

THE VIRTUAL MUSEUM AND DIGITAL HERITAGE PRESERVATION
IN KAMPONG BHARU

DANIEL CHEW VEE KANG

UNIVERSITI TEKNOLOGI MALAYSIA

THE VIRTUAL MUSEUM AND DIGITAL HERITAGE PRESERVATION
IN KAMPONG BHARU

DANIEL CHEW VEE KANG

A thesis submitted in fulfilment of the
requirements for the award of the degree of
Master of Architecture

Department of Architecture
Faculty of Built Environment and Surveying
Universiti Teknologi Malaysia

FEBRUARY 2022

DEDICATION

This thesis is dedicated to my beloved parents, who have supported me throughout my studies up to LAM Part II. They have been my strength and inspiration especially in tough times when I thought of giving up, who continually provide their moral, spiritual, emotional and financial support to get me to where I am today.

To my brother and sister, who are always there for me keeping me accompanied and are especially good at being the best chefs in the house, they have been my source of enjoyment every day as I look forward to having meals prepared by them.

Behind every successful man, there stands a woman. That woman is no other than my dear wife, who has stood by my side ever since the day we met, you are my pillar of strength and love. Thank you for guiding me in your ways throughout this thesis.

ACKNOWLEDGEMENT

Firstly, with a sincere heart, I would like to thank my supervisor, Dr Aiman Bin Mohd Rashid for his guidance and assistance throughout this thesis. His continuous support and advice have been invaluable towards the completion of my Masters in Architecture. I am ever grateful to my co-supervisor, Dr Lim Yong Long, who has provided many insights into my research and final design project. Without their encouragement and support, this thesis would not have been possible.

I am also indebted to Universiti Teknologi Malaysia (UTM) and RDC Architect for funding my Masters in Architecture Studies at the Department of Architecture, Faculty of Built Environment and Surveying. My journey in this field would not have been achievable without them.

I would also like to extend my gratitude towards my relatives, coursemates, and friends who in one way or another shared their support, thank you.

Above all, to the Great Almighty, the author of knowledge and wisdom, for his countless love and blessings.

Thank you.

ABSTRACT

Kampong Bharu is an urban village located right in the middle of Kuala Lumpur city centre, which is being encroached by many upcoming and already completed high-rise mega projects. Recent changes in its plot ratio to 1:10 have made matters even worse as developers scramble to grab a piece of the pie. Due to its strategic business location, Kampong Bharu's heritage is slowly being eroded with many architectural heritage buildings and structures being lost from existence. This village holds many important histories towards the development of Kuala Lumpur that we have come to know. Yet there is a lack of celebration of the heritage and history of Kampong Bharu. This study reviews the ways digitisation and digitalisation can help benefit the heritage preservation of Kampong Bharu and the challenges it faces. This study explores the various methods and case studies in preparing future heritage centres that focus on digital and virtual exhibitions.

ABSTRAK

Kampong Bharu adalah sebuah perkampungan bandar yang terletak di tengah-tengah pusat bandar Kuala Lumpur. Ia sedang dicerobohi oleh banyak projek mega telah siap ataupun dalam pembangunan. Perubahan terbaru dalam nisbah plot kepada 1:10 telah menjejaskan lagi keadaan apabila pemaju-pemaju berebut untuk mengambil keuntungan daripada pembangunan tanah Kampong Bharu. Oleh kerana lokasi perniagaannya yang strategik, warisan dan sejarah Kampong Bharu semakin terhakis dengan banyak pembangunan baru dan juga kehilangan bangunan-bangunan warisan seni bina yang penting. Kampung ini mempunyai banyak sejarah penting ke arah pembangunan Kuala Lumpur yang telah kita ketahui. Namun terdapat kekurangan sambutan terhadap warisan dan sejarah Kampong Bharu. Kajian ini mengkaji cara pendigitalan dan pendigitalan yang boleh membantu memanfaatkan pemeliharaan warisan Kampong Bharu dan cabaran yang dihadapinya. Kajian ini meneroka pelbagai kaedah dan kajian kes dalam menyediakan pusat warisan masa depan yang memfokuskan kepada pameran digital dan virtual.

