Heritage Buildings & Digital Tectonic

Project Description
Historical building conservation is a concept that is relatively new but one that is rapidly gaining acceptance and interest in Singapore and Asia due to the fast pace of economic development, transformation of building stock and urban fabric as a whole. Building conservation involves the restoration of architectural forms of immense formal complexity by manual labour; a process which is extremely slow and costly that raises barriers in conservation and endangers built artefacts of significant cultural value.

Technology has the potential of transforming the field of architectural conservation by the introduction of rapid digital data acquisition, modelling and prototyping/fabrication media. The cost of said technologies has been progressively reduced during the past decades. We envision that in the next decade large parts of historical buildings will be restored using 3D scanning and printing technology. In anticipation of this we are aiming to create a pedagogy, a methodology as well as products towards these developments and present an impactful case study via the restoration of the Yueh Hai Ching Temple in Singapore.

People
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Project Summary
Heritage Buildings & Digital Tectonic is an IDC project for the study of design technology and historical conservation within the domain of Architecture and the Sustainable Design. The goals of this project are:

a. Education: Create a contemporary methodology and a new learning experience for history and theory via both literature study but also hands-on on-site empirical acquisition of information via digital technologies.

b. Practice: Mitigate obstacles in traditional analogue conservation methodology by the integration of precision data measurement (3D scanning), restoration (3D modelling) and reconstruction (3D printing).

c. Research: Advancement of the state of the art practice of historical building conservation via development of new computer aided design tools.

Photograph of dragon sculpture
Reconstructed polygon mesh geometry
Visualization of computer geometry

Plan and Elevation of Yueh Hai Ching temple