Public Kick-off Embedded Research

Archaeology of Architecture
The 3/4D Research Lab of the Faculty of Humanities

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A 4D-3D Research lab launched November 1, 2012

• *The Art of Reconstruction*, one-year pilot project, financed by Faculty of Humanities (*Heritage and Digital Culture priority area*), to be continued in the context of the research project CREATE (Creative Amsterdam) and the E-Humanities Lab of the University of Amsterdam

• Presentation of the project results at the international conferences *Digital Heritage* (28 -30 October 2013, Marseille) [http://www.digitalheritage2013.org/](http://www.digitalheritage2013.org/) and *The Age of Tarquinius Superbus* (7 -9 November 2013, Rome)

• *The Archaeology of Architecture* (*Digital Humanities and Creative Industries priority area*) two embedded researchers working on the development of one accessible and interoperable system for modeling, documenting and publishing

• *Biography of Building*. Group research project granted at the NIAS (academic year 2014-2015), with twelve international scholars and specialists in ancient, medieval and renaissance architecture assisted by 3D specialists and theorists.
Aims for Embedded Researcher

• Trial virtual reconstruction in 3D of two major ancient monuments from Rome (Saint Peter’s Basilika and Temple of Jupiter Optimus Maximus (Maxon Cinema 4d, Meshlab, Adobe Photoshop cs6; storage in Wavefront object files (*.obj with *.mtl), Collada files (*.dae) and Cinema 4d files (*.c4d)

• Development of a system to document the path towards the reconstruction while presenting each phase and arguing each choice within the process of reconstructing: creating a interoperable database (Microsoft Access 2007 *.accdb)

• Private partners: Virtual Dimension, Research Design Systems & Allard Pierson Museum for internships, architectural advice and valorization in the context of an exhibition and interactive public demonstrations (Rome Reborn, V-Must)

• Publication of the project in 3D PDF in peer-reviewed periodical

• Development of interoperable 3D building programme for teaching models for MA education, as well as open-source exchanging of 3D reconstructions in architecture (in the future E-Humanities Lab), time management
Separate Research Group in Faculty of Humanities

Connected with Cluster D, Heritage and Memory

Focusing on usage of 3D modeling as a research tool in understanding architecture and their transformations over time = 4D
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- Two modellers and researchers MA
- Scientific coordinator and embedded researcher
- International Research group with specialists and architects
The pilot: the lost temple of Caprifico di Torrecchia
Research on the basis of models
3D Scanner (David Light) for a perfect texture
3D scans of architectural roof elements
Collaboration with modern architects

- Carrying the roof (50 tons of terracotta)
- 7 trusses are being supported by 7 x 2 oak columns
- Built up in the lateral walls; application of mudbrick
- Extra support from cella walls, 4 oak columns in front
Reconstruction temple of Caprifico di Torrecchia
Simplified overview data organisation

Landscape

temple

- temple foundation
  - column basis
  - outer wall
  - cela
  - foundation filling

- roof construction
  - truss
    - king-post
    - rafters
  - perlings
  - sheeting

- roofing system
  - roofing ceramics
    - tegulae
    - imbrices
  - decoration
    - acroteria
    - volutes
    - statues
    - acroteria basis
A 3D Research Lab: the results

- Reconstructing in 3d is in potential an exciting new way to interpret architectural and archaeological data and has the possibility to function as a source for filling in hiatus in the record in a verifiable way.
- 3D Modeling is a RESEARCH TOOL and much needed in RECONSTRUCTION of ANCIENT ARCHITECTURE
- An ancient temple of (re-) built in real time
- The process has been documented step by step and stored in an accessible database
- Ready for a scientific publication
- Ready for valorization in a public presentation in museal context
- Ready for applications and interactive demonstrations
The abbey of Saint John Evangelist in Biograd na Moru, Croatia

The abbey of Saint John Evangelist was founded by the Croatian king Peter Krešimir IV the Great around 1060, who kept his seat in Hin and Biograd na Moru. Some historians even claim that he was crowned in Biograd.

In the aftermath of the Great Schism in 1054, King Krešimir was commanded by pope Nicolas II to reform the Croatian church in accordance with the Roman rite. He founded several Benedictine monasteries (Biograd, Zadar, Skradin, ...) and invited monks from the Veneto area to build them. Analysis of the church remains in the city centre of Biograd shows indeed a very distinct Italian building style with blind niches.

The abbey however was destroyed in 1125 by the Venetians, and the monks built a new abbey on a hill top near Čokovac on Pasman island. Recent excavations (2008 - 2009) and historical research have shown that the church of Saint John Evangelist, which was rededicated to Our Lady, survived until at least the 15th century.

Based upon recently discovered old photographs, showing the church remains at the beginning of the 20th century, excavation and cadastral plans, study of similar churches and abbeys from the 11th century in the Veneto area, building elements in the museum in Biograd and the archaeological remains in the city centre, a 3D reconstruction was made of the church and abbey. You can stand in front of the church or in the church and see how it was build layer by layer or go to the entrance to the abbey and walk inside the abbey (put the 3D visualisation in walking mode, upper left button) and discover the well, the refectory, the kitchen, the chapter room and the stairs to the monk’s dormitory.

http://www.carare.eu/eng/Resources/3D-Virtual-Reality
http://vimeo.com/75944494