The trivialization of the sustainability in the civil construction

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ABSTRACT: This paper aims to develop a theoretical reflection about the trivialization of the sustainability concept, putting together conceptual interfaces and real cases of contemporary buildings that has improper application of the sustainability concept. The case study was based on the comparison between contemporary buildings certified by LEED and modernist buildings of the 50s, which were more efficient in the context of sustainability. According to this we added factors: political, the various definitions of sustainability without a consensus, and the decoupling of the real vocation of sustainable building, as well as how they are being applied.

Keywords *Civil Construction; Sustainability and LEED.*

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1. INTRODUCTION

The Stockholm Conference in 1972 is the first attempt at rapprochement between human rights and the environment; at the time, the concept was called "Eco-Development" and later renamed "Sustainable Development". (Souza; Alencastro, p.1). What happened from there was a rapid growth in the number of NGOs, creation of activism such as Green parties, which began to influence politics, multiplication of transnational actors in the field of environment, environmentalism emergence as a new social movement and political opposition to the dominant structures (Gurski; Gonzaga; Tendolini quoted in Le Prestre, 2000).

In 1987 the United Nations conference created the World Commission on Environment and Development, which resulted in the famous "Brundtland Report, which says that "Humanity has the ability to achieve sustainable development, in other words to meet the needs of the present without compromising the ability of future generations to meet their own needs ". (Nascimento cited Brundtland, 2012, p. 1).

In this way, concerned to promote sustainability, society, government and construction companies have articulated to aim economic growth and respect for the environment. The strategy to enable this growth is directly linked to building sustainable enterprises, which purposes, among other things the lowest impact and energy efficiency in buildings.

The idea that the current production and consumption mode leads to a disaster is increasingly accepted. "The fact that the economy is in conflict with the natural systems of the planet is evident and proven by the daily information about the disappearance of fishery areas, the reduction of forests, soil erosion ... and the disappearance of species" (Brown, 2003, p.14). In this same logic, the rising need for residential, commercial and industrial buildings caused the construction and all involved agents to realize directly or indirectly the significant impact due to scale, scope and influence of the buildings in relation to the environment, in many cases causing considerable impacts and other irreversible.

Many of these negative impacts are generated by the construction sector, which accounts for 40% of world energy consumption and 16% of water used in the world. According to data from the World Watch Institute, the construction of buildings consumes 40% of stones and sand used in the world each year, and is responsible for 25% of logging annually. It is natural that sustainability assumes gradually a position of increasing importance in this scenario. (Brazil Environment, Accessed: 03/2016)

Thus, craving the understanding of the concept of sustainability and sustainability in construction, we will analyze what happens with respect to the application of this concept by large developers and important government officials. The goal is to understand, from the major labels such as LEED analysis to what extent this fulfills its role in the area of sustainability. Focusing on understanding the trivialization of the concept of sustainability in construction, from the comparison with buildings from the 50's that today are more sustainable than those certified with sustainability seals in the XXI century.

2. SUSTAINABILITY CONCEPT

The main goal of sustainability is to recognize the needs of the present without affecting future generations that appears quite engaged with an emphasis on justice. This is seen as

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a paradigm in that future policies should be based on. However, can the equitable use of natural resources, human and fair distribution of wealth among the current generation of people or efforts to do so be understood as a presumption for the widely used definition of sustainability? This principle could be in agreement, but the reality may be a different matter. (Huang, 2014)

It is pertinent to ask whether the three dimensions (economic, social and environmental) sustainability are sufficient, and what it means. The first dimension, environmental, assumes that the production and consumption model is compatible with the material basis on which rests the economy as a subsystem of the natural environment. It is therefore production and consumption to ensure that ecosystems can maintain their self-repair or resilience. (Nascimento, 2012, p. 2)

The second dimension, the economic, presupposes increased efficiency of production and consumption with increasing economy of natural resources, especially permissive resources such as fossil energy sources and the delicate and poorly distributed ones, such as water and minerals. This is what some refer to as eco-efficiency, which implies a continuous technological innovation that takes us out of the fossil energy cycle (coal, oil and gas) and expand the dematerialization of the economy. (Nascimento, 2012, p. 5)

The third and final dimension is social. A sustainable society assumes that all citizens have the minimum necessary for a dignified life and that nobody absorbs goods, natural resources and energy that are harmful to others. This means eradicating poverty and set the standard for acceptable inequality, defining minimum and maximum access to material goods. In short, to deploy the old and desirable social justice. (Nascimento, 2012, p.6)

