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Article · December 2016

DOI: 10.18860/jia.v4i2.3559

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## BRIDGING THE GAP BETWEEN THE PAST AND THE PRESENT: A RECONSIDERATION OF MOSQUE ARCHITECTURAL ELEMENTS

| Received July 31th 2016 | Accepted September 26th 2016 | Available online December 20th 2016 |  
| DOI <http://dx.doi.org/10.18860/jia.v4i2.3559> |

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### ABSTRACT

Mosques are among the most important building types for any community, where Muslims gather for their prayers and social activities. Mosque architecture has developed over history and faced several dramatic changes. This raises a question regarding the reality of mosque architecture and how it should look like today. This paper discusses this issue through a historical overview and some critical observations. Firstly, the paper discusses the historical functional role of mosque basic elements. Validity of these elements within the context of modern architecture has been argued considering the contemporary inputs that have a significant impact on mosque architecture. Several cases are presented and discussed in this regard. The study concluded that there is a great symbolic and spiritual value of these elements that should be maintained. The analysis carried out of several contemporary cases revealed that there is a wide margin to revive and reintroduce these elements in the light of the modern architectural trends. In addition to their functional roles, mosque architectural elements could be used as identity elements of the Islamic city, microclimatic modifiers, and linking tools between the past and the present.

### KEYWORDS:

Mosque; Islamic architecture; vernacularism, modernism

### INTRODUCTION

Since the early times of Islamic history, Muslims have paid a lot of care to mosque architecture. This could be noticed in the diversity of mosque elements and styles that have been used across the history. Several elements have been used for centuries in the architecture of this unique type of buildings including prayer hall, courtyard, dome, minaret, and iwan. However, the contemporary development of architecture in terms of technology and theory caused confusion among architects of what mosque architecture should look like. The common practice of the mere copy of these elements from the historical examples without understanding their original and potential roles is controversial. Understanding the background of the emergence of these elements and how they have developed overtime should help designers reintroduce mosque architecture in a way that is consistent with its social, political, and technical contexts. This forms a real challenge to designers, which exposes the conflict that exists today between modernism and vernacularism in mosque design. This paper aims to investigate this issue in order to find out how to achieve a proper contemporary utilisation of the constituent elements of mosque architecture. It begins with an overview on the development of mosque architecture. Then, it discusses mosque design within the context of contemporary architecture to find out the potential contemporary reconsideration of the historical elements of mosque architecture.

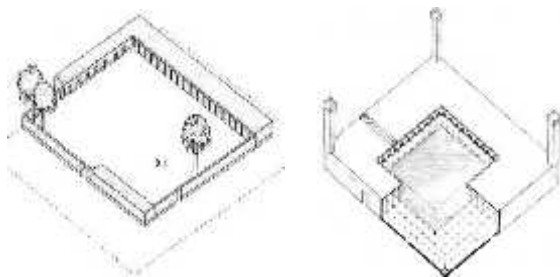
### RESEARCH METHODS

This main research problem is to find out how to reconsider the constituent historical elements of mosque architecture in a way that bridge the gap between the past and the present of mosque architecture. This is a valid issue since a clear divergence could be observed between the vernacularism and modernism schools in mosque architecture. To bridge the gap between these two approaches, a review on the emergence and development of mosque architectural elements has been carried out. This is followed by a critical discussion of the possible opportunities of reintroducing these elements in a modern function and synthesis. This has been done through a descriptive approach based on a historical analysis and an inductive review of several real-time examples. In this context, the current trends of mosque architecture have been distinguished, and necessity of the historical elements in mosque architecture has been discussed.

