space, environment and temporal contexts, most time different from current one. Only a few aspects, as the technical ones, can be quantified and, eventually, punctuated.

For the others, the approach becomes compulsorily qualitative and supported in reports, vague depositions compromising a discerning evaluation of the expected performance for analysis.

CONCLUSION

The raised issues face the difficulties to analyse an existing building through generalizing script. Though it intends to be including for any build, one should consider reality through a critic and qualitative approach.

On another hand, a script must be accomplished, for many aspects to be analysed in a building can vary according to who is accomplishing the analysis. At the same time the need of a critical position regarding this analysis is necessary, in order to verify under sustainable approach in comparing several similar buildings.

Due to complexity of the boarded theme and being this research in process, final considerations are not yet possible to be formulated. Nether the less, detecting difficulties and of the identifying limitations during the process of this particular analysis already becomes fundamental contribution to the continuity of this research, obliging the involved researches to another look at the presented study object.

REFERENCES: