

Traditional malay house: overview



The traditional Malay house is one of the richest components of Malaysia's cultural heritage. The purpose of this study is to understand and analyze traditional vernacular Malay house being modernized and the effects of modern material applied. Though the modernization process transforms and changes the materials, it still maintains the original building design, function, decorative element, and cultural importance to its local context. Literature reviews based on various sources regarding the traditional vernacular Malay house are referred, as well as interviews of the house owner will be conducted. To further enhance the research, the Malay houses in Kampong Bharu, Kuala Lumpur were chosen as the prime example of the modern vernacular Malay house. Malaysia is a tropical climatic country due to its place in the central part of the Southeast Asia. The design of the roof was steep and it was elevated is to cater the monsoon rain season in Malaysia. Due to the warm climate, most of the Malay houses have large openings on the sides and grilles are provided at the high level gable ends and the building its raised up are for ventilation purposes. There are three major elements of the traditional Malay house, which is transformed into modern context, namely the roof, window and pillars. The vernacular houses attempts to adhere to traditional life style even though it used modern construction materials while maintaining, the cultural and traditional design of Malay house. Nowadays the use of traditional materials has diminished. Unfortunately, these sustainable qualities of Malay house have transformed. Hence, through the study there are advantages and disadvantages using modern construction materials in traditional Malay house. While one exemplifies a deep cultural significance, the other is an immediate response to the evolving environment. It is intriguing that many aspects of

architectural styles and its applications were discovered through this case study research.

Case study (Kampung Bharu, Kuala Lumpur)

This study is to analyze the modern traditional vernacular Malay house. How is the origin Malay house being transform into modern vernacular houses and what is the effect of contemporary materials. The kampong Baru is located in the capital city of Malaysia, Kuala lumpur. This is a reserved area for the Malay ethnic groups. From the case study will found out the climatic effect of using contemporary materials in the traditional Malay house by the following questions:

1. How is the climate of Malaysia?
2. How did the climatic factors of Malaysia influence the design of the traditional vernacular Malay house?
3. How did the traditional vernacular Malay house being modernization?
4. What are the climatic effects on the modern vernacular Malay house?

Introduction

In this paper, is to study and analyze the influences of Malaysia climatic factors on the design of the traditional vernacular Malay houses. Basically it is part of the research on the climatic effects on the contemporary construction materials in the traditional vernacular Malay houses in Malaysia. The study is more focused on the adaption of the local climate on the traditional vernacular Malay houses and how the building was transformed into modern vernacular Malay houses through the modernization process also the effects of using modern construction materials in the modern vernacular Malay houses.

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During the early 20th century, modernization and colonization periods the British had brought multiracial immigrants into Malaya. Then, Malaysia defines as a multiracial country that included Malays, Chinese, Indian and others. During the colonization period, multiracial group is staying separately. The majority staying in countryside mostly is Malays group and the Chinese and Indian were staying in the city. The Malay racial group depends heavily on the environment. Villages can be established even a single traditional Malay house and the additional houses came later. Normally, the buildings that built closely together were usually family members. The most significant characteristics of traditional vernacular Malay house are the adaption natural climatic factors in Malaysia.

The traditional vernacular Malay house

The traditional vernacular Malay house defines as a richest component of Malaysia cultural heritage. The buildings built with local materials and local techniques. Mostly, the occupant will participated in the process of design and construct, it is to manifest the aesthetic skills of the Malays.

The site planning of the building based largely on Islamic beliefs and its environment. The layout was split into two parts, front and back yards. Obviously, front part will be the welcoming guest area and it is decorated with different types of ornamental plants and flowers. Back yard is the area linked to kitchen and washroom and it is placed near water, as the kitchen needs intense water usage. The marital status also reflected the architectural style of the building because of the Islamic beliefs.

The house form had developed and modified over a long period to satisfy most of the cultural, occupants needs and circumstances changes. The traditional Malay houses are bamboo or timber houses raised on stilts (timber). The building mostly is a post and lintel structure with timber or bamboo walls and a thatched gabled shape roof. There are always large openings on the sides of the building to providing good ventilation. From a distance the traditional Malay house seems to integrate naturally with the environment. The large gabled shape roofs, dominates the low walls and with different orientations and sizes created an interesting visual form. Overall the Malay house is designed to cater the local climatic factors by various ventilation and local materials that are low thermal capacity materials. Besides the well adaption to the environment, the design of the traditional Malay houses are flexible is to cater the needs of user and it evolved a building system called prefabricated. The building has developed a sophisticated addition system that allows the building can be easily extended with the needs of the occupants.