### DEVELOPMENT OF MOSQUE ARCHITECTURE

The year 622 was the year of migration to Medina, *hijrah*, in which the Prophet Mohammed (PBUH) established his mosque. This mosque is one of the three main mosques in Islam: *al-Haram* Mosque in Makkah, Prophet's Mosque in Medina, and *al-Aqsa* Mosque in Jerusalem. Books of history explained the Prophet's Mosque architecture, which is called today

*Al-Masjid Al-Nabawi*. According to Hillenbrand [1], the original mosque was built by the Prophet (PBUH) and his companions as a courtyard surrounded by plain walls and attached to a covered prayer shed (Figure 1).



(a): First Construction [2] (b): First Rebuilt [1]  
**Figure 1: An imagination of the Prophet's Mosque**

In general, the design of this first model was simple and homogeneous with its urban context. As number of Muslims increased, this mosque was extended and developed seven years later to be a court surrounded by arcades from all sides. As Islam spread outside the Arabian Peninsula, number of mosques in the city increased from one large mosque, called *al-Masjid al-Jami'* or the grand mosque, to many and possibly hundreds of mosques. Also, mosque design developed as a response to the new urban contexts. Many elements have been added to mosque design (Figure 2).

The first and most important element in mosque architecture is the prayer hall, which is the place where people pray in rows directed to the *Qiblah*, Makkah. Prayer hall also includes a place for the *Imam*, who is the leader of prayers. This place is called *al-Mihraab*, niche, and it is placed in the front wall of the hall. Inside it, there is another element called *al-Minbar*, pulpit, from where the *Imam* delivers Muslim weekly speech in Friday prayer. As a general rule, the design of prayer hall should not contain anything that might disturb the praying people, especially in the *Qiblah* wall. Symmetry in prayer halls is a usual practice. This could be along one or two axes.

Another element of mosque architecture is the courtyard. Courtyard was used as a main element in the first construction of the Prophet's Mosque (Figure 1). It is a common element in almost all mosque styles. It is usually attached to the prayer hall and surrounded by covered arcades called *riwaq* from at least one side. Mosque courtyard has several advantages. For example, it can be used as an additional external prayer place especially in peak times and occasions. Also, it has an environmental advantage, where shading, vegetation and water bodies can be used for passive cooling purposes [3].

The twin of dome and minaret is another unique component of mosque architecture. Historically, dome is one of the oldest roofing forms and has been used since the earliest times. Also, it is considered as one of the most efficient shapes to cover large plans. In mosque architecture, some claim that it has an additional symbolic value of representing the vault of the heaven. However, it also attracts architects

because of its ability to provide large internal space without internal columns.



(a): The use of domes and pencil-like minarets in the Ottoman mosques, Turkey [5]



(b): Interior of the prayer hall in the Great Mosque of Cordoba, 8<sup>th</sup> century, Spain [5]



(c): Abdullokhon Mosque, 16<sup>th</sup> century, Isfara, Tajikistan: the entrance [5]



(d): Friday Mosque of Ashtarjan, 14<sup>th</sup> century, Iran: dome chamber iwan [5]



(e): The Spiral Minaret, Samarra Mosque, Iraq [5]



(f): Ghoury minaret, Egypt (by the author)

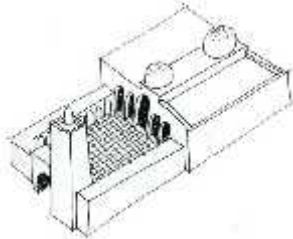

**Figure 2: Historical examples of the use of mosque architectural elements**

Dome is used in different ways in mosque design. It could be used as a main roofing element or a complementary one. The earliest domes were smaller than the subsequent ones. Some mosques include one dome, while others include multiple ones. Also, variety of dome shapes could be distinguished in mosque architecture like spherical, elliptical, bulbous, and onion-shaped domes. In general, this element is common in Turkish mosques which are characterised by the construction of multiple domes and half domes. These domes are usually centralised over the prayer hall, and sometimes cover the entire plan with lateral and smaller numerous domes. In this case, roof loading doesn't rely solely on columns. This resulted in a high ceiling in the interior and massive appearance of the exterior.

