

ULUSLARARASI SOSYAL ARAŞTIRMALAR DERGİSİ THE JOURNAL OF INTERNATIONAL SOCIAL RESEARCH

Cilt: 13 Sayı: 69 Mart 2020 & Volume: 13 Issue: 69 March 2020
www.sosyalarastirmalar.com Issn: 1307-9581
Doi Number: <http://dx.doi.org/10.17719/jisr.2020.3988>

CONCEPTS IN SUSTAINABLE ARCHITECTURE AND CRITICAL APPROACHES ON THE ECOLOGICAL EFFECT

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Abstract

The concept of sustainability in the 1970s is the result of human awareness for the environmental and the humanity issues, consist of cultural, social and economic problems. One of the most important goals of the sustainable development is to preserve nature and modify its perspective, and the manifestation of sustainable development in the environmental aspects is called sustainable architecture.

Albeit the results of today's crises are well recognized, but the most of the presented solutions for environmental problems in a sustainable architecture seems to be ineffective and incomplete. Nevertheless, despite to the proposed solutions to the environmental problems, their approach to the nature keeps disconnected, and the eternal nature value remains non-restored.

The purpose of this research is to seek for environmental theories of sustainable development and sustainable architecture. Thereby, it may complete its deficiencies by employing comparison of attitudes towards nature. In this way, this article firstly describes the goals of the sustainable development and sustainable architecture and secondly, it presents its solutions in order to identify its defects and can propose a more complete policy.

Although sustainable development has ecological, economic and cultural-social roots, but, the role of the nature becomes more apparent with the search of the problems facing contemporary humans and their solution in the sustainable architecture. At the end of this paper, the nature and its broad meaning have been studied, which can determine the triple relationship of the human, the nature and the architecture. Considering the role of the human as well as architecture as a process that leads to sustainability, it will be the other important point in modifying the relationship between human, nature and architecture.

Keywords: Sustainable Development, Ecology, Nature, Architectural Process.

INTRODUCTION

After one century of the modern architectural experience, despite its valuable achievements and developments, complex problems arise in the environment. The situation of the world at the beginning of the 21st century testifies to an unsustainability development, which characterized by population growth, increasing in the consumption and distributing of unbalanced resources. Population growth, with the obvious instance of the Western lifestyle were caused a major imposition on the natural environment. (Serriri, 2016, 92). This imposition in the contemporary

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lifetime led to climate change, ozone layer depletion, species extinction and habitat decline. Therefore, the culture of the consumption and the human approach toward the nature changed. Following these changes, the concept has been introduced, namely "sustainable development". As a result, due to the important role of the built environment in the process of sustainable development, the experts consider this process (Nesr, 2014, 102).

One of the three prominent aspects that sustainable development emphasizes is environmental issue. The task of architects in this field is very critical, since architects directly and indirectly are responsible for 75% of climate change (Grutter, 2015, 113). Therefore, architects must pay more attention to the nature by a new perspective. The decades have passed since from mentioning sustainable architecture, and many solutions have been proposed by architects to solve the crisis, but there are still some problems in applying sustainable architecture (Irwin, 2001, 165). It seems that, without the elimination of theoretical defects of sustainable architecture, it cannot be continued. The term "sustainability" includes many complex aspects. Sustainability, based on its underlying slogans that are pervasive, it aims to preserve the earth. This term not only recommends realistic and applicable approaches as well as solutions but also it attempts to protect the breath of the nature (Sassi, 2006, 243).

Since there is no definite method or recommendation for sustainable architecture, focusing on the discussions and theories which have been expressed in this field seem to be essential for increasing the knowledge of the architects. In this article, various perspectives on sustainable development and architecture have been presented to extract the various fundamental aspects of sustainable architecture (Munier, 2005, 328).

