

SUSTAINABLE ARCHITECTURE IN THE HOT, ARID AND SUNNY REGIONS OF IRAN

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Abstract: *The present paper will investigate the specific elements of architectural design based on Islamic beliefs, by taking Iranian Architectural values and vernacular climate design methods into consideration. This research will assess the spirit of experimental elements, created by the inhabitants, according to recent scientific findings. The main concentration will be on the physical design of rural areas in hot, arid and sunny regions of Iran in order to have active and healthy environments and to emphasize on transferring all these sustainable values to the future.*

Keywords: *Iranian Architectural Elements, Rural Design, Arid Regions, Kashan, Iran*

1. Introduction

There is a division between academic fields and professional practices in architecture around the world. In Iran and many other countries the Academics are advocating traditional architecture in a “traditional” way.

They believe in directly cloning traditional elements from traditional buildings and using them in today’s architecture in an abstract way. However, because of the rising competition among the architects in the market, they are giving what the society aspires for: “Modern architecture”. These polemical practices have not yet been able to affect the academics. So, if Islamic architecture exists, the qualities and features that set architecture in the world apart from be other, should be explained and identified.

We must be in search for the ways by which a given epoch could have solved the aesthetic problems, as they presented themselves at the time, to the sensibilities and the culture of its people. Then our historical inquiries will be a contribution, not to whatever we conceive aesthetic to be, but rather to the history of a specific civilization, from the standpoint of its own sensibility and its own aesthetic consciousness [1].

2. Literature Review

In countries such as Saudi Arabia, urban planners have started searching for ways of reusing earlier Islamic urban patterns in modern cities [2]. In other countries, for example Morocco, the state itself carried out a policy of national urban design and architectural approach.

At the same time, The “Aga Khan Foundation” promoted a search for specific elements of architectural design based on Islam, and undertook a large program of seminars (“toward an Architecture in the spirit of Islam”, seminar #1, 1948; and “Conservation as Cultural survival”, seminar #2, 1978; to “Architecture as symbol and self-Identity”, seminar #4, 1979), and publications, Also “Hamdouni” searched Islamic Architecture in the West and he said that Islamic architecture values were not just limited to Arab-Islamic countries; it was also burgeoning in the West [3]. In this research, we introduce the Islamic elements used in Iranian habitats and we want to identify the characteristics of them and the way they coordinate the building to the values such as religious beliefs, cultural identity and vernacular climatic requirements. Finally we investigate the problems recently occurred in the architectural approaches of the Islamic countries by the influences that the non-Islamic architectures have had on them.

3. Specific Elements in Islamic and Iranian Houses

3.1. Interior Space

The most striking feature of all, in Islamic architecture is the focus on interior space as opposed to

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the outside or facade. The most typical expression of this focus on inner space is in the Islamic house. Rectangular dwelling units typically are organized around an inner courtyard. The facade of this house offers high windowless walls interrupted only by a single low door. Often these courtyard houses are clustered together into a walled complex to serve the needs of extended families and care them in arid regions.

Entrance to the complex is through a single door that leads to a passageway from which the individual dwellings can be reached. It has been said that the traditional courtyard house is never a completed project. As family size increases, more rooms are built on the lot's unused land. Once the land around the courtyard has been covered, expansion takes place in a vertical direction.

3.2. Circulation System

The traditional need to entertain male guests, while at the same time bar them access to the females of the household, has given rise to additional complexities of design particular to Islamic domestic architecture, which therefore must accommodate a double circulation system. The men's reception (or guest) room tends to be located adjacent to, or directly accessible from, the entrance lobby of the house so that visitors do not meet or converse with the female household or violate the "Harim". The men's guest room is a symbol of the economic status of the household and is furnished with the precious possessions of the family; therefore it is generally the most decorated room of the house.

So, does the house, thereby reflecting the history, accumulated growth and family structure of a number of generations.

The assertive nature of the individual Islamic dwelling can be clearly seen in the construction of modern houses. Many of the courtyard houses that give the Islamic city its unmistakable appearance, still exist. Often, however, they are being replaced today by structures influenced by the styles of Western architecture.

3.3. Courtyard

Yet the traditional courtyard house is an advanced structure. The open-air interior courtyard performs an important function as a modifier of climate in hot, arid areas.

