What's Virtual Reality Good For? The Archave System – Problems and Possibilities

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Excerpts from the Abstracts

- “Archaeological excavations produce vast amounts of data that have an inherent three-dimensional character. We hypothesize that providing archaeologists with an immersive virtual environment in which he or she has total access to all these data, in its original context, will allow them to perform, not only simple walkthroughs over the site, but complex analyses on the recovered data.”
- “We focus on augmenting existing archaeological analysis methods with new ways to organize, visualize, and combine the standard 2D information available from an excavation (drawings, pictures, and notes) with … 3D models of objects and the site itself.”

ARCHAVE Interesting points

- Creation of a VR/AR model requires by definition a set of choices to be made
  - These choices may be interpretive
  - The sense of the site may be altered by the model's projection of the data
- VR/AR is what it is because it a model of reality, not reality itself, and has its own weaknesses and strengths

Methodology

- Visualizes Great Temple of Petra site excavations
- Started with block coloring the 3D structures by # of finds
  - Too little information
- Attempt to use GIS methods
  - Insufficient fexibility in existing packages
- Create new visualizations using see-through walls and utilize the physical clustering of objects as the metric
  - Most successful: encompasses design goals

- **Lesson: further from a recipe than usual GUI design**

Capabilities

- Uses translucent walls model
- Allows interaction thru cursor and glove (select motion only)
- Allows queries against database of finds
- Does not contain much metadata about finds

VITA Overview

- Visualizes data from an Elymian acropolis (Sicily)
- Data includes find location, images, and metadata, digital video and stills, laser range scans of location, panoramic images of site
- Attempts to preserve the site in all its stages
- Goals: assisting data visualization and analysis, on-site field planning, and remote collaboration on the data
- Does not use human modeling of 3D component

Methodology

- Mixed multimodal environment
- Uses tracked see-through HMD's, touch sensitive projections, gesture, and speech
- Navigation via world-in-miniature and full scale world modes
  - Can explore a 10x10m tile at a time
  - Panoramic backdrops can "fill in" periphery
  - 2D display and WiM allow temporal and spacial navigation
  - A handheld active lens allows access to high resolution data
- User-centric iterative design

User Reactions

- 3D full scale projection complementary to 2D data traditionally available
- Virtual model allows easy capture of different perspectives
- Primary benefit was connecting temporal coordinates of objects with the 3D representation and related metadata of objects
- Most wanted feature: time lapse visualization
- Equipments is cumbersome, occludes normal body language