TABLE OF CONTENTS

	TITLE	PAGE
	DECLARATION	iii
	DEDICATION	iv
	ACKNOWLEDGEMENT	v
	ABSTRACT	vi
	ABSTRAK	vii
	TABLE OF CONTENTS	viii
	LIST OF FIGURES	xi
	LIST OF ABBREVIATIONS	xii
	LIST OF APPENDICES	xiii
CHAPTER 1	INTRODUCTION	1
1.1	Introduction	1
1.2	Problem Statement	1
1.3	Research Aim	2
	1.3.1 Research Questions	2
	1.3.2 Research Objectives	3
1.4	Significance of Research	3
1.5	Research Scope	3
CHAPTER 2	LITERATURE REVIEW	5
2.1	Definitions	5
	2.1.1 Definition of Museum	5
	2.1.2 Definition of Heritage Centre	6
	2.1.3 Definition of Heritage	6
	2.1.4 Definition of Digitisation	7
2.2	Museums Adaptation	8
	2.2.1 The New Age of Museums	9
	2.2.2 Digital Libraries, Archives and Museums	9

2.2.3	Digital Heritage	10
2.2.4	Museum as Community Builder	10
2.3	Lack of Physical Space for Exhibitions	11
2.4	Resource Consciousness	12
2.5	New Economy for Virtual Reality	12
CHAPTER 3	RESEARCH METHODOLOGY	15
3.1	Introduction	15
3.2	Research Paradigm	15
3.3	Theoretical Framework	16
3.4	Research Procedure	16
3.5	Data Collection Procedure	16
3.5.1	Literature Review	17
3.5.2	Case Studies	17
3.6	Summary of Chapter	17
CHAPTER 4	CASE STUDIES	19
4.1	The Big Picture	19
4.2	Claudiu Ionescu, Digital Museum	19
4.3	Atelier des Lumières Digital Museum, Paris	22
4.4	Amos Rex Museum, Finland	24
CHAPTER 5	ANALYSIS OF FINDINGS	29
5.1	Analysis	29
5.2	Roles of Digitisation in Preserving Heritage	29
5.3	Architectural Components	30
5.3.1	Structural Components	30
5.3.2	Open Layout	31
5.3.3	High Ceiling	31
5.3.4	Hybrid Exhibitions	32
5.4	Adaptive Re-use of Old or Abandoned Buildings	33
5.4.1	Environmental Impact	33
5.4.2	Educational Spaces	33

5.4.3	Economic Opportunities	34
5.4.4	Depicting Culture	34
5.5	Advantages of Digitising Heritage	34
5.5.1	Reduced Need for Physical Space	35
5.5.2	Unbounded by Physical Location	35
5.5.3	Ease of Portability and Accessibility of Exhibition	36
5.6	Methods of Digitising and Implementing Digital Heritage	37
5.6.1	Projection-based Visuals	37
5.6.2	Virtual Reality Headsets	37
5.6.3	LCD Screens	38
CHAPTER 6	CONCLUSION	39
6.1	Review of Objectives	39
6.1.1	To Recognise the Role of Digitisation in Preserving Heritage	39
6.1.2	To Identify the Different Architectural Components in a Digital Heritage Centre	39
6.1.3	To Explore the Methods of Digitising Heritage and Implementing it in Heritage Centres	40
6.2	Limitations	40
6.3	Recommendations for Future Research	41
6.4	Conclusion	41
REFERENCES		42

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
Figure 4.2.1	Claudiu Ionescu, Digital Museum pointing towards ‘the future’	19
Figure 4.2.2	Left; demonstrates an organic shape created in an angular space. Right; a triangular window sitting symmetrically on the sharp pointy edge of the building symbolising a forward movement into the future.	20
Figure 4.2.3	Rooftop garden of Claudiu Ionesco overlooking the floodplains	21
Figure 4.2.4	Section cut reveals a large open space that is uninterrupted by columns	21
Figure 4.3.1	Colourful exhibition space of Atelier des Lumières	22
Figure 4.3.2	Panoramic projected art on walls and floor or exhibition space	23
Figure 4.3.3	Digital artworks are seamlessly projected onto curved surfaces	24
Figure 4.4.1	Sky windows opening up from interior hall of Amos Rex Museum	25
Figure 4.4.2	teamLab’s exhibition The Vortex of Light Particles is projected on the inside of the museum's largest dome	26
Figure 4.4.3	Second floor plan of Amos Rex Museum	27
Figure 4.4.4	Section cut of Amos Rex Museum’s largest digital exhibition hall	27

