AI & Soc
DOI 10.1007/s00146-013-0488-5

ORIGINAL ARTICLE

Time.deltaTime: the vicissitudes of presence in visualizing Roman houses with game engine technology

David Fredrick

Received: 9 April 2012 / Accepted: 29 April 2013

Abstract First drafted in 2006 and currently in version 2.1, the London Charter calls for the adoption of international standards for intellectual integrity, transparency, sustainability, and access in 3D modeling for cultural heritage. While the London Charter has been in the process of revision and distribution to the heritage community, game engines have become less expensive and more approachable. Several engines offer the ability to publish easily across operating systems, mobile devices, and the web, causing a rapid expansion in their use for archeological visualization. However, the very power of game engines to create and publish immersive content poses fundamental challenges to the emphasis on data-driven visualization and transparency expressed in the London Charter. These challenges should not be suppressed, since they can prove heuristically fruitful if they are explicitly recognized and explored. This potential is illustrated by a descriptive analysis of the recreation of the House of the Prince of Naples in Pompeii by an undergraduate humanities class, which concludes that the immersive effects of engine-based visualizations are as much to be found in their creation as in their "playing." This suggests the value of democratizing the creation of game engine content for heritage visualization beyond research visualization laboratories, as a part of undergraduate curricula in the humanities.

Keywords Heritage visualization · Game engines · Pompeii · Presence theory

D. Fredrick (✉)
Director of Humanities, University of Arkansas, 525 Old Main, Fayetteville, AR 72701, USA
e-mail: dfredric@uark.edu

1 Introduction

On February 25, 2006, an international committee of scholars, chaired by Franco Niccolucci, met in at King's College London to draft a set of standards governing the creation of 3D models for heritage preservation and archeological research, entitled "The London Charter for the Use of Three-Dimensional Visualisation in the Research and Communication of Cultural Heritage." Currently in version 2.1, the London Charter aims to define "principles for the use of computer-based visualisation methods in relation to intellectual integrity, reliability, documentation, sustainability and access" (Beacham et al. 2012). This language reflects the authors' awareness that the profusion of 3D models over the past two decades has unfolded largely without the process of submission, peer review, and editorial scrutiny typical of academic publication in print media. Any department or individual scholar with the means to produce a model can publish their work on the web, as a video flythrough, a download, or through a variety of web players, without prior critique or subsequent review. Of course, this has always been true of traditional 2D web content (text, photos, digital video), and archeological and heritage programs commonly provide information about their projects through these means, without external review. But 3D content, especially in the form of navigable environments, seems different.

Most fundamentally, the difference lies in 3Ds immersive potential, and its corresponding power to convince its audience that it represents the past the way it "really" was. As Favro points out (2006), "…while observers intellectually acknowledge that the virtual re-creation is an approximation, not a *Doppelgänger* for a past reality, this concept is almost immediately subsumed by the experiential power of the presentation." Until recently, 3D models

Published online: 20 October 2013