

MALAY ABSTRACTIONS OF ECOLOGICAL PATTERNS INTO GEOMETRICISED EXPRESSIONS IN PALATIAL ARCHITECTURE AND THE APPLIED ARTS

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ABSTRACT

Malay ornamental traditions are more generally known for their curved, expressive and convoluted patterns, emerging from the traditions of woodcarvers and artisans in observing ecological forms, rather than geometric or gridded patterns. Typically, observed flora and fauna are developed into curvatures and ornate forms and translated into panels and 'papan larik' in vernacular, including palatial, architecture. This paper highlights a lesser known tradition in Malay architectural decorative traditions in which such ecological forms are abstracted into more geometrized elements, either due to the modularity needed for insertion as architectural elements, using techniques such as weaving, or modern techniques encountered by craftsmen and builders; such as metallurgy. The paper highlights five examples in the palaces of Kedah, Perak, Kelantan, Terengganu and Selangor, and examples of geometrized elements are also observed in applied arts. These highlights the essence of the Malay culture and civilization have a resource in both organic and geometric patterns evolution which reflect a form of rationality and simplified geometric form, which had arisen from more traditional patterns such as weaving and paneling. The findings of the paper contribute to the availability of the range of expressions in Malay traditions in more modular design and format available for regional and localized identity in present modern buildings and developments.

Keywords: *abstraction, vernacular ornamentation, contextualisation, modern vernacular, aristocratic design, geometric motif*

1. INTRODUCTION

The Malay world has been known for its celebration and integration of controlled ornamentation; artefacts and architecture, - into which there is a range of inscriptions, carvings, texts, pottery, utensils and applied arts, rather than geometric design. Geometry is typically related to abstract sciences which diffuse into the applied arts and architecture in the mathematically-inclined past civilizations such as the Arab-Islamic civilization and the Chinese civilisation. The Malay artist or carpenter/artisan is more known for infusing structures with the curved 'life' of nature through ornamental elements, recalling more South Asian regional eastern traditions. Their artefacts are generally infused with refined patterns which are curved and convoluted, having an innate meaning and life of its own and are typically not only perceived as rationally-formed or functional entities. To the makers, they carry a spiritual content and connotation. Their workings are abstracted from flora and fauna and more specifically, in the Malay world, from trees, flora, leaves, flowers, shoots, and creepers. Traditionally, these have, at times, dominates the architectural and interior compositions.

The late anthropologist Alfred Gell (1998) once argued that with curved patterns characteristic of Malay decorative motifs and carvings were means by which 'the viewer becomes enchanted by its complex or convoluted forms'. Gell was referring to the condition of how Malay ornamental forms, was a kind of elevated decoration that kept admirers entranced with its dynamic and 'flowing' nature of its movements. When inserted into architecture and interiors, they somehow capture the attention of occupants and create a kind of a palpable link with the human perception and attention through the forms that recall movements, curves, and tessellations. Carvings are fused into spaces and become a three-dimensional equivalent of two-dimensional art and inventiveness. Rosnawati Othman (2005) had usefully highlighted that there are

three main means which ornamental motifs suffuses Malay architecture and indirectly refers to the three main forms of woodcarving in the traditional Malay world.

- Panels
Referring to ornaments capture in rectilinear forms
- 'Arca'
Referring to ornaments capture within 'arch' like forms
- 'Larik'

The motifs are captured in architecture as row-like or linear-like decorative forms, yet they are still organic, recalling the freezing of, or capturing animate forces in nature. They recall natural forms, not unlike seeds which are known to sprout life in all flora and typically captured and bounded by geometric boundaries which give a sense of control and decorum to the free-forms of the ornaments. Leaf stems, leaves, flowers and branches seem to emerge from a source and fill partially or fully a wall or component of the interior. This paper will further discuss on the attributes of geometric motif applied on Malay palaces. The attributes would help in identify and characterize the identity of geometric motif design.

2. LITERATURE REVIEW

The literature will look into the field study of Malay ornamentation and Malay motif. The first part of literature will be discussed on the application of Malay ornamentation in Malay palace. Second part is typology of Malay ornament motif. Third part is Kelarai (plaiting) as a unique geometric motif. Lastly is on the geometric motif application on building.