LIST OF ABBREVIATIONS

2D	-	2 Dimensional
3D	-	3 Dimensional
AI	-	Artificial Intelligence
VR	-	Virtual Reality
AR	-	Augmented Reality
LCD	-	Liquid Crystal Display
MAS	-	Malay Agriculture Settlement
PKB	-	Perbadanan Pembangunan Kampong Bharu
NFT	-	Non-Fungible Token
BH	-	Berita Harian
UNESCO	-	United Nations Educations, Scientific, and Cultural Society

LIST OF APPENDICES

APPENDIX	TITLE	PAGE
Appendix A	List of Virtual Reality Museums	44

CHAPTER 1

INTRODUCTION

1.1 Introduction

Heritage is a piece of our history that has been maintained for the present and will be passed on to future generations. Heritage is described as the meanings linked to the past in the present, and it is considered a form of knowledge defined within social, political, and cultural settings. (Graham. B, 2002). Kampong Bharu being a site filled with historic identities is facing a challenge of modernistic redevelopment. As of late, more and more heritage aspects of Kampong Bharu are slowly being eroded, physically demolished or left to be forgotten. The Covid-19 pandemic which has hit the world hard has also contributed to the loss of social, cultural and economic preservation of Kampong Bharu. Throughout the years, this village has seen many transformations in its skyline with more and more high-rise buildings being built within. It is a threat to the preservation and conservation of the village identity. Therefore, this paper studies the various ways a digital heritage centre can positively contribute to its surrounding environment and the different components that a heritage centre should provide that would bring more social, cultural and economic benefits towards the preservation and growth of Kampong Bharu.

1.2 Problem Statement

The study area consists of Kampong Bharu which is well known for its market at Chow Kit and food street at Jalan Raja Muda Musa. It is a hidden gem in the middle of Kuala Lumpur city centre and makes it a special place to visit. Kampong Bharu dates back to 1900 when the first Malay Agricultural Settlement (MAS) scheme was formed as requested by Sultan Abdul Samad. Though 1 year later it was declared unsuitable to cultivate padi. An abundance of history and heritage can be traced back

to this village such as the settlement of the Mandailings and also the tin miners along the Klang River. Much of this history has been poorly preserved or documented yet alone exhibited to showcase its vast history that is present at Kampong Bharu. Despite all this precious information, the village lacks a place to present and showcase all this history to the visitors and locals alike. To make matters worse, more heritage buildings are being demolished or left to rot without being cared for as national treasures. Therefore, it is important to preserve what is left of its heritage by providing a platform to showcase and carry out various social, cultural and economic activities of Kampong Bharu. Like Kampong Bharu, Heritage centres in urban areas are often the keystones of unique urban neighbourhoods worldwide (Boeri et al., 2016; Girard, 2014; Yung et al., 2017) and therefore plays an important role in safeguarding the historic aspects of a place.

1.3 Research Aim

This study aims to address the potential roles and methods of digitisation in preserving the heritage of Kampong Bharu

1.3.1 Research Questions

The research questions of the research are:

- (a) Can preserving heritage through digitisation bring about social, cultural and economic benefits?
- (b) What are the components required in a heritage digitisation centre?
- (c) How to digitise and implement digital heritage?

1.3.2 Research Objectives

The research objectives of the research are:

- (a) To recognise the roles of digitisation in preserving heritage.
- (b) To identify the different architectural components in a digital heritage centre.
- (c) To explore the ways in digitising heritage and implementing it in heritage centres.