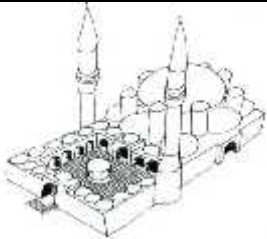
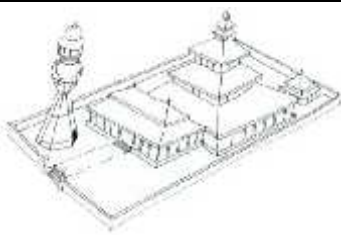
Minaret is the principal vertical feature of mosque architecture. It is the tower from which prayer call is historically performed five times a day. This has been replaced by sound speakers nowadays. In addition, some claim that it has a symbolic value represented in raising the declaration of faith. One or more minarets are usually attached to mosque prayer hall. Minarets in the historical models have a variety of forms. This is clear in Cairo, which is known as the city of a thousand minarets. One main form is the square

one, which is found in Syria, North Africa, and Spain. Another form is the spiral one. Minarets of *Ibn Tulun* mosque and the Great Mosque of Samarra are famous examples here. Also, the pencil-like minarets are common in Anatolia. Finally, *iwan* is another historical element of mosque architecture that could be found in Persia. *Iwan* is a vaulted open hall with rectangular arched facade used as a monumental entrance [4]. In some examples, many *iwans* have been used in different sides of the mosque courtyard.

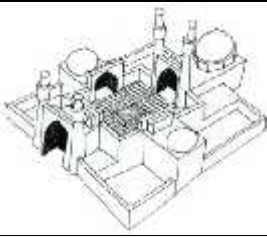
**1. Hypostyle mosques:**

	
<b>Location</b> The Arabian heartland, Spain and North Africa	<b>Location</b> Sub-Saharan West Africa
<b>Description</b> Hypostyle hall with flat or domed roof attached to a courtyard	<b>Description</b> Hypostyle hall using mud-brick or rammed-earth construction

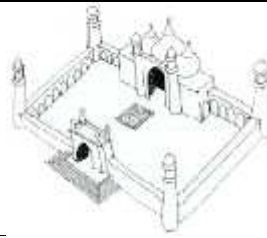
**2. Mosques with central and covered interior:**

	
<b>Location</b> Anatolia	<b>Location</b> Southeast Asia
<b>Description</b> Central interior covered by a massive dome	<b>Description</b> Central interior covered by pyramidal roof construction

**3. Mosques with iwan (vaulted hall):**


<b>Location</b> Iran and central Asia
<b>Description</b> Similar to no. 1, but with <i>iwan</i> and dome on the sides of a bi-axially divided courtyard

**4. Mosques with triple dome:**


<b>Location</b> The Indian subcontinent
<b>Description</b> Triple-domed style with a large courtyard

**5. Mosques with walled complex:**

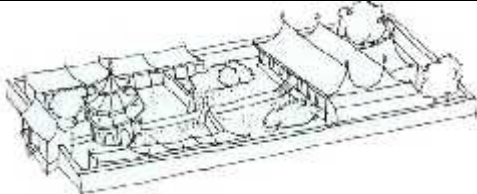

<b>Location</b> China
<b>Description</b> Detached pavilions within a walled garden enclosure

Figure 2: Illustration of the five basic categories of mosque architectural styles [4, adapted]

## RESULTS AND DISCUSSION

Mosque architectural elements discussed above have been used in different ways and combinations as a common language to produce different mosque styles. This was a result of local and regional conditions (e.g. the effect of the climatic conditions on the use of the courtyard). According to Frishman & Khan [4], it is possible to classify mosque architectural styles into five broad styles according to their geographical zone as depicted in Figure 3. Hillenbrand [1] classified them under three main categories: the hypostyle or Arabic style, the Turkish or Ottoman style, and the Iranian or Persian style. He said that the rest of styles have major similarities with them. For example, mosque style in the Indian subcontinent is a successful combination of these three main styles. In these styles, the above-discussed geometrical elements of mosque architecture are maintained but varied in a way or another.