2.1 APPLICATION OF MALAY ORNAMENTATION IN MALAY PALACE

The Malay palace uses ornament as a symbol of wealth, status and power for the peoples to see. During those time it is common for a sultan to showcase their power through ornamentation (Nangkula Utaberta, 2014). The Malay palace design is the same as the common Malay house but in a larger scale. Farish and Eddin (2003) explained quality and beauty of carving found on walls, partition panels, windows, grilles, air vents, doors, railings, bargeboards, fascia boards and gates were meant to serve as visual indicators of social rank and status of the dwelling owners. This also applied towards the application of ornaments. Ornaments in Malay palaces applied in the same ways as Malay house in term of its placement size. The different will be on the design complexity and the amount of ornaments used to decorate the palaces.

The sultans would usually become the patron of these artisans or craftsmen, which sees them residing in the palace ground for the sole purpose of serving the Sultan with the most beautiful carving for the palaces and for other object such as weapon and craft. This clearly showed the influence that the Sultans had on the ornaments of a palace, it could be seen that the design of an ornamentation is like the manifestation of the Sultan thought of what is beautiful in his perspective. Thus, the involvement of colonising power especially the British colonial towards the Malay peninsula kingdoms would see the changes in ornamentation design which evolve according to the likes of the Sultans.

Malay palace are the local form of public architecture of the Malay world. The physical design of a Malay palaces is an external expression of the early polities of the tropical South east Asian world, who were exposed to global colonising forces. These colonising forces does affect and force the evolution on some of changes in the palace's architecture of the 'Sultan', which is an institution that had a direct confrontation with external colonising influence (Gullick, 1987). It is clear that some Malay palaces does adapt and hybridise some of the influence of its coloniser i.e. British colonial. This paper tends to look into the British colonial influence and will try to focus on the front elevation or the façade of the palace as the focus of study. This is due to the fact that façade of a palace is usually tend to be more decorated with ornament.

2.2 TYPOLOGY OF MALAY ORNAMENTATION MOTIF

There are variety of style and typology of ornament in Malay architecture. The type can be differed in many attributes including placement, material, incisions, function and composition. But the most significant attributes that give a distinctive character to an ornamentation is its use of motif. The creation of ornamentation with motif is closely related to the traditions and influence inherited from one generation to another (Abdul Halim Nasir, 1997). The characterization impact of a motif can distinguish and differentiate the art type from different place, districts and state other than becoming the trademark (Hafiza, Hamdzun, Zuliskandar, Manan, & Melayu, 2014). Through the creation of motif, it can elevate Malay craftsmanship to a higher level as well as getting acknowledged for its creation of a sophisticate carving workmanship. The use of motif in Malay carving can generally be categorize into 4 type:

1) Floral motif

The most common motif in the use of ornamentation are floral motif. The motif are taken from nature such as the name of trees commonly used in the Malay's daily lives or for food like the mangosteen. Mangosteen motif are a great example of an often used motif by the craftsmen. Plus, flower motif are also used in caring such as the Bunga Melayu Tua motif (Nila Inanga Manyam Keumala Daud, Ezrin Arbi & Mohammad Faisal, 2012).

2) Fauna motif

Fauna motif are motif that are taken from animals or insect. One of the common examples of this type of motif are the 'itik pulang petang motif' (duck returning home at sunset), the duck is the main fauna motif to be used in this motif. The fauna motif was known to be influenced by Hinduism at one time before the advent of Islam to Malaya. After the coming of Islam, fauna motif is simplified or decreased in its use, suitable with Islam teaching that forbids the use of living things as house decoration. This led to the evolution of fauna motif from a literal form to a more simplified form of fauna motif in its design creation.

3) Calligraphy motif

Calligraphy motif are motif that are a direct influence of Islam. The motif is mostly writing on text form of advice, law, religion, teaching and more (Kraftangan Malaysia, 2009). Some example of calligraphy motif is applied at the entrance of a building written as 'Assalamualakum' or 'Bismillah'. The arrangement and composition of this type of motif depends on the appropriate function and places following the produced carve text. The produce carved text is sometimes composed with flora or geometric motif to add more detail to the craftsmanship.

4) Geometric motif

Geometric motif is motif that are often associated with abstract, casual or hard motifs. It is more related to mathematical formulas due to its form and is rarely done in form (Hafiza et al., 2014). According to Haziyah Husin (2006) geometric motif are related to arrangement like organic and geometric form according to the arrangement types it produces. The creation of geometric motif follows the interpretation from pattern that uses high level of imagination to the point that it is difficult to recognize its origin. The form of geometric motif is usually arranged in row and the form are rarely combined with other form (Abdul Halim Nasir, 1986). Geometric motif can be identified by looking at the designs that uses basic element used in design through straight, oblique and transverse line. The line will produce carving in the form of boxed arrangement and straight that can be seen at the space filled with carving on a particular object.