The courtyard allows for outdoor activities with protection from wind and sun. The courtyard also serves as an air-well into which the cool, night air can sink. And the plain, thick-walled street facade of the house, with few or no windows, is designed to withstand severe elements like hot winds and sand. The roof usually is flat with high parapets. The most decorative feature of the courtyard house is the ornate roof line.



Fig. 1 "Tabatabai House" one of historical places in Kashan, Iran [4].

3.4. Architecture of the Veil

The architecture of the courtyard house has been called the architecture of the veil. Enveloped by a plain facade, the house's innermost sanctum, the courtyard, is kept secret. The introverted courtyard house expresses the need to exclude the outside environment while protecting that, which is inside the family and the inner life. Because of the lack of emphasis on external appearance in Islamic architecture, a structure, a mosque for example, might be hidden from being viewed by secondary adjacent buildings. If the facade is visible, it is rare that the facade gives any indication of the structure's size, shape or function [5].

3.5. Hidden Architecture

Closely related to the idea of "Hidden architecture", is the absence of specific architectural forms for specific functions. Most forms in Iranian architecture can be adapted to a variety of purposes. In addition, structures for a specific function might assume a variety of forms. "Grube" uses the "Four-iwan" structures popular in Central Asia and Iran, as an example. The four-iwan design is a kind of structure used for some palaces, mosques, schools, caravanserais, and private houses.

Generally, Islamic architecture and Iranian architecture is given to hiding its principal features behind an unrevealing exterior; it is an architecture that does not change its forms easily, if at all, according to functional demands, it tends to adapt functions to preconceived forms which are basically contained by the inner spaces.

Unlike traditional European structures, Islamic and Iranian buildings rarely have displayed an inherent directional or axial quality. In fact, if the building does have an actual physical direction, this often differs from the functional direction. In addition, Islamic architecture and Iranian architecture typically does not strive for the same balance that European architecture does. Thus, it is easy to make additions to original plans of Iranian structures. For example, as families grow, it is simple to add new dwellings to the traditional courtyard-house complex. The complex can become an organic maze of structures accumulating

around and totally engulfing the nucleus of the original design.

Enclosed space, defined by walls, arcades and vaults, is the most important element of Iranian architecture. With the exception of the dome and the entrance portal, decoration in Islamic and Iranian architecture is reserved for the articulation and embellishment of the interior. Islamic decoration does not emphasize the actual mechanics of a building, the balance and counter-balance of loads and stresses instead; it is a part of the Islamic and Iranian architectural tradition that aims at a visual negation of the reality of weight and the necessity of support [5].

3.6. Feeling of Weightlessness

How is Islamic decoration used to project a feeling of weightlessness? Grube writes: "They range from the use of mosaic and painted decoration to tiles, especially luster and painted polychrome, and from molded and deeply cut stone or plaster to actual openwork and pierced walls, vaults and even supporting pillars." The multitude of decorative treatments of surfaces in Islamic and Iranian architecture, the use of almost any conceivable technique and the development of a rich repertoire of designs, from geometric to abstract shapes to full-scale floral patterns, from minutely executed inscriptions in a full variety of calligraphic styles to the monumental single words that serve as both religious images and decoration, is without parallel in the architecture of the non-Muslim world.

Its effect is extraordinary and its function is quite unmistakable. It goes hand in hand with the non-directional plan, the tendency to an infinite repetition of individual units (bays, arches, columns, passages, courtyards, doorways, cupolas) and the continuous merging of spaces without any specific direction or any specific center or focus, and if a definite spatial limit is reached, such as a terminal wall, the surface that should stop the progress of anyone moving through the building will be decorated with patterns that repeat themselves, leading on visually, beyond the given limit of the wall, surface, vault or dome.

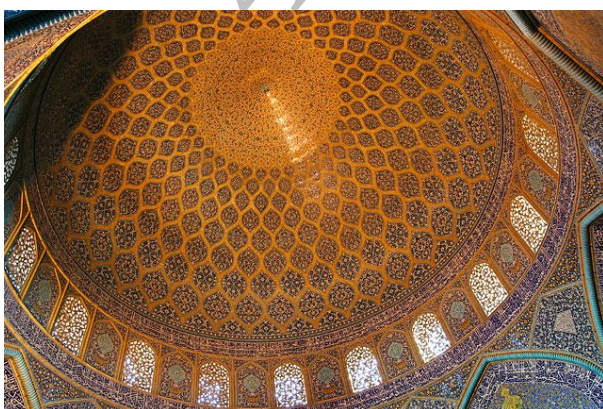


Fig. 2. Ceiling of "Sheikh Lotf Allah Mosque" one of the historical places in Isfahan, Iran [4].