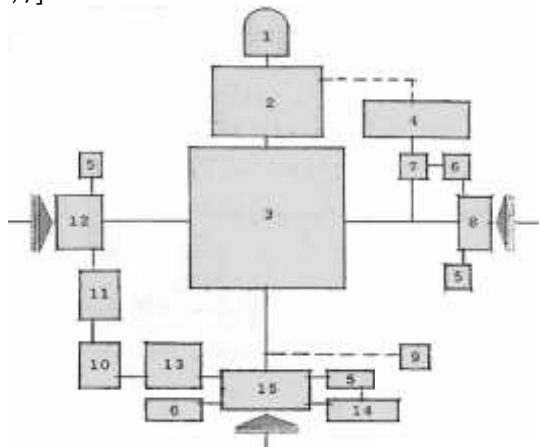
This diversity in mosque elements during the different ears of Islamic history can be related to the dynamic concept of mosque, which is simply a place to perform prayers. This means that the simplest form of mosque is a defined enclosure, usually covered, with its floor used for prayer. As an example, Figure 4 shows an open-air simple prayer area, where a stone marker indicates *Qibla*, Makkah direction. Thus, the basic functional requirements in mosque architecture are [6, 7]:

- Providing a sufficient and pure place for prayer.
- Orientation towards Makkah.
- Reducing or eliminating internal columns that interrupt prayer rows.
- Avoiding over decoration that interrupt prayers.
- Using plan forms that allow for longer rows, especially the first one which has a special virtue in Islamic traditions.



Figure 4: Mosque simple concept [2]

Other facilities may be added to accommodate the functions of community welfare that are practiced in mosque buildings in addition to performing prayer. Some spaces that are commonly added to the contemporary mosque are: female prayer hall, Quran teaching facilities, meeting rooms, and ablution facilities. Figure 5 shows a zoning diagram and design example of a typical contemporary mosque showing the above-mentioned elements.



- |                        |                       |
|------------------------|-----------------------|
| 1. Niche, Mehrab       | 9. Minaret            |
| 2. Male prayer place   | 10. Library           |
| 3. Courtyard and Riwaq | 11. Storage           |
| 4. Female prayer place | 12. Literal entrances |
| 5. Shoe racks          | 13. Imam office       |
| 6. Drinking water      | 14. Ablution (Males)  |
| 7. Ablution (Females)  | 15. Main entrance     |
| 8. Female entrance     |                       |

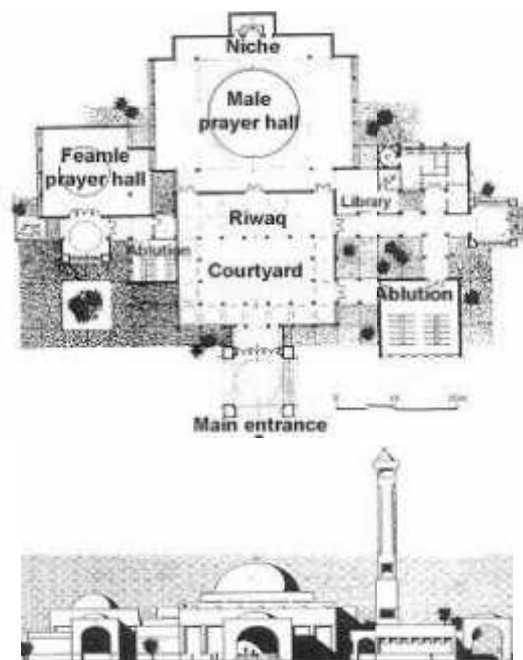


Figure 5: Common zoning of the contemporary mosque, showing exemplary plan and façade [8]

