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Cultural and Environmental influence on Tall buildings in the Middle East

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ABSTRACT

Nowadays Tall buildings are being portrayed as saviours of the world's cities problems of rocketing population densities, need for rapid expansions, scarcity of land for development, sprawling growth, heat island phenomena etc., Whereas the presence of Tall buildings in Historical or antiquity context is subjected to more scrutiny than in any other prevailing context in cities around the world. The good news is that the ingenuity of architects in striking the balance between the need to cope with current pressing issues (i.e., normally requiring advanced modern technology) without losing the spirit or essence of a particular historical context. That is normally achieved with conceiving cultural Iconography out of Tall buildings by employing symbols or elements from very intrinsic and/or indicative cultural dispositions within a given context and reproducing it through, form, texture, light, art, material, etc. producing an elegantly proportionate master piece of tall buildings that often transcend the dilemma of coping with the tradition and tackling successfully its intended goals. The main aim of this article is to exhibit globalisation trends in tall buildings that can adapt to local contexts through successful examples in the Middle East. Having said that, it is crucially imperative to emphasise that this trend doesn't lead to extinction of the local cultural influence. But present an amicable continuation to values, traditions and identity of a given place.

Keywords: Tall buildings designs, Cultural influence in architecture, Environmental influence on building design, globalisation, Islamic Architecture.

1. Introduction

Places exist not only as an eminent Premise but also in the living conscious of people through memorizing historical events or cultural encounters. This association of place with human experience gives what we can call a place identity. Place Identity experience obviously can vary in its significance with the variety of impact it has on people living memories. It can range from a subtle remembrance to huge monuments. Either case, it transcends through

generations one after the other. Many researcher studied this area such as (Proshansky et. Al, 1983). trying to determine its impact, besides major factors contributing to its proliferation and those who might pose any challenge, namely Globalization, (Yeung, 1998). (i.e., where a number of forces combined towards producing modern prototype buildings as opposed to traditional or indigenous ways of building/living).In this study, an attempt is made to shed some light at major design areas that has been subject to development or evolved through traditional solutions throughout the Arab world. The main focus is on the underlying cultural/environmental principles that influence various solutions so that lessons can be learned or prospective solutions may be made on informed grounds.

2. Lighting:

Figure 1, Ibn Toloon Mosque in Cairo, small windows in thick walls.(Illustration effects by Elbakheit A.R.)

Sun light throughout the Middle East is remarkably high in intensity, and influence building design considerably. (i.e., over 11000 LUX of Sky illumination, 1200 KW/h/Sqm). Buildings are clustered to provide maximum shade from the sun, thus appreciable temperatures may ensue under shade. Horizontal surfaces either from building components, roofs or ground surface would be characterized for providing a significant source of reflected light. Some interesting solutions are adopted to mitigate such high magnitudes of light levels as buildings would have recessed windows within thick walls Figure 1. To mitigate glare, plenty of high level windows, but very small in size to provide light above normal eye level figure 2 and 3. Coloured glass embedded in domes providing interesting lighting interiors (Sibley, 2007). In hot humid areas normal windows would have 'Mashrabias' that is wooden lattice or patterns as bay-windows providing shading from intensive direct light, while admitting adequate natural lighting.

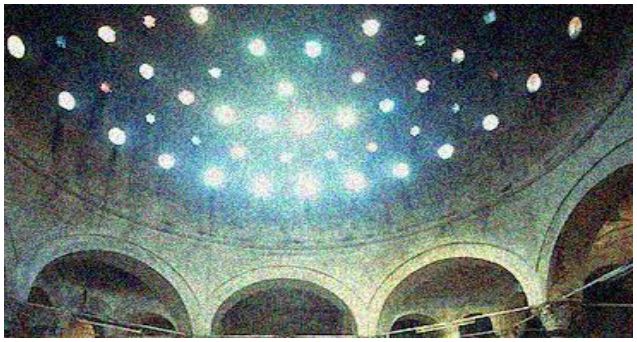



Figure 2 left and 3 right, Turkish Bath or Cagaloglu Hammam. .(Illustration effects by Elbakheit A.R.)

