

Green Architecture and Islamic Architecture: The Islamic Arabic City and the Traditional Islamic House

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Abstract. The concept of sustainability or green architecture is not considered a new term, it is rather a concept embodied by the traditional architecture in different parts of the world since old ages via spontaneous and experimental compatibility. This compatibility is associated with the environment and with the efficient exploitation of the resources of the natural environment in accordance with the evolution of life and its means over the years. It is obvious to everyone the fact that the teachings of the Islamic religion include a lot of the principles of sustainability, which overlap with the social organization and behavior of the humanitarian community and are reflected on the production both at the level of urban planning standards for cities and urban agglomerations or the features of the traditional architecture. This paper is an attempt to define the concept of sustainability in the references of traditional Islamic architecture, in general and housing in particular, through a review of the relationship between man and the environment and its preservation within the Islamic perspective.

Introduction

In recent years, the adoption of the concept of green architecture became of an important influence in many European countries, in the American continent and East Asia [1]. and the expression of positive reaction to the concerns of climate change and population growth, there became a great interest among the various public, private and industrial institutions in these countries in this issue It has become necessary to have geometric authorities functioning at the level of the professional associations and government institutions to be responsible for the construction industry in our country and to take important decisions on the subject of sustainability in the built environment.

Environment and Islamic Thinking

Although the word environment has not been mentioned verbally in the Quran, Contemplating in the verses, we find that the concept of the environment in the Quran and the Sunnah is referred to as the "Earth and what is on it and around it" [2]. There are many Islamic rules that are inspired by the guidance of the Holy Quran and the Sunnah urging individuals and groups to preserve the environment to keep it clean and in order. Allah says "and those who harm male and female believers without a reason endured slander and manifest sin"[3].

The concept of environment and its preservation from all forms of pollution is associated with the doctrine of the Muslim This is clearly embodied in the Prophetic Hadith "Faith is of about 70 or several more kinds, the best among them is to say there is no god but Allah and the last is to remove

something harmful from the way of Muslims". If the environment, according to the western thinking, is the space or the area in which people live including human and natural phenomena that affect and are affected by it, the Islamic concept of the environment is much deeper than its western equivalent, as it links the environment with faith system of the Muslim who believes in one God [4], the environment is the framework in which humans live and they practice social and productive activities. Thus, the environment is the source of wealth and production, and maintaining it and the rationalization in the use of its resources enhance production and giving

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There is no doubt that the treatment of ancestors of environment was not random or innate, but based on the profound legacy of experiences and learning through the principle of "trial and error". This was supported by a creative thought and penetrating insight. The depth of these experiences was demonstrated in modern studies over hundreds of years. Elements of sustainable design is integrated with the design intellect by using local building materials and carefully planned simple techniques, which stem from their local environment where solutions were effective and interactive with the environment and with the available resources without the need to convert or control them.

Paul [5] in his book "The Encyclopaedia of the Classical Architecture" ascribed the success of the traditional architecture, in addition to being a product of the logical correspondence to the available resources in the environment, the climatic factors and the community principles, there are many upholders of the concept of sustainability who laid great attention to traditional architecture in the Arab Homeland. The number of studies that investigated the classical architecture increased in number. These studies aimed to provide a new utilization of traditional architecture such as the central courtyard and wind towers to be used in areas that have a similar climate Murtadha [6]. when we consider traditional architecture, we are either looking for the thought behind its building to learn how to build in the future, or, as it is the case in the last few years, scholars started to look at traditional Islamic architecture in more depth linking between the principles of Islam and the principles of sustainability. Murtadha concluded his book, "Principles of Islam in the Built Environment" and in the last chapter entitled "Sustainability: Rethinking in Islam" confirms that most of the principles of Islamic architecture "can be included within the concept of sustainability. It is beyond dispute that the sustainability advocates concede that the intellectual trends of ancient civilizations and traditional societies embraced the ideas and principles that form the basis of sustainability. Of the most important calls of sustainability is to provide our needs at the present time without reducing the chances of future generations to achieve, but the researcher finds that, the Koran and the Sunnah, and since more than 1400 years contain similar principles to the ones sustainability calls for in our present time [1]. Figure 1 shows, Al-Kadumia city in Baghdad and the narrow streets, The compact style and winding paths make apartment buildings close to each other to give the shading to the walker in these paths and block sunlight from residential and surrounding buildings.



