REDEFINING ISLAMIC ARCHITECTURE THROUGH SUSTAINABLE AND PROGRESSIVE APPROACH

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Chapter 1

INTRODUCTION

In order for Islamic architecture to flourish and maintain its meaningful relevance in today's built environment, it must begin to change its approach to reflect a more progressive, sustainable and positive interpretation of its features.

IT IS ONLY THEN THAT WE WILL BE ABLE TO successfully promote Islamic architecture more effectively, and maintain its relevance as an important universal architectural style that can be used throughout the Islamic world and elsewhere. The current prevailing interpretation of Islamic architecture may cause this approach to matter less as it becomes more and more dated in the future. It may even be regarded as just mere indulgence on the part of the owners or clients which use their own version of the past architectural features, to purely justify its importance of celebrating the use of its former glorified Islamic architectural features, and replicating these features into their new buildings.

The various uses of these features are at times mixed together without any clear understanding of order in architecture. As a result, the recent architectural direction of mosque architecture has been towards a rather incomprehensible mixture of post-modern Islamic architecture, through which a version of South East Asian and a ‘pseudo version’ of Middle Eastern Islamic Architectural language was formed. This is probably due to the poor understanding of the chronological timeline and history of Islamic architecture.
NEW DIRECTION OF DESIGN

This approach to define a new direction in designing the various types of buildings using Islamic architectural features must be at least be on par with other non-Islamic architectural buildings around the world. It must be able to justify the need to use the Islamic architectural language to become a more of a universal Islamic architectural typology which can then be adopted worldwide.

The traditional mosque design, which is commonly used to define Islamic architecture wherever its origin, is often used as a reference to Islamic architecture. The new progressive style must move away from this and must not only be elegantly designed but practical and true to its time.

Its application in designing the built-up spaces and facade intended for the use of its inhabitants must reflect its overall design which is more in line with the time period it is in - in this case, the 21st century. It must be suited for today’s generation and simultaneously inspire, future generations to be more conscious of the use of green technology and move towards a more sustainable architectural design.

EXPLORATION OF PROGRESSIVE IDEAS

New progressive ideas on expressing Islam should be continuously explored in preparation for all future buildings to be low carbon, energy efficient and be built entirely of sustainable materials. By doing so, it has to do away with most of its past direct interpretation of styles or nomenclature and other superlative elements to describe Islamic architecture, which had used the traditional approach of copying past styles in designing Islamic architectural buildings.

For example, the current approach of designing mosques throughout Malaysia can only then be replaced with practical yet elegant designs by using new sustainable materials which can be used to shape the outlook of future Islamic architectural buildings.

This approach, if accepted, does not detach itself from the established Seven Principles of Islamic Architecture which was previously used in designing such buildings. However it will, in my opinion, help strengthen the Seven Principles of Islamic Architecture to reflect today’s concerns.

The Seven Principles of Islamic Architecture are, Tauhid (the concept of Unity and Oneness of God), Ihtiram (Respect), Ikhlas (Sincerity), Iqtisad (Moderation/ Humility), Haya’ (Modesty), ‘Ilm (Pursuit of Knowledge), and Dhikr (Remembrance).

These principles were often used to illustrate the intrinsic relationship between Muslims, their beliefs and how these principles can be incorporated into Islamic buildings. Islam embodies a way of life for Muslims and serves as a cohesive force amongst ethnically and culturally diverse populations throughout the world.

There should not be any essential differences between spiritual and secular art in Islam, allowing the virtues of Islamic architecture to transcend from being mere ideas to becoming inspirational and spiritually functional spaces.

THE FUTURE OF ISLAMIC ARCHITECTURE

The principles of Islamic architecture must always be incorporated from the inception of its design to become an essential part of the new progressive and sustainable approach in designing any future Islamic architectural buildings.

There are and will still be constant dialogues among architects and the public concerning the future of Islamic architecture. The question we may want to ask ourselves is: “What will be an acceptable and fresh approach for a new universal Islamic architectural language which will or can be used to define and distinguish the faithful with their religion in this vastly fast-changing globalized world?”

From the past 1434 years of the Hijrah Islamic calendar, we have learned that different regions of the world, race or culture have defined Islamic architecture differently. It has been carried out over many centuries by incorporating their version of Islamic architecture with its own culture and art. Will this approach continue in the future? Or will the Islamic community moves towards a more universal architectural language which will be more focus towards sustainable architectural framework, or move towards depicting a more progressive interpretation of Islam?

What will the future of Islamic architecture be by the end of this century, say in the year 2100? Will there be any significant difference from other future architectural building designs around the world? Or will it still be more of the same architectural language that is used today?
THE EARLY MUSLIM KINGDOMS

The Spread of Islam, 630-1700

- Growth under Muhammad
- 632 - 644
- 645 - 661
- 662 - 750
- 751 - 1700

Spread of Islam in Southeast Asia

- 13th / 14th centuries
- 15th century
- 16th century

THE EARLY MUSLIM KINGDOMS
HISTORY OF MALAYSIAN ISLAMIC ARCHITECTURE

Malaysian literature and writers have stated that the various Islamic traditional architectural languages were borrowed from other parts of the world and had been used in the building of mosques, and other selected Islamic-styled buildings.

THE BUILDERS OR ARCHITECTS HAVE CONSCIOUSLY incorporated their interpretations and expectations of others in their designs, and created their version of Islamic architecture in the design. Suffice to say that the beginning of the building of mosques in the various Islamic countries gave rise to many of today's much-used Islamic design elements in an attempt towards creating building structures that are to represent modern Islamic architecture.

These past architectural elements from around the world, mainly from the Middle East, Central Asia, North Africa, the Iberian Peninsula and Northern India, are still being used in today's modern mosques. They are considered to be a continuation of Islamic architectural language in the South-East Asia region including Malaysia. The only difference now is that new, modern and lightweight materials are used to construct such design elements and various interpretations of a particular style to adorn these new buildings.

Many critics had questioned the interpretations or the use of these architectural elements in Malaysia. Some may have a political motivation, the expected style by the public or the most favoured style of that particular time and even using historical style dating from and after the Prophet Muhammad’s (PBUH) passing in 632. Islamic architecture has been around for approximately 1433 years, and has been interpreted by various caliphates, rulers, patrons, artisans, builders and architects. These interpretations of Islamic architecture were carried out through the building of the many different mosques throughout the world, which had also influenced the architectural language of other forms of Islamic buildings. These include office buildings, courthouses, palaces, universities and even houses.

To learn more about the Malaysian Islamic architectural style, we need to briefly go back in time to discover the origins of Islam in the Malay archipelago region, going back as far back as the 12th century.
THE SPREAD OF ISLAM IN SOUTHEAST ASIA
THE SEAT OF SRIVIJAYA AND MAJAPAHIT EMPIRE
EARLY HINDUISM PERIOD

In the early history of Southeast Asia, in the first century A.D., it was said that the Indian settlements from the sub-continent were the first to establish their presence in the Malay Archipelago Islands, settling amongst the Malay indigenous people.

During this time it was also thought that Buddhist religion was also spreading among the people, together with the Indian culture and the Hindu religion. By 500 A.D, Indian culture had spread throughout the same area and by the seventh century, the Buddhist Srivijaya Empire had also established its centre, which was located in Palembang, in the southern part of Sumatra.

The Srivijaya Empire was then followed by the Majapahit Empire in the 14th century. The Majapahit Empire however, was under the Hindu influence, encompassing Borneo, Sumatra, the Malayan Peninsula and parts of the Philippines (Sulu, the region of Lake Lanao in Mindanao and vicinity of Manila Bay in Luzon).

During the pre-Islamic times, and according to the Chinese historical records in 671 AD, Persian and Arab merchants had already established regular trade with China in this region. Moreover, the classical Malay historical data had established an approximate date of 1204 A.D. at the time that Islam came to Sumatra.

