EVOLUTION OF CARVING MOTIFS IN MALAY VERNACULAR ARCHITECTURE IN KELANTAN AND TERENGGANU

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ABSTRACT

Consistency of floral motifs on Malay woodcarving is unmistakable considered as essential component in traditional Malay vernacular architecture in Kelantan and Terengganu, north-eastern region of Peninsular Malaysia since after 14th Century. This paper presents an exploratory study on the evolution of floral motif in Malay woodcarving in the period of establishment 1850s to present. It examines visual descriptive and interpretative analysis of 32 carved components on mosques, palaces, traditional houses and resort in Kelantan and Terengganu as data of carving motif which obtained from measured drawings from the Centre for the Study of Built Environment in the Malay World at Universiti Teknologi Malaysia. Drawings of 32 carved component were analyzed using point pattern analysis and quadrant count method to find the changes of flora motif. The result suggests that the evolution of floral motifs have changed gradually as the complexity of floral motif consists of abstract leaves and branches integrated in pleasant composition. The factors of the changes are possibly influenced by the type of buildings, carving values toward plant materials of the era, the behaviors of Malay culture, and the significance of placement carved components in the buildings.

Keywords: Woodcarving, floral motif, Malay vernacular architecture, carved component

1. INTRODUCTION

Since before the arrival of Islam, woodcarving has long been entrenched in Malay Art of traditional vernacular architecture Kelantan and Terengganu, the north-eastern states of Peninsular Malaysia and still remains so to this day. The functions of woodcarving as a vital component are not only served it purposes for ventilation, light and aesthetic value, but also to adapt on thermal requirement of the hot-humid tropical climate (Tajuddin, 2005). Since 1800s floral motif is dominating on the carved component in Malay vernacular architecture.

The aim of this paper is to identify the changes of floral motif on ventilation panels of traditional vernacular architecture in the states of Kelantan and Terengganu . It illustrates the importance of the change of pattern and the evolutionary process which has taken the way of evident from the 1850s to present. In this paper, we examine physical character of Malay woodcarving from theoretical aspect and the collections of ventilation panels measured drawing from The Centre for the Study of Built Environment in Malay World (KALAM). In addition, the authors conducted a personal interview targeted on craftsmen opinion on the change of patterns and motifs in Malay woodcarving from the period of its establishment until now.

The evolution of the Malay woodcarving provides a significant transition identity by the period of time and the prediction of future pattern in design perspective. This paper presents a preliminary finding of an exploratory study of the floral motifs on ventilation panels of traditional vernacular architecture of Kelantan and

Terengganu. The initial stage of research highlights the visual description in terms of floral motifs, placement and layout in the building. Carved components also well-known as the cutting of material such as wood to form an artistic ornamental design called motifs.

2. METHOD

2.1 visual Analysis on Measured Drawing

This study was conducted in two methods including: (1) evaluation on collections of measured drawing of ventilation panels of 12 traditional vernacular architectures in the states of Kelantan and Terengganu. The drawings were obtained from the Centre for the Study of Built Environment in the Malay World at Universiti Teknologi Malaysia, and (2) one-to-one interview with two craftsmen, Norhaiza Nordin and Che Gu Abas on motifs of woodcarving.

The study examines the complexity of pattern changed through from 1850s to present in variety types of traditional vernacular architecture which consist 32 carved components. Table 1.0 shows information of the carved components selected including the types of types of architecture, year of construction and locations of the architecture.

2.2 Point Pattern Analysis Techniques

Point Pattern Analysis is a method of techniques which is used to identify patterns in spatial data that is the pattern on the carved components. It is initially related to face recognition method which involves algorithm significance as to easily evaluate the results.

But, there are several methods and algorithms that attempt to describe pattern for a collection of points such as (1) Quadrant Count Method, (2) Kernel Density Estimation (K means) and (3) Nearest Neighbor Distance. In this study, we utilized the simplistic algorithm as introductory and to clarify a few mathematical and statistical which was Quadrant Count Method.

This Quadrant Count Method is introductory algorithm to Point Pattern Analysis which all the points data will divided into size of quadrant as easily to evaluate the results. In basic terms, Point Pattern Analysis is an investigation focused on finding frequency of patterns in data comprised of points in a spatial region. Figure 1 shows the Point Pattern Analysis techniques applied on sample of carved component which consist Quadrant Count Method and selected algorithm on Ismail Said's carved component.