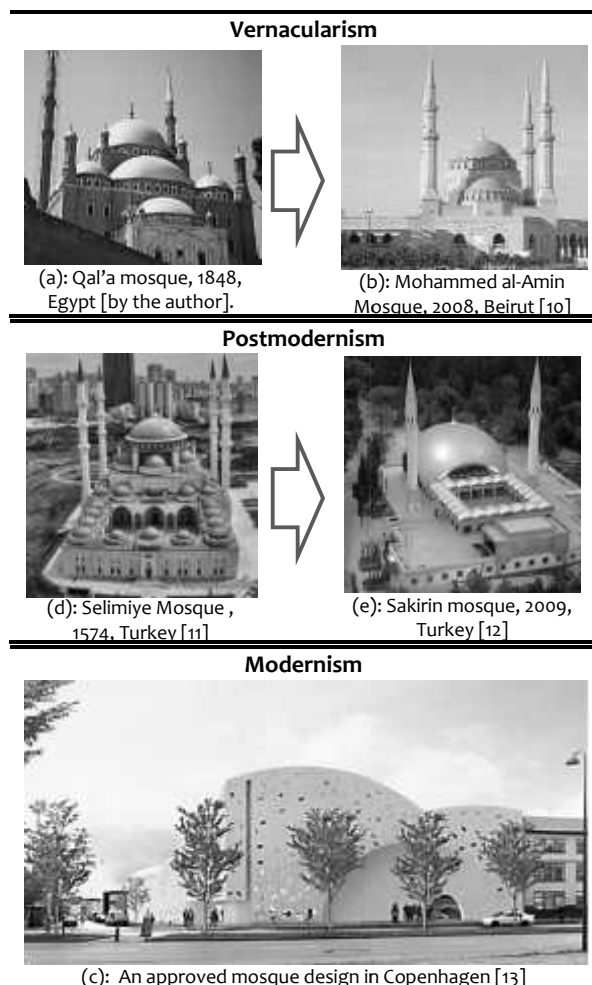
Today, mosque architectural elements face a great challenge in the context of modern architecture, which is generally characterized by simple forms in which decoration elements are discouraged. This challenge is more pronounced in the West, where design of new purpose-built mosques has several international references, depending on the vision of

Muslim minorities of mosque architecture [9]. Globally, several trends exist in contemporary mosque design. However, based on an inductive review of the existing examples, the author suggests grouping them into three main streams:

- Preserving the historical styles in terms of main characteristics and details. This may be called

vernacularism, where architectural mosque elements are almost copied from the historical typological forms without significant changes.

- *Delinking* the contemporary mosque from these styles. This may be called modernism, where the door is open to use new forms possibly with an indication of some historical elements of mosque architecture.
- *Reintroducing* the historical styles but in a modern way. This may be called postmodernism, which presents a moderate approach. In this case, historical elements of mosque architecture are used in their usual order but in modified forms, proportions, colour, texture, and materials. Figure 6 shows examples of these three trends.



**Figure 6: Three main streams are distinguished for mosque design in the modern context of architecture**

One main reason of this diversity is questioning the necessity of some historical elements in mosque architecture. Some argue that some of these elements, such as domes, were not originally developed by Muslims, therefore they should not be used in mosque architecture. However, this is how architecture works: to develop the work of others in an innovative way. Moreover, Islamic architecture has developed special building types, elements, proportions, and even ornaments [14].

Some also argue that these elements have not been used in the first model, the Prophet's Mosque. Thus, their claimed spiritual value is overestimated. Accordingly, mosque spiritual impact should come from its simplicity and purity that promote spirituality in prayer while maintaining the aesthetic principles. In this context, the spiritual role of these elements can be considered as complementary rather than essential [6]. In this context, dome and minaret have been considered as optional elements of mosque design in the modernism school [15]. However, this underestimates the functional role of these elements as discussed below.

