POSTER abstract

Engaging the Virtual Landscape: serious gaming environments as tools in historical landscape reconstruction and interpretation

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The nature of historical data and historical research in general provide unique challenges within the context of GIS. Recent advancements in geovisualization, immersive environments, and even virtual reality offer the opportunity to generate digital representations of the cultural and physical landscapes, and embed those virtual landscapes with information and knowledge from multiple sources. The development of these technologies and their application to historical geography research has opened up new opportunities to synthesize historical records from disparate sources, represent these sources spatially in a digital form, and embed the qualitative data that is often crucial to historical interpretation.

This poster will discuss the development of a virtual reconstruction of a historical landscape enhanced with embedded multimedia data, utilizing Microsoft's XNA Framework game development environment to create a serious game application, the *Spatial Experience Engine (SEE)*, to provide the same level of graphical capability and navigability as leading entertainment video games. Moving beyond representing increasingly realistic landscapes in a virtual world, gaming environments such as XNA also allow researchers and scholars to build interactive, immersive serious games that enable users to go beyond the passive viewing of these

digital worlds. Utilizing the advanced graphics power of gaming environments allows for the modeling of realistic terrain and vegetation, as well as water movement, weather, and other physics-based aspects of the virtual environment that are important components in creating a sense of interactivity and immersion. As the sense of immersion within the virtual environment becomes more compelling, users can begin to *experience* phenomena that in combination create a sense of place.

Embedded within the virtual reconstruction, multimedia sources such as photographs and audio provide historical information that can be accessed through interaction with features in the digital landscape. In addition, embedded access to GIS functions provides a link to spatial analytic tools that can be used for landscape analysis. These qualitative data sources are essential components in the reconstruction and interpretation of historical landscapes, and are difficult to represent within a traditional GIS platform. In addition, the incorporation of tools that allow the user to access GIS functionality while still immersed within the virtual environment, such as database queries and geoprocessing tasks, can bring the analytical capabilities of GIS into the experience of a digital landscape.