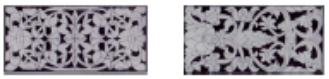
There are a few of criteria on the data to determine whether Point Pattern Analysis appropriate to our analysis methods: (1) spatial data must be mapped on a plane which consist latitude and longitude point, (2) study area must be selected and determined prior to the analysis, (3) there should be entire set of data to be analyzed, and (4) there should be 1-1 correspondence between objects in study area and event in pattern.

2.3 Quadrant Count Method

In producing Variance To Mean Ratio (VTMR) of 32 selected samples of carved component in analysis stage, Quadrant Count Method is applied. It is the fourth step applied after point pattern produced by intersection of a single line CADD of samples with 200mm x 200mm grid which covered all pattern. All data points in each grid are counted and number of points in the region will be produced.

Furthermore, the numbers of quadrants also need to be counted to get the value of Mean. To identify the VTMR also known as frequency of point data, we need the total value of Variance by double up all point data in each grid. VTMR is then calculated and a histogram of 32 VTMR Kelantan and Terengganu carved component will be built. Figure 2 shows the steps of Quadrant Count and Algorithm applied on sample of Che Gu Abas's carved component.

Table 1.0: Ventilation Panel of Kelantan and Terengganu traditional vernacular architecture selected for visual analysis.

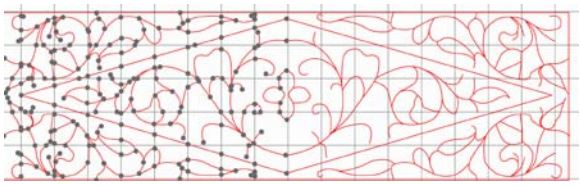
No.	Type of Architecture	Year Built	Location of House
1	Old Palace	1894	Istana Balai Besar, Kota Bharu, Kelantan. 
2	Old Palace	1840	Istana Jahar, Kota Bharu, Kelantan. 
3	Traditional House	1937	Wan Hussein's House 
4	Mosque	1968	Kg.Laut Mosque, Kota Bharu Kelantan 
5	Mosque	1870	Langgar Mosque, Kota Bharu Kelantan 
6	Traditional House	1850	Hj. Mohammad Dobah House, Kota Bharu, Kelantan 
7	Traditional House	1994	Ismail Said House, Johor 
8	Traditional House	2004	Che Gu Abas's House, Pasir Puteh, Kelantan 
9	Old Palace	1926	Istana Besar Tengku Long, Kg. Raja, Besut, Terengganu 
10	Old Palace	1880	Istana Tengku Anjang, Kuala Terengganu,Terengganu 
11	Mosque	1942	Kg. Bukit Bayas Mosque, Kuala Terengganu, Terengganu 
12	Mosque	1938	Kg.Hiliran Mosque, Kuala Terengganu, Terengganu 
13	Traditional House	1914	Biji Sura House Kuala Terengganu, Terengganu 
14	Traditional House	1987	Tok Ku Paloh House, Kuala Terengganu, Terengganu 
15	Traditional House	1999	Seri Bakawali, Kg. Raja, Besut, Terengganu 
16	Traditional Resort	2007	Terrapuri Heritage Village, Penarik, Terengganu 

3. ANALYSIS: Applying Point Pattern Analysis and Quadrant Count Method on Sample

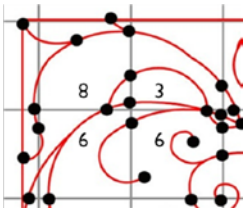
The Computer Assisted-Analysis tool is applied to implement the method techniques as such computer-aided design and drafting (CADD). Besides that, analyzed interview data were applied to produce the initial results and findings that may lead to detail interpretation. Figure 2 shows the step to analyze floral motif pattern by using Point Pattern Analysis and Quadrant Count Method to identify the complexity of the pattern and frequency of VTMR in the period of 1850s to present.

Step 1: Ventilation panel at Ismail Said's house built in 1994

Step 2: Transformation 2D pattern of ventilation panel into single CADD line.



Step 3: Point Pattern produced by intersection between single and grid.



Mean = No. of points in the region / Mean = No. of quadrants

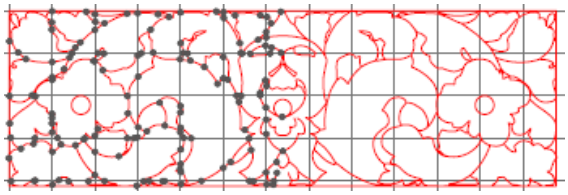
$$Variance = \frac{\sum x_i^2 - \frac{(\sum x_i)^2}{n}}{n-1} =$$

$$VTMR = \frac{Variance}{Mean} =$$

Step 4: Calculate the mean, variance and VTMR of point in the sample using mathematical formula.