One of the historical roles of the dome is to keep rows of praying people connected by reducing structural elements in the prayer hall. This also helps maintaining connected vision lines between people in the prayer hall and the pulpit while delivering the Friday speech, *Khotba*. It could be argued that these benefits are achievable using advanced structural systems like frames or other types of space structures. However, it has been found from an environmental point of view that domes have a significant environmental potential that justify their use in buildings. This includes enhancing vertical ventilation currents. They also help energy savings in cooling due to the fact that they have no corners where heat is likely to be trapped. Another benefit is saving on building materials. Dome has approximately one-third less surface area when compared to a box-style building [16].

Regarding the minaret, the historical role of the minaret is also a topic of argument between historians. The question of this argument is whether the reason behind minaret use in mosques was originally performing prayer call or not. In the past, there is always a person allocated to perform prayer call from the minaret top. Nowadays, this is not applicable anymore because of the use of sound speaker systems. Therefore, it could be argued that there is no need for this large structure just for this function. However, circumstances of establishing the first minarets in Islam tell that they might were intended to have a symbolic value more than a functional one [1]. Also, the analysis of the word origin in Arabic language gives another dimension to this argument. Minaret in Arabic is named in one of the following most common three words, which indicate that it has other functions apart from prayer call:

- Manara, which means a place of light.
- Sauma'a, which means a seclusion cell, usually for worshipping. This name is still used in North Africa.
- Mi'dhana, which means a prayer call place.

In the context of this argument, Nofal [17] classified mosque architectural elements in different functional groups, as shown in Figure 7. He claimed that these elements have their preferences from the Prophet's mosque and the earliest mosques in Islam, which reflects the essential fictional requirements. In fact, the rationale of this classification is a subject of argument. For example, it includes the minaret as one of the main elements, while it excluded the dome. This

is despite of the fact that dome is a common architectural element that has been used in the earliest mosques and reached its peak in mosque of the Dome of the Rock in Jerusalem built in the Umayyad dynasty in the seventh century. In this century, minarets started to be used in mosques [18], and were not popular until the fourteenth and fifteenth century [2].

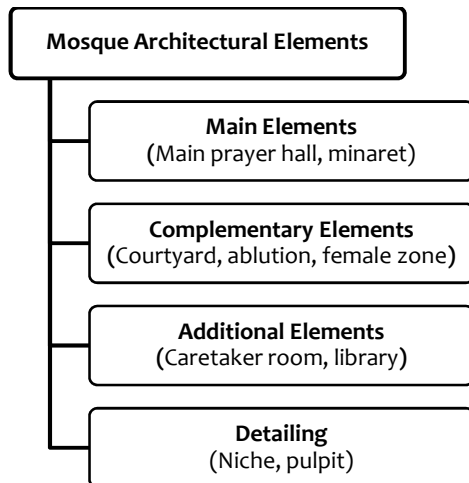


Figure 7: Mosque architectural elements [17, adapted]

In general, historical elements of mosque architecture have achieved their validity by being in use for centuries of the Islamic civilisation. The fact that they have not been used in the first model didn't prevent their use later on as there is no particular Islamic text in this regard. This means that historical elements of mosques should be maintained and enriched to provide the required symbolism. This has to be done in an innovative way that harmonises with the context of contemporary architecture without being put into rigid moulds. This strikes a balance between the need of preserving mosque identity and the need of keeping the door open for innovation in mosque architecture in a way that considers the local and regional requirements.

Figure 8 shows some examples in this regard. Some ideas depicted in the Figure are:

- The modern minaret design of al-Harithy mosque in Jeddah, KSA.
- The modern structural system in King Faisal mosque in Islamabad, Pakistan. This system allowed space enclosure similar to the dome and possibly free of internal columns.
- The use of foldable structure to cover the courtyard of the Central Mosque in London.
- The new proportions implemented in the design of the dome and minaret in the famous Island Mosque, Jeddah, KSA.