As there is very little research that focuses on the geometric motif, this research will attempt to look into detail on geometric motif on Malay Palaces as case studies.

2.3 KELARAI (PLAITING) AS A UNIQUE GEOMETRIC MOTIF

The art of plaiting is one of the major National Art heritage that exist since the early time of Malay Peninsula. This is due to its variety range of interpretation as well as interesting design. The process follows the use of colours that make different kind of plaiting product looks more beautiful. The art of plaiting is a very time-consuming craft especially in satisfying the current customer demand. Thus, one must be very skilful, diligent and creative in the process of plaiting. The art of plaiting cannot be separated from the traditional way of life in Nusantara communities. During the old days, local villager would create numbers of plaiting products in daily basis. The product ranges from food cover, praying mat and plate mat. Plaiting are even used in building component, usually used for wall panel with a very distinctive design for decorative and work environment purposes (Ismail & Md Nawawi, 2011). Although the geometricized motif is the basic motif for plaiting, there would be an extension form of a more characterized typology of plaiting which are plant motives, abstract motives, peoples name motives and fauna motives (Ismail & Md Nawawi, 2011).

Malay traditions include, as well, amongst the wide range of motifs of Malay architecture and applied arts, a wide range of geometricized elements, amongst others, such as the *Kelarai bunga cina* motif; which is amongst the motif arise from the Malay traditions of weaving i.e. the process of weaving strips of leaves which have been processed according to specific procedures Among the Malays, plant motifs are conventionally used in the kelarai motif including the Chinese flower, durian flowers, gourd flowers, and parts of plants including roots, shoots (bamboo shoots) and reins (banana, mangosteen, or traditional nut). Kelarai or ragi are named and shaped after flowers, bamboo as well as other rural elements or pursuits. *The Kelarai Pucuk Rebung, Kelarai Siku Keluang, Kelarai Bunga Cina, Kelarai Bunga Cengih and Kelarai Jari Kedidi* are some of the traditional motif designs still in use today. The Kelarai motif is typically woven from a technique that produces the form of woven bamboo and the strips of bamboo are made like boxes resembling lotus flowers with blocks on all sides.

2.2 GEOMETRIC DESIGN APPLICATION ON BUILDING

As stated by above literature Geometric motif one of the typologies in Malay motif. The use of geometric motif would have varied in many attributes that include material, component, design, composition and technique. According to Said (2013), craftsmen applied geometric motifs on ventilation panels, door leaves, wall panels, partitions and railing. The arrangement and configuration of the geometrical motif can be a series of diagonals repeatedly copied throughout the component. Swastika and star are among the complex motif that is sometimes being used at walls or ventilation panels of a buildings. The carving or crafting of a geometric motif are more likely easier than the other 4 motifs, this is due to its application being used for repetitive components like railings, balustrade and ventilation panel. Because of the simplistic production process of geometric motif, craftsmen usually leave its production to his apprentices or sometimes their wives.

I. METHODOLOGY

A case study of Malay Palace from Malaysia was studied on its application of ornamentation. The case study was focusing on the timeline of late 17th to early 19th century. The geometric form of ornamentation on each building case study and applied art product was recorded using visual documentation; e.g. photograph. The photograph data was visually observed and analysed.

Table 1: Five case studies of the Malay world

Palace and location	Description of geometricized decorative motif
Istana Kenangan, Kuala Kangsar 1926	Geometric forms arise from the weaving patterns of the <i>kelarai</i> , traditionally found in <i>Kutai</i> traditions.
Istana Balai Besar, Kedah 1735	Geometricized forms in the abstracted <i>larik</i> , border ceiling patterns, door and fascia board
Istana Bandar, Kelang 1905	Geometricized patterns found in external larik and simplified patterns of ventilation panel
Istana Jahar, Kota Bahru 1887	Geometric pattern of balustrade and ventilation panel
Istana Tengku Long, Besut 1904	Geometric pattern of ventilation panel



Figure 3 Istana Kenangan

3.1 ISTANA KENANGAN, KUALA KANGSAR, PERAK

Istana Kenangan was being built on 1926 by a Malay tukang (builders) named Sopian. The built process is also helped by both his son Zainal Abidin and Ismail. The palace finished its construction on 1931. The named Istana Kenangan was first being used on 1960 which is after its restoration by the effort of Tunku Abdul Abdul Rahman Putra Al-Haj, former Malaysia prime minister. The original named of the palace are Istana Lembah. The palace was built by the order of Almarhum Sultan Iskandar as a temporary palace for the Sultan to reside before awaiting for the completion of his new Istana Iskandariah. The construction of the palace was fully in timber.