3.7. Decoration

Decoration is a major unifying factor in Islamic and Iranian architecture and design. For 13 centuries, writes "Dalu Jones" in a very interesting and informative essay entitled "Surface, Pattern and Light" (in *Architecture of the Islamic World*, edited by George Michell), decoration has linked buildings and objects from all over the Islamic world from Spain to China. Notes Jones, "Islamic art is an art not so much of form as of decorative themes that occur both in architecture and in the applied arts, independent of material, scale and technique." There is never one type of decoration for one type of building or object; on the contrary, there are decorative principles that are pan-Islamic and applicable to all types of buildings and objects at all times (whence comes the intimate relationship in Islam between all the applied arts and architecture).

Though objects and art differ in quality of execution and style, the same ideas, forms and designs constantly, because little furniture is traditionally used for daily life in Islam, decoration contributes to the creation of a sense of continuous space that is a hallmark of Islamic architecture. The layers of surface decoration are increased and the complexity of visual effects enriched by the use of carpets and cushions, which often reflect the same decorative schemes as those found on walls and ceilings. Floors and ceilings contribute to the fluidity of space by the nature of their decoration, since they are often patterned in the same manner as the walls; sometimes, in the case of floors, the decoration actually represents carpets. Islamic design may seem restricted to two dimensions but that the very character of Islamic design implies three-dimensional possibilities. For example, the interlacing designs, often accompanied by variations in color and texture, create the illusion of different planes. Through the use of reflecting and shining materials and glazes, the repetition of designs, the contrasting of textures and the manipulation of planes, Islamic and Iranian decoration becomes complex and sumptuous.



Fig. 3. Color glasses of a window (top of the window) in "Tabatabai House", Kashan, Iran [4].

Regardless of form, material or scale, this concept of art rests on a basic foundation of calligraphy, geometry and, in architecture, the repetition and multiplication of elements based on the arch. "Allied and parallel to these are floral and figural motifs," Jones writes. "Water and light are also of paramount importance to Islamic architectural decoration as they generate additional layers of patterns and just as happens with surface decoration, they transform space." Space is defined by surface and since surface is articulated by decoration, hence there is an intimate connection in Islamic architecture between space and decoration.

It is the variety and richness of the decoration, with its endless permutations, that characterizes the buildings rather than their structural elements, which are often disguised. Many devices typical of Islamic architectural decoration, for example "Muqarnas" [a honeycomb decoration that can reflect and refract light], are explained by a desire to dissolve the barriers between those elements of the buildings that are structural (load-bearing) and those that are ornamental (non-load-bearing).



Fig. 4. Ceiling of "Pirnia House", Naeen, Iran [4].

"Tabatabai House" is an example of the feeling of continuous space, created in Iran's architecture through the multiplication of given patterns and architectural elements. Arches and squelches of different types and scales are employed for both structural and decorative purposes. This house was built in the 1840s for the affluent Tabatabaei family and was designed by "Ustad Ali Maryam". It consists of four beautiful courtyards, delightful wall paintings with elegant stained glass windows, and all the other classic signatures of traditional Persian residential architecture such as "Biruni" and "Andaruni".



Fig. 5. "Tabatabai House", Kashan, Iran [4].

3.8. Elements of Decoration

This section summarizes list of the elements that make up Islamic and Iranian decoration:

3.8.1. Calligraphy

Because of its role in recording the word of God, calligraphy is considered one of the most important of the Islamic arts. Nearly all Islamic buildings have some types of surface inscriptions in the stone, stucco, marble, mosaic and/or painting. The inscription might be a verse from the Qur'an, lines of poetry, or names and dates.

Like other Islamic decorations, calligraphy is closely linked to geometry. The proportions of the letters are all governed by mathematics. Inscriptions are most often used as a frame along and around main elements of a building like portals and cornices [6, 7]. An inscription also might be contained in a single panel. Sometimes single words such as "Allah" or "Mohammed" are repeated and arranged into patterns over the entire surface of the walls.

