Chapter 3

The Interpretation of Vernacular Architecture through Fractal Models: In the Case of Iran, Masouleh Village

Ehsan Reza
Eastern Mediterranean University, Cyprus

Ozgur Dincyurek
Eastern Mediterranean University, Cyprus

ABSTRACT

Mathematical algorithm and nonlinear theories were used in order to study the establishment and development of traditional settlements since the second half of twentieth century. In order to interrogate vernacular architecture, fractal geometry is one of the most advanced methodologies in this study. Vernacular architecture is an organic architecture, which is formed in response to environmental, cultural, economical factors. There are plenty of variations in topography; climate and geographical issues among the mountainous areas in Iran. Therefor, there are many useful thought, which can be learnt from the existing vernacular architecture. This study is going to investigate fractal pattern of housing in Masouleh village, Iran. By referring to the fractal dimension calculated with box counting method, different type of information will be collected and this attempt will help decision makers, planners, architects and designers, especially in new housing developments.

INTRODUCTION

Architecture has always had its place alongside human beings with their particular lifestyle. This interaction between architecture and their lifestyle is influenced by factors such as; culture, economy, politics, society, religious beliefs and ideologies, which help to create a local identity resulting in its particular built forms representing the characteristics of the local community.

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The loss of local identity and the disregard shown towards the architectural know-how of former generations can be observed following the emergence of industrialization era. The underlying reasons for this development is the isolation of humans from nature, as well as the general neglect of the natural and urban development, thus creating serious problems in respect of architectural identity as well as the structure of the existing constructed environment.

Some key factors that used to define the guidelines respected by architects and decision makers regarding the building environment began to disappear when current designers and planners emerged. Some of those factors can be named as contextual design, environment friendly considerations in building design which respect the cultural patterns. All these factors revealed a kind of “identity crisis” in architecture and obliged the architects and designers to rethink their design approaches and look towards the revival of the old architectural heritages of previous generations and apply them to contemporary architecture.

According to this, the role of contemporary architecture, with reference to Glancey’s argument (2000), is to discover a “radically new way of shaping the four walls that surround us of looking at old ways”.

Vernacular architecture derived from the Latin word “Vernaculus” which means native, refers to people belonging to their respective regions, which, consequently, indicates their origins and culture. The concepts of origin and culture are associated with the ideas of identity, and belonging, as well as with the heritage passed on by previous generations. Thus, the study and investigation of the evolution of the built environment will serve to identify the necessary factors, which allow and promote the preservation and fostering of the qualities provided by the built environment in respect of the cultural identity background.

As it is mentioned in various studies, vernacular architecture is seen as a key element, which would allow the paving of the way towards a solution for many problems such as urban accommodation (Oliver, 1997).

It can be claimed that vernacular architecture is an organic characteristic of architecture, which is usually formed in connection with a variety of factors, particularly those of the environment and culture. Therefore, gaining a good understanding of these formations is a complex process. Formal architectural approaches have mostly used Euclidean geometry, which represents pure volumes that can be defined through regular forms. Mountains, which fall under the category of natural objects, represent organic geometries that don’t have specific recurring organizational shapes. Vernacular architecture has such an organic geometry of natural objects, whereas contemporary settlements mostly form a different geometry compared to that of the natural environment. In the light of vernacular architecture, nature-friendly designs, which are generally neglected in the developing cities, can be achieved by understanding the necessities of vernacular architecture. It is highly important to revitalize the traditional techniques in today’s architecture. The essential need to study and investigate some regions as case studies, will allow for the discovery of their potentials, the acquisition of the results of these studies, which will then be presented in a categorized way. Consequently, these results can then be proposed as some principles, which can be applied to today’s architecture.

The use of literary reviews in this study is mainly utilized for the general description of the vernacular architecture and of fractal geometry in particular. The main aim of this study is to determine a solid relationship between vernacular architecture and fractal geometry, which will allow for the revitalization of vernacular architecture in order to achieve conventional new dense housing. Accordingly, the main characteristic of natural geometric patterns in vernacular architecture will lead to the patterns of con-
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