According to the author (Pereira cited Heinberg, 2009, p.4), the use of the terms sustainable and sustainability is not feasible, because there are many possible definitions to characterize these two terms. What predominates, in fact, despite many theoretical efforts is lack of consensus on the meaning given to sustainability. The numerous definitions lead to the argument that sustainability is a concept devoid of meaning and with many meanings at the same time. In this sense, (Temple, 1992 1-28) stated that the massive use of the term means that it is many things and nothing at the same time, and that as a concept it is very broad, being useless. (Huang cited Pezzzoli, 2014) says that today's literary scientists offer more than 100 definitions of the term sustainability or sustainable development.

3. SUSTAINABILITY CONCEPT IN CIVIL CONSTRUCTION

This movement emerged in the late 2000s and focuses on creating harmony between the final work, its construction process and the environment. Intended to avoid steps in each of unnecessary damage to the environment by optimizing construction processes, reducing the resulting residue, and reducing energy consumption of a building. It also has the objective that a building reaches a level of thermal comfort and proper air quality, thereby reducing the need to use artificial ventilation or heating (Construction Forum Accessed: 03/2016). Globally buildings are responsible for 25% to 40% of energy consumption and 30% to 40% of CO2 emissions and the use of significant amounts of natural resources, such extracted materials and mineral deposits (30%), water (20%) and space (10%). (LNEG, 2011).

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Sustainable architecture design challenges the idea of a building as a work of art and comprises as part of the living habitat, closely linked to the site, the society, the climate, the region and the planet. It undertakes to disseminate ways to build with less environmental impact and higher social benefits without, however, being uneconomic. The development of an architectural project in the search for greater sustainability should consider the entire life cycle of the building, including its use, maintenance and recycling or demolition. (Construction Forum Accessed: 03/2016)

It is understood here as sustainable not only the environmental performance of products, but also social and environmental responsibility of the manufacturers. There is still much to develop. Among the points to be pursued are: the creation of methods of analysis of a product life cycle and of the building (to ensure expected performance), as well as a mechanism to inform the consumer of the environmental characteristics of products, of works and sustainable features of the projects. (Andrade; Ramacciotti, Simon, 2012, p.29)

4. FREE-RIDER

The free-rider discursive (applied to environmental issues) is an actor who, to express rhetorical support to sustainable development, enjoys the benefits of being "green" without actually being one. That is, they appropriate and benefits of symbolic goods without supporting their discourse by practical action and continues to be guided by individual/immediate interests (Fonseca; Bursztyn, 2007). This allows players to reproduce certain discourse and appear to practice it when, in fact, their daily practice is guided by special interests that often clash with the speech used as a rhetorical instrument. (Fonseca, Bursztyn, 2009, p 16-17).

The chances of a program or project be approved for funding agencies increase, as they express their membership, at least formally, the criteria of Good Governance Manual (MBG). The greater the number of elements of good governance questions list the project contains, the greater are your chances of being approved and funded, for "donors and international financial institutions are increasingly basing their aid and their loans with the condition that reforms are promoted to ensure good governance "(UNESCAP, 2009, translation by the authors).

The free-rider concept is proposed by (Olson, 1999) to explain why, in the logic of collective action, it is not enough for individuals to be aware of their own interests and favorable to the acquisition of collective benefits for them to mobilize in search of such benefits. When the group is large and the benefit is too general, the action of a single individual has little impact on the action, either favorable or contrary to the acquisition of collective benefit.

5. CERTIFICAITIONS

A set of actions that supported the development of sustainability in construction were environmental certifications for buildings, as shown by some examples cited in Figure 01, which determine parameters for assessing the environmental impact of buildings both in their construction and in use. Many countries have developed their own methodologies, aiming to support the action of the construction companies in their markets. By 2011, about 32,000 certificates had been issued in the world. Both environmental assessment initiatives

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buildings have good design and management guidelines. (Andrade; Ramacciotti, Simon, 2012, p.28)

The maturation of these evaluations is demonstrated by the development of methodologies for residential buildings and housing developments. This expands the view that sustainable construction should cover all types of works, in addition to considering other requirements of energy efficiency, and insert social aspects in his assessment. Thus, the concept of a green building is expanded to a sustainable building. (Andrade; Ramacciotti, Simon, 2012, p.29)