This means that designers nowadays have wide margins to deal with mosque design in a contemporary way without compromising its historical reference. The author recommends that mosque architecture and its constituent elements need to be perceived in the contemporary context of architecture as:

- Linking tools between the past and the present:

Muslims are used to see mosque buildings in specific styles or characters for several centuries. This has created a spiritual link between them and the spirit of the Islamic history and civilisation. The current diverse trends of modern architecture confirm the need to contextualise mosque architecture. Considering the need to revitalise the historical architecture of mosques, modern architecture of Muslim societies needs to be integrated in this regard [19].

- Identity elements of the Islamic city:  
In fact, architecture is the most tangible physical manifestation of our societies, which have the ability to add a sense of civilization to their own habitat [20]. This is critical considering that within the context of globalization and contemporary architecture, preserving city identity has become an essential issue. The role of education, regulations, and public awareness is essential here [21]. Mosques are main elements in creating the Islamic city image. Cities such as Cairo and Istanbul are typical examples, where city skyline and perspective are greatly dominated by this type of building. Thus, on a city scale, the unique style of mosques is essential in showing the Islamic city identity and promoting the sense of place among the inhabitants. Mosque architecture in this regard should be perceived not only as a technique of forming the space but also as a chance to create a system of meanings and expressions [22].

- Identity tools utilised to distinguish mosques among adjacent buildings:

When somebody looks for a mosque, he/she will try to find a building with specific characteristics and architectural elements. This in fact shows the advantage of mosque historical elements, especially dome and minaret which are the two most powerful symbols of mosque architecture [23]. Al-Qaradawi, an Islamic scholar, mentioned that one of the characteristics required in mosques is the uniqueness of its architecture among other buildings [7]. This has the advantage of guiding people to this kind of buildings. Thus, mosque should be designed in a way that makes mosque identity unquestionable.

- Microclimatic modifiers:

As argued above, the traditional architectural elements are still used in the contemporary mosque design. One way to give their existence more value is to use them for serving design sustainability. Sustainability is a comprehensive term that encompasses several good causes that are consistent with the mission of mosques. In its core, sustainability means preserving resources for the future generations and providing thermal comfort for building occupants. Considering the latter notion, several elements have been used in mosque architecture to response to the local climatic needs [24, 25]. This includes the courtyard, possibly with a fountain in the middle to create a microclimate, domed and vaulted

roofs to enhance natural ventilation and provide natural lighting, and the *Mashrabeya* to provide privacy for the prayer hall and provide evaporative cooling and shading. Unfortunately, few studies have investigated the thermal and energy performance of mosques in depth [26]. This may explain the difference between a mosque that has a dome and the one that hasn't. Apart from the above-mentioned issues related to identity, the advantages of natural ventilation, natural lighting, and self-shading are lost in the second one. The high-level openings placed at the top of the main prayer hall have been found to be effective inducing air flow in the building [27]. This

in fact explains the growing trend of implementing the concepts of sustainability in the contemporary 'green mosque' or 'sustainable mosque'. The role of such type of buildings in promoting sustainability awareness in the community and enhancing the quality of life is substantial [28]. Contemporary mosques should be designed in a way that minimises the usage of energy. This is achievable using passive and active techniques. The design should also be well-integrated with the existing landscape, and located within walking distance of adjacent neighbourhoods.

