23

The Architectural Expressions in the Built-Environment of the Muslim World

♦ Building Types And Their Architectural Character ♦ Urban Character ♦ Conclusion

Muslim architecture has become incorporated as an indispensable legacy of the world's cultural achievements. Despite the unique architectural elegance of vernacular rural architecture, which is so well suited to its environment, inspiring in its mix of simplicity and sophistication, most of the architectural heritage in the societies of the Muslim world is concentrated in the urban areas. We will concentrate on that heritage and attempt to identify its common elements.

It is almost impossible to do justice to a topic as wide in scope and as varied as the Muslim world. After all, Muslim societies are found in dissimilar locales from Morocco to Indonesia, and from the coast of East Africa to the Himalayas. Terrains ranging in variety from the jungles of Java to the deserts of Arabia, from the fertile plains of the river societies of the Middle East and South Asia, to the Mountains of Anatolia, encapsulate climatic conditions so disparate that the architectural expression must be different to compensate for the difference.

The Concept of Overlay for Understanding Architecture

The concept of overlay is useful in understanding the manifestations of Islamic culture as reflected in the built environment of Muslim societies. Historically, Muslim experience was very distinct compared to that of Roman civilization, with its clearly defined architectural language resulting, for example, in identically designed forts being built in the deserts of Libya and the snows of northern Europe, irrespective of climate—a situation akin to the use of a giant rubber stamp in defining the boundaries of cultural identity of the empire through the placement of icons. Muslim civilization, on the other hand, exported no uniquely defined architectural language from Arabia to the vast and varied regions it ultimately encompassed. Islam spread a more subtle, yet ultimately an increasingly more powerful presence through its method of defining itself and society by responding intellectually and culturally to the "codes of conduct" outlined in the Quran and the example based on Prophetic tradition. From Morocco in the west to Indonesia in the east, with the sole exception of the Iberian peninsula, these societies once established, have been able to retain their Muslim identity, even after prolonged periods of colonization.

Indeed, this process evolved mainly because Islam's contribution to a civilization functioned as an overlay which interacted with existing realities and cultural specificities, modifying them in subtle ways, thus creating a new synthesis by allowing it to evolve for an extended period and finding new expressions in response to interactions between different cultures. For example, the interplay between the Muslim empires of Central Asia and India led to a synthesis of form that belonged to both cultures. However, once established, almost any Muslim society is best understood as comprising several cultural systems as well as empires which function as states with all the power relationships and commercial transactions embodied in such an organization of human affairs. It is then that one finds architectural expression being affected by stylistic borrowings and transfers. These, however, are the manifestations of specific Muslim societies and their interactions, not the assertion of some universal Muslim identity that spread from one geographic cen-

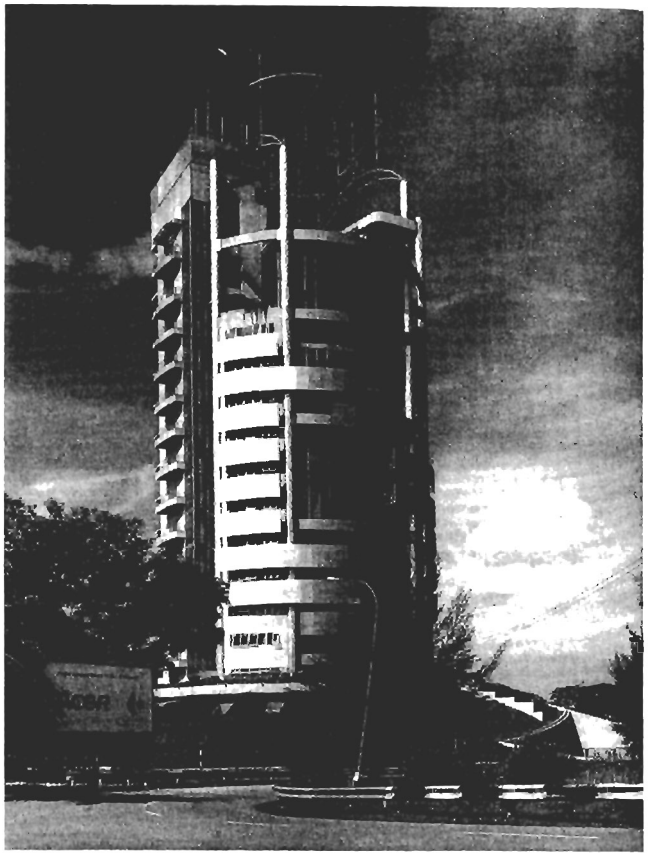
ter. For instance, although Timurid architecture was known in Egypt (indeed there are two well-preserved fifteenth-century Timurid domes in Cairo), Mamluk architecture which came later pursued its own stylistic development.