1. THE SUSTAINABLE DEVELOPMENT

The sustainable development is a very broad concept and idea, which has many different concepts. As a result, through the abundance of these meanings, various responses have been obtained from the experts (Guy and Moore, 2005, 96). The concept of sustainable development is an important change in understanding the relationship between the human and the nature and the human beings with each other. This perspective has conflict perspective with the past two centuries of humanity that formed on the environmental separation bases, including social and economic issues (Sassi, 2006, 247). In this view, the relationship between human and the environment was perceived as human's dominance over nature and believed that human knowledge and technology could overcome all environmental and natural barriers. This point of view is related to the development of capitalism, the industrial revolution and modern science. As Bacon, one of the founders of modern science, declared: "The world is made for mankind, not human for the world" (Felamaki, 2011, 322-330).

Environmental management based on natural resources management acknowledged that the humans need natural resources, and these resources must be managed with accuracy Instead of using quickly and in unplanned form. In this case, they can be used for many years successfully. The concept of sustainable development is the result of growing awareness from global connection among growing environmental problems, social issues, economics, poverty and inequality, and the concerns about the future of humankind in terms of health, (Hopwood et al., 2005, 42-45).

Sustainable development was documented at the World Conservation Strategy (WCS) Commission, and it was organized by the International Union for Conservation of Nature (IUCN) in the 1980's. In addition, this issue was proposed by the World Commission on Environment and Development (WCED) with the titles of "our common future" in 1987 and "Caring for the Earth" in 1991. This report presented comprehensive definition of sustainable development. Therefore, according to Brundtland report, humanity has the ability to develop sustainability to ensure the supplementation of current needs without jeopardizing the ability of future generations to meet their needs (Felameki, 2011, 263).

As represented by some researchers like Alan Fricker, the sustainability is recognized as a kind of attitude towards the future. As they continued, this attitude is just like a path map that



focuses on a set of values, ethics as well as spirituality and it controls human behaviors (Munier, 2005, 351).

In the year 1999, this book "Our Common Journey: A Transition toward Sustainability" was published by the National Research Council (NRC) group. With regarding to the six seasons of this book, a broad view is documented from all phenomena, factors and events that ultimately recognize the human environment (Mimarian, 2014, 332).

The sustainable development is not a steady state of coordination, but rather, it defines as a changing process. In which, the humanity factors like mining, investment, the orientation of technological development and institutional changes will become compatible for the demands of today and the future (Ragheb et al., 2016, 778). This definition of sustainable development includes two determinants: firstly, this definition, not only accept the concept of needs, especially the basic needs such as food, clothing and shelter for human life, but also it provides a convenient and moderate approach for the human life. Secondly, this concept accepts the demand for technology resources and social organization with environmental capability to meet present and future needs (Williamson et al., 2003, 64).

Medahi and Seyadi (2016) With considering to the has been mentioned about sustainable development, the goals with respecting to the environment can be categorized in three main aspects; **a.** the relationship between the human and the nature, **b.** designing a path map, which was focused on a set of methods and ethics, **c.** Change in mining. However, it has to be mentioned that, these three aspects have a close meaning to preserving the nature in order to meet the needs of the future generations (Figure 1).

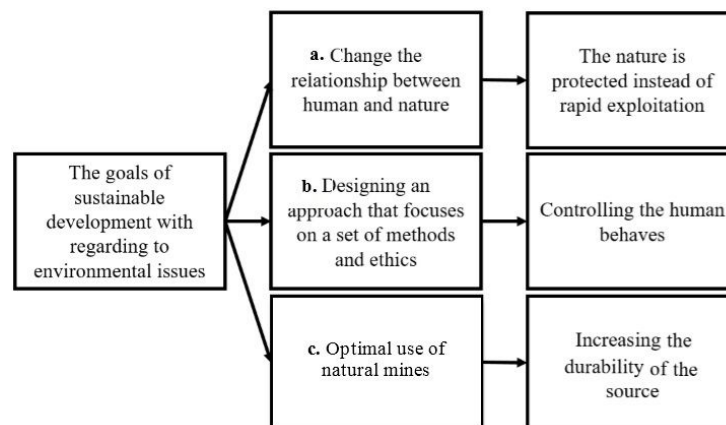


Figure 1. The goals of sustainable development with regarding to environmental issues (Medahi and Seyedi, 2016,174).