1.4 Significance of Research

This research aims to identify the various social, cultural and economic benefits of preserving and showcasing the history and heritage of Kampong Bharu digitally. According to the Cambridge dictionary, heritage is defined as features belonging to the culture of a particular society, such as traditions, languages, or buildings, that were created in the past and still have historical importance. Kampong Bharu has had a rich heritage since the early days of the Mandailings settlement and was a tin mining hub of the past. Unfortunately, the current redevelopment plan by the government body - Perbadanan dan Pembangunan Kampong Bharu, has other mega master plans in mind for the 300 acres urban village that involves amalgamation of many land parcels to form bigger plots of land for skyscrapers (PKB, 2019). Therefore, it is of great importance that a heritage centre be erected to safeguard the identity and history of Kampong Bharu and at the same time benefit the locals and visitors alike.

1.5 Research Scope

This study focuses on how a heritage centre using digital media and content integrate social, cultural and economic programmes into its everyday activities and space planning. This includes studying the design for urban spaces, circulation and museum programming through various case studies. Currently, many museums are

single functioning buildings with less mixed uses. Therefore, during downtimes, off-hours, or even a pandemic outbreak, museums around the world are not being fully utilised. This can be seen at the nearby Bangunan Warisan that has been jumping between a gallery and an abandoned building countless times. (BH Online, 2017) More can be done in enabling a multifunctional building program that can withstand the test of time that the future will bring.

REFERENCES

- BBC Culture. (2015). *Why Museums Hide Masterpieces Away*.
<https://www.bbc.com/culture/article/20150123-7-masterpieces-you-cant-see>
- BH Online. Bersih Kelab Sultan Suleiman, 14 April 2017.
<https://www.bharian.com.my/taxonomy/term/2644/2017/04/271511/bersih-kelab-sultan-suleiman>
- Business Dictionary. 2013. Accessed December 11, 2013.
<http://www.businessdictionary.com/definition/digitization.html>
- Cassidy, C. A., Fabola, A., Miller, A., Weil, K., Antas, M., & Cummins, A. (2019).
Digital Pathways in Community Museums. 0775.
<https://doi.org/10.1111/muse.12198>
- Collin. 2013. "Collins Dictionary." Accessed December 1, 2013
http://www.collinsdictionary.com/dictionary/english/digitalization#digitalization_1
- Guba, E. G., & Lincoln, Y. S. (1994). *Competing paradigms in qualitative research*.
In N. K. Denzin, & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117). London: Sage.
- Hedstrom, M. & King, J. L. (2003). On the LAM: Library, Archive, and Museum Collections in the Creation and Maintenance of Knowledge Communities.
Collections, 1–40.
<http://www.oecd.org/dataoecd/59/63/32126054.pdf>
<http://jllking.people.si.umich.edu/OECD-LAM-published.pdf>
- Igwenagu C.M (2006). *Collection of Data. Basic Statistics and Probability 147-160*.
First Ed. Prince Press and Communications ISBN 978 052 761 34

International Council of Museums (ICOM), Article 3, Statutes, 2007.

<http://uis.unesco.org/en/glossary-term/museum>

Jabatan Muzium Malaysia, 2019. *Laporan Tahunan JMM 2019*. Sources:

<http://www.jmm.gov.my/files/Laporan%20Tahunan%20JMM%202019.pdf>

Kaynar, I. (2000). *Visibility, movement paths and preferences in open plan museums:*

An observational and descriptive study of the Ann Arbor Hands-on Museum.

Proceedings of ICLS. [http://kaynar-](http://kaynar-rohloff.com/papers/kaynar_SpaceSyntax05.pdf)

[rohloff.com/papers/kaynar_SpaceSyntax05.pdf](http://kaynar-rohloff.com/papers/kaynar_SpaceSyntax05.pdf)

Keeves, J. P. (1997). *Educational research methodology and measurement.*

Cambridge: Cambridge University Press

Kerajaan Malaysia. (2008). *Akta Warisan Kebangsaan 2005 (Akta 645)*

Kennedy, S., Fawcett, R., Miller, A., Dow, L., Sweetman, R., Field, A., Campbell,

A., Oliver, I., McCaffery, J. and Allison, C. 2013. *'Exploring Canons and*

Cathedrals with Open Virtual Worlds: The Recreation of St Andrews

Cathedral, St Andrews day, 1318', Digital Heritage International Congress

(DigitalHeritage). IEEE Vol. 2, pp. 273-280.