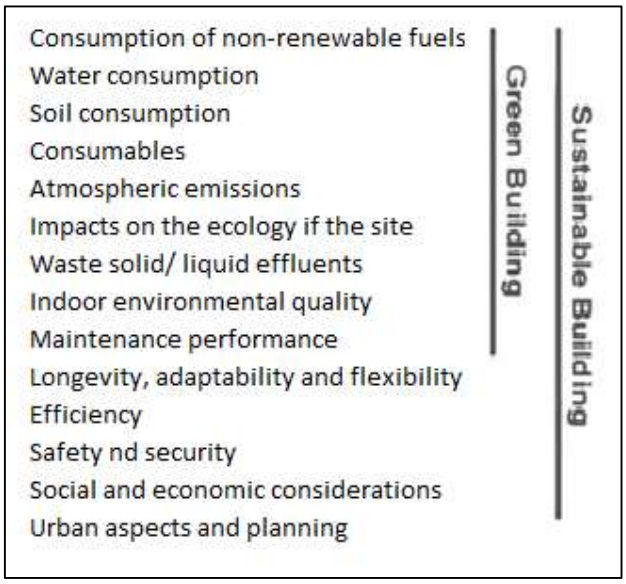

Figure 1. Options: design / green and sustainable construction. Source: Andrade; Ramacciotti, Simon, 2012

There are three types of Environmental Labelling, according to (Duarte, 2011, p.12):

•Ecological labels - "stamp" that indicates that a product or service meets certain environmental requirements based on their life cycle, directed to the final consumer.

•Self-statements- developed by manufacturers, importers or distributors to communicate information on the environmental aspects of its products or services without being subject to external verification, directed to the final consumer. Ex. Indication emissions of VOC.

•Environmental Statements of Product EPD - more complex and are aimed at the professional public (public or private). Not They do not necessarily mean that the product is environmentally superior, but show that the supplier has a good knowledge of the environmental aspects and impacts. The primary objective of sustainable construction is the implementation of a sustainable building, as shown in Figure 02, this shall include the three dimensions of sustainability: environmental, economic and socio-environmental.

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Figure 2. Definition of a sustainable building. Source: Pereira, 2009

6. CASE STUDY

The efficiency of allegedly sustainable buildings is questioned, because they proved, through assessments, much less sustainable in the post-occupation than its proponents have claimed. In response, the city of New York began requiring by law the disclosure of the actual performance of some buildings, which led to even lower results in sustainability performance. (Mehaffy; Salingaros, 2013)

The program uses a point system based on a wide list of features for buildings that can be certified by accumulating points on not only energy efficiency, but also on water conservation, proximity to public transportation, indoor air quality and use of environmentally friendly materials. Another problem is that certification is based on energy modeling to predict the amount that a building uses. However, Council officials and many experts agree that such models are inexact. Once a building is open it can use more energy than was predicted by the project. And the way how a building is used - how many occupants it has, for example - affects its energy consumption (Navarroaug, 2009). Other reasons for failure: Widespread use of glass curtain; expanding wall; deep design plan, no building is an island and architectural treatment of buildings in isolation from the urban context. (Navarroaug, 2009) and (Mehaffy; Salingaros, 2013):

Although Henry Gifford is not an engineer, he is respected in the energy efficiency of the cycle due to their technical knowledge. According to Henry LEED sealed the buildings which used 29% more energy than conventional buildings. This statement in his article came to the US Green Building Council which has made the LEED change a lot since then. Still, Henry filed a class of $ 100 million, against the USGBC, alleging fraud, unfair competition, deceptive trade practices, false advertising, wire fraud and unjust enrichment. "No one hires me to fix their buildings" - Henry Gifford (Alter, 2010)

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Environmental lawyer Shari Shapiro in Law Green Building describes the process in simple language: The allegations are essentially fraud and false advertising, an unreliable claim. His theory is that the USGBC falsely claimed that its rating system makes buildings more economical, and for this reason the owners could pay more for certified buildings, and that professionals have obtained worthless professional credentials, and people in general, have been deceived by LEED. (Alter, 2010)

Figure 3. Anara Tower, Dubai. Source: e-architect.co.uk/dubai/anara-tower Access: 4/2016

Another case of unsustainability and design conceptually incompatible with the concept of sustainability is The Anara Tower, which was planned to be one of the tallest buildings in Dubai, and an icon of sustainability. Despite its facade of glass facing west, high embodied energy in the materials, and, interestingly, a non-functional giant wind turbine. Sustainable building for the consumer cost real sustainability. It was not built. (Mehaffy; Salingaros, 2013)