THE ARRIVAL OF ISLAM

In 1292 A.D, Marco Polo visited Perlak in northwestern Sumatra on his return voyage from China. He had reported that many of the people had already converted to and practiced Islam indicates the beginning of the influential spread of Islam, and probably the beginning of Islamic architecture within the Malay Archipelago area. During this time, it is thought that the northern port of Perlak was still under the Majapahit’s Hindu rule when Marco Polo came to visit this area during his expedition to China.

It was stated in Marco Polo’s travel journal that the spread of Islam had occurred because of intermarriages between the Muslim merchants and the local inhabitants. Another famous world traveller to this region who had travelled to this area much later, Ibn Battuta of Morocco, also confirmed Marco Polo’s earlier observations when he visited the North Sumatran Port of Pasai in 1345, 53 years later.

Although many Arabian merchants were reported to have arrived in this area during the early decades of Islam, it was said that only in the 13th century did Islam gain significant influence in this part of the world. It was also recorded that the Islamic religion arrived gradually via the Arab and Indian traders en route to China as early as the 8th century.

The spread of Islam was being embraced by people around the Malay Archipelago area which includes the islands of Indonesia, southern Thailand and the southern Philippines. They took in the culture mostly voluntarily, and not by force or by conquering invaders, which by that time were mainly about the Hindu faith.

During the 15th Century, there was a rise in the number of Sultanates or kingdoms within this area and the most prominent was the Malacca Sultanate. Through the ruling of the Muslims sultans and Malacca being an Islamic state, Islam had the opportunity to spread quickly to people throughout the region.

Before Malaya obtained its independence in 1957 from the British, it was ruled by various other colonial empires. From the year 1511, the colonial rulers had divided Malaya under their rule and separate it from the Islands of Sumatera, Java and other nearby regions which were under Dutch and Portuguese rulers among others, namely the Siamese Kingdom.

I would also like to begin by explaining that from the various historical data, we can see that the comings of Islam to this region was due to the Muslim merchants which had dominated international trade in the Arabian Sea, the East China Sea and the Bay of Bengal during the 1200’s to 1500’s. A common religion had enabled the Muslims to establish a trade network, linking the coastlines of East Africa, Southern Arabia, the Persian Gulf and the Malabar Coast with the Islands of Indonesia and the southern coast of China. The traders had established good business relations and business transaction laws based on the Syariah law.
**THE RISE OF MALACCA**

Around the year 1400, Parameswara, a prince from Palembang, was forced to flee his homeland. He then left for Temasek and became the ruler of Temasek, now more commonly known as Singapore. He assumed the throne of Temasek for two years before he was later ousted by the stronger Majapahit. Parameswara was forced to flee northwards to Malaya when Majapahit raided Temasek. He stumbled upon Malacca while trying to find a good trading place to settle down and exert his influence.

It was then that he established an area near present day Malacca in 1403. It was said that the name Malacca’s was to have derived from the Arabic word Malakut which means a market place. Since the eighth century, the Arabs had maintained a trading colony around this region and had used this area as a trading or a market place.

There is also a difference in opinion that the name given by Parameswara was actually from the Malacca tree *Phyllanthus emblica*, known as *Amalaka* in Sanskrit. Legend has it, on that one fateful day, Parameswara was leaning under the Malacca tree when he witnessed a white mouse deer kicking his hunting dog into the water. After watching the incident and seeing it as a good omen, he decided to name the place as Malacca, or Melaka.

Parameswara encouraged and promoted peaceful trading between regions after establishing the Port of Malacca. International attention was given by other traders as Malacca grew as a trading port in size, influence and wealth. At the time, Muslims from Arabia dominated the international trade in the Indian Ocean to South China Seas in the 1400’s. Thus, Arabic had also become more of the international language of the traders in this region.

Islam had then gained many followers in the many islands of Indonesia since 1300’s. In 1405, as fate had it, the Prince Parameswara fell in love with a Muslim princess from the Court of Pasai in Northern Sumatra. Parameswara married the princess, converted to Islam and changed his name to Sultan Iskandar Shah to reflect his new religion.

It is said that this act by the Sultan was the beginning of the embrace of Islam by the indigenous Malay population in the Malacca Sultanate Empire, a once powerful and influential kingdom in the region.

It is thought that Sultan Iskandar Shah became a Muslim around 1414. In the 1420s, Sultan Megat Iskandar, the son of Sultan Iskandar Shah, converted from Hinduism to Islam.

His act may have contributed to Malacca being the main centre of Islamic culture in South-East Asia. At that time, Malacca also came under the protection of China, which grew to be one of the most powerful states in the region. This is because of the strategic location of the Straits of Malacca, which was located on the main commercial route between China and the west.

In 1424, Sultan Megat Iskandar Shah passed away and was replaced by Sultan Muhammad Shah (1424-1444). Sultan Sri Parameswara Dewa Shah succeeded Sultan Muhammad Shah.

He was then replaced by Sultan Mudzafar Shah (1446 to 1459). Even today, there are still some differences of opinion as to an actual date or period that can be used to pinpoint and record the beginning of the Islamization period in Malacca Sultanate, subsequently spreading its influence to the rest of the Malay Peninsula. However, most historians agree that Islam was firmly established during the reign of Sultan Mudzafar Shah of the Malacca Sultanate (1446 to 1459), some 567 years and approximately 22 generations ago. Malacca’s position was threatened by the Portuguese who saw the region as a hindrance to its eastward expansion into Southeast Asia. In 1511, the Portuguese captured Malacca under the reign of Sultan Mahmud Shah, (1488 to 1511). The new conquerors dug up the graves of all the previous sultans and destroyed their tombstones.

Because of this, Sultan Iskandar Shah’s grave could not to be found, but his legacy lives on, as he was the prince that had ultimately brought Islam to Malacca for the love of a beautiful Muslim Princess from Pasai in Sumatera. The culture was then spread throughout the region by his successors.

The Portuguese seized Malacca in 1511, but most of the rulers fled south and established a new capital in Johor Lama. The Portuguese were the first European colony to establish themselves in Malaya (or Tanah Melayu), and so began a series of colonial rule for the next 450 years.
THE INFLUENCE OF COLONIAL POWERS

In the 16th century, China withdrew its naval support of Malacca. In 1641 the Dutch East India Company (DEIC) allied itself to the Sultanate of Johor, and together they drove the Portuguese out of Malacca. The Dutch was not thought to have had any direct interest in Malacca, but merely wanted to funnel the sea trades away from Malacca to its own Port in Java. The Dutch then left their Johor allies in control of the other Malayan states.

Many other Colonial powers like the British did recognize the potential value of Malaya, which at that time produced gold, pepper, and tin - desired by the British to make tea tins for their Chinese tea exports.

The Sultans, mainly Kedah at one time, tried to seek help from the British in the hope that it would stop the Siamese expansion in their state and move down the Peninsula. In an act to protect its state, the Sultan of Kedah made an agreement with the British for its protection and in return, the British East India was allowed to use Penang as their trading harbour or outpost.

However, the promised protection by the British to fend off the Siamese in the 1862 did not happen, and the region was attacked. This resulted in the sacking of Kedah by the Siamese.

The British Empire exploited Malaya as an economic asset, while allowing the Sultans and their respective individual areas some political autonomy in the early 20th century. The British were caught completely off-guard by the Japanese invaders during the invasion in February 1942 at the height of World War 2, but they did manage to regain control of Malaya at the end of World War 2, in 1945.

After the war had ended, the power the British was not the same and its empire was substantially weakened. Britain had to come to an agreement to return Malaya to its people after being persuaded by the local leaders to do so peacefully.

Malayan leaders at that time wanted independence after many years under colonization. In 1948, the leaders formed the Federation of Malaya under British protection which later paved the way for Malaya to become an independent country in 1957.

During the 450 years of foreign rule, the Islamic religion did not vanish and was not replaced by another religion. The local population did not entirely convert to other religions brought in by the three Colonial rulers and masters, although there were attempts to do so. It was noted that under the British rule, Islam, continued to flourish and even grew in strength.

The British ruled Malaya, (Tanah Melayu) for 160 years beginning with its occupancy of Penang in 1786 as their trading outpost (this includes the two years it was under Japanese occupancy during World War Two). The British Colony masters were in some way better than the others, namely the Portuguese and the Dutch, in administrating its colony’s well being.