Kuhn, T. S. (1970) *The Structure of Scientific Revolutions (2nd Edition)*. University

of Chicago Press. Section V, pp. 43-51

Marty, P. F. (2008). Museum websites and museum visitors: Digital museum

resources and their use. *Museum Management and Curatorship*, 23(1), 81–99.

<https://doi.org/10.1080/09647770701865410>

Medhavi Gandhi (2020) *The Museum of the Future: a vision for the next decade*

(2030), <https://www.theheritagelab.in/the-museum-of-the-future-2030>

Mills, A. J., Durepos, G., & Wiebe, E. (2010). *Encyclopedia of case study research (Vols. 1-0)*. Thousand Oaks, CA: SAGE Publications, Inc. doi: 10.4135/9781412957397

Müller, K. 2002. Museums and virtuality. *Curator* 45 (1): 21-33. Orna, Oxford Dictionary. 2013. "Virtual." Accessed December 11, 2013. <http://www.oxforddictionaries.com/definition/english/virtual>

Peponis, J., Dalton, R., Wineman, J., & Dalton, N. (2004). *Measuring the effects of layout upon visitors' spatial behaviors in open plan exhibition settings*. *Environment and Planning B: Planning and Design*, 31(3), 453–473. doi:10.1068/b3041

Report Linker, November 2021. *Virtual Reality (VR) Market - Growth, Trends, COVID-19 Impact, and Forecasts (2021 - 2026)*. https://www.reportlinker.com/p06184936/Virtual-Reality-VR-Market-Growth-Trends-COVID-19-Impact-and-Forecasts.html?utm_source=GNW

Saglamtimur, Z. (2010). *Digital Art*. *Anadolu University Journal of Social Sciences* 10 (3): 213-238.

Simon, N. 2010. *The Participatory Museum*. Santa Cruz, California: *Museum 2.0*.

Statista, 2021. *Consumer Virtual Reality (VR) Hardware and Software Market Revenue Worldwide from 2016 to 2023*. <https://www.statista.com/statistics/528779/virtual-reality-market-size-worldwide/>

The British Museum (2009). *British Museum Collection Fact Sheet*. https://www.britishmuseum.org/sites/default/files/2019-10/fact_sheet_bm_collection.pdf

United Nations Educational, Scientific, and Cultural Organization (UNESCO). (2021). *Number of Museums around the world*. Retrieved from <https://en.unesco.org/themes/museums>

Appendix A – List of Virtual Reality Museums

1. KOREA Cubically Imagined VR
<http://cubicallyimagined.kr/en/main/>
2. The Great Wave of
https://www.youtube.com/watch?v=3OAAf2Eo1Gs&t=5s&ab_channel=Participant
3. VR Starry Night Van Gogh
https://www.youtube.com/watch?v=G7Dt9ziemYA&ab_channel=VRMotionMagic
4. Loka Local Virtual Tours
<https://www.lokalocal.com/virtual-reality>
5. How Museums are Using Virtual Reality
<https://www.museumnext.com/article/how-museums-are-using-virtual-reality/>
6. The Museum of the World
<https://britishmuseum.withgoogle.com/>
7. Solomon R. Guggenheim Museum and Foundation
<https://artsandculture.google.com/streetview/solomon-r-guggenheim-museum-interior-streetview>
8. Musée d'Orsay, Paris
<https://artsandculture.google.com/partner/musee-dorsay-paris?hl=en>
9. National Gallery of Art, Washington DC
<https://artsandculture.google.com/partner/national-gallery-of-art-washington-dc?hl=en>
10. National Museum of Modern and Contemporary Art, Korea
<https://artsandculture.google.com/partner/national-museum-of-modern-and-contemporary-art-korea?hl=en>