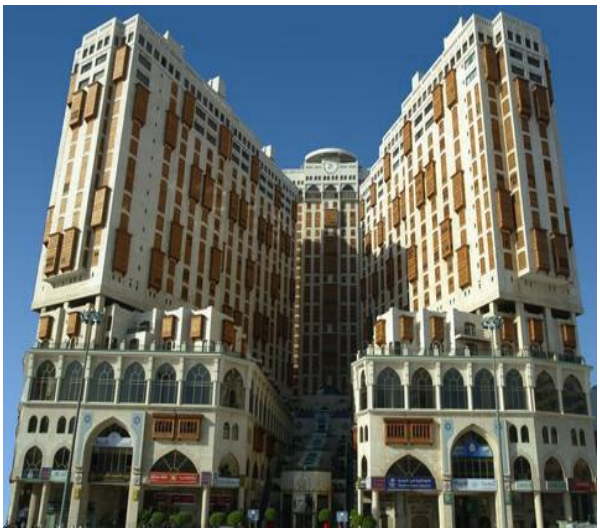


Figure 4, Mashrabyas and wooden shutters to shade windows and provide adequate natural lighting.(Abraj-Macca tower).

In hot dry regions, internal courtyards encircled by colonnade columns passages admitting natural light with less heat to surrounding spaces, (Givoni, 1998).

3. Texture Patterns and textures:

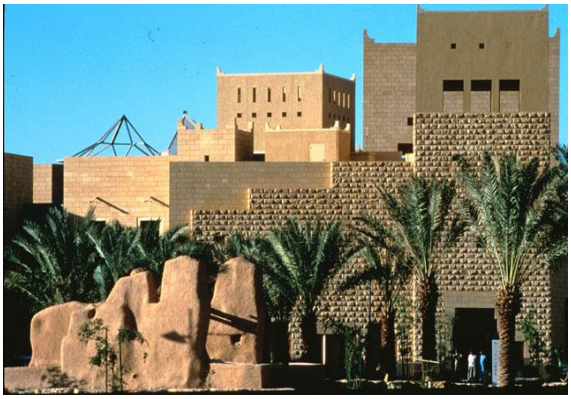
Within the Middle East prevails what we can call the influence of Islamic Traditions in Architecture. This is basically a set of cultural values and traditions that dictates the use of buildings, land uses, communal spaces all the way to private areas. Old Middle Eastern cities or towns were developed around centrally located Mosques, Markets, guest houses (Hotels nowadays) and Hammams (public bath's). The central part is surrounded by houses and other services, (Saqaaf, 1986). This was predominantly an influence of climate more than that of tradition. Parallel to cultural influence is the influence of climate and ecological setup of the

place that differentiate desert areas from costal to highlands. The resultant is built-up setting or a built environment that is clustered and compact in the vast majority.

One of the main Artistic expressions of this culture is presented in the form of 2-dimensional surfaces as a means of expressions such as mosaics, patterns and textures, shading grills (i.e., Mashrabyas) (Calligraphy and Sqour, 2010).

4. Forms and shapes:

The main influence of buildings forms in the Middle East region is that from culture and climate. The majority of building forms come as an amalgamation and agglomeration of different components joined in such a way as to serve not only the functional or cultural purposes. But the climatic and aesthetic as they inflict shading on each other or allow for natural lighting or ventilation to be admitted into their interiors. In hot-humid areas close to the Sea, traditional buildings may be as high as several storeys without court yards. However, normally have large bay windows covered in Mashrabias to admit natural light and cooling by cross ventilation. On the other hand hinterland away from the Sea would normal have hot dry climate, were the traditional architecture tend to be more protective introverted courtyard system. Here the