3.8.2. Figures and Animals

Because the creation of living things which move, human and animals are considered to be in the realm of God, Islam discourages artists from producing such figures through art. Nevertheless, a certain amount of figural art can be found in the Islamic world, although it is mainly confined to the decoration of objects and secular buildings and to miniature paintings. Figural sculpture is quite rare in Islam.

3.8.3. Geometry

Islamic and Persian artists developed geometric patterns to a degree of complexity and sophistication previously unknown. These patterns exemplify the Islamic and Persian interest in repetition, symmetry and continuous generation of patterns. The superb assurance of the Islamic designers is demonstrated by their masterful integration of geometry with such optical effects as the balancing of positive and negative areas, interlacing with fluid overlapping and under passing strap work, and a skillful use of color and tone values.

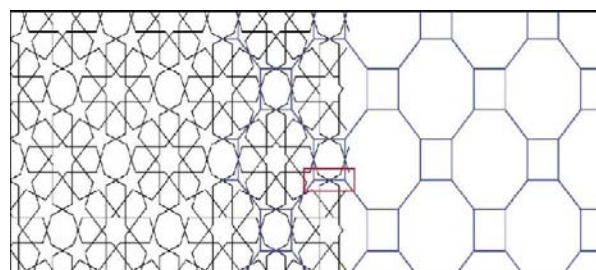


Fig. 6. "Ideal Rosette" one of the most beautiful motifs in Islamic art [8].

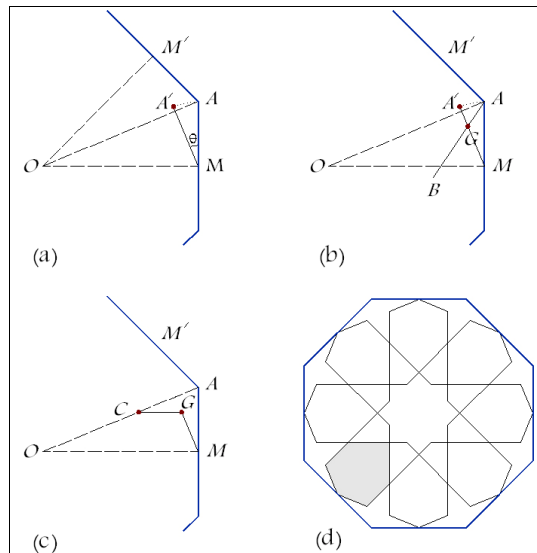


Fig. 7. An illustration of the steps in the construction of a generalized "ideal rosette".

In (a), point A' is obtained by rotating A about M by angle θ . The value of θ that yields the ideal rosette is then simply $|\angle AMM'|$.

In (b), the intersection of $A'M$ with AB (the bisector of $\angle OAM$) yields point G .

In (c), point C is found as the point on OA with $AC = AM$. We then construct the line through C parallel to OM , when truncated, yields the final ideal rosette in (d) [8].

3.8.4. Floral Patterns

Islamic and Persian artists reproduced nature with a great deal of accuracy. Flowers and trees might be used as the motifs for the decoration of textiles, objects and buildings.

In the Mughal architectural decoration of India, artists were inspired by European botanical drawings, as well as by Persian traditional flora. Their designs might be applied to monochrome panels of white marble, with rows of flowering plants exquisitely carved in low relief, alternating with delicately tinted polychrome inlays of precious and hard stones.

The "Arabesque" (geometric and vegetal ornament) is "characterized by a continuous stem which splits regularly, producing a series of counterpoised, leafy, secondary stems which can in turn split again or return to be reintegrated into the main stem," writes Jones. "This limitless, rhythmical alternation of movement, conveyed by the reciprocal repetition of curved lines, produces a design that is balanced and free from tension."

In the arabesque, perhaps more than in any other design associated with Islam, it is clear how the line defines space, and how sophisticated three-dimensional effects are achieved by differences in width, color and texture.... The underlying geometric grids governing arabesque designs are based on the same mathematical principles that determine wholly geometric patterns.

3.9. Water

In hot, arid climates, the water from courtyard pools and fountains cools as it decorates. Water can not only reflect architecture and multiply the decorative themes; it can also serve as a means of emphasizing the visual axes and create a microclimate. Like the images they mirror, pools of water are immutable, yet constantly changing; fluid and dynamic, yet static [9, 10].