Figure 4 Istana Balai Besar

3.2 ISTANA BALAI BESAR, ALOR SETAR, KEDAH DARUL AMAN

The Balai Besar (Great Hall or Main Hall) represented the public portion of a palace built in 1735 during the reign of Sultan Muhammad Jiwa Zainal Abidin Shah (1710-1760), built using the skilled craftsmen under the supervision of the Sultan. The present version of the Balai Besar built was built in

1898. Previous versions had been destroyed by Bugis and Siamese invaders. In 1767, Siam invaded Kedah and the ensuing conflict resulted in the partial destruction of the Balai Besar. Again in 1770, the Balai Besar was seriously damaged by fire during an attack by the Bugis. Functions which were originally been held in the building had to be relocated in the hall of the Kuala Kedah Fort.



Figure 5 Istana Bandar

3.3 THE ISTANA BANDAR, KELANG, SELANGOR

The Istana Bandar, Selangor, built in 1905, is an almost totally masonry building built by Sultan Alauddin Riayat Shah, and it is known that the idea and designs for the palace came from the Sultan himself. Once the palace was completed, Sultan Alauddin moved his throne there. He lived in the palace for 35 years, until his death in 1938. The palace itself has two levels, with 15 stately rooms. The Sultan was known as extremely involved in the decoration of the palace, giving the palace his personal touches. It was known that the Sultan insisted on the Malay forms in the palace design, with sharp roof lines, curved windows, and ornately decorated stone staircases. Yet overall, the palace frontage has evolved from influences of Classical Georgian design, with its punch windows and frontal symmetry staircases. There is an iconic external staircase reminiscent of Georgian houses, while columns and balustrade now appear like pilaster, fused with the unique attribute linked to Malay identity, consisting of pilasters that fuse into the wall which seem to reflect nuances of the *serambi* balustrade as half-height pilasters into the façade itself.



Figure 6 Istana Jahar

3.4 ISTANA JAHAR, KOTA BHARU, KELANTAN

Istana Raja Bendahara or Istana 'Jahar' was named after a specific tree that grew at the site. The name Istana Jahar was given when a Jahar tree was planted in the palace the compound under the order of Sultan Muhammad IV and till present day, the Kota Bharu City Centre had established around it.

Construction of this palace was started at the end of the reign of Sultan Muhammad II (1837-1886) and was completed in 1887 during the reign of Sultan Ahmad (1886-1889). The palace was built as a wedding gift for Sultan Ahmad's prince, Long Kundur, who later succeeded him as Sultan Muhammad III (1889-1890) (Saleh 1987).



Figure 7 Istana Tengku Long

3.5 ISTANA TENGKU LONG, BESUT, TERENGGANU

Istana Tengku Long was built on 1904 by Che Hat. Che Hat is a famous carver from Pahang. The current palace is built at Muzium Negeri Terengganu, but originally the palace is being built 30meter from Besut River. The palace was used by Tengku Long bin Tengku Ngah during his ruling in Besut. The palace main material is from timber and the decoration of carving is filling up the wall with its beauty. The palace was built because of the royal wedding between Tengku Long and Tengku Embung who were from the royal family of Terengganu.










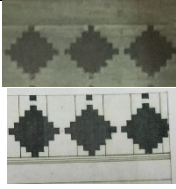
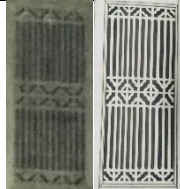

J. DISCUSSION AND ANALYSIS

The study identifies geometric pattern on the ornamentation of these Malay Palaces and the applied arts product. The pictorial data of the Malay palaces at different component which have geometric motif were analysed. The applied arts pictorial data look into some of the product that also had geometric motif. The findings significance is highlighted.