Figure 1: Point Pattern Analysis and Quadrant Count Method

Sample Algorithm done on Che Gu Abas Ventilation Panel.



Step 1: Transformation 2D pattern of ventilation panel into single CADD line.

$$Mean = \frac{No.\ of\ pts.in\ the\ region}{No.of\ quadrants}$$

$\frac{146}{28}$ = ***5.21*** *(Mean)*

Step 2: The Mean of the sample can be calculated as above.

Step 3 *: Let xi be the frequency of points in each quadrant. Then the Variance of the sample can be calculated as*

$$Variance = \frac{\sum x_i^2 - \frac{(\sum x_i)^2}{n}}{n-1}$$

$= 5^2 + 7^2 + 5^2 + 7^2 + 5^2 + 11^2 + 5^2 + 7^2 + 4^2 + 4^2 + 6^2 + 7^2 + 7^2 + 4^2 + 6^2 + 7^2 + 2^2 + 6^2 + 1^2 + 7^2 + 7^2 + 2^2 + 5^2 + 4^2 + 1^2 + 1^2 + 1^2 + 1^2 + 2^2 =$ ***895***

$$= \frac{895 - \frac{(146)^2}{28}}{28-1} = \textbf{\textit{4.96}}$$

Step 4 : Variance To Mean Ratio (VTMR) is calculated as below :

$$VTMR = \frac{Variance}{Mean}$$

$$VTMR = \frac{4.96}{5.21}$$

$= 0.95 \times 2$ (both side)

$= \underline{\textbf{\textit{1.90}}}$

Figure 2: Quadrant Count Method and Algorithm applied to get the VTMR value

4.0 Results and Interpretation

The analysis revealed that 32 sets of Variance To Mean Ratio (VTMR) collection of selected ventilation panels of variety types of vernacular architecture shown the fluctuation in the number of Frequency through Era for Kelantan and Terengganu Malay woodcarving as presented in Figure 3 and Figure 4.

Regarding to personal communication with Norhaiza Nordin (2010), He suggested that, the Malay woodcarving persistently applied from traditional palace to current vernacular architecture. It is because, the beauty of the local art work was created by craftsmen, actually functioned as for building identity or indicator of the building itself to show whose or what is the building for.

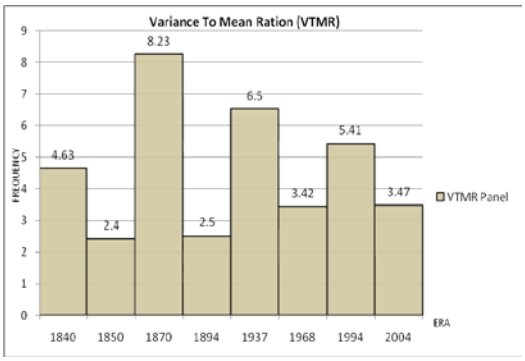


Figure 3: Histogram Frequency to Era of 16 set of VTMR data sets for Kelantan traditional Malay vernacular architecture.

As shown in Figure 3, the changes of pattern in Malay woodcarving in Kelantan architecture. This changeability suggests that in 1870s, had higher score than other era in terms of complexity pattern and motif in ventilation panels of Kelantan traditional architecture. From the era of establishment, the VTMR scores slightly decreased from era 1840 to era 1850, but it reached at highest point in era 1870. This up and down changeability repeated again started from era 1894 until 2004.

Evolution of Malay woodcarving

Meanwhile, the results presented above presented the changes of pattern in Malay woodcarving in Terengganu. This unpredictability suggest that, VTMR in era 1880 and era 1938, had higher score than other era, and then it scores lower from era 1880 to 1880, slightly increased in era 1942 until

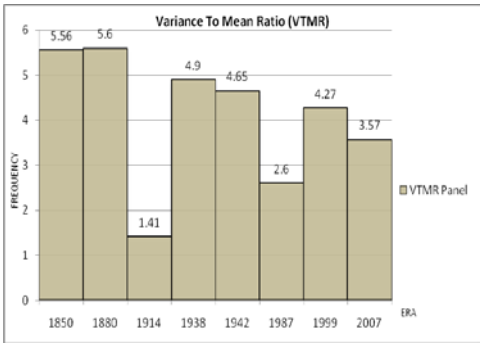


Figure 4: Histogram Frequency to Era of 16 set of VTMR data sets for Kelantan traditional Malay vernacular architecture.

