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Reviving tradition in Islamic Built Environment: An Assessment of Pirnia's Proposed Principles

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ABSTRACT

Mohammad-Karim Pirnia (1922-1998) remains to be regarded as the most influential contemporary character in the field of traditional Islamic architecture of Iran. Having academic training in architecture he also delved deep in the study of history and evolution of Persian architecture, both pre-Islamic and Islamic. Parallel to these he worked closely with traditional architects and master craftsmen in search of qualities/characteristics that connected and united the multitude of Islamic architectural forms and styles that had evolved along the course of history. Pirnia pursued this path as long as he lived. He brought those invaluable firsthand findings to the classrooms, shared them with students and often elaborated upon them in his writings. In his efforts to understand the essence of traditional Islamic architecture he came up with five basic characteristics.

The five qualities that, according to Pirnia, constitute the foundations of traditional Islamic architecture include People-Compatibility (Mardomwari), Abstinence from Waste (Parhiz az Bihodegi), Self Sufficiency (Khod Basandegi), Introversion (Darun Garayi) and Structural Considerations (Niaresh). These principles are applicable to individual structures (micro) as well as larger scale compounds such as neighborhoods, towns and cities (macro).

In this paper we propose to present a critical assessment of Pirnia's five principals examining each of them against historical examples. In order to do so we will be using Kashan's old city compound that includes a wide range of buildings of different natures and functions, namely mosque, bazaar, madrasa and housings, etc. as examples. We shall also discuss briefly the validity of the five elements when applied to the modern architecture of the Muslim world.

Key words: Pirnia, Islamic architecture, Proportionality, Self-Sufficiency, Introversion

Introduction

In the very core of the term 'tradition' lays the concept of 'continuity' through gradual evolvement. This is true with traditional architecture as well. Traditional architecture reflects a people's social identity and life style; it shows the gradual change pattern that takes place in a society's cultural, economic and religious dimensions. Preservation of tradition would mean safeguarding of values, protecting virtues and maintaining a meaningful and harmonious connection between individuals and the world around them **(Zekegoo 2011).** Since the evolvement takes place in a rather slow and steady process' it maintains the sense of stability and avoids cultural shock. The Islamic architecture of Iran is a natural continuity of the ancient Persian artistic tradition. In fact the Sasanian architecture contributed much to the formation of Islamic architecture, especially mosque architecture **(Zekegoo 2009).** The formation of central dome and four arched opening on a square plan for instance, that became among the most popular forms used for mosque and tomb architecture in Mughal, Ottoman and of course Persian Islamic architecture is in fact borrowed from the mandalaic plans of pre-Islamic sacred architecture of Persia. **(Zekegoo 2009)**

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Pirnia, in his lifetime efforts in studying, teaching and designing managed to extract and introduce principles that connect, relate and unify Iranian architecture; this is in spite of racial and cultural differences among peoples of different parts of Iran. He discussed the Iranian socio-cultural condition, the historical grounds, climate, religious factors and the aesthetic values and developed his five principles. These principles could be applied to different types of Iranian architecture such as mosques, houses, bazaars, public baths.

People-Compatibility (Mardomwari),

Pirnia often uses the term *Mardomvari* when he discusses the principles of Persian traditional architecture. *Mardomvār* is compound word: *Mardom (مردم) means 'people' while* the suffix *vār (وار) suggests* 'compatibility'; it also means 'people-like' **(Mohammad Mo'in. 1972).** *Mardomvāri* would therefore mean a manner or style that is in harmony or compatible with the likes and needs of people. Pirnia considers this to be the first among his five principles.

*Mardomvāri (*people-compatibility*)* has been expounded by Pirnia at various levels. At one stage, in a high school textbook, **(Pirnia, 2003.1)** he explains that a traditional building must always be compatible with human anatomy, that is to say 'members of a building should be desirably proportionate with the human body and its needs'. **(Pirnia, 2003.1);** He provides details of specific rooms in a house that a traditional architect designs them in a manner to address specific needs of the residents. This is putting "functionality" above all other qualities in a building. Pirnia, having been a veteran architect, was of course well aware about the importance of function in any form of architecture – traditional or modern. However his stress on this aspect under the banner of 'People-Compatibility', and the study of the examples he provides convinces us that he actually meant something way beyond mere functionality. He gives example of a *sedari*[3] – a proper term for a bedroom in old traditional houses. He discusses the details such as shelves, niches, bedding storage compartment and goes as far as explaining the proportion of the width of the room in relation to the bedding and human body proportions. He further compares the low height of the ceiling of *sedari,* with that of *panj-dari*[4] - a high ceilinged spacious room that was designed to accommodate guests. He speaks about the conscious choice, by the architect, to allow for great volume of natural lighting for *panj-dari* as compared to the limited light exposure in *sedari. (Image 1)*

