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VISUALISING OF THE 20TH CENTURY PAST CULTURAL
HERITAGE OF WELD QUAY, PENANG THROUGH
DIGITAL TECHNOLOGY REPRESENTATION

CHAN YI CHEE



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THESIS PRESENTED TO QUALIFY FOR A MASTER'S DEGREE IN
CREATIVE STUDIES
(RESEARCH MODE)

FACULTY OF ART, COMPUTING AND CREATIVE INDUSTRY
UNIVERSITI PENDIDIKAN SULTAN IDRIS

2019



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ACKNOWLEDGEMENT

It is a great pleasure to acknowledge my deepest thanks and gratitude to my respected supervisor, Assoc. Prof. Dr. Muhammad Zaffwan bin Idris who has been given me his patience, guidance and insight throughout my Master's thesis writings. I would like to give my extreme appreciation to my co-supervisor, Dr. Lim Chen Kim who has been given me her unwavering supports and constructive feedbacks at all time. Within their endless encouragement and dedication, I have finally completed my Master Degree.

I would like to thank the interview informants and other researchers for sharing me precious information and stories in order to complete my data collection. At the same time, I am not forgetting about my family members for being supportive throughout the years of doing research. Thanks to them very much.





ABSTRACT

This study aimed to identify appropriate information and materials for interpreting the Weld Quay as the cultural heritage centre in the early of 20th century. The study synthesised the relevant information and materials with the digital technology to construct a virtual reality environment. This study also proposed suitable digital technology to visualise the garments of the inhabitant based on the occupational stereotype at trading port of Weld Quay. Theoretical framework of this study was based on the Visual Narrative Field Model and the research used qualitative approach to collect data. Since those remarkable scenes and data regarding the culture heritage of old Weld Quay were long gone, narrative analysis method was selected to collect the data. Two informants were invited for conducting narrative interview. Apart from interview, other narrative data in visual forms were also collected from museums or galleries, printed documents and virtual outputs. The collected data were analysed using narrative analysis and visual analysis. Narrative analysis was mainly used to analyse interview data whereas visual analysis were used to analyse, categorise and interpret the other visual narrative data by identifying the denotative and connotative signs of the visual data. The information and data in terms of the past environment and garments in Weld Quay were found, where these data could be used to reconstruct and visualise the long gone environment setting of Weld Quay. The information that derived from the narrative interview are regarding materials, colours and elements of garment of different ethnics whereas visual data provided information regarding the environment settings and elements that can be found in the surrounding of each of the locations at Weld Quay. As a conclusion, the proposed idea for visualising the past cultural heritage at Weld Quay in virtual reality form has been successfully achieved. This study implicated that the use of digital tools and technology were beneficial for preserving or conserving cultural heritage. Thus, younger generation can access the information digitally and immortalise the unique cultural heritage.





VISUALISASI WARISAN BUDAYA SILAM DI WELD QUAY, PULAU PINANG PADA ABAD KE-20 DENGAN TEKNOLOGI DIGITAL

ABSTRAK

Kajian ini bertujuan untuk mengenal pasti maklumat dan bahan yang sesuai untuk mentafsirkan Weld Quay sebagai pusat warisan budaya pada awal abad ke-20. Kajian ini mensintesis maklumat dan bahan yang relevan dengan teknologi digital untuk membina sebuah persekitaran dalam bentuk realiti maya. Kajian ini juga mencadangkan visualisasi dengan mengguna teknologi yang sesuai bagi pakaian penduduk setempat berdasarkan stereotaip pekerjaan di pelabuhan Weld Quay. Kerangka teori bagi kajian ini adalah berdasarkan Model Bidang Visual Naratif dan penyelidikan ini menggunakan kaedah kualitatif bagi pengumpulan data. Memandangkan data mengenai keunikan warisan budaya tersebut telah lama hilang, kaedah analisis naratif telah dipilih untuk mengumpul data bagi kajian ini. Dua orang informan telah dijemput untuk menjalani temuduga. Selain daripada kaedah temuduga, data naratif lain yang berbentuk visual juga dikumpul daripada muzium atau galeri, dokumen bercetak dan imej digital. Bagi menganalisis maklumat dan data yang telah dikumpulkan, kaedah analisis naratif dan analisis visual digunakan. Analisis naratif merupakan kaedah utama bagi menganalisis data yang dikumpul melalui temuduga, manakala kaedah analisis visual digunakan bagi menganalisis, mengkategorikan dan mentafsirkan data naratif lain yang berbentuk visual dengan mengenal pasti tanda-tanda denotatif dan konotatif dalam data visual. Penemuan data daripada analisis adalah berkenaan dengan persekitaran dan jenis pakaian yang pernah wujud di Weld Quay di mana data tersebut boleh digunakan untuk membina semula dan menggambarkan persekitaran silam di Weld Quay. Maklumat yang diperolehi daripada temuramah adalah berkenaan dengan bahan, warna dan elemen pakaian etnik yang berbeza, manakala data visual pula memberikan maklumat tentang tetapan persekitaran dan elemen yang boleh didapati di sekeliling setiap lokasi di Weld Quay. Kesimpulannya, idea bagi menggambarkan warisan budaya silam Weld Quay dalam bentuk realiti maya telah tercapai. Kajian ini telah menunjukkan bahawa penggunaan peralatan dan teknologi digital dapat memberi manfaat bagi memelihara atau membina semula warisan budaya. Dengan ini, generasi muda boleh mengakses maklumat secara digital dan menghargai warisan unik ini turun-temurun.