2. THE SUSTAINABLE ARCHITECTURE

The sustainable development in affiliation with construction activities and built environment is often referring to the sustainable building or sustainable construction. The building sector is one of the largest economic and social sectors in Europe, and with the built environment, it has a significant effect on changing the natural environment. The construction sector and the built environment have been identified as two key areas for sustainable global development (CIB, 1999).

Generally, the buildings have the longer life in comparison with the other artifacts and it will have a significant impact on sustainable development during all stages of drawing, building, equipping and destruction or reuse. A building is defining as a product with a combination of materials and compounds that interact mutually. In addition, the building has a significant effect on human health. For instant, 90% of the European people spend their living time within the buildings and architectural space (WGSC, 2004).



2.1. The Various Perspectives on Sustainable Architecture

The challenge of sustainable architecture has an affiliation with a comprehensive solution for environmental considerations and simultaneously to attain a level of life quality and cultural, economic, social and comfort values (WGSC, 2004). Sustainable development aims to make a significant transformation in comprehension the relationship between the human and the nature. However, the proposed solutions in the sustainable development for the built environment and the architecture are mechanized. And in modification doesn't led to viewpoint and ideology of human toward the nature, and also the relationship between the human and the nature is not defined as complete and correct. In the following, the paper is referring to some perspectives on sustainable architecture and solutions for understanding different opinions (Mimariyan, 2014, 375-379).

From Richard Rogers's (2007) point of view, sustainable design aims to meet future needs without destroying the remaining natural resources of the future. His perspective refers to the buildings, the sustainable design of resource efficiency, flexibility and a long life (Serriri, 2016, 97). As presented by Jong-Jin Kim, there are three basic principles for sustainability in architecture: saving the resource consumption, which causes the reduction in consumption, reusing and recycling employed natural resources of buildings, designing based on life cycle (it suggests a method for analyzing the process of building and its effects on the environment), and finally the designing of human (which focuses on the interaction between man and the natural world). In addition, he describes the methods and tips for achieving these three principles (Kim, 2009, 8-15).

3. Economic, Environmental, Cultural-Social Sustainability

Occasionally, the sustainability of all three systems (e.g. economic, cultural-social and environmental) is called the trilateral basis, which is evaluated by the sustainability, success of development and design (Williamson et al., 2003).

In literal terms, sustainable architecture focuses on architectural sustainability as a scientific discipline and as a product of a scientific discipline. In the cases in which, sustainable architecture emphasizes on the axes like the future, it focuses on the best method of designing and planning of the general realm (Sassi, 2006, 253-256). In this regard, the cases including: key arguments, urban planning, architecture, and sustainability are strongly tied with each other. Ecological methods and cultural sustainability cannot be investigated separately. The responsibility for the environmental guarantee means cultural sensitivity and cultural sustainability should include ecological awareness. For cities without a combination of these two aspects, there will be no viable future (Cole and Richard, 2003, 367).

Recently, many environmental technology methods fail before they succeed. This failure is just because of the incapability of the designers, who have failed to diagnose the cohesion and socio-cultural content of the architecture or lack of understanding the needs and expectations of the others, who intend to use it. Indeed, in this section, the authors are discussed about amnesia or preserve the local cultures and values (Edwards and Hyatt, 2009, 125-129).

This subject really affects the success or failure of the project. The global technological advances in the term of information and communication have led to increase the amount of consumption, continued urbanization, and the growth of international capital and the business around the world causes to converting the culture with new racial patterns and cultural affiliations into unexpected Hybrid cultures. At the same time, the rapid growth of the technology has an impact on the increasing of the environmental problems on the global scale, thereby, the ecological disasters can be seen, such as the rapid loss of resources, natural species, high consumption and increasing of the energy waste. In this way, it is understood that the artistic environment as a major cultural branch and the major consumer of energy and resources is strongly implied in both processes (Cole and Richard, 2003, 371 ; Seriri, 2016, 98-99).