courtyard receives the night cooling and re-distribute it to adjoining areas. Thick mud outside walls are employed to preserve the cool temperatures day time, while the courtyard admitting natural daylight in good levels, (Talib, 1984). The result is often a configuration that presents an interplay of solids and voids, shade and shadow, and masses with implicit proportions and beauty figures 5, 6, 7, 8 and 9. The buildings in figures from 5 to 8 are designed by Arabian architect Rasim Badran, while the building in figure 9 (i.e., Qatar Art Museum) is designed by I. M. Pie, an American Architect from a Chinese background. Nevertheless, both of them were highly successful in articulating the expressions of traditional/cultural functions in contemporary manner.

Figure 5

Figure 6

Figure 7

Figure 8

Figure 5, Imam Mohamed bin Saud Mosque.

Figure 6, Traditional Museum in Riyadh.

Figure 7, Grand Mosque in Riyadh.

Figure 8, Governmental Palace in Riyadh.

Figure 9, Museum of Islamic art Doha.

Figure 9, Courtesy Museum of Islamic Art website, http://www.mia.org.qa/ar/ accessed 27/2/2013).

5. Tall Buildings in the Middle East

Ostensibly, the early development of Tall buildings was a direct influence to forces of the market in the United States. These forces came predominantly as a result of the desire of large corporate companies to create their headquarters as a sort of Icons to their brands on top of the basic requirement of the provision of office or work space. This force is also present in new tall buildings outside the US. Perhaps the second force backing building tall is the global culture of Architect's worldwide. This culture exhibit new design philosophises through spectacular presentations in magazines and journals that motivate architects throughout the globe to emulate similar design concepts in their practice. When they do so, they will be confronted with the debate about concepts of Globalization, westernization, Place Identity and so forth of the Architecture that became a silhouette to any global metropolitan. Perhaps within the Middle East the more successful examples of Tall buildings are the ones that accomplish the balanced blend of the cultural and environmental requirement with technologies that enhance these factors instead of challenging or being naïve to them. That being said, it is imperative to emphasise the importance of the current move within Tall buildings to design for sustainability, which intelligently resolve most of the pressing issues with this peculiar type of buildings. (i.e., sustainability of energy, resources, environment, culture, social and in every sense of the word with its positive local and global impacts).

A good example of a tall building that accomplished to a good extent this Doha Tower, by Ateliers J. Nouvel, 2012 winner of the Best Tall building in Middle East and Africa, Antony Wood, (2012), figure 10 and 11. Perhaps the most successful points in my opinion is that the building is designed with careful environmental consideration to matters from natural lighting to views, shading, practicality of office space just to name a few. From the external appearance

probably the most beautiful about it is the finishing at the top of the building, both in terms of the internal idea of the penthouse to the exterior that is not far from a traditional minaret. However, the only drawback may be the uniform appearance of the exterior of the building from a distance which is seldom found in a building with such a height. Especially when comparing the building with its surroundings in the water front view figure 11.

Figure 10 left and 11 right, Doha tower, by Jean Nouvel. Courtesy of flickr.com and Courtesy of skyscrapercentre.com respectively.

6. Traditional high rise monuments in Islamic architecture:

One of the tallest traditional and symbolic buildings in the Middle East region are minarets. Minarets are used by architects as symbolic features connecting haven with earth. This became as a tradition that transcend from one generation to the other whilst evolving in design and details. They basically serve the function of beacons calling for prayers in old times. In fact, at the dawn of Islam they weren't known. People used to climb tops of buildings by ladders or so to call for prayers. Only in the late 7th century the seventh ruler of Muslims (i.e., Mouaya Ibn Aby Sufyan) ordered his governor of Egypt to build minarets with proper stairs to call for prayers. Since then to the present they have been evolving in shape and configurations.

