

New Approches in Applied Arts and Design

Creativity and Sustainability

Mandana Barkeshli



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CHAPTER TWO

TECHNIQUE AND METHOD IN DOCUMENTATION OF HERITAGE BUILDING: THE USE OF 3D LASER SCANNING ON KAMPUNG LAUT MOSQUE KELANTAN

Hazman Hazumi
Harlina Md Sharif

INTRODUCTION

Each cultural heritage conservation project has its own unique techniques and methods. These techniques and methods are carefully considered to achieve various conservation objectives. Proper planning of each stage process needs to be evaluated in order to determine proper method and technique used.

The decision to use 3D Laser Scanning system in documenting Kampung Laut Mosque (KLM) is based on our evaluation that the project is biased towards a cultural heritage conservation project rather than simply an architectural or computer-generated modelling exercise. This decision is also influenced by the increasing importance virtual heritage plays in the conservation, preservation, and interpretation of our cultural and natural history. Rapid advances in digital technologies in recent years offer virtual heritage new direction; new media technologies. To us, having KLM as the pilot project and the first building to be documented in Malaysia using such method is very promising as we feel that it is expected to satisfy heritage representation such as the naturalness, the sensation of depth and realism.

Evaluation and selection of the VR application, method and technique in this Kampung Laut project was based on the increasing use of 3D digitization and modelling in documenting monuments and artefacts over the past few years. This is due to advances in laser scanning techniques, 3D modelling software, image-based-modelling techniques, computer power and virtual reality. Therefore we feel that embarking on the VR project is timely for Malaysian conservation scene. Our approach in this research is both modelling methods based on laser scanners data and computerized images technique. By this, a well-planned, well-documented and well-executed VR world can impart complex three-dimensional information much more successfully than traditional media.

The scope of VR application in cultural heritage conservation covers:

- **Heritage archive**—in virtually every country there is a government organisation dedicated to cultural heritage and record of heritage buildings. In addition, various charitable foundations, universities, and philanthropists contribute funds to such efforts. Generally, VR laser scanning is used in conjunction with other methods of recording, including high-resolution photography, and visual inspection of the building's materials. Full sets of 2D plan and elevation drawings are often required and the scan data itself is increasingly provided as part of the client's deliverables.

- **Heritage re-building**—High-definition surveys are also used to precisely capture existing geometry of heritage buildings that are to be meticulously taken down and then re-built in another location. Scanning is a great tool for brick-for-brick, panel-for-panel matching of the original building with the re-built building.