It may be noted here that in many cases an entire long side of the rectangular *panj-dari* room, from floor to its high ceiling, is covered with *orosi* (ارسی) – vertically sliding stained glass windows that often face the central courtyard of the house. On the contrary the three windows of the *Sedari,* with its low ceiling, located on the short side of the room, allows limited light appropriate for privacy. Also the names given to the rooms were mostly based on a 'proportional element' that is the fixed size of the doors. The terms 'with three doors' (*sedari)* or 'with five doors' (*panj-dari)* refer to this very fact. All door heights in residential buildings were built according to average human height. The size of the entrances had also direct impact in reducing interior-exterior temperature exchange, an important step in saving energy and fuel cost. Perhaps it was due to such

[3] Persian term *sedari* (سه‌دری) literally 'with three doors' is a small room in traditional Iranian housing. It had an attached large closet for storage of bedding furniture.

[4] Persian term *panjdari* (پنج‌دری) literally 'with three doors' is a spacious room with high ceiling in traditional Iranian housing allocated for family gathering and guests.

considerations that some architects preferred to use "Humanism and Proportionality" [5]– a descriptive expression for Pirnia's Persian term *Mardomvāri* – rather than our more accurate translation "People-Compatibility".

Abstinence from Waste (Parhiz az Bihodegi)

Waste in all traditional societies is looked down upon and in many religious traditions is regarded as a sin; it implies mindlessness and fatuous character. Qur'an describes believers as 'those who turn away from all that is absurd and frivolous (23:3).[6] The broad meaning of waste in architectural context covers a range of meanings – from construction material waste to wastage of space, light, heat etc. Aesthetic values, in most forms of traditional and indigenous societies, were valued only if they served purposes and complemented the meaning, function and structure of a building. So anything that is merely 'decorative' and does not serve a structural or even spiritual purpose will be considered frivolous. Pirnia gives example of *Gerehsazi*[7] with gypsum, clay, tiles and brick (that is usually regarded as 'decorative' elements) (Image 3) as *Ómood* (آمود) and *Andood* (اندود) – additions to the outer surface of the structure at the last stage – and regards them as fundamental parts of building (PIrnia, 2003.1). To this we can add *Karbandi (*کاربندی*)*, another element for meaningful beautification of the interior of the high rooms that has significant structural value. (Image 4) Luxurious *Orosi* windows add aesthetic quality to both the interior and exterior of the house through the magical effects of color and light defined within geometric patterns. Their functional quality in providing natural ventilation, allowing natural lighting throughout the year and, at the same time, defusing and transforming the strong summer sunshine into a spectrum of colorful rays is regarded as another example of abstinence from waste. (Image 5)

Even when it comes to the issue of functionality of space the principle of 'abstinence from waste' – that is rooted in a dominant worldview rather than a mere architectural concept – has always been a natural consideration. The logic behind naming rooms 'three-door-room' (sedari) and 'five-door-room' (panj-dari) instead of bedroom and living room, for instance, is to be found in the traditional concepts of space and function. The spaces in traditional housings were not designed to meet one specific need, but rather to serve multifunctional purposes. A traditional householder would argue that most spaces in a house can and should be utilized for different functions at different times according to the householders' needs. That if one limits the usage of a room just for resting in it at night it would mean that one is wasting the functionality of the space during daytime, when householders can utilize the place for other meaningful activities. Moreover, during different seasons (in cold or hot weather) the function of some of the spaces within a house changed. During winter the householders spent more of their house times in rooms that received as much sunlight as possible, and moved to rooms with least sunshine exposure in summertime.