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LIST OF ABBREVIATION

UNESCO United Nations Educational, Scientific and Cultural Organisation

ICH Intangible Cultural Heritage

DCH Digital Culture Heritage

3D Three-Dimensional

BIM Building Information Modelling

HBIM Historic Building Information Modelling

TCH Tangible Cultural Heritage

CAD Computer Aided Design

VH Virtual Human



AR Augmented Reality

IoT Internet of Thing

CGI Computer Graphics Imagery

NGOs Non-government Organisations

ICOMOS International Council on Monuments and Sites

QR Quick Response

GTWHI George Town World Heritage Incorporated

CG Computer Graphic





CHAPTER 1

INTRODUCTION



This chapter relates to the discussion of the background of Weld Quay describing about its remarkable moment and how significant it is in terms of its function, economy, cultural heritage and past life. On top of that, the chapter makes introduction on digital visualisation cultural heritage and its significance as well as it figures out the problem statement of the research. Next, research objectives, research questions and benefits of the research are also discussed respectively in this chapter. Lastly, scope of the research will be determined to describe the boundary of this research.





1.1 Brief Introduction of the Research

The World Heritage List included 1031 cultural and natural heritage places, which are considered as having extraordinary value (UNESCO, 2016). Among the heritage lists, Weld Quay in George Town, Malaysia is also one of the region that become recipient as a United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Cultural Heritage Site (Lim et al., 2013). Therefore, Weld Quay is considered as one of the core areas to preserve. However, it would be even better if the preservation work can be conducted on the Weld Quay's past culture.

For that, in this research, researcher proposes to reconstruct the past life of Weld Quay in virtual form. The environment and inhabitants of the old Weld Quay are proposed to be visualised by using proper tools and technology. Digitisation of culture heritage is currently considered as the popular way to preserve the heritage especially to the intangible one. Nevertheless, the reconstruction work in accurate way seems difficult to progress due to many data regarding the elements of environment setting, inhabitants and activities that had happened in the past no longer existing in the current site.





1.2 Introduction of Weld Quay

Weld Quay is named after Frederick Aloysius Weld, Governor of the Straits Settlements in the 1880s. Weld Quay was where boats usually land their cargoes and passengers. It reclaimed from the shallow seafront to link the ends of the 'ghausts'. In 1882, the reclamation of the seashore contributed to the construction at the waterfront and provided colonial government to share the load of trading traffic further north. Later, those jetties were dominated and managed by a few group of clan member for uploading and downloading of goods as well as for mooring of their sampans.

Many of the classical style buildings along the Weld Quay were used with great effect. Weld Quay had represented Penang's heyday and remarkable moment as the entrepôt for the produce of northern Malaya, southern Thailand and northern Sumatera in the early of 20th century. Many of the large European import-export companies and shipping agencies such as Boustead & Co., Shiftman, Behn Meyer & Co. Ltd and many more are located along the Weld Quay.

Other than that, Weld Quay is considered as succession historical colonial town based on the function of trading and cultural exchanges between East and West for more than 500 years. This area is the most complete surviving historic city with multi-cultural living heritage where the many religions, ethnics and cultures met and coexisted arising from trade route Great Britain and Europe through the Middle East, the Indian subcontinent and the Malay Archipelago to China (UNESCO, 2016). As time goes by, Penang has made up a population, comprising Chinese (43%), Malays and other natives (41%), Indians (10%), British or European and others (6%) (Cheah,





2012). The arrival of different ethnics into Weld Quay also represented the entrance of different culture into a region. Butler et al. (2014) and Mohd et al. (2015) mentioned that with the arrival of Chinese and Indian diasporas, different varieties of culture heritage were slowly embedded. In the meanwhile, Nakamura (2015) added that the word ethnic represents and refers to the cultural differences between groups.

In the older days, one of the obvious cultures that can be spotted from different ethnics was the way they dressed up. As for current era, traditional wearing of Malay is commonly known as baju Melayu or baju kurung, traditional garment of Chinese is Cheongsam or Samfu whereas Indian is Saree or Kurta. However, these traditional garments could not represent as daily garments that wore by the inhabitants in the past Weld Quay. The garments' culture of each ethnic would be distinguished according to their ethnicity and occupation. Each of them could be said comprising



different occupational stereotype.