3.10. Light

For many Muslims (and non-Muslims), light is the symbol of divine unity. In Islamic and Persian architecture, light functions decoratively by modifying other elements or by originating patterns. With the proper light, pierced facades can look like lacy, disembodied screens. Light can add a dynamic quality to architecture, extending patterns, forms and designs into the dimensions of time. And the combination of light and shade creates strong contrasts of planes and gives texture to sculpted stones, as well as stocked or brick surfaces.

4. Examples of Climatic Solutions

There had been numerous creative climatic planning in order to use energy efficiently. Studying of these and combining them with new climatic systems can be a proper way to make the building more sustainable. Regarding the four climate regions Iran, there are different adopted architectural approaches on the basis of the best ways of efficiency and sustainability by using the best combination of vernacular materials.

The important point in using such materials is their environment friendliness. These materials besides very ingenious climatic solutions and architectural design methods such as the courtyard, the wind catcher, the massive walls, and the hypocaust, were the main reasons for energy efficiency of these buildings to these extents.



Fig. 8. "Ghajar Bathhouse", Qazvin, Iran.

As an example, the Iranian architectural use of "Hypocaust" in bathhouses is one of these methods. Hypocausts were used for heating bathes. The floor was raised by pillars, and spaces were left empty inside the walls so that the hot air and smoke from the furnace would pass through these enclosed areas, heat them, and then it is let out. Rooms requiring more heat were placed closer to the furnace and the heat could be increased by adding more wood.

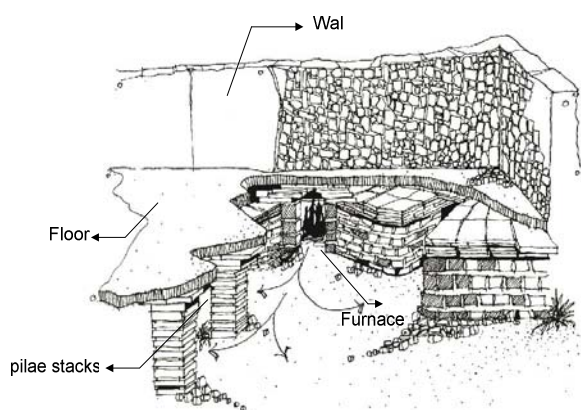


Fig. 9. "Pilae Stacks" in hypocaust.

But the adaptive reuse of vernacular solutions has to be in combination with new sustainable means in order to meet with today's needs.

5. Specific Elements in General Buildings

General buildings in Islamic cities such as the squares, the mosques, the bathhouses, the bazaar and ... have specific elements in Islamic and Iranian architecture. For an example, a brief survey of contemporary mosques shows that at least one of the large formal components (e.g., the minaret, the dome) appears in every case. Their actual realization, domes can be pyramidal, minaret an assemblage of vertical elements, both have become symbols of mosques and of contemporary Islam. There are other symbols in mosques such as the mihrab, the courtyard, the gateway, the portico, the chahar taq, the plinth and the ablution place [10].

But the search for symbolism within the forms of Islamic architecture is still in its inception and requires elaboration. Already observable is the fact that the regional traditions of Islamic architecture tend to repeat several particular forms and signs.

In this paper, some of these were identified. Attention was drawn to such elements as the minaret, the dome, calligraphy or epigraphy, and internally oriented plan types.

The minaret, for example, was shown to have a number of formal and stylistic variations. Moreover, the rage of inscriptions found on minarets provides evidence that individual monuments may have several different

levels of significance or meaning. The minaret's ostensible function as a platform for the call to prayer was and often is not exclusive to it: roofs, stairways and especially balconies were and also places for the muezzin [10].

6. Adaptation the Traditional Elements with Today's Needs?

On the whole the researches have shown that these elements of Iranian architecture could meet with needs and demands of their own age and adopt themselves with the identity, culture and climate of their regions; But here the question is: "How can we use the above elements in consistent with today's needs?" For this purpose, an intelligent interpretation of the Iranian traditions, forms and elements is necessary and the logical, functional and structural basis behind them has to be studied and understood.

6.1. The Future of Islamic and Iranian Architecture

Certain architectural features have become fixed and eternal. In this modern world, they help us find our architectural roots and remain true to our identity. Almost every architectural structure addresses, in a direct sense, the cultural identity and the philosophy within a physical context. If we want to understand, appreciate, and evaluate the architectural quality of a building, we need to develop a sense of dimension, topography, climate, material, structure, and proportion, and of the surrounding physical environment, both natural and human made. This sense goes far beyond the building's ability to serve utilitarian needs.