In architectural literature the value of "regionalism," like most other "isms," is a much-debated topic. Regionalism embraces the notion that any architectural work reflects the specificities of the region in which it is located. It accepts contexualism in the broader sense of including the physical aspects (site, climate, materials) and the socio-cultural context, stylistically and functionally. The Turkish architect, Suha Ozkan, has contributed a useful differentiation between what he terms "vernacularism" and "modern regionalism" in understanding contemporary architectural work which seeks to speak to a specific identity. To paraphrase: "vernacularism" refers to architecture which has evolved over time in any particular region and is therefore limited to existing building types and scales, whereas "modern regionalism" refers to a contemporary interpretation of local architectures and is not limited by scale, building types or technology. Ozkan stresses that regionalism does not exclude modernism; rather it presents another view of architecture that rejects the idea of internationalism, a tendency largely formented by the power of example and by wide media coverage and shifting fashions in a world growing ever smaller through technological advances in communications.

Regionalism is of considerable concern in different parts of the Muslim world today. Malaysian architect, Ken Yeang, a leading exponent of regionalism, has argued that the architectural significance of regionalism appears through relating its built configuration, aesthetics, organization and technical assembly and materials to a certain place and time. He has, in fact, produced cutting-edge contemporary work paying particular attention to climate.

More broadly, however, this view obviously defines regionalism as bridging both technology and culture and thus, the architectural debate on regionalism has a direct link to the recognition of societal particulars. Furthermore, the specificities of Muslim societies can be better appreciated by understanding the interaction which occurs between universalist Islamic principles and local realities as an enriching overlay which, although frequently subtle in its physical manifestation, was nonetheless pervasive and durable.

The cultural evolution of these societies particularly in its modern phase, however, has for the most part been subjected to historic rupture which permeates much of the present debate about cultural identity in Muslim societies. This has been the subject of recent critical writings, especially from Mohammed Arkoun.



The Menara Tower in Malaysia: architect Ken Yaeng's brilliant contemporary design for an office building in the hot tropical climate of Malaysia.

His scholarly enquiry traces, in large measure, the malaise which impels contemporary Muslim societies to a "rupture" in the evolution of the integrated and integrating framework within which individuals view self and society. An ossification of intellectual enquiry accompanied the imposition of central dogma by Muslim empires of the later Middle Ages. The European Renaissance and its subsequent intellectual ferment thus coincided with a time of intellectual stagnation in the Muslim world. This situation was exacerbated by the Industrial Revolution and the colonial experience. Attempts at modernizing Islamic thought, from Jamal al din Al-Afghani and Muhammad Abduh in the late nineteenth century to the philosopher Mohammad Iqbal and others in the twentieth century, sought to remedy this rupture in the evolution of Muslim intellectual development. Contemporary "fundamentalist" currents, with their emphasis on reviving the past, are also manifestations of this concept of arrested development. Each region of the Muslim world, however, retains its own distinct cultural, socio-political and architectural character. It is this last which is the focus of this essay.

The legacy of the Muslim architectural past, is still best studied in urban centers which continue to define both the legacy and the evolving modern conditions of the built environment of Muslims today. What, then, are the characteristics of that architectural and urban-situated legacy?

♦ BUILDING TYPES AND THEIR ARCHITECTURAL CHARACTER

Architectural character is, of course, held hostage to materials, technology, climate and the function of the building. In general, however, the architectural character of a place was defined by a number of important buildings: the Mosque, the *Qasr* (Citadel or Palace), Residences and Shrines. Cities in Muslim societies were also centers of commerce and learning, therefore, additional types of buildings were found in many areas: *Khanqa*, the place for spiritual contemplation and retreat; *Madrasa*, the place for education and learning; and *Sebil-Kuttab*, the place for teaching children and watering the wayfarer. Frequently, a number of these elements were joined together in a single complex structure.

It is difficult to explain the typology of these buildings in a stylistic sense, because, notwithstanding the common thread of overlays, there is much geographic and historic variation in architectural expression. Nevertheless, one can illustrate each type of building, using the medieval documentation available for Cairo and the Middle East as a primary source. The work of Laila Ali Ibrahim has been essential in elucidating many of the architectural terms of the medieval period, to which she devoted decades and produced a scholarly dictionary on the subject. It is based on her work that the following clarifications are made. For greater clarity we can group them into religious buildings, secular buildings, and buildings for investment.

Religious Buildings

Of all religious constructions the mosque is the most important and has the highest prestige. All mosques are *masjids*, a masjid where the Friday prayer takes place is called *masjid al-khutba*, *masjid al-Juma*, *al-masjid al-jami* and later simply *Jami*. From the Cairene documents, this development took place between the time of building of the Mosque of Ibn Tulun, 876–79, which is called by inscription *masjid* and the mosque at Esna built in 1077 by the Fatimid general, Badr al-Jamali, which is called *Jami*.