Under the British rule, foundations were laid for an administrative structure and a systematic framework of governance was introduced for others to assume, once they were no longer around to rule.

The British granted independence in Malaya and Singapore on 31st August 1957. Soon after, on 16 September 1963, Malaysia was formed with Sabah and Sarawak. Two years later, Singapore was later expelled from the federation to become an independent republic.

INDEPENDENCE CEREMONY OF MALAYA IN MERDEKA STADIUM ON 31ST AUGUST 1957
ISLAM AND MALACCA

The year 2011 marks the 500th anniversary of the fall of the Sultanate of Malacca under the reign of Sultan Muhamad Shah. Before the fall, the whole Malay Archipelago region lay under various empires such as Srivijaya, Majapahit and the Malacca Sultanate. Islam began to flourish quickly throughout the region, from the 13th century to the fall of the Malacca Sultanate in 1511, a period of approximately 200 years.

At this time there were presumably some notable local indigenous Islamic forms of architecture in Tanah Melayu, (Malaya). However, none of the earlier structures of this era survived. The oldest surviving mosque in Malacca is the Masjid Kampong Hulu, first built in the 1700's. This was probably one of the biggest and most impressive structures that depicted a local version of Islamic architecture. The local Islamic architecture had embraced, created and adopted the many forms and vocabularies introduced throughout the centuries by different prior empires and rulers. This was during the time when Islam was regarded as a major influence and religion in the world.

The Islamic architectural language used for building structures in Malaya and around the region during this time had borrowed, adapted and interpreted various architectural languages from the Ottoman Turkish era, which featured Moorish, Mughal, Sino-eclectic styles. It had a major impact and greatly influenced the built Islamic landscape of Malaya before and after it gained independence.

Although the Malacca Sultanate Empire was instrumental in spreading Islam to the Tanah Melayu (Peninsular Malaysia) from the year 1400s to the early 1500s, there were also two other notable earlier historical events that may also have contributed to the spread of Islam. The events were the conversion of ruler Raja of Kedah in (1136) to Islam and the discovery the Batu Bersurat (The inscription stone written in Jawi) in Kuala Behrang, Terengganu in 1303.

THE EMERGENCE OF MALAY SULTANATES

Like many other Malay states during the earlier historical era, the Terengganu local population was practicing under a Hindu-Buddhist culture/religion, combined with animistic traditional beliefs for hundreds of years before the arrival of Islam to the state.

It was said that, under the influence of the Srivijaya Empire, Terengganu traded extensively with the Majapahit Empire, the Khmer Empire and especially by traders from China.

Terengganu was said to be one of the first Malay states (after Kedah) to have received Islam as the state religion as attested by the Inscription Stone monument. This monument dates back to 1303, and was written using Arabic inscriptions. It was found in Kuala Berang area, the capital of the district of Hulu Terengganu. Terengganu later became a vassal state of Melaka, but retained considerable autonomy during the emergence of the Riau-Johor Empire.

A book on the Spread of Islam in Kedah Kingdom was written to record events on the spread of Islam to other states in the Malay Peninsula. The book was written by Ustaz Abdul Manaf b. Haji Ahmad, who had also recorded a much earlier date as to when the first Sultan of Kedah, was regarded as one of the earliest rulers of a state in the Malay Peninsula to have had embraced Islam.

The first Sultan of Kedah titled himself so, because he had embraced Islam. He did not call himself a Raja which was then used to address him and others in his position. It may be because the title ‘Sultan’ had a strong influence by the Arabian and the Middle East Monarchs which carry the title in naming their rulers as Sultans, rather than Raja whose is said to have derived from Hinduism. It is also thought that the Sultan had accepted the teachings of Islam without being forced to do so, after an Arabian preacher from Yemen convinced him. He must have been so taken from the teachings and the Islamic belief system that he decided to embrace the religion.

The beginning of the use of the title Sultan as the ruler of Kedah was also perhaps due to the visit by a Muslim preacher and scholar from Yemen, by the name of Sheikh Abdullah bin Ja’afar Quamiri, to Durbaraja II (Phra Ong) at the his palace at Bukit Mariam in 1136. The audience with the Sultan had then resulted in the Raja’s conversion to Islam from Hinduism. He adopted the name ‘Sultan Mudzafar Shah’ to reflect the new religion he had just embraced and established the new Sultanate of Kedah, with the Royal lineage still continuing to rule Kedah today.

It was said that the spread of the teachings of Islam in the Malay Peninsula was through persuasion, and not by wars or by force. Arab merchants and sailors came through the Malay Peninsula due the movement of trade which began in the third century (300 C.E.). They were said to be responsible for spreading the religion to parts of the Malay Archipelago during and after Prophet Muhammad’s (PBUH) death. These merchants came mainly from the Middle East, in particular the Arabian Peninsula, travelling via the maritime trading route to sail from Arabia, India and onto to China. These merchants almost always stopped to trade and to find shelter at the various ports along the Peninsula of Malaya.

The Raja’s name was changed from his Hindu-Buddhist name, Phra Ong Mahawangsa to a new Muslim name, Sultan Muzaffar Shah of Kedah Sultanate. Sultan Mudzafar Shah I, became the first Muslim Sultan of Kedah. His reign was from 1136 to 1179 and he was also said to be the last Hindu Raja or Ruler of Kedah. It is unfortunate that there are no surviving Islamic architectural structures during this era to depict the change, but it was assumed that they were to have been modestly built and made entirely out of timber.
CURRENT ISLAMIC ARCHITECTURE ISSUES

In today’s Islamic architectural context in Malaysia, the major concern lies within the architects and the owners who are entrusted to build such structures and who are most unwilling or unequipped to take the necessary risks to experiment new meaningful Islamic architectural forms to properly depict a progressive Islamic architecture. It is also important for the public or the owners who will be given the responsibility to make the decision to accept that there is a need to move on and open up to receive well thought-out ideas in new, proper interpretation of Islamic architecture. In light of the changing needs to respond to future challenges, there is now a dire need for all new buildings to take a more comprehensive, sustainable approach and to consider all aspects of ‘green’ architecture. By just focusing on the subject of construction, there will still be a tendency for architects to build and design Malaysian mosques based on the same public’s perception on how a mosque should look and thus, avoids the many current real issues that need to be addressed.

For example, a mosque, in the eyes of most Muslims, should still conjure images or domes, one or several Minarets, and a number of pointed arches in order for it to be considered as an Islamic Mosque. The only reason that I can give for this phenomenon is because most Malay Muslims were brought up and somewhat conditioned to expect these images to define a mosque, or any Islamic architectural building, without questioning the reasons behind it. It is through these various images that we were constantly fed that caused us to be ingrained with these elements to be associated with Islamic architecture. Moreover, because of this and our belief that it is so, the uses of these elements are carried out to meet the expectations of the general Muslim masses.

These images which fed our imaginations were further strengthened by the many stories or pictures that were told to us by our parents, elders, friends and even our religious teachers, and were expressed to us ever since we were young. These images and drawings of Mosques that we have been exposed to from time to time have continuously seen in the books we read, the built structures and the prayer mats we use. The beautiful art of calligraphy and geometric patterns which have greatly influenced our imagination as the basis of Islamic architecture. For example, the many sign boards throughout the country which have been installed at various locations indicate a nearby mosque, are often depicted in the form of a white silhouette image of the dome, minaret or pointed arches on a reflective green background. This images constantly reminds us that a mosque must be reflected in that manner.

Many in Malaysia, as they grow older (the general Muslim public) tend to have pre-set ideas and their own personal opinions towards what Islamic architectural should look like. However, their expectations may be superficial and are mostly inclined towards a combination of the various Islamic styles from the past historic grand Mosques that have been built around the world, with their design elements often been repeated over and over again by others. Furthermore, many failed to understand the background or history of these various styles.

The above approach, carried out in such manner to please the needs of the masters, failed to adapt to the environment of the general surrounding buildings, context, climate and landscape. As a result, many of these already built structures have turned out to be bad copies of the original, in an attempt to project an Islamic style of a certain era.