Figure 12, from left, Ali Mosque 12th, Aqsa Haram 14th, Samura Minaret 10th, Manarat Hassan 12th, Holy Mosque Mecca 20th, and Holy Mosque Medina 20th. (Four left figures, Courtesy of Archnet.org)

Despite the fact that minarets are no longer been used by man for conducting the calls (i.e., calls are made through loud speakers nowadays), they retained their symbolism. Different parts of the Islamic world have developed their own distinctive minaret proto-types. We find in Western part of the Arab world (Morocco, Algeria and Tunisia) they have adopted square towers such as the fourth photo from left in figure 12, as well as in Syria and Jerusalem as in second photo from the left. In Turkey and Iran they used more slender cylindrical forms like the first from left. While in Iraq they used spiral stairs at the circumference of central solid core tapering such as that third photo from left in the same figure 12. The pinnacle of the development of design for minarets is presented in the couple of photos to the very right of the figure, (i.e., the minarets of the two holy mosques). The most developed formal form of minarets to date is the one on the photo to the very right of the figure, used in the Prophet's (peace and blessing be upon him) Holy mosque in Medina. The form of this minaret is composed of 5-plans or levels tapering towards the sky. Each plan symbolises a state of beings mode or spirituality. The lower most is always of a square plan that is very current in Islamic architecture in different building types down to garden layouts, which normally interpreted as a reflection to the four major directions on earth (i.e., sense of direction, North, South, East and West). The second level is usually octagonal in plan. This has a reference within the holy Book (I.e., Quran) that associate the number 8 being for the Angels who carry the Devine's throne. The third level of the minaret is of a circular plan symbolising the sky/heaven circular paths. The fourth level is usually made with columns in a balcony overlooking to outside. Thus, freeing the minaret from much of materials used in the preceding levels and redirect thoughts more to spiritualties/heavens. The fifth and final level is where the minaret points to the sky.

Nowadays many contemporary mosques are designed with minarets in a more futuristic yet symbolic manner. However, height is never been taken out of the equation. A demonstration to this fact is in the design with height used as its main featured vocabulary. Perhaps a good example of this are the minarets in the newly under-construction Qatar Faculty of Islamic Studies in Doha, Figure13.

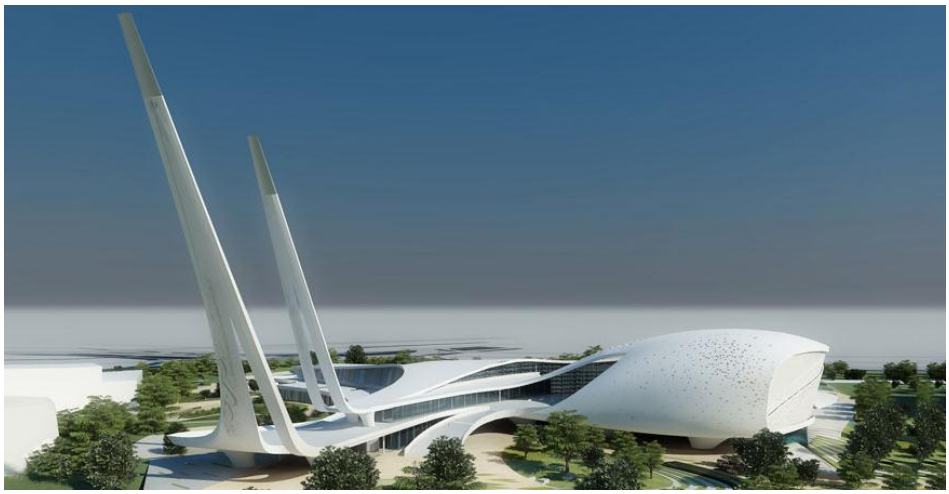


Figure 13, Faculty of Islamic Studies, Doha. (Courtesy of Maya Architects, London).

7. Western versus Eastern Scrapers

Tall buildings whether in the East or west have many similarities especially when it comes to their construction, materials, operating systems, technologies, structures and usage. This is especially evident when comparing concurrently designed and/or constructed projects as they progressively utilize the most cutting edge solutions. This can also be arrived at with a glance to the top 100 tallest buildings list of the skyscraper centre website. However, when considering cultural, climatic or environmental solutions the storey takes a slightly different path.