The *Jami* played a very important role in medieval Muslim society. It was a multi-purpose structure, used primarily for prayer, but also for teaching, debates and announcing decrees. This aspect of multi-use complex

The Sebil-Kuttab of Abdel-Rahman Katkhuda in Cairo: An example from the Ottoman period of a combined structure with a Quranic school on the top floor and a public fountain on the ground floor.

characterizes many Mosque complexes to this day. A tribunal was sometimes located in the mosque and in early Islam it housed the treasury.

The design of the Mosque has changed considerably over the centuries even within the same general area of the Middle East. The simplest, oldest and original design, was the open courtyard and columned covered areas on four sides, called *Riwaqs*, with the one facing Mecca, known as the *Riwaq Al-Qibla* being larger than the other three. The center of the *Riwaq Al-* Qibla may be accentuated by a dome and the wall be marked by a niche called the *mihrab*. One or more minarets completed the composition. This is the style made famous by the great Ummayad Mosque in Damascus. Subsequently the four *riwaqs* were replaced by vaulted spaces opening onto the central courtyard called *Iwans*. The dome over the Qibla side became more accentuated, and the verticality of the composition enhanced, as was the case with the Mamluk mosques such as the Sultan Hassan Mosque in Cairo. The Ottoman mosques reached their apogee with the great architect Sinan in the 16th Century, and relied on

a huge domed central space supported by four half domes. The enclosed structure was entered through an open forecourt with colonnades all around. In all cases one or more minarets served the dual function of landmark and call to prayer.

Mosques were utilized by a variety of different people: *ulama* (scholars), *fuqaha* (jurists), *mudarrisins* (teachers), *muhadithins* (hadith scholars), *sufi shaykhs*, Quran reciters, *muezzins* (those who call to the prayer) and others. The Muslim historian Maqrizi reported that there were seven hundred fifty people living in the Azhar mosque by the beginning of the 15th century, and that in 1416 the Emir Sudun had turned them out. While this action might seem appropriate by modern standards, in the 15th century it was not only deplored, but even harshly condemned. Emir Sudun was believed to have committed a major sin because a mosque has to be *mamur*, that is inhabited by pious people day and night.

Zawiyas, spaces for superogatory prayer outside mosques, were numerous, usually built by a ruler or a wealthy person for a certain *shaykh* who acted as the head of the center. The *shaykh* and his staff lived in the *zawiya* where he received his pupils. When the *shaykh* died he was usually buried in his *zawiya*, which accounts for the large number Shaykhs' tombs inside the city.

The *madrasa* (college) is listed second in prestige after the mosque. The term appears on a considerable number of Cairene monuments. There was, however, a considerable difference between teaching in mosques and teaching in a *madrasa*. Although, the scholar Maqrizi mentioned five earlier schools in Nishapur when speaking of the Nizamiyya Madrasa in Baghdad (1066–68), he regarded it as the most important *madrasa* because the teachers were granted a regular salary from the ruler, a practice that was begun in 989, during the reign of the Fatimid Caliph al-Aziz bi-Allah at the Al-Azhar University-Mosque.

Courtyard of Al-Azhar Mosque-University: The great Mosque of Al-Azhar, founded by the Fatimids (10th century AD) and to which many later additions by Mamluks and others were made, is also one of the oldest universities in the world.

A *madrasa*, on the other hand, was a private institution in which teaching was confined to resident students. Friday public prayer, for example, did not take place in the *madrasas* until the fourteenth century. An example of this new development was found in the great complex of the Sultan Hasan, 1356–1362 in Cairo, which had both a *masjid Jami* and four *madrasas* (as stated in the endowment deed, (*waqf*) written at the time of its founding). It was the college mosque par excellence.

The terms used for sufi institutions, varied from one country to the other, hence the confusion sometimes caused from historical sources. Ibn Battuta, the famous traveller, who visited Egypt in 1326, said *zawiyas* in Egypt were called *khanqas*, the place wherein *sufis*, lived, and their gatherings held in a domed chamber. Other historians said that *ribats* and *khanqas* fulfilled the same purpose. *Sufi* institutions in Egypt are therefore known either as *khanqas* or *ribats*.