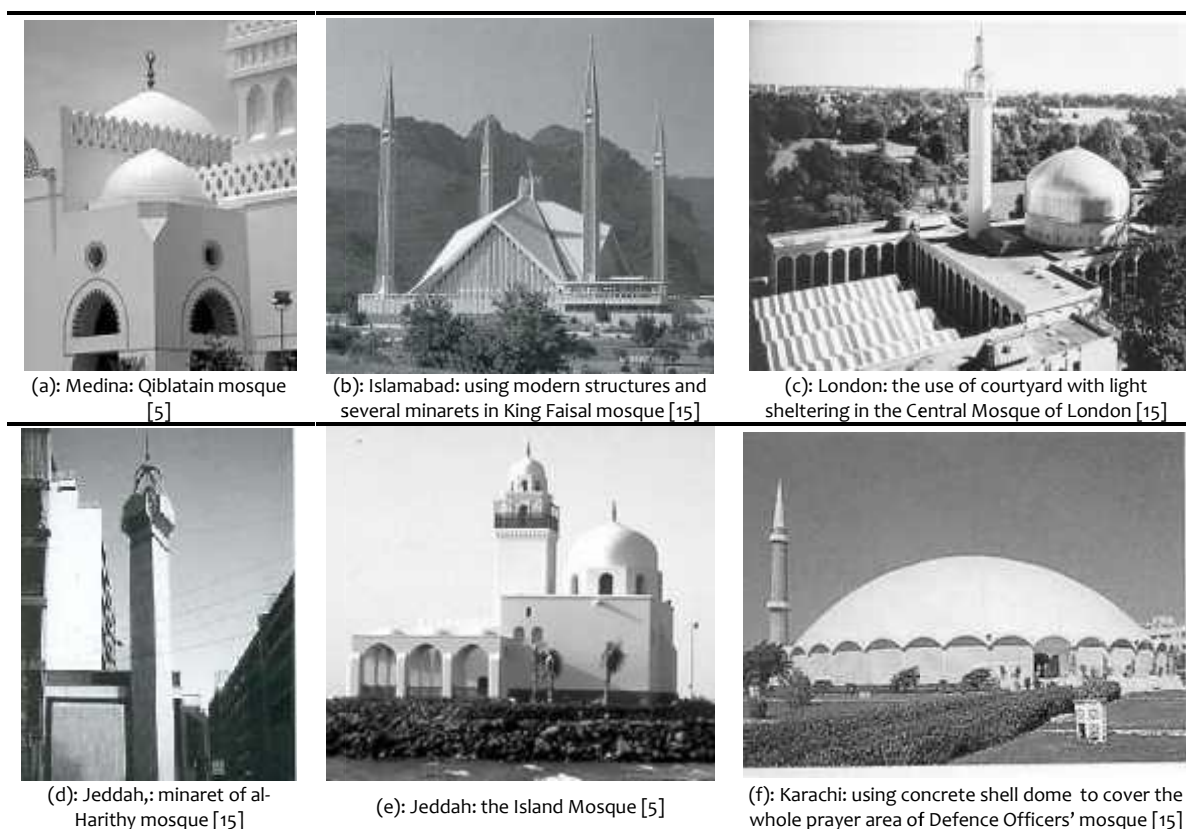


Figure 8: Examples on different contemporary mosques

## CONCLUSION

This study highlighted the concept of mosque and its main constituent elements. It offered a brief analysis of the historical development of these elements. Despite the great diversity observed in mosque architecture, designers nowadays face a dilemma when it comes to the contemporary mosque design. Some tend to "copy" from the historical prototypes, while others try to "delink" their designs from the historical models in order to introduce new models. In fact, both tendencies have in a way or another underestimated the importance of mosque historical preference on one hand, and the modern functional and aesthetic potential of its historical elements on the other hand.

To develop a modern theory of mosque architecture, spiritual and symbolic values of mosque elements as well as their functional and environmental role should be reconsidered. This means that contemporary mosque design should be used to link our architecture today with the spirit of the history of Islamic architecture in order to maintain identity of the Islamic city. The presented examples showed that this is a possible practice in contemporary mosque design. Referring to the historical models in order to validate the new designs is achievable through reintroducing mosque elements to be consistent with the modern architectural inputs. This helps forming a common language in mosque architecture that respects regional diversity, on the one hand, and prevents the loss of mosque identity on the other one.



In this context, mosque historical elements need to be perceived in the contemporary context of architecture as:

- Linking tools between the present and the spirit of the Islamic history and civilisation
- Identity elements of the Islamic city
- Identity tools utilised to distinguish mosques among adjacent buildings
- Microclimatic modifiers that emphasise the role of mosque in promoting the concepts of sustainability and green architecture.

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