Furthermore, the design of some of these new Mosques which have been built recently were based on many past Islamic architectural forms and have been seen by many learned people as a ‘missed opportunity’ to create mosques which can be designed to project an alternative approach using innovative contemporary modern designs. By continually constructing, designing and building in this manner without exploring other possibilities, it will not only affect us now but our future generations. Future generations will think we were trapped in a time warp or just being plain unimaginative when it comes to producing new and progressive Islamic architectural buildings.

To be fair, there were some attempts to integrate elements of Islamic architecture in various present day buildings such as office buildings, courthouses, universities and government buildings. These buildings can be found throughout the world. There were some interesting and innovative outcomes with the use of geometric patterns, calligraphy, shapes, materials and the use of spiritual symbolisms. However, many turned out to be a bad representation of Islamic architecture not suitable for countries such as Malaysia, which endures a hot and humid climate throughout the year. We must also acknowledge that there are also many good attempts to depict Islamic architecture in a modern contemporary design which in my opinion should continue, be encouraged and over time, we may be able to see some great new works in the making.

EXAMPLE OF DOME, MINARET AND ARCHES OF DELHI FRIDAY MOSQUE, INDIA
THE ORIGINS OF ISLAMIC ARCHITECTURE

Firstly, we need to analyse and understand the history of Islamic architecture and its components before we can attempt to design a particular mosque or any Islamic building using the various typologies.

BY DOING SO, WE WILL THEN BE ABLE TO ACHIEVE one of our objectives, which is to be able to understand more on how to approach a more suitable design using Islamic architectural features that will surpass expectations and place Malaysian architects at the forefront of a new progressive global Islamic architecture. The failure to do so may result in an Islamic architecture that is incomprehensible and superficial. It will then weaken the need to continue the current approach of simply building that which merely wants to be projected as a form of good Islamic architecture, or can be defined as post-modernism Islamic architecture. This is an opportunity not to be missed by Malaysian architects to redefine the meaning and outlook of Islamic architecture.

MOSQUE TYPOLOGIES

There were many prior pieces of research done, and it has been somewhat established that there are traditional typologies of mosques that were built to represent various Islamic architecture around the world over approximately 1400 years.

They are the Arabian, the Umayyad, the Timurid, the Turkish, the Iranian, the Indian, the Chinese, the South East Asian and the modern types. We have also learned that these various styles or typologies were used to determine that there are different Islamic architectural styles that can be found in various parts of the world including Malaysia.

The Arabian typology (622-750 A.D.) took most of its initial form of the Egyptians temples which are the hypostyle flat roof commonly used during the Egyptian Empire and the Byzantine Empire (330-1435). Occasionally, smaller domes were built over the Mihrab (the semi-circular niche in the wall of a mosque that indicates the Qiblat) and/or the entrance. Most of the mosques built using this typology will only have one minaret and a perimeter sahn (An open courtyard combined with an ablution area) that were designed to link the various parts of the mosque. The use of the dome is to provide roofs over vast, uninterrupted spaces which are column-free and used as the prayer halls. In the mosque of Quba, there is a vast space that contains a hypostyle (a roof supported by columns) a marble prayer hall paved courtyard and a massive minaret.

The following style, the Umayyad typology (661 to 750) developed its architecture by the Umayyad Caliphates, used existing methods from the Byzantine and Sassanid Empire. Umayyad typology has existed since approximately 661 AD. It normally has several decorated façades made out of bricks, blocks and stones which are then carved. The domes were usually made of local timber hardwood. Almost of the surviving structures of this time are in Syria and Palestine.
Moving beyond the Arab realm, the Iranian (Persian) (1100’s to 1400’s) style mosque typology can be recognized by the pointed tip dome that rises vertically and ends with a sharp apex dome. Grand, oversized gateways or doorways are used to adorn the entrances of the mosques with smaller niche wall arches surrounding its perimeter. This typology, to some extent, can be compared to the Gothic pointed arch system. The design of the mosque is carried out with iwans a rectangular hall or space, usually vaulted, walled on three sides with one end entirely open. The overall forms and characteristics can vary in terms of scale, material and decorations. The format gateway to the Iwan is called Pistaq. During the 11th century, a new mosque form was introduced based on the 4 Iwan plan. It consists of a square central courtyard with Iwans in the centre of each side, behind the Qiblat. Iwan is a square domed chamber containing the Mihrab. From the Seljuk period onwards (1100’s) the four Iwan plan became the standard format for mosques.
The precedents of the Chinese mosque typology were based on the Chinese temples, houses and even palaces. They feature numerous inner courtyards, timber walls and distinctive Chinese gable roof form. The surrounding areas are often walled to enclose its compound or courtyard.

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While the Moorish Style (800 to 1500) focuses on the use of geometry, intricate artwork in plaster and the use of colourful tiles. It is named after the ‘Moors’, the North African people who had conquered the Iberian (parts of islands in the Mediterranean Peninsula at the beginning of the year 700). Its design incorporates the various shapes of intricately designed circular decorative arches. Other distinctive features are its single but domineering distinctive large Minarets, and the use of green tiled roof form reminiscent of Mediterranean roofs. The characteristic elements of this style include Muqanas, horse-shoe arches, voussoirs and domes (as well as related arches, lancet arches, courtyards and decorative tile work).
Looking towards the famous Indian subcontinent, the Indian-style mosque typology of Mughal architecture (16th – 17th Century) has outstanding onion shaped domes and arches. A spacious and large courtyard or a Shan is located in front of the main building, and is a distinctive feature in this type of a mosque. It is a coloration of various Persians styles which can be found in Persian, Turkish and Indian Byzantine architecture. This typology is also known as Mughal architecture and is commonly used in many of the earlier mosques and Islamic structures in Malaysia and the surrounding region. Some mosques of this origin will have three large domes and the many smaller domes.
The glorious Turkish typology is the mosque architecture of the Ottoman Empire (14th to 19th Century). This consists of many minarets that are elegant and slender in form. Some of these mosques have between two and six minarets built mainly to express the grandness of the Turkish style mosque. The Turkish Empire is also known as the Ottoman Empire, which ruled several countries and territories in central Asia, parts of the Middle East and North Africa since 1453 to 1923. The main prayer hall was usually crowned by a huge thin semi-circle metal dome (which is often made of lead) with many half domes on each of its sides which act as part of the supporting buttresses of the main dome. It was also built with a perimeter of decorative small flat domes surrounding it. We can easily distinguish these mosques by their dark grey lead domes, their massive grey stone façade and their slender minarets.
Situated in the Central Asia, the Timurid Islamic architecture (1370 to 1506) is the pinnacle of architecture centred at Timur, then Samarkand and Herat. It is now known as the present day Kazakhstan. Timurid typology has bulbous single or double domes, tile-work that decorates the interior and exterior of the mosque, multiple minarets and a vast scaled pointed arch entrance. We can also distinguish them from their unique colourful ceramic work, which adorned both the interiors and exteriors of the mosque. The Ottoman, Mughal and Safavid Empires may have been greatly influenced by the Timurid typology.

While the Southeast Asia mosque typology (1400’s to 1700’s) is similar to the Chinese mosque typology. It is normally built in single, double or triple pyramid roof form. It is different, in a sense that the roof varies in height, shape and size. It had either a two-tier or three-tier pyramidal roof that can well compare to the indigenous vernacular architecture.
The final typology, which is the modern type (1950’s to present), has no definite or distinctive common reference or repetitive features like the past traditional mosques. It is said that these mosques built in this era have their own sense of style or approach. An architect that designs these mosques expressed his interpretation differently by using elements that are usually used to depict Islamic symbolism of spirituality.