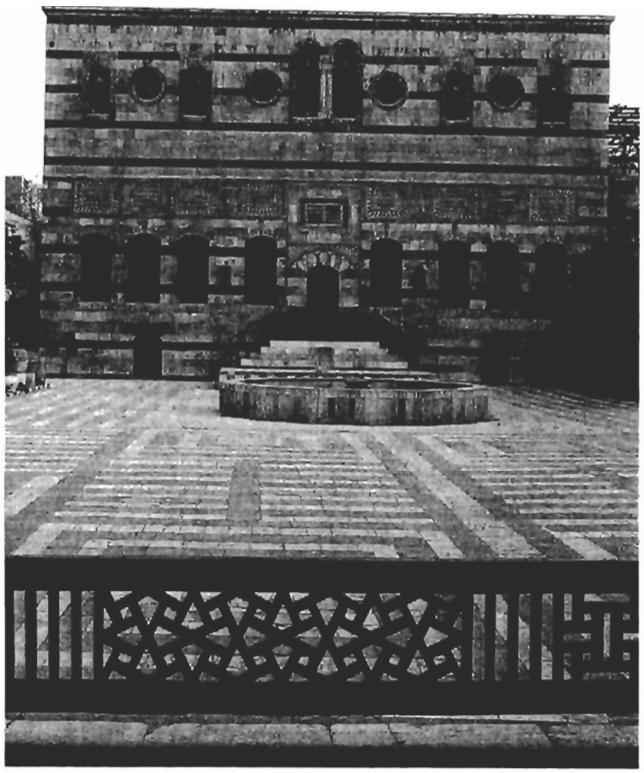
A major difference between *khanqas* and *madrasas*, according to medieval Muslim sources, was that while teachers could reside in and take allowances from any religious institution, a *sufi* could not stay in a *madrasa* and receive a pay from its endowment at the same time. He adds: a *faqih* is a *sufi*, but a *sufi* is not a *faqih*. Many *khanqas* also had *madrasas* which were attended by Sufis who stayed in them.

Secular Buildings

All buildings were called *dars*, in the early Islamic period, but by the Mamluk period (1250 AD) the term was usually applied to private houses. A princely residence was normally called a *qasr* or palace. Maqrizi, in his description of Cairo, mentions fifty-seven town houses, the majority of which he calls *dar*, while referring to four others as *qasr*. Early *dars* in Egypt were extremely large constructions comparable to the Roman *insulae*. Dar al-Tamr had twelve shops, five lounges, fifty-eight storerooms, fifteen huts, six halls, a yard, seventy-five residential units and five upper lounges. Another large house also had five *masjids*, two baths and several bakeries for its inhabitants who needed more than four hundred jars of water a day. Often, the term *makan* (place) which could be applied to any construction religious or secular, was adopted for princely residences.

Buildings For Investment

A *waqf*, (an endowment stipulated for a specific purpose), is the best source for different types of medieval investment constructions. For example, the *waqf* of al-Ashraf Barsbay, carved on the walls of his *madrasa*



The Azm palace in Syria: Is an example of a Qasr, fully restored to its erstwhile appearance with missing parts and the gardens fully reconstructed.

dated 1425, enumerates fifteen different types of constructions. We shall discuss only four terms which have generally been confused, *qaysariyya*, *khan*, *funduq* and *wakala*.

One important point which must be made is that the term used to designate the function of the building applies only to the ground floor. The upper stories are referred to separately. *Qaysariyyas* were not like *dars*, where craftsmen worked and sold their products. A *qaysariyya* was either rented as a whole by auction, or each unit separately in cash or on trade leases. There were *funduqs* in Fustat since the beginning of the Muslim conquest from 641, which had accommodation for foreign merchants. The governors of Misr for forty years, until the reign of Yazid ibn Muawiyya (680–83) stayed in Funduq Harmah in the *masjid* at its entrance. *Funduqs* were used for selling goods and products from the countryside or from other countries and were usually built at city gates, a strategic point where merchants had to unload and pay custom duties (*mukus*).

Khans were quite large, served as *funduqs* and had store rooms. It was only, however, in *khans* and *funduqs* that money was kept. *Khan* Masrur al-Kabir, also called *funduq*, had ninety-nine *bayts* (living units) a *masjid Juma* and a safe where the money of orphans, and those out of town, was kept. Merchants kept their money in Funduq Bilal al-Mughisi; therefore *funduqs* and *khans* were well guarded places. The *wakala* was a bonded warehouse for trade, and it is probable that after the state tax was collected, the owner of the *wakala* got a share or perhaps a percentage on the value of the imports and the distribution in the city.

The buildings were often inviting, sometimes imposing. The remaining monuments were mostly public buildings, the bulk of old residences having succumbed to replacement and occasionally reuse. By and large, where there were noticeable deviations from the human scale, they tended to accentuate verticality. Most of all, buildings were primarily hostage to and a reflection of the townscape. Irregular shapes and their shadows created by the irregularly shaped lots of growing cities, the imaginative character of corners and details responding to the organic growth of the city as building reclamation and the linking of new to older buildings helped create the lively, vibrant character we still find so charming.