Back then, Chinese and Indian immigrants were majority working as the stevedores and labourers in the trading port of Weld Quay. They were regarded as having the same occupation but both of them were having distinct stereotype. This is due to different ethnicity will practice different culture in terms of wearing. Similar to Malay ethnics, they would dress in other way round. In terms of occupation, Malay was believed rarely working and showing up at Weld Quay area due to majority of the Malay and Jawi Pekan were allocated to the Southern part of the town or to the village houses to live a life (Goh, 2014). In the meanwhile, other ethnic like British or European were working as Governor or officer in the company, which was built along the Weld Quay.





This is the general introduction of Weld Quay. The details regarding environment setting and culture heritage of Weld Quay were required further investigation and data collection as many of the past scenes and element of cultural heritage were no longer in existence. Other than that, a few more problems are encountered. Before progressing the digitisation work, the problems that need to be addressed are discussed in the following topic

1.3 Problem Statements

- 1) Lack of proper data: Weld Quay had represented Penang's heyday and was used to be as one of the significant places in Penang. It served as entrêpot for the Northern regions of Malaya, Sumatera Southern Thailand and many more at 20th century. It is also famous for the centres of historic, commercial and multi-cultural where various ethnic can be found here. Nevertheless, Weld Quay is lacking of proper documentations regarding the past life of trading port and commercial centre particularly in the early of 20th century where this time is considered as a peak time of Weld Quay development, especially the intangible one. Idris et al. (2016) states that intangible cultural heritage (ICH) is a fragile asset. Even if there are, that information are fragmented and not classified. Since there are lack of proper information and preservation work shown in Weld Quay, safeguarding of cultural heritage especially to the intangible heritage seems more significant in nowadays (Farahani et al., 2012; Aristidou et al., 2014). Therefore, a series of source and platform will be figured in order to trace back the past life of Weld Quay in the older days.





2) Method for Investigating the Past Life of Weld Quay: This research is emphasising the level of accuracy in the visualisation task of the past life of Weld Quay based on the environment setting and physical details of inhabitants. Nevertheless, the past life of the old Weld Quay had disappeared as those livelihoods and cultures are no longer practicing in current Weld Quay. Furthermore, not many proper data in terms of visual that can exactly interpret what had happened in the past. Even in the research done by (Lim, 2013) doesn't provide a real-time of environment setting and accurate physical details of inhabitants although the study is about simulating past life of trading port at Weld Quay in 1800s, where the focus is mainly on how the introduced high-level control method could help in the behaviour changing and interaction of different ethnics. Due to this situation, it is relatively difficult for designer to progress the visualisation task without sufficient data of the past. For that, in this research, method for investigating these data is regarded as the key elements in order to solve this situation. Within the right method, bits and pieces will be figured out from large amount of data. By putting them together, the required data will be embedded slowly.

3) Tools and technology: In current era, sizeable amount of tools and technologies have been introduced to create a virtual scene as well as to visualise and simulate any object in virtual form. However, not all of them can be utilised in this research. The decision to select the proper tools will only decide after the elements and data of the old Weld Quay are collected and analysed. This is owing to the appropriateness of usage of the tool and technology is depending on the types of data used as well as the needs and purpose of the research.





1.4 Research Objectives

- 1) To explore appropriate information and materials for interpreting the Weld Quay as the cultural heritage centres in the 20th century.
- 2) To synthesise the relevant and appropriate information and materials with the digital technology to construct into virtual reality environment.
- 3) To propose suitable digital technology to visualise the physical characters and garment of inhabitant based on occupational stereotype at trading port of Weld Quay.



1.5 Research Questions

- 1) What types of data are needed in order to interpret past life in trading port of Weld Quay in the early of 20th century?
- 2) How to synthesise the data collected with digital technology in order to construct virtual reality environment?
- 3) How does the proposed digital technology work in visualising the physical characters and garments of inhabitant based on occupational stereotype at trading port of Weld Quay?





1.6 Benefits of the Research

The present work is designed to consider that most of the younger generations have almost forgotten the history and remarkable moment of the trading port in Weld Quay. Moreover, most of them are not permitted to visit to the real site due to various mobility problems. Through this research, people will be able to experience the real virtual environment and able to witness the remarkable trading activities that had occurred in Weld Quay during the 20th century.

Instead of allowing people to witness the past life, this research will also enhance and articulate the method regarding in-depth investigation for seeking the past and long missing heritage, especially to the intangible ones. The information regarding ICH is believed more difficult to obtain in compared to the tangible one due to intangible heritage is in mere form. It keeps modifying during the inheritance and transmission process following the development of societies, cultures and trends in every different eras. Additionally, preservation work of intangible heritage in the older days is nearly impossible. Thus, the task of finding data of intangible culture heritage is tough. This research can be said as contributing the methods for digging out the long gone heritage data.

