Rhetoric, Embodiment, Play: Game Design as Critical Practice in the Art History of Pompeii

David Fredrick

Associate Professor of Classical Studies and Director of Humanities

University of Arkansas

dfredric@uark.edu

Abstract

This paper explores the consequences of using the game engine Unity to construct 3-D models of Pompeian houses, linked to art and spatial databases, as an ongoing research colloquium for advanced undergraduate and graduate students in the humanities. Rather than serving as a neutral piece of visualization software, the game engine functions as critical tool because, more than any other visualization platform, it permits real time, embodied movement through the houses. One outcome of such embodied movement has been the recognition that the traditional vocabulary for describing space in Pompeii is inadequate, and a much more careful methodology is required, using network topology and visibility graph analysis to establish spatial profiles for the rooms. As they construct the models in Unity, students also encounter the contradiction between the texture pipeline used to produce immersion in games and the emphasis on accuracy and scientific objectivity found in cultural heritage discourse, a discourse which paradoxically also stresses immersion. Finally, the game engine encourages students to consider the rhetoric of embodied play in the Pompeian decorative ensembles themselves. Rather than a static, hierarchical structure or strictly linear progression, this rhetoric rather seems procedural, stressing dynamic, emergent meaning revealed through exploration along a variety of paths. The House of Octavius Quartio illustrates this rhetorical play, as its mythological repertoire moves between a Cartesian subject position distant from the body and in control of the landscape and an anamorphic subject position close to the body and immersed in the landscape, represented through the reflection of Narcissus and the dismemberment of Actaeon. The movement between Cartesian and anamorphic subjectivity is further mapped onto gender in the sculpture of Hermaphroditus which was discovered by the rear exit of the house.

In the fall semester, 2009, the *Digital Pompeii Project* was launched at the University of Arkansas. An ongoing humanities colloquium limited to nine students per semester, its initial goal was the creation, in the Unity game engine, of a 3-D database for artwork in Pompeii. Each semester, the class models and textures a housing unit in Pompeii, with each student responsible for several rooms. Their work is then reviewed, edited, and published to the web where online users can navigate it in real time, with links to a database of frescoes, mosaics, and sculpture (see Clarke 2012 and Frischer 2007 for similar projects at other Roman sites). There is currently no accessible database of artwork for Pompeii, and many of the frescoes and mosaics have been removed to museums or damaged since excavation. While there are 2-D publications which include detailed plans, photographs, and archival evidence (lithographs, watercolors, drawings), it is very difficult to appreciate, from turning their pages, the kinesthetic effect of space and decoration inside a given house, or compare the decorative program of one house with another (Carratelli 1990-2003, Strocka 1984-2004). Moreover, it has become apparent to us--both teachers and students--that Pompeii not only lacks an art database, but a spatial database as well. Rooms in Pompeian houses are labeled with a traditional nomenclature, but as the archaeologist Penelope Allison has pointed out, the evidence in Latin literature for the room names is poor, and as descriptors of space they are hopelessly vague (Allison 2004).

The experience of building virtual Pompeian houses and exploring them in a game engine has made us increasingly aware that we do not know the "where" of Pompeian art in a statistically useful way. The existing 2-D publications for the artwork simply do not lend themselves to comparative analysis with data generated by contemporary methods of environmental modeling: space syntax and visibility graph analysis (Montello 2007; Stöger 2011). The Unity models, on the other hand, allow the visualization of network topology and visibility graph data wthin the 3-D environment, where their relation to decorative patterns can be experienced and assessed in virtual space. At the same time, because Unity publishes to the

web, the movement patterns of a large number of crowd-sourced "players" can be tracked, with various parts of the decoration turned off or on, and compared to the patterns of movement predicted through environmental modeling. Hence the project has gradually changed in scope from linking an art database to a 3-D environment, which would be more strictly archival, to researching the relation between space and decoration by capturing spatially relevant data and visualizing it directly within the 3-D environment, where the relation between space and decoration can be appreciated more tangibly than by looking at a 2-D plan, a visual integration heatmap, and dozens of illustrations scattered across a variety of publications.