♦ URBAN CHARACTER

What then were the key elements of this urban character? They were: (i) The Friday Mosque; (ii) The Market; (iii) The Palace or citadel; and (iv) The residences, which included both individual homes and apartment complexes. A brief word about each is pertinent.

The Friday mosque: The central and most important building in the city, the Friday Mosque, like the cathedral in the Christian societies of the west, was both landmark and congregation point. It was frequently surrounded by the rest of the urban tissue, so that the approach through narrow streets led to a sense of discovery, very different from the broad approaches and public places found in western urbanism. Stylistically, the architectural expression varied by region and period, but key features such as the minaret and the gateway are common. The dome is found in Egypt, the Middle East and North Africa and arguably finds its greatest expression in the Ottoman architecture of Turkey.

The market, the center of economic activity, it was frequently found near the Friday Mosque and tended to be a series of streets with commercial stalls on both sides. Physical contiguity usually coincided with specialization in terms of the wares provided, thus creating sub-markets within the market area.

The palace or *citadel* tended to be the seat of temporal power, the expression of wealth of the ruler or the ruling elite and to affirm an elegance of construction,

representing the best technology of the period. A detailed discussion of the citadel of Cairo and the Topkapi palace in Istanbul will be given later in this essay.

The residences, included apartment complexes known as Rab' (plural Riba') which consisted of several duplex units frequently but not always laid out around a courtyard. The individual homes of the elites were usually built around a courtyard, with a garden and water.

This brings us to the infrastructure that complements these elements. *The streets* were the essential element that defines the urban character and provides the contact for a sense of place. Characterized by broken alignments, variable land uses and a skillful combination of slight expansions that create the space for public interaction and tight spaces that highlight the human scale these tortuous streets were the organizing framework of the old city. Frequently the houses and activities were based on clan, ethnic or guild associations giving the space a strong social solidarity. *Neighborhoods* organized around cul-de-sac streets called Harat were the basic building blocks of the city.

Gardens were very important to provide privacy and enjoyment for the elites. The sanctity of the inner courtyards, frequently protected by a broken entrance, led to "oases in the city." *Water* was provided through public fountains in the streets and in the gardens.

Within the urban context, the characteristics mentioned above are valid for most of the cities of medieval Islam until the early nineteenth century, when technological change and the influence of models from the west created a profound transformation of the urban landscape of the cities of the Muslim world. In the twentieth century, and especially in the last forty years, dramatic population growth, modernization and increased urbanization have all contributed to the transformation of the cities into major metropolises not to say mega-cities, with all the problems and opportunities inherent to such a transformation.

Since it would be impossible to examine the transformation of all the different areas of the Muslim world here, we propose, to limit our discussion, to three cities and survey their urban development and evolving architectural character: Cairo, Istanbul, and Samarkand. Each of the three cities has a well documented history, and has exercised a profound influence on the region where they are located. They are sufficiently different to justify inclusion in a survey article such as this, yet sufficiently similar to exemplify the common thread believed to exist throughout the Muslim societies of the world.

Cairo: From Military Camp to City

Muslim general Amr Ibn al-Aas conquered the fort at Babylon in 636. To commemorate his victory, he first built a mosque near the site. Even in its much transformed state, it reveals in its hypostyle formation, and open courtyards, the inspiration of the Arabian Hijaz. This area became known as *Al-Fustat*, or "the encampment," in which military tents slowly gave way to more substantial dwellings in mud brick. These were based on eastern models, more specifically on the open "T-shaped" *iwans* (vaulted spaces open on one side), some examples of which can be found in the Ukaider palace in Iraq, a nascent step toward the model internalized and refined in the tenth century in Cairo by the Fatimids. One example of that transition exists today in the Dardiri Qaa in Cairo which is now used as a space for light industry; the high square central tower with flanking covered iwans, an unmistakable descendent of the houses of *Al-Fustat*.

After the initial settlement of Amr ibn Al As at Fustat, expansion of the settlements proceeded between the river and the Mokattam mountain in a Northeasterly direction. The first expansion settlement was al-Askar, followed by Ibn Tulun's al-Qatai. All these settlements accompanied the strengthening of the role of the city as the center of administrative control, although Alexandria continued to be a very important city.

There is little left of these three early settlements, except for two major Mosques. The oldest, the Mosque of Amr, has been many times restored and there is no more than one or two bays of the original building still in place. The imposing structure that we see today is all built in subsequent periods and through subsequent additions and restorations. The Mosque of Ibn Tulun (ninth century AD) is a much more important building. It was the quasi-independent ruler of Egypt, Ahmad Ibn Tulun who had this imposing structure built. It is unique in having a minaret with an external staircase, apparently inspired by the Malwiya tower of Sammarra in Iraq. The square plan with the beautiful arcades on all four sides is elegant and unencumbered. The scale, although large, is not overwhelming. The Mosque was not used during the Fatimid period, and had fallen in disrepair., until a young Mamluk, Lasheen, hid from his enemies in the abandoned mosque and vowed to restore it if he escaped. He did and in the tumultuous politics of the period, became sultan and fulfilled his vow, returning the Mosque to its original grandeur. Because his restoration was faithful to the original, the building we now have is not very different from the Mosque that Ibn Tulun built in the ninth Century AD.