4.1 GEOMETRIC MOTIF IN MALAY PALACE CASE STUDY

Table 2: geometric motif in building case study

Building	Component			
Istana Kenangan Kuala Kangsar				
	Dinding Wall	Dinding Wall	Kepala tingkap Windows head	Jerejak Balustrade
Balai Besar Kedah				

	Jerejak Balustrade	Papan cantik Fascia board	Pintu Door	Tiang Column
Istana Bandar Kelang				
	Kisi kisi Ventilation panel	Jerejak Balustrade	Kisi kisi Ventilation panel	Dinding Wall
Istana Jahar Kota Bahru				
	Jerejak Balustrade	Jerejak Balustrade	Papan cantik Fascia board	Jerejak Balustrade
Istana Tengku Long Terengganu				
	Kisi kisi Ventilation panel	Kisi kisi Ventilation panel	Kisi kisi Ventilation panel	Kisi kisi Ventilation panel

From the table it can be seen that all of the building case study had geometric motif. The motif can be found in several component of the building. The component is kisi kisi (ventilation panel), jerejak (balustrade), papan cantik (fascia board), tiang (column), pintu (door), dinding (wall) and kepala tingkap (window head). The table would further show that balustrade and ventilation panel component had the most use of geometric motif. While other component like door, window and column had the least amount of usage.



Figure 6 (left) balustrade of Istana Jahar (right) ventilation panel of Istana Bandar

The high number of geometric motifs use on balustrade and ventilation panel can maybe connected to the nature of geometric motif to be easily duplicated or mass produce. Unlike other motif, geometric motif heavily relies on repetition of pattern in its design. Component like balustrade and ventilation panel are both a component that need to be reproduce in a number of amounts for it to be applied. This can clearly be seen in figure 6. There is also a possibility that the use of geometric pattern is influenced by the nature of ventilation panel and balustrade to be a functional device of capturing natural lighting and ventilation.



Figure 7 geometric pattern of Istana Tengku Long

Most of the geometric motif had a very abstract pattern that is hard to identify its origin of inspiration. This can be seen in the ventilation panel, balustrade and fascia board. Yet still there are motif that would try to combine between geometric and floral like the one in Istana Tengku Long. Based on figure 6 we could see that there are two similar patterns of geometric motif but the only different is on the use of floral motif in one of the panels. This would show that there would be a possibility to combine both motifs.



Figure 8 (left) Bunga durian geometry (right) berhati geometry

The most unique and rarely apply geometric motif would be the Kelarai of Istana Kenangan. This palace is the only one that had this method of applying geometric motif, all other palace would have used the full incision technique on timber panel but the palace would use a weaving technique called kelarai. The method is even more unique as to highlight a more distinctive geometric pattern, two contradict colour of black, white and yellow are applied to portray a hexagon like pattern that is said to be of a resemblance on bunga durian and berhati. The use of material is also different as it uses bamboo strip. From figure 8 would show the two geometric motif of Kelarai from bunga durian on the left and berhati to right.



Figure 9 balustrade decoration

The other unique application of geometric motif can be seen applied to Istana Bandar. The geometric motif is wall decoration in the form of a balustrade, but it does not function as balustrade only looks like one. Other unique feature of the geometric motif is the use of masonry material. This would suggest that there is a possibility to explore more on the material used for current building when using geometric motif.

4.2 GEOMETRIC MOTIF IN APPLIED ARTS



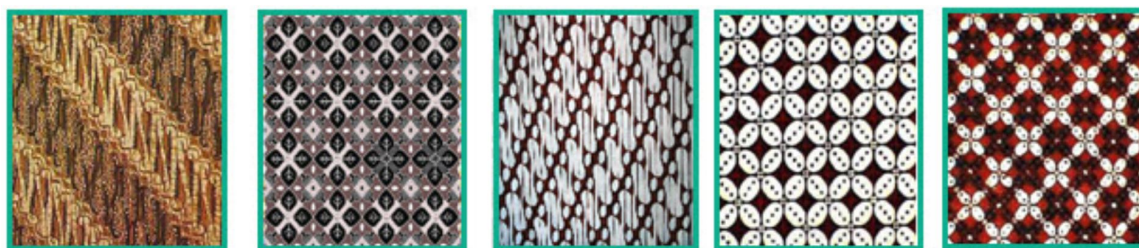


Figure 10 applied art kelarai product (top) (Irene Badilla, 2017) and batik geometri (bottom) (Nanang Ajim, 2017)



Figure 11 geometric motif character (Nor Hatika Daud, 2018)

The applied art case study will be reviewed by looking through example of geometric motif product. There are many types of product that had geometric motif. The use of it in the field of applied art includes craft product, apparel and other related product. The most notable type of geometric motif being applied are the plaiting (kelarai) type. The figure above would show different type of product currently available. Plaiting can be done from a simple mat to a sophisticate handbag. The only limit of using plaiting method is the creativity of the craftsmen. There is also geometric motif that have no texture in which the geometric pattern is drawn. The figure 11 above would show different geometric motif style that can be applied. This would show how that geometric motif does not necessarily mean it has been only in geometric but because different arrangement of each pixel can lead to different character of motif.