It is demonstrated that information and knowledge about new ideas and skills or many new technologies can barely be transmitted to other cultures and countries. Even after they have



been introduced to a new cultural context, they either have been implemented in a minor approach or have not been adapted; hence, they were replaced or even neglected (Cardelus, 2018, 54-57). Before claiming that these technologies are as realistic, applicable, and valuable, they must have realized that they are connected to the culture of those people in a complex way, and the technologies that adopted to the particular group of people can't be accepted necessarily by the other cultures (Fischer and Hajer, 2010,115).

In order to accepting and working on the new technologies and practices, they have to be in one line with the expectations, demands, the knowledge and the cultures of the people (Willis, 2000). Of course, it is undeniable that the culture of people's consumption and their perception to the nature is gradually changing and their modifying approach is also crucial, why so, the new technologies should be promoted with the right culture, and it seems that in addition to indigenous culture, the modifying of that should be considered too.

From what has been expressed about sustainable architecture, considering to the energy we can search the sustainable environmental goals: constructing the buildings that are sensitive to indigenous needs, the minimum energy consumption and etc. As mentioned before, considering the native cultural-social content is also necessary for the applying of environmental technologies (Figure 2).

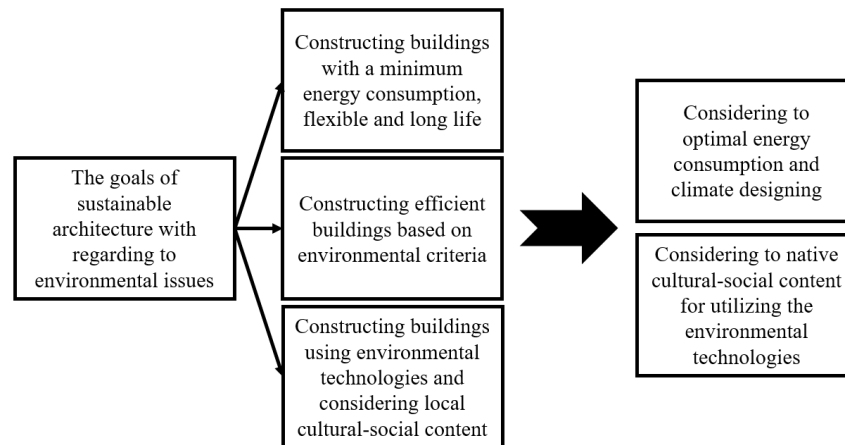


Figure 2. The goals of sustainable architecture with regard to environmental issues (Serriri, 2016, 105).

In all the mentioned cases, the nature is not discussed as its real meaning. In the targets of the sustainable architecture, the nature must be preserved because of the human needs. While, previously it was different, the relationship between the human and the nature in addition to its conquest and use included the other relationship with the concept of nature sanctity. This meaning of the nature; denotes the sacredness of it, has led to a sense of respect for nature while using it, and thus, all the problems that modern humans are seeking to solve, has been solved by giving the meaning to the nature (Nasr, 2015, 108-114).

4. MODIFYING THE RELATIONSHIP BETWEEN HUMAN, NATURE AND ARCHITECTURE WITH THE APPROACH OF THE SUSTAINABLE ARCHITECTURE

4.1. The Human Role

Sustainability requires a continuous progression effort. There is no possibility for improving and modifying the built environment, without the participation of the people. Sustainability is not a matter that people simply agree with their rules and regulations. As a result, they must be carried out by the participation of the communities in an efficient resource management with respecting to an equality rights and based on sustainability levels (Munier, 2005, 357-361).



In the most of proposed solutions by the sustainable architecture, the climate attitude is considered, “with respecting to the climate attitude, the humans are reduced to the level of living creature, who need just a weather comfort”. Considering the climatic conditions is recognized as one of the most prominent pillars of architecture, but it's not that easy. Here is a collection of various factors which are formed the final shape of the building and just one of them is the climatic. So that, the human can experience the feeling of being in a comforting atmosphere and simultaneously receive a lot of messages within that space (Mimarian, 2014, 267-272).