ASSYAFAAH MOSQUE, SINGAPORE (MODERN TYPOLOGY) (COMPLETED IN 2004)

TUANKU MIZAN MOSQUE, PUTRAJAYA (MODERN TYPOLOGY) (COMPLETED IN 2010)

SITE PLAN OF ASSYAFAAH MOSQUE, SINGAPORE
MOSQUE TYPOLOGIES IN MALAYSIA

However, in Malaysia, it is said that there are now eight different styles of mosque designs which had established the various unique architectural language that are still being used throughout the region. Most of the examples used to describe these typologies were built since the oldest surviving mosque was created in the 1700’s, and adopted the various influences taken from the many world typologies described above.

The typologies are the traditional vernacular, sino-eclectic, European classic style, North Indian, modern vernacular, modernistic expressionism, post-modern revivalism and now the sustainable modern contemporary style.

Traditional vernacular means architecture that is prevalent or similar to other surrounding structures or within a specific context. These mosques’ architectural language was widely constructed and used during the pre-colonial period. Mosques in this category can be distinguished by their roof form. The roof would be in the form of a single, double or triple tier pyramid or gable roof like the Kampung Laut Mosque. Mosques in this stylistic classification were constructed with the use of timber. The tiered pyramid roof typology used in the construction of the early traditional mosques may have been influenced by the sacred form of the Pagoda building form found in various parts of China. At the same time, it was adopted to allow hot air to rise from the inside to the outside. This particular style, which is not found elsewhere, may influence others and prove the fact that the building craftsmen during this particular time were actually Chinese in origin, and if there were indigenous craftsmen during that time, they may have had inherited their skills from the Chinese.

While the sino-eclectic style could be defined in two ways, one which follows the Chinese typology and another that follows the combination of two architectural languages, which are the Chinese style combined with the traditional vernacular style. This style is similar to the Chinese typology as it had either a triple tier or double tier pyramidal roof form. Its unique feature lies in the roof ridges with curved forms which are made out of cement. In this design typology, the builders had often incorporated various elements that were suitable to be built in this hot and humid tropical climate.
The coming of colonial powers brought the European classical style. It was derived from the Greco—Roman heritage. It can be easily distinguished by the tripartite division form on the top, middle and the base. Moreover, it is often designed to strictly follow a symmetrical composition. It has vast similarities to the classical styles or language of the west, but had been adapted in various ways to incorporate Islamic features to suit our hot and humid climate.

SULTAN ABU BAKAR MOSQUE, JOHOR BAHRU, JOHOR (EUROPEAN CLASSICAL STYLE) (COMPLETED IN 1892)

Another significant style is the Northern Indian style. It was influenced by the Moghul Empire architectural style, which was brought in by the traders and adapted to reflect its Islamic characteristics. It had incorporated many different sizes of ‘onion’ shaped domes, spires and exotic shaped arches. In many cases, large open courtyards were placed in front of these mosques for the anticipated overspilling areas for praying.

KUALA LUMPUR TRAIN STATION AND HEADQUARTERS, KUALA LUMPUR (COMPLETED IN 1910)

KAPITAN KELING MOSQUE, GEORGE TOWN, PENANG (COMPLETED IN 1916)
A kind of eclectic style, the modern vernacular is different from the traditional vernacular style in a sense that it had used different materials and a mixture of various architectural styles often assembled together without any prior fixed plans or method. It had been mainly built using concrete post and beam structures with brick infill and the use of a collection of different materials and architectural elements from a range of various shapes, as if taken from a handbook or catalogues and used to differentiate itself from another mosque. Its assembly of materials and style may be hard to comprehend as it does not always follow any particular order.

The construction of the roof often uses the style of the pyramidal roof or gable roof form, but many of these structures incorporated the use of timber or metal trusses to support with the use of concrete roof tiles or a metal roof. Normally, the mosque, together with its other support buildings, has one or two minarets and a dome. The dome is usually placed on top of the pyramid or gable roof, which is either in a small or large size or a combination of both small and large sized domes depending on the size or importance of the particular mosque.

While modernistic expressionism is an architectural language that defies historic revivalism and features lavish ornamentation. The various symbolic abstractions and structural forms were often being used in a more idealistic way, a personal interpretation by the architect when he is designing the mosque to depict a modern spiritual architectural. It also uses the plasticity and characteristics of the concrete to express Islam uses architectural symbolism which are often combined with a spiritual approach such as light, form and water with an outcome that often depicts the sculptural architecture.
Moving forward, the post-modern revivalism creates an architectural style to suit the general public to experience the various Islamic styles of the world or its interpretation. It is an attempt to express the past glories of Islam, symbolizing that Islam was once a powerful and influential religion, and it conjures Islamic architectural images built for others to experience its meaning. The introduction of lightweight materials such as glass reinforced fibre or the metal framed domes allowed for the easy construction to build and to copy a dome from a past style. This particular material is now commonly used and made it easy to copy various international Islamic styles of the past, or make an interpretation of a chosen style. This style is commonly used in most buildings today.

By using the already established timeline of Islamic architecture in Malaysia to the present day (between 1700s to 2013), we can establish that the oldest surviving Islamic structure is just a mere 300 years old - a relatively short period in history. However, the use of Islamic architecture in Malaysia has continued, and has constantly evolved throughout the last 300 years. We are fortunate to be in a Muslim country where we are still able to continue building, exploring and experimenting with the use of Islamic architectural language in many of our past, present and future buildings.

Last but not least, the contemporary sustainable modern style is the new architectural approach that will define the future relevance of the new generation of Islamic architecture. The design of these mosques is still very new and will promote the practice of Islamic sustainable designs and that will reflect the culture in a progressive manner. This approach may set a new, serious direction of the next generation mosques to be built or to refurbish old ones. It can be described as architecture with a good conscience towards its environment and the future, instead of the past.
**FUTURE MUSLIMS PROJECTION IN MALAYSIA**

The current Muslim population in Malaysia, as reported by the Department of Statistics of Malaysia, is now approximately 60 percent of the almost 30 million people (2013) inhabiting the country. This equates to approximately 18 million Muslims. The population of Malaysia is also predicted to reach a maximum of 57 million people by the year 2090; Malaysia will then experience a negative growth, following the population growth patterns of many current developed countries. Within a period of approximately 77 years, it is projected that an additional 27 million people will be living in Malaysia of which, approximately 16 million will be Muslims. This works out to be approximately 207,000 additional Muslims per year. The total population of Muslims in Malaysia is projected to be at least 34 million out of a 57 million-strong population by the year 2090.

A study that was carried out by a local estimated that there are approximately 5,000 mosques in Malaysia to cater for 18 million Muslims. We can assume that we may need between 4,000 and 5,000 new mosques in the next 77 years. On average, between 51 to 64 new mosques will need to be built throughout Malaysia every year.

**MALAYSIAN MOSQUES EVOLUTION**

Between the early years from the beginning of Islam in Malaysia in the 1700s, mosques were probably being built in a very simple, modest and manner. Some will classify these mosques as just a building with a roof on timber frame, while it is elevated on stilts for safety and tropical environmental reasons. As architects, we normally classify these buildings as simply traditional vernacular style mosques. Some larger mosques built in this era were also made out of simple materials such as timber and concrete. Some were considered as major structures, as they comprised thick load-bearing walls, with the use of plaster, timber and imported clay roof tiles. Only a few major mosques built in the 1700s still survive today, and these were made largely out of timber and brick. Several good examples are the Tengker Mosque, Kampung Hulu Melaka Mosque, Kampung Laut Mosque and Kampung Keling Mosque.

During and soon after the British Malaya, which had begun during the rise of the British Empire, there were many mosques and public structures that were built around Malaya which were influenced by notable British architects using borrowed Islamic architectural language. The British had also introduced a new Anglo-Indian-Mughal style using stone and brick wall and built as a new mosque typology in the 19th century, with influences from Moorish-Mughal architecture. These structures were built to adapt and suit our local climate and context.

These mosques are often characterized by the use of domes and arched windows which had used ‘Moorish/Mughal architectural style’. The best example of ‘Moorish/Mughal architectural style’ is the headquarters and the train station of the Malayan Railway Company in Kuala Lumpur.