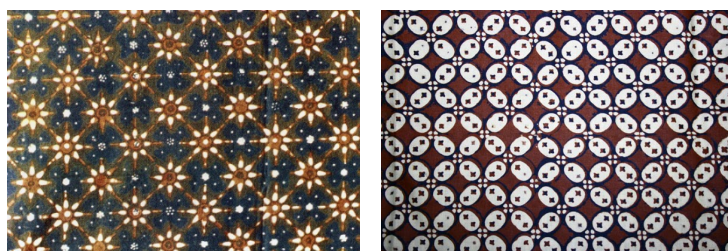


Figure 12 example of Teruntum motif (left) (Batik Pattern, 1970) and example of Kawung motif (right) (Rohima, B. N.2012)

The batik geometric motif does not only beautiful to look at but it also holds a deeper meaning in its design. The Teruntum motif can be found in batik fabric traditions and the motif name itself came from the term Teruntum-tuntum which means to grow again and again. The species of its floral are curved but its motif is abstracted to form elegantly simplified and almost geometric patterns. Philosophically, the word 'teruntum' means always bloom and vibrant again. When abstracted, the flower shapes resemble a geometricized abstraction that recalls stars, and overall reflecting, a star-studded sky. The motif has meaning that recalls Malay idealisms of family life should always be a harmonious relationship, full of love, a good married life, the relationship between children and parents in their own family, and extends to other people's families and the wider community. From the left figure show a Kawung motif which Originate from Central Java, the Kawung motif is commonly used in traditional Indonesian Batik. The

term Kawung refers to a pattern consisting of circle repetition where these circles intersect and form ellipses on each side. Known since the 13th century in Java, Kawung appears on Hindu temple walls such as Prambanan, Kediri and Loro Jonggrang. The motif provides valuable visual reference connected to *Sakti* mythology, the Goddess of all creation in Hinduism.

4.3 GEOMETRIC MOTIF OF APPLIED ARTS AND MALAY PALACE FOR FUTURE DEVELOPMENT

The overall analysis would show an additional attribute of geometric motif that are being applied on Malay palace and applied arts. The attributes can be distinguished into use of material, design meaning, technique of use, combination with other motif and its use for repetitive component. These attributes are an important finding that could be applied to current modern building. There is also a possibility for the use of Batik geometry motif to be used in building component. To make thing clearer the table below are the finding on geometric motif.

Table 3: Suggestion for attributes of geometric motif

Material	Wood Bamboo Masonry Steel
Design meaning	Applying motif with consideration understanding its meaning and metaphor
Technique	Kelarai (plaiting) (weaving) Full incision carving Coloured
Motif combination	Geometry pattern combine with other 4 motif
Functional component	The use of geometry motif on building component that allows natural lighting and ventilation to pass through

5. CONCLUSION

In the Malay world, although nature is not typically viewed authoritatively in terms of numerical relationship references or platonic beauty, there is still a geometric tendency that recalls a sort of complexity and rationality in thinking and creating. The Malaysian builder, craftsman and designer sees himself as an agent from whom the manufacturers, designers or employers or craftsmen find a meaning in relation to nature. The nature is both organic or geometricized elements are seen as pathways to identity and a way of breathing a spirit into physical objects, structures, and artefacts including applied arts, interiors, and architecture. Malay arts and architecture is a form of vernacular architecture, which in general, is known for its organic forms as if mimicking nature and imbuing nature's soul in buildings similar to various part of world's 'cultures' and its forms can be argued as representative of the subcultures of the world. Much can also be said to the use of geometric motif for the future of Malay architecture. The attribute of the motif would hopefully can be useful to be applied and considered for future research. The use of geometric motif should always be considered as there are a deeper meaning in term of its tangible and intangible character to be explore.

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