Chapter XIII
Game-Based Historical Learning

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ABSTRACT

Serious games research typically uses modified computer games as virtual learning environments. Virtual heritage projects typically aim to provide three-dimensional interactive digital environments that aid the understanding of new cultures and languages, rather than merely transfer learning terms and strategies from static prescriptive media such as books. As an intersection between the two fields, game-based historical learning aims to provide ways in which the technology, interactivity, or cultural conventions of computer gaming can help afford the cultural understanding of the self, of the past, or of others with mindsets quite different to our own. This chapter will outline the major technological, pedagogical, and evaluation issues pertinent to game-based historical learning, provide working definitions of virtual learning that may lend themselves to evaluations, and endeavor to explain how specific issues of game-based historical learning may be addressed. It will also forecast trends and suggest approaches to help focus this diverse field.

INTRODUCTION

Virtual heritage is not merely a theoretical endeavor for domain specialists. Apart from the issue of how to theoretically determine, create, and achieve both social and cultural presence, there is the added logistic issue of how best to convey these subjective experiences through interactive media in a way that is amenable to how individuals learn. In addition is the issue of how to evaluate not just how they learned, but exactly what they learned and why they learned it. As to what learning means, unlike virtual learning environments or serious games, we do not want to only measure effectiveness, efficiency, and user satisfaction, but also the awareness, understanding, and sense of newfound ownership or appreciation of cultural diversity, authenticity, and significance.

Once we understand how to preserve and communicate social and cultural significance,

we also need to communicate it to a wider audience and create a platform in which shareholders (descendents or visitors) can maintain, improve, and collaborate. Ideally, the shareholders will then learn more about what has been simulated and why it is (or was) culturally significant.

BACKGROUND

Definitions

In virtual heritage projects, the aim is typically to 'recreate' or 'reconstruct' the past through three-dimensional modeling, animation, and panorama photographs. Historical reconstructions have been a common reason for creating environments using virtual reality technology. Moreover, many of these virtual environments have aimed for realism rather than for meaningful interaction. Yet this may not be the most effective means of educating and engaging the public (Champion, 2006), for virtual heritage is a 'visualization' or 'recreation' of culture (UNESCO, 2003, 2007).

The point of virtual heritage is thus to visualize the significant and revealing aspects of a culture through its artifacts and the records it leaves behind. For example, the ICOMOS (1999) Burra Charter argues:

Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the Place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups.

Currently virtual heritage models fail most if not all the criteria for collection and dissemination of culturally significant information to various groups of people, for they are typically expensive, fixed in place, do not allow personalization, and require expert assistance. Yet heritage is not just that which physically remains, but also that which can be passed on, or conversely, something that is intangible.

Conveying the intangible is also an issue for digital history (which can be described as the visualization of historical resources using digital technology). Interactive history is a subset of digital heritage, the development of digital resources that teaches historical learning through interactive media, particularly by using the interactive and multimodal features found in computer games.

Game-based historical learning could be defined as the use of the in-game editors to modify ('mod') existing game levels in order to enhance learning about historical content. However, it has a wider scope than the use of game editors alone. Game-based historical learning could be more comprehensively defined as the focused use of real-time rendering engines, game editors, game platforms, game peripherals, and/or game-style interaction metaphors to help the public enhance their awareness of historical issues and heritage sites. Hence, game-based historical learning is an intersection of digital history and serious games (games designed to aid learning).

Viewpoint

As computer games are both highly popular and highly interactive, they may appear to be an ideal fit for virtual heritage projects in terms of presentation and education. Such use of technology as a focused pedagogical tool may help scientists communicate, collaborate with each other, or otherwise evaluate various hypotheses on the validity, construction, significance, use, maintenance, or disappearance of historic- and heritage-based sites, artifacts, and cultural beliefs. However, the use of games may popularize archaeology and heritage at a superficial level. Much like the *Indiana Jones* and *Lara Croft: Tomb Raider* films, game-style interaction does not necessarily teach