The building of the mosques during this time was probably carried out on request, as gifts, or to appease the general local Muslim population as a contribution or donation by wealthy patrons. It is important to note that the early architectural language of a typical large mosque in Malaysia (during the British rule) was influenced by the Mughal (the northern India state) or Moorish styles. Some were also constructed in a mixed Islamic style with architectural influences from these areas from the British familiarity in this particular area, as their colony or its proximity to South Asia. We are actually unsure as to whether there was any political motivation to do so by the British and the wealthy at that time, as there were also many Greek and Roman, art Deco buildings and even modern architectural building styles being built during the 160 years of the British colonization era.

**POST INDEPENDENCE APPROACH**

Since Malaya achieved its independence in 1957, there had been a move by the early leaders to seek a Malaysian architectural identity style of the many of its new public buildings. It was a direction that was towards the search of the more traditional Malay identity or Islamic architectural built form. The National Museum in Kuala Lumpur is one such early example of a building that was done in this approach to achieve a traditional Malay architectural language build form, and was a bold experiment to explore the use of the new national identity architecture.

We have since learned that this may not be the best direction for the country to pursue as it was at the expense of many other climatic and environmental concerns that have now become more pressing. In the end, this particular architectural approach produced an awkward building form that did not suit its intention. It was also being said at that time that the new ‘international style’ of the 60’s and 70’s were not suited as it was considered to be too bland for a newly independent country. Its architecture is considered to be an identity for all throughout the world and its powerful influence was meant to erase other forms of architecture. The ‘less is more’ doctrine were the keywords of the day. This is said to be one of the reasons why the government at the time had started a movement towards discovering a new architectural identity in Malaysia in the late 1970’s to around 2010. At the same time there was a post-modern attempt to revive the use of colonial Greek and Roman architecture in other types of buildings. Between 1970 and 2010, there were also attempts to find a suitable style to define Islamic architecture. It had produced some interesting structures, but not many were in an inspirational Islamic architectural form. We must also note that there were some notable or great contemporary Islamic architectural styles built during this time that were not picked up and needed to be explored further. It would have been a step forward towards a more progressive style to help Islamic architecture in Malaysia to flourish and become works of exceptional Islamic architecture.

It has now become apparent to many that this approach (national identity or Islamic identity) was generally a futile experiment as it was not deeply understood or accepted by many, either fellow architects and some of the general public. Furthermore, it is hoped that the direct interpretation approach will now be abandoned completely to accommodate a different set of solutions in interpreting Islamic architecture or the national identity.
THE FUTURE PATH

In this new decade of 2010 to 2020, we are moving towards the direction of building sustainable architectural buildings. There is no particular set of style to this form of architecture. These buildings vary in design and the materials used. Usually, these new, modern buildings with components of prefabricated and recycled materials are combined with the used of glass and steel.

In the design of Petronas Twin Towers, the architect, Cesar Pelli chose a distinctive but subtle Islamic modernist style to match the new Islamic image for the 21st century. This is regarded as a successful Islamic architecture for a skyscraper building typology, which seems to adopt a more timeless modern Islamic architecture.

The use of Islamic architectural style in Malaysia had flourished and still is relevant as a building form, having been used ever since the independence of Malaya in 1957 and the formation of Malaysia in 1963. There are only a few good examples that we can use as good references, and there are also many questionable Islamic architectural style buildings which were built, and are regarded as bad examples. We certainly hope that such an approach to depict Islamic architecture will not to be repeated.

Many buildings were mere copies of some previous historical Islamic mosque language which were said to be used in an effort to interpret the beauty of Islamic art and architecture. Many turned out to be a bad replica of a style that had been originally built well.

In my opinion, there is also no real intentional political agenda, as some have vehemently suggested in their writings, but I would say it is a preference or an attempt to re-live the glories of Islamic architecture, or an attempt to make a different statement to the particular contemporary modern style that was commonly used during this period.

ISLAMIC SYMBOLISM

There is also a debate which points out that Malaysia is a multi-cultural country and such use or approach will be deemed to be ‘not Malaysian’ and against its principles. The past approach was probably carried out to impress the glories of Islam to Malaysians and the general Malay Muslim population as Islam is the country’s official religion. Rightly, or wrongly and historically, projecting Islamic architecture had been done ever since the beginning of the rise of Islam in the seventh century by the caliphs, sultans and rulers, as they saw it as their religious obligation to promote the greatness of Islam to the world, and to spread the teachings of Islam as their legacy. This approach will continue as long as there are people worldwide who are willing to build such buildings using this approach.

Moreover, this method had been emulated by the various religions before and after Islam, i.e. Christianity, Hinduism and Buddhism which have been in existence for thousands of years. As the nation grew prosperous, we can see that during this time most religious buildings were often adorned with various motives and embellishments. This is similar to the rise of Islam over the last 1400 years in other works such as art, calligraphy, motives, geometric patterns and even landscapes, where it was commonly added as a part of Islamic architecture.

After learning, understanding and analysing the history of Islamic architecture over the years, we have the opportunity to design a mosque in Cyberjaya to test our design philosophy in designing a modern sustainable mosque and using the seven principles of Islamic architectural elements. It is also our attempt to move away and restrain ourselves from using the various past Islamic architectural languages and embellishments which had already been used and re-used in this region for over 600 years.

We did not want to repeat what had already been done, and so designed the mosque in the spirit of the National Mosque which was completed in 1965. After 50 years, it is well regarded as a brilliant example of a modern mosque in this world.

Moreover, it was our attempt to design a mosque building which could be adapted easily to our environment and the built surroundings of Cyberjaya. We have also incorporated various design approaches to conform to the Malaysian Standards (MS 1525) and Green Building Index (GBI) guidelines to achieve our objectives to design a new sustainable and progressive Islamic architecture for a mosque building typology.
In our research we have learnt that when designing Islamic architectural style in Malaysia for various types of buildings over the years, architects and designers used various languages which had begun ever since Islam set foot and spread around the Malay Archipelago region.

THE STYLES USED IN MALAYSIA WERE PREVIOUSLY CLASSIFIED AS:-

1) Traditional vernacular style  
2) Sino-eclectic style  
3) European classic style  
4) North Indian style (Mughal/Moorish style)  
5) Modern Vernacular style, the modernistic expressionism style  
6) The post-modern revivalism style

We feel that there is a need to re-examine the use of Islamic architecture of the present day to reflect Islamic architecture as a progressive architectural style. Some may choose to continue using the previous Islamic architectural styles, but we believe that there is an urgent need to re-work our design approach and take some risk to redefine Islamic architecture in a more positive and progressive manner.

Normally, a mosque would have one to four minarets, but to economize, we have chosen to use just one minaret, sectioned into five tiers. It will be a sculptural focal point of the mosque, located in an Islamic garden plaza below. The five-tier Minaret symbolizes the five pillars of Islam which are 1) Shahadah (belief or confession of faith), 2) Salat (worship in the form of prayer), 3) Sawm Ramadan (fasting during the month of Ramadan), 4) Zakat (alms or charitable giving) and 5) Hajj (the pilgrimage to Mecca at least once in a lifetime if he/she is able to do so).

The structure will also be used as a centralized ablution area and will incorporate loud speakers which will be used for the call of prayers. Moreover, the mosque is situated in a location that would complement the future Cyberjaya University Islam Malaysia complex, to be located adjacent to the site.
**GREEN DESIGN ELEMENTS**

In today’s society, we are more conscious with the need for environmental preservation, and with the aim totally eliminate the many negative environmental damaging impacts of our daily existence, to ensure buildings remain energy efficient and relevant in the future. This is where the Green Building Index (GBI) and the Malaysian Standard (MS1525) were also used as our guiding principles in our approach together with the already established seven Islamic principles for Islamic architecture. We believe this is a step in a right direction where others may be able to follow suit.

GBI is a Malaysian Green rating tool for buildings to promote sustainability in our built environment and will be used to raise awareness on environmental issues together with making it our responsibility to our future generations in preserving the environment. The GBI rating tool is based on six key criteria which are Energy Efficiency (EE), Indoor Environment Quality (EQ), Sustainable Site Planning and Management (SM), Material and Resources (MR), Water Efficiency (WE) and Innovation (IN). There are also many other international rating tools that can be used to measure the sustainability makes up of a building such as LEED, Green Mark or BREEAM.