After the Tulunids, the return of Abbasid suzerainty was weak. Soon the country fell into the hands of the Ikhshid dynasty. The dissolute court and the weak administration of such a rich province, plus the general weakening of the Abbassid Caliphate in Baghdad, meant that Egypt was an easy and natural eastward expansion of the rising power of the Shia dynasty, the

Fatimids, who conquered Egypt from north Africa in 969 AD. The Fatimids established their capital city immediately to the northeast of the existing settlements and called it Al-Qahira, the victorious, today known as Cairo.

Today, we have little left of the older settlements other than the two big mosques. Because of their permeability, the mud brick residences there were always less secure than their masonry counterparts in the princely city of Al-Qahira. Al-Fustat and Bulaq served as the port and supply center for the new city with each representing a completely different character. Because the Fatimids at first excluded the general populace from the new city, Al-Qahira, they designed it to fit their vision. Its plan was inspired by the Roman cities they had seen in their trek across north Africa, it was orthogonal and axial, while the civil basis of Al-Fustat encouraged more organic development.

The plan of the Fatimid area, was a regular rectangle encircled by fortification walls and divided from north to south by a great thoroughfare. In the center, two palace complexes faced each other opening into a large square. Around this central complex of palaces, the city was divided into quarters that housed the different ethnic groups.

The Fatimid rule made Cairo the center of a vast and splendid empire. The walls of the city and its gates date from that period as do some of the mosques: Al-Hakim, and al-Saleh Tallai, named after a grand Vizier of the period, which shows that the mosque was on an upper floor with shops below it.

The most important builder for Cairo remains the famous ruler and warrior Saladin. This amazing individual started as the Vizier for the last Fatimid Caliph whom he deposed and established his own dynasty. He built the fortifications of Cairo and started the construction of the citadel that still dominates Cairo to this day. Saladin was not to reside in the citadel, but from 1206 AD, all rulers of Egypt resided there until the Khedive Ismail (builder of the Suez canal and much of modern Cairo) moved to the newly constructed Abdeen Palace in 1874.

The Citadel is a unique complex, a royal city that ruled over the rest of Cairo and Egypt for the next 800 years. It is one of the largest citadels in the world, and contains many buildings erected by successive rulers. A well for water, Bir Yusuf, runs 90 meters deep. An aqueduct, combining seven waterwheels links the citadel to the city. The citadel walls are vast and considered impregnable in its day. There are 36 towers, many of them larger than the towers at the Tower of London. Several mosques and palaces are built within its walls, and the stables were designed to accommodate up to 30,000 horses. So imposing is this complex that it is visible from almost any place in Cairo, and the thin minarets of the Mohammed Ali Mosque, the last erected there in the 19th century, are the quintessential signature of the Cairo skyline.

The vast bulk of the monuments in medieval Cairo, however, date from the Mamluk period. After the end of the Ayyubid dynasty founded by Saladin, the slave warriors, the Mamluks, who had initially been imported into Egypt to protect the regime, became themselves the rulers. The transition occurred through the brief reign of a most remarkable woman, Shajarat Al-Durr ("tree of pearls"), who as wife and widow of the last Ayyubid sultan, ruled for a brief period initially in the name of her son then in her own name, including minting money with her name. She led the defense of Egypt against the IX crusade and imprisoned France's king (saint) Louis IX in Mansura (1249 AD). She married the most powerful of these warrior slaves, Aybak, and was subsequently murdered by his first wife. The succession started the first of two Mamluk dynasties the Bahri Mamluks, of whom the most illustrious was Al-Zahir Baybars, who stopped the westwards expansion of the Mongol warriors at Ain Galut (1260 AD) and completed the defeat of the crusaders in the Levant. He established the first of the great Mamluk monuments, the mosque that bears his name.

Under the Mamluks, Cairo became the center of a vast empire of great wealth and learning. The Mamluks, though themselves originally warrior slaves, had no loyalty other than to Egypt. They built for themselves and for posterity in Cairo and the rest of the country. It is their legacy, as well as the subsequent Ottoman heritage that most decisively defines the character of medieval Cairo.