Figure 4. 7 World Trade Center. Source: som.com/projects/7_world_trade_center Access: 4/2016

In return, 7 World Trade Center tenants (Figure 4), trumpeted its gold LEED rating, an emblem of environmental citizenship SOM office, over the last six years. However, when it comes to energy efficiency, the new 52-story tower is far from being an example of performance, according to data released under a municipal law governing the use of energy in New York buildings. The building had a score of 74, just below the minimum of 75, referring to the set of high efficiency by the federal Energy Star program of the Environmental Protection Agency buildings. (Mireya Navarroaug, 2012)

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On the other hand, the MetLife building built in 1963 that features a large central terminal scored 39. However, the Seagram Building in 1958, masterpiece of architect Mies van der Rohe, on Park Avenue was awarded score 3. Older buildings tend to have higher Energy Star scores, because they have thicker walls, fewer windows and less ventilation - superior "thermal envelope" as a report on the first results. (Mireya Navarroaug, 2012)

"The stakes are considerable. Unlike cities that rely heavily on automobiles, New York has carbon dioxide emissions - almost 80 per cent - regarding the heating and cooling of buildings. According to this demand of energy it is crucial to fulfill the goal that the city has to cut global emissions by about a third by 2030, reducing costs and combating climate change. " (Navarro, 2012)

The largest buildings in New York - there are only 2 percent of the nearly one million buildings in the city - account for 45 percent of the energy used throughout the building stock**.** "On the other hand, two venerable buildings of the 1930s, the Chrysler Building and the Empire State, respectively hit the notes 84 and 80, the result of extensive upgrading of their insulation and mechanical systems**.**" (Navarroaug, 2012)

7. SUSTAINTABILITY OF THE BUSINESS LOOK

To (Palestrini, 1980), "from the beginning of the twentieth century, mankind has changed the world dramatically." "The industrial and agricultural growth, technological innovation, consumption of goods and resources, all have deeply interfered in nature conditions" (Gavazzoni, 2015). Thereby causing the producing of environmental impact as an inherent need and social commitment and ethical justification. Organizations are sustainable when they serve the interests of their owners and also of society. The performance of individuals stems from their personal beliefs and values, which require limits determined by the beliefs and values of society. (Fenker, undated)

Ethics and the laws created by man is what dictates, ultimately, the limits of their performance. Sustainability proposed today has to do with a new model of business management. The main challenge of sustainability, and greater focus of resistance from the executive, is the commitment to the long term. It turns out that as well as quality management, which was once synonymous with competitive advantage and is now a staple in industry, sustainability management is an inevitable way. Therefore, the more companies postpone its implementation, more expensive and more complex it will be in the future (Gavazzoni, 2015).

However, the general trend of sustainable development of most countries is well revealed. The difference is, in each country, in the attitudes of governments, companies, institutions and citizens to meet the challenges of sustainable development. To increase the sustainability index for Brazil, it is necessary to increase their participation in international cooperation and projects related to environmental issues. (Mikhailova, 2004)

8. CONCLUSION

This article realized that nowadays, although the sustainability concept is constantly debatable their applicability, in some cases, is not as efficient as expected. What really is expressive, in large part, is the need that the contemporary buildings have to be always ¨the

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most¨ in a way, seek to draw more attention through the design, or your height than actually seek to play the role. The wrong interpretation of the sustainable concept meaning add power to the income´s divergence, as well as the lack of a truly effective system of sustainability seals, generate the illusion that the building is when in fact it is not sustainable. In this way, it becomes evident the need for a review regarding the LEED certifications already issued.

The sustainable building concept, even before be analyzed on its real applicability, must be understood first of all, by the people who will dwell, which has as much responsibility as the designer and the entire chain that the conceived. In fact, to achieve a high income and thus the building be considered sustainable, the work must happen together, from the actions of the users of the building. In this way, the aim is to incentive a sense of ownership of the inhabitants, the building has the ability to communicate on a daily basis, showing (for example in the elevators) data on consumption and expenditure, daily goals and monthly energy, water, etc. In this way, it is understood that the exposure of these data, by means of technological resources, encourages awareness and even recovery among users with regard to the waste. Thus, the implementation of the 5R's (rethink, reduce, reuse, refuse and recycle) will occur naturally within each individual present there or passing through expanding including the city scale.

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