Cyberjaya Mosque, once completed in 2015, will be considered one of the first Green Platinum rated mosques in Malaysia and maybe in the world. The Cyberjaya Mosque is planned to be rated Platinum following the GBI rating system, the highest rating certification that can be given to a particular building in Malaysia. This is to ensure that the mosque is designed according to the highest standards of sustainability and, in almost full compliance to the GBI criteria, will set the standards for other Islamic buildings to follow. The Green design features of the Cyberjaya mosque allow for lower maintenance and running cost. The concrete used in its structure, for example, will use ‘fly-ash’ concrete, which is a form of concrete mixed with recycled materials and certified as a green product. Other architectural finishes and M&E installations will also be adopting the green products principles by following a rigorous certification process.

**OTHER GREEN INITIATIVES**

The overspill area around the central courtyard allows for natural ventilation and day lighting, which would be harvested and utilized to minimize energy dependency. The glass dome located above the enclosed main prayer hall will be installed with randomly fitted energy efficient LED lighting and will use two panels of low ‘E’ (Emissity) glass attached to aluminium decorative grilles that will be used as sun shading devices. Any rising hot air trapped within the main prayer hall will be extracted and released through ventilation louvers below the pinnacle of the uppermost dome, thus reducing the temperature build-up at the main prayer hall (flue stack / chimney effect). The indoor designed temperature aims at an average temperature of 26 degrees Celsius with the use of mechanical fans. The low energy air conditioning system is designed to only operate for an average of two hours during Friday prayers, Aidilfitri and Aidiladha festivals and other special events.
SMART WATER AND ELECTRICITY SOLUTIONS

In addition, the use of travelator instead of an escalator was chosen to be incorporated into the mosque, connecting the ground floor to the first floor. This is a good, practical suggestion by the DYMM Sultan Selangor as it will improve the circulation of people at the various levels during prayers. Cyberjaya Mosque will be one of the only mosques to feature a travelator and a glass lift, which is designed for the use of the less capable and disabled people.

The Cyberjaya Mosque is designed to be a water efficient building as well. It has a rainwater harvesting system to collect water for irrigation of the landscape areas in and around the mosque. A series of columns encasing UPVC downpipes are located at the main entrance of the main prayer hall, and these pipes function as rainwater downpipes which are then used to channel the rainwater to the rainwater harvesting storage tanks located on the first floor. The roof is used as water catchment areas channeling rainwater to flow off the R.C. roof into the same first floor storage tanks.

740 BIPV Solar Monocrystiline panels capable of harvesting 0.18kWp will be fixed onto a system of aluminium racks placed onto the R.C. roof as a source to provide renewable energy. It will be one the first mosques in the world to be installed with a substantial number of Solar panel systems to generate renewable energy. This harvested renewable energy will be substantial and will be used to feed back to the national grid via the use of ‘Fit in Tariff’. The TNB tariff will then use this renewable energy supply through the national grid as a conduit to supply a percentage of renewable energy to their consumers. In doing so, a monetary return to the mosque of approximately RM750.00 per day will be credited, and can be used as added an income to maintain the mosque.

With the above efforts in using and incorporating the six GBI criteria’s, the Cyberjaya Mosque will qualify it to be one of the first mosques to be truly ‘green’ in the world.

BIPV SOLAR MONOCRSTILINE PANELS ON THE ROOF TOP
Chapter 5

THE QUEST FOR FUTURE IDENTITY

It is difficult, to a certain extend to write and explain in the future of Islamic architecture without having the luxury to refer to some prior design, from a particular region, type or historical style which have been long used, copied interpreted or repeated over and over again for the past 700 years.

Ever since the decline of the glory days of the Islamic golden age which began in the 14th century, moved on to the rise of the European Empires and into the end of World War 1, Muslims here and around this region are trying to incorporate Islamic features into new buildings.

This has been consciously done by many who desired to prevent the complete avoidance or abolishment of Islamic architecture in our newly design built environment, especially in Malaysia, which is now greatly influenced by mostly western modern world architecture.

It would have been deemed to be architecturally correct if the intention is as such that Islamic architectural features and concept are used in their buildings where they as owners of such buildings wish to do so, but it must be done in a manner using elements which can reflect modern interpretations.

The design quality of the interpretation of Islamic architecture and its application in today’s modern world needs to be well conceived for it to gain the same status as the past great Islamic architectural designs. Moreover, the modern interpretation or approaches must be at least noteworthy, comparable and on-par with the other current well-received designs of their time.

BRIEF HISTORICAL TIMELINE

We can establish that the origins of Islamic architecture began in Arabia, with the first mosque, the Quba Mosque just outside Madinah and soon after, the Nabawi Mosque in Madinah, followed by other structures around the region. After the passing of the Prophet Muhammad (Pbuh) in 632 A.D., various Islamic Empires emerged and had redefined Islamic architecture which had been done in the eyes of the caliphs, rulers or sultans to express the beauty strength and the glories of Islam. At that time, the intertwined natures of Islamic art and architecture which had been created to produce and applied to these buildings was done in the name of the religion. These invented creations were cutting edge, innovative and of great beauty. The great past Islamic empires that had produced notable Islamic architectural features and had influenced early Islamic architecture in Malaysia were mainly from the Moorish Empire, encompassing the early Moroccan/ Iberian Peninsula (710 to 1492), the Ottoman Empire (1299 to 1923) and the Mughal Empire, stretching from northern to central India (1526 to 1858).

These architectural languages used here in Malaysia were mainly from Islamic interpretation of the Mughal and Moorish typology and were ‘borrowed’ during the approximate 160 years of the British rule and influence up until 1957.

Other early Islamic architectural influences here in Peninsula Malaya came from the Chinese craftsmen and builders brought in to build mosque structures and other buildings during the early booming trading era. Most of the adaptations were consciously adjusted by the builders to suit the local hot and humid climate. These structures were built for the purpose of spreading the teaching of Islam, and for it to last for many decades or even centuries to come.

In total, since the fall of Malacca in 1511, the Peninsula of Malaya was under the foreign colonial rule for approximately 450 years. Since Malaysia gained independence in 1957 (56 years ago), Islamic architecture in the country has been the subject of many different styles and approaches, often with some reference to some previous Islamic architectural language imported to embellish these modern structures and some without any reference to our tropical context or local climatic. This is in line with the Islamic awareness in this region since the beginning of 1980’s. There were some exceptional examples such as the National Mosque and Negeri Sembilan State Mosque which were built almost 50 years ago. I believe that, the designs of these mosques were ahead of their time and the designs were not easily understood, explained, accepted or replicated during this period.

In general, most other Islamic architecture created in the last 56 years in Malaysia was mere adaptations of a past style, ornamentation or form.

REDEFINE THE APPROACH

In summary, to date in Malaysia, we have built mosques using nearly all of the various past Islamic architecture adaptations of the different typologies constructed around the world. We are now at a crossroads of choosing either to continue in the manner we have been doing before, or begin a new generation of designing in a more progressive approach. If we take this path, we can at the same time define and continually experiment with a new local, progressive Islamic architecture.

We now have a very good reason to take a different approach, as it can be said to be in line with the current concerns of creating buildings that are sustainable, forward looking which will be based on new technologies, MS 1525, and the Green Building Index standards. At the same time, we are also moving towards producing Zero Carbon buildings in the near future using less energy (highly efficient equipments) and powered by the many forms of renewable energy sources.