There were various traditional Malay house forms can be found in Peninsular Malaysia. Normally, they classified based on the shapes of roof. The basic forms of Malay house are called the bumbung panjang, bumbung lima, bumbung limas and bumbung perak. The most common design of the Malay house form was bumbung panjang that with a simple long gable roof, supported by the main posts. The bumbung panjang is the simplest one of the four roof shapes and it is an oldest identified in Malaysia. The bumbung panjang form became most popularity used on the Malay house among the poorer users and those built the buildings by themselves. Due to the

bumbung panjang house form, it is simplicity and become a very efficient roof shape for the building. Mostly the material used for the bumbung panjang is attap. Attap is a thatch covered and tied together with nipah and others palm trees that can easily found in the local area. The simple funnel shape of bumbung panjang roof is a very efficient in ventilation properties. The roof can cools the house effectively is because of using the ventilation grilles at the ends of the gable called tebarlayar and the ventilation joints to provide better ventilation.

Besides the bumbung panjang, the bumbung lima, bumbung limas, and bumbung perak are all not origin tradition roof shapes, it has modified and developed through foreign influence. Furthermore, the bumbung lima Malay house always with a hipped roof, the bumbung perak Malay house form always with a gambrel roof and the bumbung limas house always with a pyramidal roof. Hence, they are two type of houses believed that were influenced by Dutch and British architecture during the colonization. Lastly the bumbung perak house form also known as the bumbung potongan Belanda which is a type of Dutch roof and it is a famous roof in East Coast.

Originally, spaces in traditional Malay houses can be separated into front part and back portion. Therefore, the core house (rumah ibu) or main area must be at the front and the kitchen (Dapur & Rumah Tengah) area will be on the back portions of the house. The selang is a closed walkway covered by leaves and used to be a linking device for the front and back portions. The selang is providing good ventilation and natural sunlight entering the house. Besides the location of the side entrance to the kitchen, it is also a space for womenfolk to socialize and chat. Most of the traditional Malay houses

entrance there will be a covered porch called the anjung that acts as a transition place between the private and public spaces. The anjung will only used to entertain the unfamiliar visitors and it is a favorite space for the users to chat and rest. This floor was approximately 0.5 to 1 meter lower than the rumah ibu floor level. Beside the anjung was a hanging verandah (serambi gantung) where most of the guests will be entertained here and it is a one step down from the main house around 15 centimeters. The openings in the serambi gantung provide good views to outside and allowing natural ventilation entering the place where usually occurred daily activities. At the serambi gantung area can easily observed the embellishments like carving and grill of openings, balustrades and wall panels. Next to serambi gantung was the rumah ibu, which is the core area and it is the largest area and can defined as multi purpose area for most activities were conducted here. The rumah ibu floor level was the highest and cleanliness area while the kitchen (dapur) was the lowest level and untidy area of the house.

How is the climate of Malaysia?

The main characteristics of traditional Malay vernacular houses are it is well designed to cater the Malaysia climate. From the Malay houses we can notice it is designed with a very good understanding for nature. In the traditional Malay societies, the villagers were directly obtain most of the resources from the natural environment for theirs building materials, food and medicines. To understand better on the influences of local climatic factors on the Malay houses, must first understand the local climate, thermal requirements comfort and the conditions of the environment that the building will build. Malaysia is located in central South-East Asia and has a

tropical weather. Due to the latitude and longitude, it gives Malaysia a warm humid equatorial that influenced by monsoonal climate. The monsoon climate here comes twice a year, the first monsoon season comes during the summer season and the other comes during winter season. The differences between the two monsoon season are summer season bring lots of rainfalls and winter monsoon does not brings rain and is generally dry. The annual rainfall was averaging 80 inches to 100 inches. Furthermore, the climate here gives hot summer and high humidity throughout the year. The temperature here holds around 24 Celsius to 34 Celsius, which gives warm days and fairly cool nights. The annual humidity level was averaging about 75% or above. The high humidity climate causes the very high water vapour in the air. It can filter the solar radiation but it also speeded up the rotting, and the growth of algae. The local wind only comes in from northeast and southwest these two directions. Normally winds are in low variable speed, high variable speed wind will only occur when rain.