So while one of our initial pedagogical goals was to give advanced undergraduate and graduate students in a range of humanities disciplines a basic skillset for creating 3-D content in Unity, this has expanded to include network topology software (Gephi) and visibility graph analysis software (Depthmap). A second pedagogical goal was to introduce students to contemporary art historical approaches to Pompeian houses, and to encourage them to question these interpretations by using the research platform they were in the process of creating. As mentioned above, this platform has morphed from 3-D virtual houses + art database to 3-D virtual houses + art database + spatial database. The art and spatial databases are still under construction, so the project is not yet in a position to assess broader patterns between decoration and space across Pompeii. Rather, this paper addresses what drove us, collectively, to interrogate space more closely in the first place, to feel that we needed much more precise ways of characterizing space in order to begin to understand its relation to decoration.   This, it turns out, speaks directly to the use of a game engine, as this has led us to fundamental questions about the nature of virtual space and embodiment in the 3-D environment in comparison to decorative programs and embodiment in the original Pompeian houses. And this, it turns out, has to do with the intrinsic relation of any game engine to games, and embodiment in game space.

It could be argued that games, because of their relation to play, encourage playful exploration and rule testing rather than critical engagement. Therefore it is not really tenable to use a game-like environment, constructed through a game engine, as a vehicle for honing students' art historical skills, since this would lead students toward play and away from art history as serious critical practice. The answer to this is that it may or may not be tenable, but it

is unavoidable. If archaeologists and art historians intend to construct real time, freely "walkable" recreations of past environments, their only choice is a game engine. It's not that a game engine might be an intellectually poor or frivolous solution among other viable solutions for visualizing Pompeian houses in 3-D, in real time. It's the only option. To put it another way, if one chooses the game engine and recreates the houses, one is able to ask: given the ability to navigate the house models in real time, with the artwork back in place on the virtual walls and floors, and with the inclusion of water features, plants, and sound, what new arguments could be made about how these decorative ensembles work? No other representational technology would allow this question to be asked, and at the end of the day this is not only a question about "playing" the environment but also about embodiment and the I/eye of more traditional art history (Flynn 2012).

Equally important here is the students' experience in the process of constructing and texturing the models--not just "playing" the game, but making it. Transformations in our view of Pompeian houses emerged as the students grappled with the question of levels of detail and the value of immersion--or, what resources to use from the game engine pipeline to produce the effect of embodiment. Once the geometry of a given house has been modeled, the first step in texturing is simply to place the best evidence on the walls and floors. This will likely consist of a montage of archival black-and-white photographs, 19th-century watercolors, tourist photographs from Flikr, the students' own photographs, and line drawings from academic publications. While a necessary starting point, this produces an uneven visual effect which is hardly conducive to immersion. Moreover, it typically leaves well over half the walls and floors blank, as there are many places where no direct evidence for the decoration remains. This problem was confronted head-on in the first two semesters of the course, and in group discussion with the students it was decided that if the goal was to understand how these houses worked spatially and decoratively, the existing evidence would have to be extended by sampling, flipping, inference, or even plausible invention by comparison to evidence from other houses.

However, when the students researched how this had been done in several other 3-D recreations of Roman architecture (Packer 1997, Frischer 2012), they encountered a strange sort of art direction, at least for games. Many virtual Roman sites exist in an antiseptic perfection of

precision lines and shapes, uniform colors, and unblemished marble. As one student memorably observed, "it was as if in ancient Rome there was no birdshit." The aesthetic effect of these recreations was practically as contrary to immersion as the collage of sources in their first texturing pass.