This redefining in designing the progressive Islamic architecture will be a departure from the past default approach of just merely borrowing some previous Islamic architectural features in our need to satisfy the ‘brief’ of building Islamic buildings or structures and classify it as ‘The New Islamic Architecture’ for a particular type of building. It has its risks, as it may take greater explanation to the client or user in convincing them that these buildings were designed in the spirit of Islamic architecture. Many will not be entirely convinced, as they will still be expecting the use of the traditional exotic Islamic symbolism such as an Islamic dome, pointed arches, and minarets when visualizing an Islamic architectural building such as a mosque. There should bring more meaning to Islamic architecture than the above descriptions of an Islamic mosque or other buildings in the future.
FUTURE SOLUTIONS OF THE ISLAMIC ARCHITECTURE

**Malaysia is a well-respected leader in Islamic finance, law and teachings. We must now take the lead or be a part of a discussion in the effort to produce a new progressive type of Islamic architecture and art.**

At the moment, architects from the Western world are taking the lead in producing innovative and cutting edge designs in the name of Islamic architecture. This is because either their designs are more advanced or because they are simply architects from well developed countries in Europe or America that understands architecture better and are often listened to by their clients.

A stigma that has recently been attached to ‘brand architecture’ by works done by well-known architects had distorted the employment of western, non-Muslim architects to define Islamic architecture. Moreover, they are also able to somehow understand better than most Muslim architects on projecting a new progressive image. I believe there are many ways to take a lead in Islamic architecture that can be easily adopted and below are two ways we can start to change the direction of Islamic architecture for the future.

**GREEN RATING TOOLS**

The way towards introducing the new Islamic architecture of the world should be a continuous conscious effort by many and shall always be taken as work in a progress to reflect the Spirit of Time (Zeitgeist) and the Spirit of the Place (Genius Loci).

It can still be based on the seven principles of Islamic architecture as mentioned earlier with an approach towards sustainability in mind and the use of zero energy or renewable energy sources.

In Malaysia, we can achieve these principles of sustainability just by adhering to the requirements of the Green Building Index (GBI) and the Malaysian Standards (MS1525). The submission for certification will then be carried out by specialized trained people.

The GBI rating is based on six key criteria:

1. Energy Efficiency (EE)
2. Indoor Environment Quality (EQ)
3. Sustainable Site Planning and Management (SM)
4. Material and Resources (MR)
5. Water Efficiency (WE)
6. Innovation (IN)

The definition and the process to obtain the above are well defined and easily understood.

However, there will be a collective effort by all stakeholders to ensure that the design meets its strict and rigid requirements to obtain its full potential (marks) to obtain the desired rating.

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</table>

**GBI CLASSIFICATION**

With these criteria being addressed as much as possible, various points will be given in each and every category. With the accumulated points, the building is rated and the rating would be able to tell us how ‘green’ the building is, and whether it has complied to the set of requirements. The greener the building is, the more it will move towards the direction of achieving Zero Carbon building status, which will ultimately be using less energy (highly efficient equipment to be used in the buildings) and move towards using energy from renewable sources. Furthermore, the materials used will be of sustainable quality. The aim is to reach this goal by the year 2030, following the Architecture 2030 movement aim to build Zero Carbon buildings. Meanwhile, the highest rating certification given in the GBI rating system is the Platinum rating and more efforts should be taken to always reach a higher or the next level of sustainable design.

<table>
<thead>
<tr>
<th>Part 1</th>
<th>Item</th>
<th>Maximum Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Energy Efficiency (EE)</td>
<td>35</td>
</tr>
<tr>
<td>2.</td>
<td>Indoor Environment Quality (EQ)</td>
<td>21</td>
</tr>
<tr>
<td>3.</td>
<td>Sustainable Site Planning and Management (SM)</td>
<td>16</td>
</tr>
<tr>
<td>4.</td>
<td>Material and Resources (MR)</td>
<td>11</td>
</tr>
<tr>
<td>5.</td>
<td>Water Efficiency (WE)</td>
<td>10</td>
</tr>
<tr>
<td>6.</td>
<td>Innovation (IN)</td>
<td>7</td>
</tr>
</tbody>
</table>

**GBI POINTS ALLOCATION CHART (NON-RESIDENTAL)**

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*Green Building Index 'GBI Rating System' [Accessed: 20 August 2013]*
*Green Building Index 'GBI Rating System' [Accessed: 20 August 2013]*
The GBI Rating tool for non-residential building would analyse all sustainable aspects of the particular building which could be commercial, institutional or industrial in nature. This tool focuses on the energy efficiency and indoor environmental quality. Users of the building would have better energy usage and will be inhabiting a space with good quality spaces. With this approach the need to consume energy, the need for large carbon footprint and long-term costs would be reduced over time.

Energy Performance Index (EPI) is an international standard to measure the usage of energy in a particular building. EPI is counted a year after the building is completed and is assumed at full occupancy. As shown in the table below, it shows the GBI rating for different categories with different approximate cost or percentage.

<table>
<thead>
<tr>
<th>Green Building Index Rating</th>
<th>Average Malaysian Building Meets MS 1525</th>
<th>GBI Certified</th>
<th>GBI Silver</th>
<th>GBI Gold</th>
<th>GBI Platinum</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEI kWh/m²/year</td>
<td>250</td>
<td>200-220</td>
<td>150-180</td>
<td>120-150</td>
<td>100-120</td>
</tr>
<tr>
<td>Energy Saving %</td>
<td>Base</td>
<td>10-20</td>
<td>30-40</td>
<td>40-50</td>
<td>50-60</td>
</tr>
<tr>
<td>Incremental Construction Cost%</td>
<td>Base</td>
<td>1-3</td>
<td>5-8</td>
<td>8-12</td>
<td>12-15</td>
</tr>
</tbody>
</table>

The graph below shows that less than 30% of Malaysian buildings now achieved a recommended Building Energy Index (BEI) level. An average Malaysian office building has an average BEI of 250 kWh/m²/year, which is well above Malaysian Standard (MS1525) and best international practice. Malaysian Standard 1525 set a code of practice promoted Energy Efficiency and the use of Renewable Energy. The MS 1525 standard also sets a benchmark of 150kWh/m²/year or below as the maximum BEI benchmark level of a building to be considered as energy efficient or green.

GBI and MS 1525 is considered the ‘right way’ moving toward and follows the principles for better living conditions in the future. Currently, we are still in the process of constructing the Cyberjaya Mosque and at this time, Cyberjaya Mosque is designed to achieve a GBI rating of Platinum, which is the highest rating on its scale.
MODULARITY DESIGN SOLUTION

The move towards modularity will be a new way of emphasizing the sustainable aspects of building a mosque in the name of progressive Islamic architecture. As we have already built monumental mosques throughout Malaysia, the building of modular mosque can be used in the building of future mosques that are impressive but less expensive.

Modular mosques' design would be cost effective and would take a shorter construction time period to complete. It would be more cost effective as most of the building components would be pre-fabricated for walls, the roof, pillars, doors, etc. An 8m x 8m modular panel, in the example below, will be made of lightweight pre-fabricated components that would then be transported to the site and require only a few workers to assemble it. This way, the mosque would be completed within a few months. A 16m x 24m square mosque could take approximately 3 to 6 months to construct with all the materials being pre-fabricated in various factories.

It will be cost effective as the owners of a mosque will pay less due to a faster construction period. Lastly, the modular mosque could be easily extended and expanded, as and when it is needed, to cater for the increasing Muslim population in a given area over time. The materials used can also be easily taken down and re-fixed on a different site. In conclusion, this can be a successful method for building new mosques in the future, as nearly all of its components can be pre-designed to meet various needs, fabricated in factories and then easily installed on-site.

Examples of prefabricated modular mosques which can be constructed within three to six months:

- Exterior of the Modular Mosque
- Section of the Modular Mosque
- Elevation of the Modular Mosque
- Floor Plan of the Modular Mosque (4x3 Module with 864 Pax)
Various modular configuration for mosque typologies:

1. 3 PANELS OF THE MODULAR MOSQUE (200 PAX)
2. 6 PANEL OF THE MODULAR MOSQUE (400 PAX)
3. 11 PANELS OF THE MODULAR MOSQUE (800 PAX)
4. 22 PANELS OF MODULAR MOSQUE (1600 PAX)
5. 44 PANELS OF THE MODULAR MOSQUE (3200 PAX)
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**Book**

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**Article in Journal**

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Lim, J (2012) p.1 ‘Building Energy Index in Malaysia  


Takeo Kamiya ‘Master Pieces of Islamic Architecture’  