Pirnia takes this principle back deeper in the history and extends it to ancient wisdom of architecture that has manifested in great monuments of the past. In Choghazanbil temple (1250 B.C), he argues, lowest part of walls have been covered with blue tiles not simply to decorate the monument; that glazed tiles were rather meant to protect the part of the building that was most exposed to the damp soil from deterioration, while the rest of the

[5] See " A Breif Survey on the Principles of Iranian Islamic Architecture" in *Archi-Cultural Translations through the Silk Road, Proceedings of the 2nd International Conference*, by Bahareh Hosseini & Atefe Zand Karimi, Mukogawa Women's Univ. Japan, July 14-16, 2012

[6] وَالَّذِينَ هُمْ عَنِ اللَّغْوِ مُعْرِضُونَ

[7] *Gerehsazi* (گره سازی) *or Gerehchini* (گره چینی) *are terms for geometric patterns of baked or raw clay, gypsum and the like that adorn the outer surface of a building.*

building is covered entirely with bricks – a much stronger material for defense against the harsh climate of the area (Pirnia, 2003.1).

Self Sufficiency (Khod Basandegi)

This principle is a natural continuity of the former two – all three spring from a worldview that cannot be associated exclusively with Iran or even Islam; they have their roots in collective human wisdom of traditional societies that are trans-cultural and even perennial. People were brought up to be able to stand on their own two feet in all stages of life. It was a matter of self-esteem to earn one's living by hard work and to be content with one's earning, however limited. To be self-sufficient meant strength, independence and peace of mind for the individual, and brought about respect and trust from the side of the community. This individual quality, in traditional mindset has more weight and value than glamorous possessions with bulks of debts behind them, which is associated with 'greed' – a grave personality flaw according to Islamic teachings and many other religious traditions, also one of the 'seven deadly sins' in Christian ethics. The entire concept is therefore linked to a traditional philosophy of life and from there it extents to the place of living – the house – and to architecture as a whole.

Self-sufficiency, or in Pirnia's Persian terminology khod basandegi (خود بسندگی), in architectural context, simply refers to conscious preference from the side of the architect to use locally available material from sources nearest to the construction site. There are three advantages, Pirnia says, in adopting this approach, namely efficient and speedy process of construction, harmony with the surrounding nature/environment, and finally faster and more convenient process of renovation or reconstruction **(Pirnia, 2003.1)**.

Self-sufficiency was so basically imbedded in the culture of construction that in numerous cases the architects instructed the workers to process the very soil from the site to be built and utilize it as construction material. In such examples, still available in a number of historical cities of Iran, the soil extracted through digging the foundation was refined, turned into clay, then molded into bricks that were used in raw (sunbaked) or fire-baked bricks eventually used for construction. Pirnia refers to Godal baghche in Yazd and a few historical houses in Kashan as examples of such practice **(Pirnia, 2003.1)**. (Image 6) Self-sufficiency in certain cases extended to innovation in making equipment and creative approaches in replacing established material – that have become rare or unavailable, for any reason – with other cheap and abundant ones . Alhagi, a wild desert-grown plant, locally known as camel-throne (خار شتر), for instance, was used as a substitute for straw at the time of the latter's scarcity **(Qayyoomi, Abdullahzadeh, 2012)**. It is to be noted that mud-straw mixture was the main construction material in hot and dry weather of central and southern Iran.

Introversion (Darun Garayi)

Introversion and extraversion are central themes in human personality theories in general and in psychological studies in particular. Introversion, at a personal level, may be defined as the "tendency toward being wholly or predominantly concerned with one's own mental life." [8] Traditional man saw introverts mostly as deep thinkers with analytical minds, who pondered before speaking but not so successful and comfortable when communicating with crowd. Introversion was also associated with creativity and inner energy. Many artists, writers and composers were in fact introverts – from social behavior perspective, but excellent communicators

[8] Extracted from Merriam Webster online dictionary

through their art and in relation with intimates. The modern approach took a complete opposite position; it developed more regard and value for appearance and expression, hence promoting extroversion as an ideal form of personality **(Susan Cain, 2012)**. Both introversion and extroversion found manifestation in architecture, especially in houses that accommodate the smallest social unit, family.