The plethora of monuments that make up the unique richness of the Cairene urban environment date mostly from the Mamluk period. The great complexes of Qalawun and the Mosque and Madrasa of Sultan Hassan are exemplars of the architecture of the period that are widely studied. The urban character of the city, and imperial capital for about 400 years by that time, was developed into the characteristic guild quarters and system that one finds in all the other cities of that time. The emergence of the building types described at the outset of this essay are all well reflected in Mamluk architecture from the 12th to the 16th centuries.

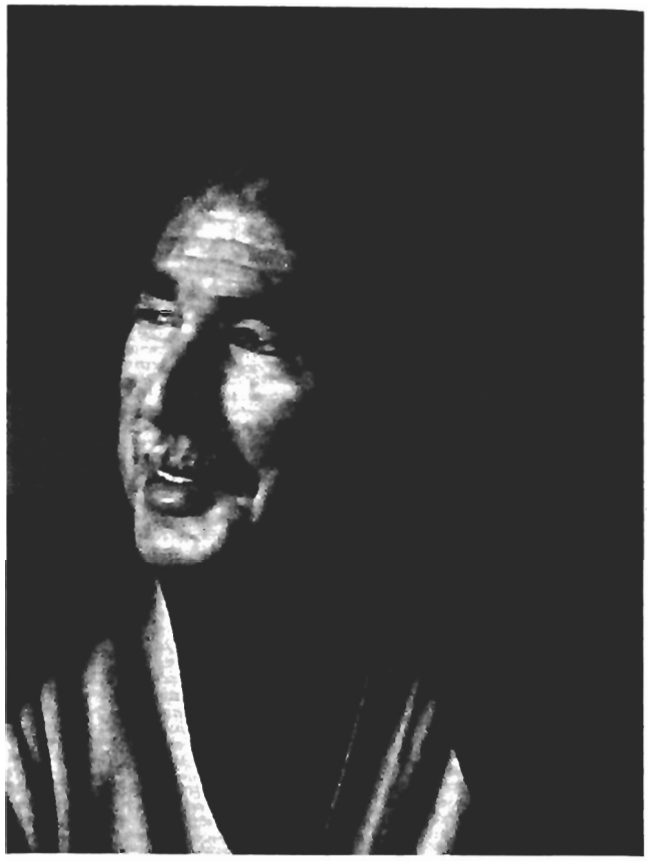
The Mamluk state fell to the advancing Ottoman Turks in 1517. The Ottoman period saw a relative decline of Cairo, as many of the best artisans and architects moved, forcibly or voluntarily to Istanbul, the unquestioned center of the Muslim world after the 16th century. Ottoman rulers in Egypt were relatively less important persons, although the best traditional houses to be found date from the 16 and 17th centuries. Some splendid small structures were erected, including the *sabil-kuttab* of Abdel Rahman Katkhuda, one of the

best examples of the charitable trust arrangements that was intended to educate youth in the upper floor while the ground floor provided water fountains for the travelers.

After the invasion of Egypt by Napoleon and his expedition, which provided an unparalleled description of the country, its flora and fauna, as well as its monuments and the socio-economic characteristics that prevailed at the end of the 18th century, the return of Ottoman rule in Egypt was accompanied by a major renewal and modernization program launched by the energetic and visionary Muhammad Ali Pasha. He modernized agriculture, built industries and educated youth. He also built one of the finest exemplars of Mosque architecture, sometimes known as the alabaster mosque, which dominates the Cairo skyline. The style of the Muhammad Ali Mosque is the quintessential Ottoman design perfected by Sinan, with Dome and squinches and pencil point minarets. The Dome is 52 meters high. The Minarets of the Mosque are among the most elegant in the world, reaching some 50 meters in height on a diameter of only 2.7 meters. So well built are these infinitely slender minarets, even though they are made of unreinforced stone and joined by mortarless masonry, that they did not break in any of the earthquakes that hit Cairo in the last 150 years.

Beyond the major monuments and urban character that we have been discussing, the houses and the texture of buildings that filled in the city deserve a few words. In 1171, following the Ayyubid takeover of Cairo from the Fatimids, the city was opened to general habitation and use, with a concurrent change in its linear street patterns. The pattern of growth and the concern for privacy eventually combined to convert the streets of medieval Cairo into a convoluted and seemingly chaotic, but essentially hierarchical system of major and minor streets, lanes, alley, and paths, incrementally interrupted by open spaces of various sizes. Additional studies, on the city have shown the extent to which the location of these spaces and the configuration of these circulation paths are far from random.