4.2. The Human and the Nature

In most of the perspectives of sustainable architecture, it seems that the modern view of Bacon still exists. It means, the management for the utilization of nature and its exploitation in such a way that it is not destroyed and remains usable for the human beings (Cardelus, 2018, 65).

Sustainability in dictionaries is defined in terms of durability and resource maintenance.

a. The ability to be sustained; relates to a method of obtaining or consuming a resource, so that, the source doesn't become empty and don't be permanently damaged. **b.** Related the type and approach of life that involves the use of sustainable methods (Nesbitt, 1997, 167).

This meaning and the similar meanings, which presented the sustainability regarding to the human perspective and the position of a beneficial tool or device is related to how to protect or improve the quality of human life within the limits of the capacities of the supported ecosystems. While equating the sustainability with the biophysical and disregarding related habits, lifestyles and cultural values is not correct (Willis, 2000).

Since the exploration of sustainable architecture is one of the most important and challenging issues of this era, As Frank Fischer and Marteen A. Hajer argued, the human can begin to ask new questions and maybe introduce a new thinking about sustainable design (Fischer and Hajer, 2010, 123). This attention to the life both in nature and in it, emphasizes that neither natural nor social conditions can have superiority to each other. Instead, a constructive process should be identified and searched (Irwin, 2001, 173). In this policy, Instead of considering the nature as an independent and extraterrestrial entity (which should be stored or exploited), the human must understand the nature and communicate with the nature in the various ways.

The biology environment is obviously a part of the culture, it is a part of an approach that people comprehend about their world and their place, within the defined limitation. Moreover, it relates to an environment where including the emotions, thoughts, interpretations, knowledge, ideology and value of the people. Therefore, it is a special way of understanding the world (Milton, 1996, 218-220). The emphasis on what people are doing is roughly related to what people think, feel and know. As an anthropologist, Milton wants to make man sensitive in ways that native knowledge forms the relationship between the human and the nature (Guy and Moore, 2005, 104).

According to Jorg Kurt Grutter (2015), in order to understand the relationship between the building and the environment, initially, the human viewpoint about the environment or generally in relation to the nature must be considered. The basis of the building is the manipulating in the nature, the type of this manipulating has the close affiliation with the attitude of people thinking in the nature. The jeopardies toward the contemporary human beings are too plentiful. This significant issue was discussed by Christopher Alexander, he mentioned that, most of the opinions and predictions about the population explosion are related to economic factors, especially food shortages and the depletion of natural resources. As he continued, the other big danger is the disappearance of beauty, human health as one of nature's creatures depends on its physical, nervous and emotional effects on the environment (Chermayeff and Alexander, 1991, 231-242).

The word “being together” and its concept may not be too serious, but the growing separation of human beings from one another and the other manifestation of the life on this planet is a serious matter. “Ecology” is an important knowledge of being together about the objects,



elements and environment. The human changes his regional location from its origin, and this changing is too unreasonable and unthinking. Therefore, the future of the earth will be at risk. Alexander says that if the rapid growth of the population occurs and all of them can be fed, and if, under such conditions the humankind survives, undoubtedly, he/she may convert to another creature. Indeed, the Alexander is discussed about the weakness of the humanity (Chermayeff and Alexander, 1991, 169-179).

Christian Norberg Schulz in the introduction of the book "Architecture: Meaning and Place" writes; «During my activities, modern world has suffered with a very complicated crisis. Our historic ecosystem was destructed rapidly, our natural environment was victimized by pollution and exploitation and humanity was treated merely as "human material". Generally, the human doesn't form a part of a meaningful whole and is stranger to the universe and himself/herself (Schulz, 1998, 111).

Schulz in his paper has been investigated the destructive effects of the contemporary world crisis on the humans, particularly on the younger generation. As he continued, these destructive effects are because of the dominance of abstract-scientific discipline, and with respecting to this belief despite all the critical efforts that the human has encountered, the main origins of the current crisis have not been properly indicated (Ragheb et al, 2016, 781-788). The solution of this situation is to "restoring the poetic dimension of life to the human beings" and the achievement of that depends on returning to oneself the things, means the tangible phenomena that are next to us and understanding the original meaning of them are possible. He comprehends these kind of perceptions as the daily environmental phenomenology, which maybe allows the humans to re-discover the universe as a totality of interactive and real qualities, and in the following, causes the redevelopment of the respecting sense and attention to things (Schulz, 1998, 117-121).

