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ScienceDirect

Procedia - Social and Behavioral Sciences 201 (2015) 49 – 61

Procedia
Social and Behavioral Sciences

Asian Conference on Environment-Behaviour Studies, AcE-Bs2015, 20-22 February 2015, Tehran, Iran

Climate Comfort Comparison of Vernacular and Contemporary Houses of Iran

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Abstract

Technology development causes a human oriented design to be forgotten all over the world. In housing design, one of the important factors for human-oriented design is Climate comfort. Today similar architectural patterns in different climate regions in Iran, can't provide residents comfort. While vernacular housing architecture of Iran had different patterns for providing climate comfort in different regions. The aim of this paper is to suggest some solutions to enhance the level of comfort in today's housing of Iran. This paper compares contemporary and vernacular houses of Iran in terms of climate comfort by using description and case study analysis methods.

Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers) and cE-Bs (Centre for Environment-Behaviour Studies, Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA, Malaysia.

Keywords: Comfort; climate comfort; contemporary housing; vernacular housing

1. Introduction

Built environment has direct effects on human's satisfaction and well-being. Building's response to inhabitants' physical and psychological needs is essential to give them a sense of self-worth, safety, and privacy. In spite of all these, it is necessary for a healthy environment to delight, uplift the spirit, relax or provide contact with nature (Sassi 2006). Therefore for attaining the physical satisfaction, the human body should be in a comfort level that achieving this depends on the accommodation of building design with the outdoor climate. Accordingly climate is one of the most important factors, which can have an effect on human comfort. Hence, due to the differences of climate in a

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Peer-review under responsibility of AMER (Association of Malaysian Environment-Behaviour Researchers) and cE-Bs (Centre for Environment-Behaviour Studies, Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA, Malaysia.
doi:10.1016/j.sbspro.2015.08.118

different part of the world, each region needs its designs and construction techniques in its buildings that can provide human comfort. However in recent years, by the development of technology, most of the new buildings are designed without considering human comfort.

In Iran, the same techniques are used in different zones for designing contemporary houses. These similar design patterns for contemporary houses cause some problems that are related to the human physical and psychological comfort. While vernacular housing in Iran was well adapted to its climate by using different strategies in different climates.

The aim of this study is expressing the importance of different architectural design strategies in responding to the climate comfort and revival them in contemporary housing. As Iran has rich vernacular architecture, scientists can analyze the positive features of the past architecture (not just imitate them) and make an attempt in order to build environmentally compatible structures using the new construction materials and advanced technologies. Consequently, the main objective of this study is to explore the possible means and ways of increasing climate comfort in contemporary houses by realizing the climate comfort building and the characteristics of the vernacular houses.

1.1. Climate and climate comfort in Architecture

"One of the effective factors in the human life, health and comfort is climatic conditions. A human being directly and indirectly has been affected by this condition" (Ramezani1, Maghsodi & Shafaghati, 2013). Jahan Bakhsh (1998) presented climate comfort conditions which in aspect of temperature is suitable for 80percent of people, or in other words, human beings under those conditions, neither feeling heat nor cold and neutral state is its other word.

Considering climatic comfort in architectural and building design is the subject matter of many kinds of research that clarifies its significance.The building design is the first defense lines against outdoor climatic parameters. The climatic design is looking after providing climatic comfort for human in buildings (Shakor, 2011). Gioni presented a bioclimatic chart of building and Elgi presented humidity and heating conditions about human needs and climate design and drew the bioclimatic chart (Kasmaei, 2008).In Iran, various studies were done in the field of climate role in architecture and urban design. Most studies pay attention to architecture survey consistent with a climate in various climates of the country. For an example, Kasmaei, (2008) studied climatic conditions, climatic parameters and the use of these parameters in the construction, Ghobadian and Mahdavi, (2013) presented different methods for analyzing thermal comfort and climate control methods, Saligheh, (2004) has presented climatic design models compatible with the region climate for the improvement of thermal conditions and raising comfort indexes and Razjooyan, (1988) has tried to analyze the effective factors on comfort by publishing his valuable book, entitled "Comfort by Architecture Compatible with Climate".

Based on mentioned researches, built environment is highly associated with the climate. Moreover, according to the climate characteristics, there are different classifications in architecture, such as cold, temperate, warm-humid and hot-dry climates. We can use this classification for achieving climate comfort level in building in different climates.

1.2. Vernacular architecture and climate comfort

Different climates require different architectural responses. To satisfy the various necessities, vernacular architectures that developed through the centuries has much original and interesting design practices and technologies (Singh, 2009). The vernacular building construction technique and specifications are more based on knowledge achieved by trial and error rather than conventional practices. Vernacular architecture provides a good solution to the climatic constraints, and there is more than one approach to solving the same climatic constraint (Rakoto-Joseph et al., 2009). It sets a harmony between dwellings, dwellers, and the physical environment. These kinds of structure evolve over time to reflect the environmental, cultural and historical context in which they exist (Helena, 1998).

Iranian vernacular architecture achieved the climate comfort conditions in interior spaces by using of intelligent strategies and adapted to the natural and social conditions of a specific locations in which it exists. Different studies