Hence, the local climatic factors here were high temperatures, humidity and solar radiation. Based on the local climatic factors the building built here should able to achieve the thermal comfort. Therefore, rain, floods and strong winds must be control to achieve thermal comfort in Malaysia Malay houses. For thermal comfort, heat will produce from the human activities and metabolic process. The metabolic process will balance and maintain the body temperature (37celcius). The heat will release during the metabolism process of conversion of good into energy. The heat loss through convection, conduction and radiation can be negligible is due to the local temperature are almost same as the body temperature. Similarly, the perspiration is

reduced and the body temperature is decreasing because of the high humidity. The saturated air envelope blocks the evaporation from the human body and it is easily formed especially in humid climate. In the building ventilation is important because air flowing can remove the saturated air envelope in order to accelerate evaporation. Similarly, a building without any ventilation, it will increase the temperature and humidity to an uncomfortable condition.

The main sources of body heat gain are the local climatic factors conduction from the building fabric. Direct solar radiation is the main source of body heat gain, thus the proper design of controlling the direct solar radiation entering the building is the most important to achieve thermal comfort. Besides that, the type of materials used is one of the major sources because the high thermal capacity materials will absorb heat and emit it to the interior buildings. Therefore, heat gain from solar radiation must be minimized and maximized the ventilation in order to achieve the human thermal comfort in the house.

How did the climatic factors of Malaysia influence the design of the traditional vernacular Malay house?

Obviously, the traditional Malay vernacular house is well adapted to local climatic control building and it also influences by the local climatic factors. A local design of Malay house must have the following factors must be raised up on stilts (timber), large opening on side, use low thermal capacity building materials (wood, timber, rattan, bamboo), controlling the direct sun radiation, a long thatched steep gable roof by attap, site planning and site layout. From the design of traditional Malay vernacular house, it is a very

appropriate design to cater the tropical climate of Malaysia and it is more suitable to the Malaysia climate compared to the modern brick house. The raised up floor in traditional Malay house is maximizing the ventilation in the house as well as preventing the monsoonal rain floods. The raised floor is hardly seen in most modern house and the quality of openness in the building is shown by the voids in its window, ventilation grills, the open raised up bottom and the open interiors. There are various features providing effective ventilation in Malay house. The purpose of elevated the floor on stilts is to catch high velocity of winds and the interiors with minimum partitions is to maximize the cross ventilation occur in the building. Normally, full-length opening and fully adjustable windows or louvers will surround the traditional Malay house. The carved panels on the top of the windows and wooden grilles also an important ventilation device. Behind the ventilation, the carving on wooden panels controlled the glare entering the house and it also representing the Islamic scripts. There are two effective ventilation devices on a simple gable roof. They are the sail-like gable-end (tebar layar) of the roof and the ventilation joints called patah both are very effective ventilation to direct air to ventilate the roof space. The houses in village are randomly arranged and planting the tree wisely around the house to allow natural flow through the building and integrated harmoniously with nature. The Malay house mostly built far apart for future extension to fulfill the needs of occupant. In the traditional Malay house, there are more voids than mass and it is a lightweight construction using natural materials to cater the local climate. The natural materials define as low thermal capacity materials and it is a very good in insulating. The long thatched roof with large overhands in traditional Malay house has reduced the solar radiation

and it also designed to reduce direct sunlight. The low walls and large overhangs in Malay house, it make the shading easier and reduced the solar radiation also the glare from the open skies. Besides providing good shading, the large overhangs also gives protection against driving rain. The walls and overhangs have allowed the windows to be open in different situation weather. In addition, the external environment of Malay house mostly covered and shaded with trees or vegetation. This provides a cooler environment and lessened the reflective of glare for the house to set in. Traditionally, most of the Malay houses are oriented to face East-West for religious reasons and reduces direct exposure to heat from direct solar radiation.

How did the traditional vernacular Malay house being modernization?

Nowadays, most of the traditional vernacular Malay houses are being transforming into modern Malay house throughout the modernization period. The Malay houses were modernized due to the stress from urban redevelopment and sociality changes. The new Malay houses has different spatial layout also the used of construction materials and technique. Based on the case studies, the Malay houses in the kampong bharu were transformed the roof, wall, pillar and window. The external environment has also changes is hardly to see high and tall trees only short trees are planted there due to the limited space of the compound. The short and small trees also blocked most of the natural airflow passes through the house. Besides the changes of external environment, the interior of Malay houses was transformed into more walls to divide the rooms and spaces. The cross

ventilation and natural air movement were reduced due to the mass partitioning walls inside the house.

