

Paper Proposal
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Reimagining Past Worlds: Issues and Challenges in the Use of 3D Graphics to Create Historical Reconstructions

For years, hand-drawn reconstructions were the primary way to translate scholarly findings about historical eras into visual examples. But with the advent of 3D computer rendering technology, researchers from many fields in the humanities and social sciences could move beyond drawings and diagrams to instead present their audiences with fully navigable and interactive virtual environments. These computer graphics (CG) technologies now allow creators to show the original finish of a weathered sculpture, the once bustling street of a long-buried town, or even the lay of a landscape before erosion, each in three dimensions. Completing an accurate and effective CG reconstruction is a complex and time consuming process, in which researchers must carefully balance many important and interdependent factors to meet their illustrative goals. My presentation will address the issues and challenges that exist at each stage of this creative process, and recommend practical strategies to create a vibrant and effective reconstruction.

Difficult creative decisions present themselves even in the research stage of a reconstruction project. Researchers must begin with the most basic question of the purpose and audience of their production, and decide on a general philosophy that will guide the project through every subsequent step. They must also define the interpretative level of the project, choosing whether it will simply be illustrative of contemporary findings, or go even further to create more specific details not fully supported by existing research. Last, they will have to decide which forms of evidence they will privilege in their visualization, and weigh the usefulness and accuracy of textual descriptions and archeological data against the examples from extant artifacts, architecture, and cultures, to define the look of a their virtual historical scene.

Scholars then must decide on the overall design of the project. They will begin with its scope, be it a single artifact, a room, a structure, or an entire community. The most important factor at this stage is the level of detail involved. High detail projects display greater levels of realism, but demand longer production times, higher costs, more computing power, and more intense research. Conversely, lower detail scenes are more efficient, more customizable, less expensive, and more easily be integrated into different media for presentations. Creators may also choose higher detail for only certain specific aspects of their environment, emphasizing architectural form, surface texture, lighting, or even a scene's virtual inhabitants over the remaining elements. Each of these decisions will ultimately affect, and in some cases limit, the final output medium, be it print, film, or interactive media such as DVD software or web content.

Finding which technologies best suit the creators' design, and gathering the talent necessary for achieving that vision forms the last stage of the production process. Scholars themselves may sometimes have the skills to create content on their own, but in many cases different styles of production design will require diverse areas of expertise. Reconstructions that emphasize imaginative environments, especially where visual evidence is scant, may call for the use of 3d modeling and animation software, and employ the skills of a visual artist. In projects that emphasize specific architectural and engineering details, CAD software and an experienced

architect or engineer might be necessary. And for those scenes stressing a high level of user interaction, creators may want to step outside traditional software packages and author proprietary software. In these cases, the production will likely require creative talent to work closely with a skilled programmer to create an experience which moves as well as it looks.

My presentation will cover these developmental stages, and recommend successful strategies for each juncture. Using specific examples from past projects, I will also talk about which workflows best suit different kinds of projects, and how researchers can collaborate with creative professionals to make their findings more engrossing than ever before. 3D computer graphics offer an unparalleled opportunity to present visions of the past to the public, but only thoughtfully planned projects will realize their full potential.