The Design of Eastern Skyscrapers is more responsive and unequivocal to cultural issues than Western counter parts especially in the selection of Plans, elevations, forms and three dimensional configurations. Eastern scrapers pay more attention to symbolisms of a cultural significance. This can be clearly evident from the handful picked examples in figure 14 below. All the shown projects plans and forms has initiated from a cultural reference. While the plans of Rose Rayhaan Hotel, Burj Khalifa Tower, Alhamra Firdous tower where chosen from a pure functional or structural requirement, the elevations and three dimensional configurations of all have a cultural influence. (i.e., curved curtain walls assimilate curves of calligraphy).

Figure 14, Rose Rayhaan, Taipei101, Burj Khalifa, Two IFC, Alhamra Firdous Tower, Petronas towers. (Courtesy of Skyscraper website).

Western scrapers figure 15, on the other hand are characterized by high efficiency of space, honesty of structural members as expressions in facades especially during the second half of the twentieth century, immaculate and elegant forms and modern or futuristic styles. When symbolic designs are pursued this is normally for commercial or Prestigious Image.

Figure 15, Willis Tower, Trump hotel, Aon center, Chrysler, two prudential, Bank of America Plaza-Dallas. (Courtesy of Skyscraper website).

8. A Tall building with cultural significance

King Abdul-Aziz endowment project, which is a consortium of high rise luxurious hotels, Clock tower and convection centre in Mecca Saudi Arabia, Figure 16. The complex as a whole suits both the climatic as well as the cultural aspect of its context. Furthermore, the fact that the northern facades are used for maximum outside views and natural lighting Figure 16, West and East facades have little openings to keep comfortable indoor temperatures. South facades has some windows for natural lighting as well as warm winter sun rays, (Watson and Lab, 1983). The building is a master piece in employing cutting edge IT technology in running all the electrical and mechanical services in one of the most significant cultural or traditional contexts.

Figure 16, King Abdul-Aziz Endowment project, (Left) Northern main elevation with plenty of curtain walls for views and lighting. (Upper right) Top floors are topped with translucent tent structures for shading as well as the cultural reference. (Courtesy of Skyscraper website and Google chrome).

The complex matches the general traditional trend of western maritime climate of Saudi Arabia, as it usually have multi-storey of 5-7 stories with plenty of wooden bay window (mashrabiya) for cross ventilation from north and south directions. While admitting natural light and always mitigating glare and sun heat from the interior of the buildings. The convention centre occupy the upper most floors with outside views. Teflon Tents are used to shade the upper most roofs reducing radiation heat and glare, while curtain walls providing the exterior views. Tents poses a subtle reference to a very old way of life of the Bedouin disposition by generosity, good living and full of morals.

9. Conclusion

Despite the fact that traditional Middle Eastern architecture have a common denominator for all the functions and symbolisms it aspire to achieve; Local traditions and climates have their say in providing a variety of different expressions, however, serving the same set of functions and symbolisms. The Built Environments within the Middle East already developed metropolitans manipulating latest thinking in design and technologies. However, there are more increasing tendencies to produce developments with no direct continuation to the cultural, climatic and traditional way of life. The traditional Middle Eastern/Islamic Architecture have the ability to develop or evolve to suit, endure and benefit from modern technology in such a way limited only by the imagination and professionalism of Architects. The Design of Eastern Skyscrapers is more responsive and unequivocal to cultural issues than Western counter parts especially in the selection of Plans, elevations, forms and three dimensional configurations. Eastern scrapers pay more attention to symbolisms of a cultural significance. Western scrapers on the other hand are characterized by high efficiency of space, honesty of structural members as expressions in facades, immaculate and elegant forms and post-modern or futuristic styles. When symbolic designs are pursued this is normally for commercial or Prestigious Image.

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