Sustainable architecture as a process, not as a product of sustainable architecture perception, involves questions about the sustainability of a building in the terms of its social and cultural context and as much attention to its environmental context (Williamson et al., 2003, 65).

There is another perspective on sustainable architecture as presented by Anne-Marie Willis. Nowadays, the sustainable architecture is recognized through the inference of architecture as a product of sustainability. While by reversing of this relationship the significant change will occur, means, the sustainability must be inference by architecture. A change that means damaging and reconstructing the architecture and the thought of architects. Establishing an accurate link between the form and what have to be sustained is just like to shifting the design attention from a building to a finished product, and they have to pay attention to the processes that are focused on what is being supported? It denotes, they should be seen as a node at the intersection of services flows, materials, information, people, and other things of the life (Nesbitt, 1997, 167-175).

Sustainable architecture means a process, which can be repeated. Sustainability is a concept which is employed for a measuring the value of a method. A method that meets the contemporary protection needs through a repeatable and durable behavior. Therefore, the process is considered as much as the final product. The sustainable architecture clearly recognizes that the final product may be worn down over time or need to be replaced. However, it also recognizes as a process that is persistent and viable, and the mentioned process can be renewed or repeated, without unessential destruction to the environment and resources, (Guy and Moore, 2005, 99-104).

Sustainability should be seen in affiliation with the process. As a power, it sustains what can be sustained. In fact, it forms the relationship between the built biophysical object, the social culture and the symbol. This sustainability perspective as a process is more than a completed product. It means looking at it or as a capability to change. It means keeping a sense of what should be preserved and what is appropriately sustainable (whether buildings, objects, activities, technologies, living or working conditions, mental or physical habits) and what is not appropriate (Medahi and Seyadi, 2016, 115-128). Sustainability means continuity, conjunction. It is an active process and it means movement and motion, means storage for the future, such as preserving existing water resources. It maintains something that is sustainable. Hence, architecture needs to



be environmentally sustainable as a design activity, along with the ability to stabilize what needs to be sustained.

CONCLUSION

The concept of sustainable development is a prominent variation in comprehension the relationship among human and nature as well as human beings with each other. It has conflict perspective with the last two centuries; a view based on separation of environmental, social and economic issues. It can be mentioned that sustainable development and sustainable architecture according to their original symptoms tend to protect the environment by changing the approach to the nature, but the solutions presented and what is now embodied in the built environment, it must have a kind of discrete and distinct from the nature, and it only focuses on the preservation of the resources in order to the exploitation of the future generations.

Although the principles of sustainable architecture involve a wide range of simplest application methods to the most sophisticated technologies of the day, the question of the appropriateness of the method and its relevance to the social and cultural context of the people and users of the environment is a matter of concern.

Modifying the perspective to the nature and thereby, changing the human behavior towards it, which leads to a change in the culture of consumption is a crucial step in the sustainable development. As mentioned before, neither natural nor social conditions can't be superior to each other. A co-creation process should be detected and searched. In this path, instead of considering nature as an independent and extraterrestrial entity, it should be stored or exploited, and the nature should be understood and communicated in various approaches.

Many theorists and philosophers are looking for the attitude, which leads to respect of the nature. Where Alexander considers ecology as the knowledge of the coherence for the objects, the elements and the environment of human beings. In addition, Norberg schulz attempts to make the environment meaningful. In addition, as proposed by Nasr, the only solution to the today's human crisis is to restoring sacred nature of the environment to it.

With regarding to the extent of the sustainability and the complex aspects of this issue, focusing to one significant point is to considering sustainability as the product of the architectural process. Sustainable architecture needs to be seen in relation to the process. It is recognized as the power, which sustain Alize what is capable to be sustained. In this case a fundamental question poses: what should be sustained? And thereby the solutions must be discerned.

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