Green areas, now becoming increasingly rare in a city that is increasingly suffering from dust and pollution, acted as natural cooling and filtration devices for surrounding buildings. Also an analysis of the housing pattern and open squares reveals that a deliberate tactic of interlocking spaces was used. Typically, two courtyards were employed, with one being planted on the windward side and the other being paved. As the sunrise and the hot air generated by the paved area began to rise, the simple principle of convection pulled through the cooler air, trapped by the vegetation in the planted court from the previous evening, causing a cycle to begin. Since the planted courts in this symbiotic system were placed to intercept the desert breeze first,



Egyptian architect, Hassan Fathy.

the higher palm trees in them acted much like the cilia in the human lung, catching the air-born dust and sand, which was then filtered over the surface of the ground, not on every available horizontal building surface, as it is today. Larger open spaces in this system, such as the mosque courtyards, continued the process, turning the entire pattern of solids and voids in the medieval city into an effective air-conditioning system.

Even today, however, it is the density of outstanding monuments that is breathtaking in medieval cairo. The Shari Muizz li-din illah, the north-south artery of the Fatimid city, still retains its formal integrity, despite the severe pressures now placed upon it. Running from the Bab al Futuh (the northern gate) at the northern wall, to the Bab Zuwaila (the southern gate) in the south, it connects an unprecedented sequence of historically significant Islamic monuments, which still remain unknown to most of the world. Even a partial list will indicate their extent; the Mosque of Hakim, Bayt Kathuda and Souheimi, the extraordinary Qalaun complex, consisting of a *Mamluk maristan*, or hospital, *madrasa*, and mausoleum, to name just a few. Each of the four richest architectural periods in their turn, from Fatimid (969–1169) through Ayyubid, (1169–1260) Mamluk, (1254–1517) and Ottoman (1517–1924) are each well

represented within the walls of the medieval city and, each, while readily recognized as different in detail, continues to speak the basic language spoken by its predecessor.

The more recent development of Cairo has seen the transformation of the city into a huge sprawling metropolis of over 12 million inhabitants. The medieval city with all its charm is but a tiny part at the center of the city, which is severely under stress from speculation, inappropriate land uses and rising damp. Efforts at conservation are still inadequate to the task, and more needs to be done if the unique treasure that Cairo represents is not to be lost to future generations.

The new city has not produced much new architecture and urbanism. The layout of Cairo, modeled after 19th century European models, did not cope well with the population explosion that followed the second world war. The architectural expression of new buildings tended to either reinterpret the past, as was artfully done by the great architect Hassan Fathy and his colleague Ramses Wisa Wassef, or to try to emulate the western modern style, with some competent but few notable buildings in that style.

The heart of Cairo was a three-dimensional textbook for Hassan Fathy, (1900–1991) who was undeniably the most important contemporary architect Egypt has produced. Through his influence and example, an entire generation of young architects are now exploring their heritage, which previously had been a source of embarrassment. This has occasionally led to unfortunate misreadings, particularly of the personalized vocabulary that Fathy had painstakingly established. The process of self-criticism has however proved to be a beneficial one. The new Cairo Opera House, By Suzaki Hiroyuki, indicates the extent to which this vocabulary has also penetrated the international consciousness, providing metaphors that would have been dismissed as retrogressive during the period immediately following World War II.

The powerful argument frequently used to curtail destruction of the rain forests, that there are untold species in them, still unknown, which may hold clues to the improvement of the human condition also holds true for medieval Cairo. The serious study of Cairene architecture started with the protean efforts of the British architectural historian, K.A.C. Creswell in categorizing this resource over half a century ago. Significant additional work was done by many scholars, including Laila Ibrahim, Doris Abu-Seif, Mona Zakaria, Nelly Hanna and Andre Raymond. Saleh Lamei Mostafa has been systematically recording and analyzing the monuments of Cairo and has recently co-authored a major reference work with Abdel-baki Ibrahim. Several scholars and specialists, including Ronald Lewcock, Saleh Lamei Mostafa, Oleg Grabar and others have graphically traced the enormity of the forces now conspiring to eradicate this priceless heritage and steps are being taken to stop them, but these efforts are minuscule in comparison to the problems involved and time is running out. Rising ground water resulting from leaks in antiquated sanitary systems, excessive vibrations caused by heavy traffic along Shari al Muizz, which should be a pedestrian street, increasing air pollution primarily carried by stiff winds from the industries at Helwan in the south, are among the many issues urgently needing to be addressed. A clue to the singularity of this legacy may be found in the recognition that it has received as a part of the world heritage, not just of the Muslim peoples.

♦ CONCLUSION

The evolving character of the built environment of Muslim societies is the product of the interaction between people and their rapidly changing conditions. It reflects the rich legacy of the past and the adaptive genius of a people in the process of profound transformation. The fruits of their current labors and imagination will create the rich legacy of the future.

There is today evidence of a new direction, a "new traditionalism," which amalgamates the best from modernism and those who would have us learn the lessons from the past. Not related to post-anything, this initiative is contemporary and seeks to express the basic principles of Islam, layered over regional considerations and takes into account the complex historical factors partially indicated here. This is a challenging time and a critical one for the architects searching for this synthesis.

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