Regarding to result presented by Kelantan and Terengganu, this is strongly suggested there is a change of Malay woodcarving from before arrival of Islam and after the arrival of Islam. In addition of evolution of Malay woodcarving, from early 13th Century, before the arrival of Islam to Peninsula Malaysia, most of carving component represents Kala and Makara motifs regarded on Hindu-Buddhism mythology. Since the arrival of Islam on 14th Century, the animistic woodcarving motifs are shifted into philosophical in nature (Farish and Khoo, 2003). Yet still, Kala Makara were embedded unintentionally into flower and foliage form on woodcarving as shown in Figure 6. After 14th Century until present, the most dominant motifs are floral in Figure 6. (Zumahiran, 2008) and some of them were combined in Islamic pattern until now (Zulkifli, 2000).

Continuity of Floral Motif

As stated by Zumahiran (2008), floral is the most dominant motifs and it remains until now. The study found that floral motifs were early started after the arrival of Islam which was inspired by craftsmen on the original sculpture of Hindu-Buddha holding the flowers and also surrounding by them as decoration (Norhaiza, 2010). Craftsmen always deliberate to create an authentic, attractive and beautiful besides an artistic and sensibility master piece of woodcarving.

Moreover, the manifestation of floral into carvings were involved 20 flowers since the early era of establishment until present either in Kelantan which influenced by Pattani and Terengganu influenced by Riau. Among the 20 selected flowers by craftsmen are 'Bakawali', 'Ketumbit', 'Sulur Kacang', 'Bunga Sesayap', 'Bunga Lawang', 'Bunga Raya', 'Bunga Cengkih', 'Jari Buaya', 'Bunga Ketam Guri', 'Bunga Tanjung', 'Bayam Peraksi', 'Bunga Delima', 'Bunga Kenanga' and 'Tampuk Manggis'. These selected flowers were chosen by craftsmen based on the physical appearance, fragrance, shape, colour and size which exist surrounding the craftsmen but the motifs on woodcarving are not exactly similar detailed as flower, it is came from interpretation of flower, leaves and others.

CONCLUSION

Carved components in Kelantan architecture were more complex in pattern than those in Terengganu architecture particularly in early era of establishment of Malay woodcarving which most them were done for palaces. The finding suggests that carvings were associated to status of people in the Malay community. Furthermore, carved components of present architecture in resort buildings and private homes were less complex than the traditional architecture that is the motif and pattern of carved component become simpler with less curves and overlaps. Yet, the Malay craftsmen still applied the floral motif for present architecture. In conclusion, there is a clear evolution of motif in the Malay carving dated from 1850s to present.

REFERENCES

Alberto sanfelia (2004). *Proceeedings of Progress in Pattern Recognition, Image Analysis and Applications.* 9th Iberoamerican Congress in Pattern Recognition, Puebla Mexico.

Che Gu Abas, Personal Communication on Motif and Pattern of Malay Woodcarving, Pasir Puteh, Kelantan, 2010.

Farish A. Noor, and Eddin Khoo (2003). *Spirit of Wood the Art of Malay woodcarving.* Singapore: Periplus Editions (HK) Ltd.

Ismail Said and Zumahiran Binti Kamarudin (2009). *Carving Motifs in Timber Houses of Kelantan and*

Terengganu. Universiti Teknologi Malaysia (Unpublished)

Ismail Said, Personal Communication on Function of ventilation panels, UTM Skudai, 2010.

John Shawe Taylor and Nello Cristianni (2004). *Kernel Methods for Pattern Analysis*. Cambridge University Press.

Mohamad Rasdi and Mohamad Tajuddin(2006).*The Discontinued Traditions of Malay Wood Carvings in Modern and Post-Modern Architecture in Malaysia:*. Jurnal Alam Bina, Jilid 8, No.2, 2006. Universiti Teknologi Malaysia.

Norhaiza Nordin, Personal Communication: The Art of Woodcarving, Besut, Terengganu, 2010.

Tariq, Erum (2004). Introduction to Point Pattern Analysis. Undergraduate Research . Schools of Mines and Technology, South Dakota.

Zulkifli Hanafi (2000). *Pola-Pola Hiasan Di Dalam Bangunan Tradisional Melayu. (Decorative Patterns in Malay Traditional Building).* Kuala Lumpur: Dewan Bahasa dan Pustaka.

Zumahiran Binti Kamarudin (2008). *Principal orders in the composition of Woodcarvings and Its Layout in Kelantan and Terengganu Traditional Houses.* Universiti Teknologi Malaysia (Unpublished).

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