As I mentioned above, the roof is the most significant feature because the Malay house were categorized based on their roof types. The Malay house in the kampong mostly used bumbung panjang compared than the other 3 types of roof. This is because the type of roof is easier to construct and cheaper. From the site I have found some houses actually using different roof for theirs main and secondary roofs. The most famous combination types of roof in kampong are bumbung perak with bumbung panjang and bumbung panjang with bumbung panjang. The long gable steep roof has become gentler for the sloping degrees and regarding the tebar layar on the gable ends of the roof were modified the design or closed with wall panels. Traditionally, attap or wooden shingles were the main materials of the roof but generally now modern construction materials were often used than the traditional materials. Besides the transformation of roof, the walls and the openings also modified due to introduce of new architecture during the colonization period. The traditional wall is made by bamboo and the traditional arrangements of wallboard were totally modified. The shuttered windows on the wall are one of the significant features to show the characteristic of Malay house. The faade of the Malay house can be separated into 3 parts, the carved wooden panels providing better ventilation mostly at the top part above the window, while the window or adjustable louvers always built at the middle and bottom parts. There are some Malay house walls still using the timber board but in the modern construction brick walls are replaced the traditional bamboo or timber board

wall is due to the maintenance and long lasting problems. There are 3 main types of windows such as the short window (tingkap), the tall window (jendela) and the punched window. The aesthetic wooden balustrades behind the windows are being used for safety purposes. In origin of window pattern, the jendela and tiangkap window have a key feature to classify the windows pattern called Jenang pintu. Although, the windows in Malay house has the traditional elements but the proportion of the window has modified to slimmer and became closer of the gap between the windows. The western punched glass window was adopted modern glass louvers to maximizing the ventilation while maintaining the safety of the house.

The traditional stilts are no longer in use since pillars are a very important structural to support load from the house. In general, the brick and reinforced concrete pillar were often used, with the increasing of concrete pillar heights spaces of underneath became more efficient. In the modern vernacular Malay house only used concrete pillars and the underneath is usually walled to fulfill the needs of user. The transformation of wooden pillars to concrete pillars is due to the concrete pillars is more suitable for supporting the loads.

What are the climatic effects on the modern vernacular Malay house?

After brought in the modern construction materials like zinc, cement, brick, glazing and aluminum louvers window into traditional Malay house has modified the traditional house forms and side effects of the high thermal capacity materials. The high thermal capacity materials are not suitable in local climate example like the zinc and asbestos roofs in Malay houses are generated more noise during the rains fall and gives a very hot interiors

during the day. Besides the climatic effects the used of modern materials also causes the diminishing of traditional aesthetic skills and techniques of creating the complicated thatched attap roof. Other than used of zinc and asbestos materials, the bricks, cement and concrete are better materials use for creating walls especially the wet area parts and stronger structures for the house. Some of the Malay house has a closed underneath to create the house to double-storey house. Such change has transformed the light and airy Malay house into solid looking building. The full-length wooden window has been replace by the adjustable glass louvers window with aluminum frames. The louvers window has modified the traditional windows into smaller and closed the bottom part of the window. It causes the less efficiency of ventilation. The iron bar in louver window is for safety purpose but it totally destroyed the quality of openness in traditional Malay house.

Conclusion

Throughout the studies, the traditional vernacular Malay house was design to cater the local climate and it is one of the richest components of Malaysia cultural heritage. Besides the adaption of local climatic factors the houses also reflected the Islamic belief. The houses were developed and modified until it satisfies the user. Based on the research they are various house form in Malaysia, they only can be classified based on the roof types. Overall the traditional Malay house was adapted to the local climate and it is design such as random spatial layout, raised up floor, full-length windows and high-insulated roof. The shading tress and vegetation around the house also helps to cool down the temperature in the house. The orientation of house facing

to east and west was influenced by the religious reason and it helps reduce the direct sun light radiation.

In the modern vernacular Malay house was transformed and modified to fulfill the needs of occupant but it still maintained the traditional roof shapes. The use of modern materials directly changed the house form and brought climatic effects into the house. Secondly, the introduction of modern materials the lightweight construction Malay house has transformed into more solid looking buildings and it also causes the diminishing of traditional skills. Overall, the sustainability in modern vernacular Malay houses was transformed and also the traditional house forms were changed.