Pirnia counts introversion among dominating qualities of traditional Iranian architecture, with minor exceptions in areas like Kordestan, Lorestan and Northern Iran **(Pirnia, 2003.1)**. He states two main reasons for this tendency, the first and most important one being 'respect for people's private life **(Pirnia, 2003.2)**. Application of this aspect would have more tangible meaning when we see the issue from the standpoint of Islamic teachings. The Qur'anic code of action to abstain from entering other people's houses without their permission or consent (24:27) and the command to the believers, male and female alike, to "lower their gaze and to be mindful of their chastity" (24:30-31) brings the issue of privacy to a deeper level and inspires the Muslim architect to provide architectural interpretation for this religious, ethical and social concept. Climatic condition is the second factor that could prepare grounds for introvert architecture, Pirnia affirms, for "introvert houses are appropriate responses to dry climates with sandstorms and burning sun" **(Pirnia, 2003.1)** The most prominent manifestation of introvert architecture is the central courtyard surrounded from all for sides by the main structure of the house. Windows provide residents with the view of the courtyard beatified with a central pool surrounded by rose gardens and trees. This special setting promotes inner family life in a soothing private environment.

But, at the same time, provisions have been thought of for the outsiders who visit. To attend to both needs houses were divided into two distinct parts known as Andaroni (inner domain = اندرونی) and Birooni (outer domain = بیرونی). Visitors and guest were received and served in the outer domain. (image 6)

The introvert setting is not confined to house architecture; it also extends to public buildings and complexes such as madrasas and bazars. These places too have been designed in such a way that the interiors are quite elaborate while from outside they modestly blend into the surrounding texture of the city. Madrasa of Aqa Bozorg in Kashan is an excellent example. Bazar of Kashan too follows the same patter; except for its high gate that is a functional need for ventilation the huge body of the bazaar – with so many passages and commercial divisions – is almost invisible. The only exceptions to this rule are the buildings of religious significance, especially mosques. The high domes of mosques and their tall minarets have been the dominating land mark of Iranian cities for so long. The features explained in this section are shared by a big number of historical cities of the Muslim world and may therefore be regarded among principles of traditional Islamic architecture as a whole.

Structural and Proportional Considerations (Niaresh)

Niaresh (نیارش), is that which holds the building together. In the terminology common among traditional Iranian architects, Niaresh includes three sciences: 1) knowledge of static (strength of material and structural calculations), 2) material science (knowledge of material for construction, sealants etc.) and 3) construction techniques **(Pirnia, 2003.1)**. The three were seen as a single body of knowledge, not as independent branches. Design, calculation and construction were regarded as interdependent sciences and were done collaboratively. In the same manner architecture and engineering were but a single body of expertise that also included aesthetics. In other words beauty, function and construction went hand in hand as a comprehensive single entity. A building had to be strong, address the functional needs of the residents, and respond to their psychological and spiritual aspects of family life. Proportionality was a key element.

To make everything 'proportional' a system known as Peymūn [9]was used. Peymūn is a module based upon which the height of roof, size of rooms, surface of the yards etc. are calculated. Breadth of a door, for instance, is the standard module or peymūn for calculating its height; the same module dictates a rule of order and proportionality that runs through measurements of the rooms and the height of the ceilings and walls, roof covers and bays. In the same way a larger section of house was taken as a peymūn based on which the grand pattern of a house was developed. (Image 7)

Conclusion

Pirnia developed his five principles based on a lifetime experience of working closely with the last generation of traditional architects, learning their techniques, understanding their way of seeing life and their perception of philosophy of architecture. He found that philosophy to be nature-oriented and, at the same time, humanistic. Two of his principles are more nature oriented while two others attend to human needs – individual and societal; the remaining one is more scientific, calculative and aesthetic in nature:

The two principles, "abstinence from waste" and "self-sufficiency" promote respect for nature and address the question of sustainability – a popular topic of discussion today. On the other hand, "people compatibility" initiates discourses on human needs – personal and social, while "introversion" stresses on securing rights of privacy for the individual as well as the family – the fundamental unit of society. The above four principles, in fact, introduce a worldview or a philosophy of life that is 'traditional' in its core; they may easily be applied to individual characters, social manners and ethics that are praised by most traditions and religions. The fifth principle, Niaresh, however, involves scientific and aesthetic aspects of architecture. Niaresh, which includes engineering, architecture and interior design, is the means through which the former four principles find physical and functional manifestation.

Despite the fact that the aforementioned principles have been introduced as characteristics of Iranian architecture, they can easily be counted as features of architectural settings in many regions that share same climatic factors and where people adhere to the traditional values in their lifestyle. The proposed principles are fundamental in comprehending Islamic traditional architecture and can be subject to further and more elaborate studies and deliberations.

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[9] Peymūn (Persian = پیمون)و a colloquial term derived from *Peymāneh (پیمانه) means "measure"*

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