Fig. 1, Al-Kadumia city in Baghdad and its narrow streets

This style also helps in reducing the area exposed to sunlight, which in turn reduces the heat gained. Housings is an essential part of the city fabric, and there is no analgesic lofty solo house design as houses are adjacent to each other without distinction between houses of the rich and the poor of how the housing unit is projected or the outer treatment. The excellence is inside, and this is one of the most prominent features of the traditional architecture which is the unity of the appearance, while the difference and the excellence are in the essence. The difference in the size and areas of houses, and the number of courtyards, which affects the spatial system of these units. This adds some merits to the environmental performance within the overall design of the urban Fabric through the formation of different places in the pressure and dislocations antenna which helped achieving natural air movement between the parts of the urban fabric, the inside of the dwelling, and the multiple spaces of house. The streets of cities were directed from north to south, the interfaces of buildings and roads are not exposed to the sun this is what makes the streets gain a shadow throughout the day and are exposed to north wind. The streets and alleys of the city were marked of being narrow to provide shadowsit also zigzag, to not be converted into windtunnels for winter.

The Principles of Sustainability in Traditional House: Adaptation and Protection

Adaptation is the exploitation of potential resources in harsh environmental circumstances and dealing with these circumstances to achieve heat comfort to dwellers and to exploit natural sources of energy. Protection is to eliminate the impact of harsh environmental circumstances. There are many basic principles on which the architecture of the traditional dwelling is based. This architecture includes the concept of sustainability and it can be modified to be guiding indications to contemporary sustainable design:

The direction towards the internal courtyard it is provides Protection against climatic factors, natural light, social privacy and natural ventilation Through planting the yard and establishing bodies of water that make the courtyard shaded and its air cool and transmitted to the adjacent rooms, figure 2 shows the air is conditioned to make the courtyard cool and pleasant in the morningat noon, the air begins to move from the shaded alleys adjacent to the courtyard and then to the internal spaces and in the evening the courtyard begins to lose its temperature to the outside air, and begins to pull cool air from the top, where the hot air ascends to the top and the temperature drops.

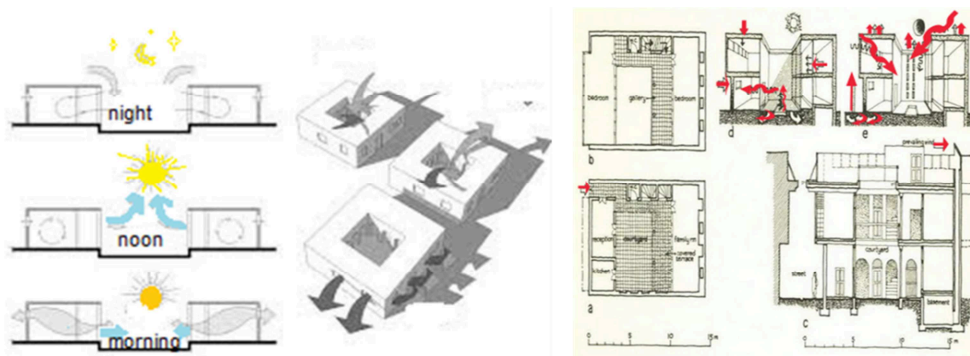


Fig.2, The air conditioned in courtyard

Aelchenachel whose most important benefits are natural ventilation, natural lighting and shadows, since they allow air to plunge to the surface figure3, shows theAelchenachel and exterior windows and openings were characterized by their small areas.They were treated with decorations and colored glass to prevent direct rays from entering. They were also narrow from inside and wide from the outside to expand the viewing angle. As for the building materials, local materials which suit the environment were used. As for the building materials, local materials which suit the environment were used. These have a high heat capacity and thermal insulation they are renewable so they are sustainable materials. In today's language, roofing was done using curved ceilings and

thick walls which are built of stone or mud for thermal insulation aiming to keep the house cool during the hot day.



Fig.3, Aelchenachel and window in Baghdadi housing

The buildings of the Arab-Islamic city was an example of economy in terms of energy, as it relied totally on natural means to achieve thermal comfort inside buildings. The buildings and housings at present lack the correct direction that suits the nature of the climate and the environment. The direction of buildings their openness to the outside caused a problem in the size of the holes and the building materials used. This in turn led to the use of artificial means aiming to avoid environmental problems generated, and this has negative effects on the economic aspect represented in resources depletion.

Summary

Traditional architecture gives us examples of how simple the principles this architecture was based on and the idea that these principles are still valid at the present time as they were hundreds of years ago. These principles stand to confront modern construction methods that did not prove to be of more validity than traditional solutions.

Contemporary architecture is confronting many challenges to prove that it is able to accommodate the requirements of sustainable development and maintaining them. The use of the modern techniques of present time and the future can make the use of principles of traditional architecture easier and more effective to achieve the principles of sustainable architecture

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