Another benefit of conducting this research is to emphasise the usage of digital technology to preserve cultural heritage. The research can provide the user with more options to preserve the cultural heritage. For those culture heritages that are hardly to be preserved in hardware form can consider preserving them in virtual form, specifically the intangible heritage one such as dancing movement, garments'





elements, past activities and many other. As for the method of preservation, it is depending on the demands of the elements and the purpose of the research.

1.7 Scopes of the Research

Weld Quay is chosen as the research area and the final technique proposed in the research is not limit in other area. First of all, this research area will not be focusing in the whole area of George Town but only the Weld Quay trading port. Moreover, the research is carried out to mine the needed data that had existed at Weld Quay in between the period of early 20th century to before the Japanese Occupation and World War 2.



Nevertheless, cultural study is a wide range of study and it could be an endless mission. Therefore, this research will limit the scope of mining cultural data, which are required for reconstruct the old Weld Quay. In this case, the requirement of data will just limit to the element of inhabitant's garments and the elements of environment setting, where the formation of these settings are on the basis of the activities and the used of the places during the past life of Weld Quay. In addition, the cultural study regarding garments and activities will only direct to the main ethnics in those days, which are Malay, Chinese, Indian and English (British or European).





1.8 Operational Definitions

1.8.1 Digital Cultural Heritage

Digital Cultural Heritage (DCH) is a fairly new field of study, sharing and inheriting the objectives of traditional cultural heritage with the purpose of preserving the past. DCH is also known as Virtual Heritage when it comes to three-dimensional (3D) synthetic recreation of real environments. The production of DCH aims to enhance or substitute of a real historical sites or objects as well as significant cultural elements through current digital technologies (MacDonald, 2006).



1.8.2 Narrative Analysis

Narrative arises when one or more informants or interviewers engage in recounting and sharing life story or experience. Narrative analysis then makes use of the story as the investigative key (Cohen & Crabtree, 2006). Narrative analysis is also pointed to various approaches to data collection and data analysis, which are useful effort for humanities and social science investigation (Earthy & Cronin, 2008; Petty et al., 2012). Narrative analysis is considered as an approach that is relied on the written or spoken words or visual representation of individuals (AtlasTI, 2016).





1.8.3 Visual Analysis

Visual analysis is defined as understanding the visual culture and seeking representation through the visual data (Crouch & Lubben, 2006). Visual analysis instead of including techniques for collecting primary data via video and photography (Pink, 2007); also including techniques for analysing data (Rose, 2003).

1.8.4 Signs of Denotation and Connotation

Denotation and connotation consists of different level of meaning or representation.

Denotation can be defined as what you literally see whereas connotation is an idea or emotion that is evoked by the literal meaning or visuals. For instance, the denotation of a rose is a type of flower but it can also be represented as the sign of love, romance and passion when it comes to connotation.





1.9 Summary of the Chapter

This chapter is presenting mainly about the background study, objective, benefits and scope of this research. After this chapter, the rest of this dissertation is organised as follows:

Chapter 2- Literature Review

This chapter review many related works regarding cultural heritage, digitisation of cultural heritage as well as the available models and technology of digitising cultural heritage. This chapter also deals with the example of past research on digitisation cultural heritage as well as the example of past research on narrative analysis is used for mining data of cultural heritage.



Chapter 3- Methodology

This chapter presents the methodology for this research. An in-depth discussion on how the method of narrative analysis will be used for collecting past life data. At the same time, various sources and platforms that work complementary with narrative analysis on data collection will be figured out. This chapter will also propose appropriate method for analysing the gathered data. The method will be decided in the light of the types of collected data as well as the purpose of this research.





Chapter 4- Data Analysis

Large amount of data will be gathered after the session of data collection. Sorting of these data are necessary and data analysis will be progressed according to the data classification. The transcription that obtained from narrative analysis will be analysed and the same method will also go to the other data, which are obtained from different platforms and sources, acting as supportive evidence to narrative data. The result will subsequently be displayed and interpreted in this chapter.

Chapter 5- Implementation

This chapter describes the process, implementation methods, tools and technologies used in the entire work of visualisation and reconstruction. The content found in this chapter does not include in chapter 3 due to the methodology for digitally visualising and reconstructing the past life of Weld Quay is depending on the types of data used as well as the needs and purpose of the research. Thus, an additional chapter is added in this dissertation. This chapter ends with the implementation results.

Chapter 6- Conclusion and Future Work

This chapter summarises the research. Limitation of research and future work will then be discussed and stated in the continuous topic after conclusion.