Fig. 10 "Imam Square", Isfahan, Iran 1933 [11]

The Islamic world, and the Middle East in particular, is undergoing a transformation today unprecedented in its history, writes architect "Garry Martin" in the essay building in the Middle East Today, in Search of a Direction:

Oil wealth, along with social and political changes, has threatened Islamic culture and traditions, this identity crisis are readily apparent in architectural design.

Tab. 1. Inventory of generic forms and typology of selected mosques [10]

Mosques in Iran, Afghanistan, Turkey, India, Pakistan, Central Asia, East and West Africa.			GENERIC FORMS								MOSQUE TYPOLOGY					
			1	2	3	4	5	6	7	8	1	2	3	4	5	6
			Mihrab	Courtyard	Minaret	Dome	Gateway	Portico	Plinth	Abution Place	Hypostyle	Hypostyle with Dome Accent	Hypostyle with Dorical Vaulting	Four-Eyvan	Central Dome	Other
NO	LOCALE	NAME														Century of Construction-A.D.
1	ARDESTAN	Friday Mosque	●	●	○	●	●	●	○	○				X		11-12
2	ISFAHAN	Friday Mosque	●	●	●	●	●	●	○	●				X		8-17
3	KERMAN	Friday Mosque	●	●	○	○	●	●	○	○				X		14
4	MASHHAD	Gowhar Shad	●	●	●	●	●	●	○	○				X		15
5	NAYIN	Friday Mosque	●	●	●	●	●	●	○	○			X			10
6	VARAMIN	Friday Mosque	●	●	○	●	●	●	○	○				X		14
7	YAZD	Friday Mosque	●	●	○	●	●	●	○	○				W		14
8	ZAVAREH	Friday Mosque	●	●	●	●	●	●	○	○				X		12
9	DAMGHAN	Tarik Khana	●	●	○	○	○	●	○	○			X			8
10	BUKHARA	Kalayan Mosque	●	●	○	●	●	●	○	○				X		16
11	SAMARQAND	Bibi Khanum	●	●	○	○	●	●	○	○				X		14
12	ISTANBUL	Hagia Sophia	●	○	●	●	○	○	●	○					X	15*
13	CORDOBA	Great Mosque	●	●	●	○	●	○	○	○		X				8b
14	MARRAHESH	Kutubiyya	●	●	●	○	●	○	○	○		X				12
15	MECCA	Haram Al-Sharif	○	●	●	○	●	●	○	●		X				7d
16	MEDINA	Mosque of Prophet	●	●	●	○	●	●	○	○		X				7
17	SAMARRA	Great Mosque	●	●	●	○	○	●	○	○	X					9
18	AHMADABAD	Friday Mosque	●	●	○	○	●	●	●	○			X			15
19	DELHI	Begampur	●	●	○	○	●	●	●	○				X		14
20	DELHI	Friday Mosque	●	●	●	●	●	●	●	○			X			17
21	DELHI	Khirki	●	●	○	○	●	●	●	○			X			14
22	DELHI	Pearl Mosque	●	●	○	●	○	●	●	○			X			17
23	DELHI	Qutb Minar	●	●	●	○	○	●	○	○			X			12*
24	SRINAGAR	Friday Mosque	●	●	○	●	●	○	○	○				X		14
25	ZARIA	Friday Mosque	●	○	●	○	○	○	○	○		X				19
26	CHUAN-CHOU	Mosque	●	○	○	○	○	○	○	○					X	14
27	HANG-CHOU	Great Mosque	●	○	○	○	●	●	○	○					X	15?
28	JAKARTA	Azziadah	●	○	●	●	○	○	○	○					X	17?
29	ISTANBUL	Nurosmange	●	●	●	●	●	●	○	●					X	18
30	ISTANBUL	Sehzade Mehmet	●	●	●	●	●	●	●	●					X	16
31	ISTANBUL	Sokullo Mehmet	●	●	○	●	●	●	●	●					X	16
32	ISTANBUL	Suleymaniye	●	●	●	●	●	●	●	●					X	16
33	ISTANBUL	Sultan Ahmet	●	●	●	●	●	●	●	●					X	17
34	KONYA	Ala Ad-Din	●	○	○	○	○	○	○	○		X				12
35	MANISA	Maradiye	●	●	●	●	●	●	●	○					X	16
36	CAIRO	Al-Aqmar	●	●	●	○	●	●	○	○		X				12
37	CAIRO	Al-Azhar	●	●	●	○	●	●	○	○		X				10
38	CAIRO	Al-Hakim	●	●	●	○	○	●	○	○		X				10
39	CAIRO	Muhammad Ali	●	●	●	●	○	●	●	●					X	19
40	CAIRO	Sultan Hasan	●	●	●	●	●	●	●	●				X		14

Inventory of generic forms and typology of selected mosques

Key		
● Strong emphasis	○ Qanat	d Pre-Islamic Arabian
○ Medium emphasis	? Insufficient information	* Converted from church
○ Nonexistent	b Converted to church	W One-Eyvan

A desire for rapid development, Martin notes, brought to the Middle East the massive importation of Western technology, planning, design and constructional expertise. Today many of the new buildings in the Middle East, continues Martin, are direct imitations of Western models that were designed for another culture and they are creating an alien environment in Islamic communities. Many Muslim planners and architects are reacting to this invasion of Western culture by reasserting their Islamic heritage. This leads to the question of just "What constitutes Islamic architecture?!!" Central to this definition, Martin explains, is the Islamic concept of Unity. "The concept of Unity in multiplicity is the determining factor in integrating Islamic societies", writes Martin. Islamic architecture was in harmony with the people, their environment and their Creator, Martin adds. Yet no strict rules were applied to govern Islamic architecture. The great mosques of Cordoba, Edirne and Shah Jahan each used local geometry, local materials, and local building methods to express the order, harmony and unity of Islamic architecture, in their own ways. When the major monuments of Islamic architecture are examined, Martin writes, they reveal complex geometrical relationships, a studied hierarchy of form and ornaments, and great depths of symbolic meanings.

But in the 20th century, the Islamic concepts of unity, harmony and continuity often are forgotten in the rush for industrial development. Here we list three directions that the contemporary Islamic architecture has taken:

- 1- One approach is to completely ignore the past and produce Western-oriented architecture that ignores the Islamic spirit and undermines traditional culture.
- 2- The opposite approach involves a retreat, at least superficially, to the Islamic architectural past. This can result in hybrid buildings where traditional facades of arches and domes are grafted onto modern high-rises.
- 3- A third approach is to understand the essence of Islamic architecture and to allow modern building technology to be a tool in the expression of this essence. Architects working today can take advantage of opportunities that new materials and mass production techniques offer. They have an opportunity to explore and transform the possibilities of the machine age for the enrichment of architecture in the same way that craftsmen explored the nature of geometrical and arabesque patterns...

The forms that can be evolved from this approach would have a regional identity, a stylistic evolution and a relevance to the eternal principles of Islam.

7. Conclusion

All over the world today, architecture is in a state of transition. Every country has gone through a period of experimentation, trial and error. Out of all this, a certain common denominator has emerged: "The contemporary or modern movement in architecture." It

is for the Muslims of today to apply their creative minds and not to copy blindly either the traditional structures neither of the past nor to reproduce the modern clichés of the west without understanding the logical basis of either. Most of the Islamic countries, with strong traditions in architecture, are today at the crossroads. With the "Oil boom" in the Middle East some of the countries are in the happy financial position of making a positive contribution towards "Architecture in the spirit of Islam."

Unfortunately, however, development in some of these countries is taking place so rapidly that there has been neither time for architectural researches, nor an attempt towards a new interpretation of what was finest in the Islamic architectural traditions. The results have therefore, been largely disappointing. Both the expatriate and local architects have been content with repeating the superficial forms and symbols such as the dome, the arch and the minaret even at the cost of being inconsistent with the modern building technology used in the structure.

Thus, it is not an uncommon sight to see the dome, which was a device to cover a large area and to create a dramatic interior space, misused in such a flagrant manner that it is recently adopted as an exterior bulbous form placed on a solid reinforced concrete slab without any relationship to the interior.

This formative period should be utilized for research in all these fields in order to result in a satisfactory solution. With a rich common cultural heritage, all the Islamic countries of the world could fruitfully collaborate in the evolution of a national architecture having its Islamic architectural traditions. It would be a real test of our ingenuity to combine the beauty and spirit of the ancient architecture interpreted in a modern idiom consistent with the technological advances of today.

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