The students knew they were using a game engine, and many were playing historically-themed games. They recognized that the textures and lighting in *Assassin's Creed* were fundamentally different from those they found in academic visualizations, not just in technical quality but intent. Game mechanics are not yet a primary concern in this project, but the effect of art is. As the students found themselves preferring the immersive persuasiveness of the organic, grime-filtered, worn surfaces they found in games, they found themselves engaged with a basic issue in game design: the visual rhetoric of textures. Further, they discovered that this put them at odds with the emphasis on objective accuracy found in academic discussions of visualization. Even as there are greater calls for immersion and interactivity in heritage visualization, the visual quality of video games has always been about faking it to get performance (e.g. decimation, procedural textures, normal maps instead of geometry), and so there is considerable anxiety in the heritage visualizaiton community about opening up that particular toolshed (Champion 2011). The organizers of the London Charter, an international agreement designed to establish guidelines for heritage visualization, explicitly attached a red flag to the potential dangers of game-style visual rhetoric (Beacham, Denard, and Niccolucci 2012):

> Credibility is important not only for the academy. For example, in the Technical Description of the activities of EPOCH, a EU-funded project on Intelligent Heritage, it is stated: "Validity: there has been some concern in the heritage community about the validation of computer reconstructions…Reliability: can people rely on what is shown by visual explanations of heritage? How can they distinguish between scientifically valid communication and fantastic, video-game display?"

As the course has been taught from semester to semester, three themes have emerged as key foci of difference between how the students perceive their task in *Digital Pompeii* and

mainstream academic visualization as defined through the London Charter. These themes directly relate to the use of a game engine rather than still images or video fly-throughs, and they will have to be confronted by heritage visualizers as they make the move to game engines: rhetoric, embodiment, and play. These themes balance quite directly against the concerns expressed in the quotation above: credibility, validity, reliability. By using Unity, *Digital Pompeii* critically juxtaposes the students' own experience with games with the London Charter's expectation that the 3-D media used for heritage visualization, including game engines, *can* or *should be* transparent vehicles for a non-rhetorical, disembodied, serious truth about past historical environments. This contradiction can be directly rephrased: to the extent that one uses a game engine for heritage visualization, one immerses or embodies the user (player) in the virtual environment, and to the extent that one embodies the user, one moves away from the disembodied, view-from-nowhere, Cartesian perspective of "scientifically valid communication" and traditional art history.

It is true that as each semester progresses and the students dig into the interpretation of their houses, they often discover and focus on what they perceive to be the game-like aspects of their decorative programs. It could be argued that this is a predictable, and not necessarily positive, result of using Unity: they see a game because they're using a game engine. Again, however, this seems like blaming the messenger--the game engine--rather than carefully considering the message, which lies in the impact of embodiment on how the user experiences and interprets the environment. As Bernadette Flynn has put it, "Fundamentally...in a game environment, the relationship between the user and the spatial content of the game is dynamic and emergent rather than static and fixed" (Flynn 2005; Gee 2008). If we replace "game environment" with "3-D, real time heritage environment," this becomes a telling description of how real time, immersive environments change the position of the viewer or user from the disembodied I/eye of scientific investigation or more traditional art history to a localized but also mobile position which emphasizes exploration and discovery rather than a final hierarchical spatial structure or linear narrative. However, it is important not to oversimplify this into spaces without sequential structure or narrative, or into a single construction of the body.

This opens up promising new lines for art historical research. In a ground-breaking article in 1994, Bettina Bergmann highlighted the associations between rhetorical patterns in Roman oratory and the arrangement of images in Pompeian houses (Bergmann 1994). Bergmann stressed the importance of modeling the houses and putting the artwork back in place in order in order to track these patterns, and while her article relied on a physical model of the House of the Tragic Poet constructed by the contemporary artist Victoria I, she suggested the potential value of computer 3-D reconstructions. A game engine like Unity is necessary choice if one is to extend Bergmann's project into real time, which, in turn, is necessary in order to explore the impact of these ensembles on a mobile, embodied viewer, or user, or player.

In the case of *Digital Pompeii*, an argument has emerged that the experience of space and decoration in these houses is more than a visual analog of the verbal rhetoric of Roman oratory. Rather, in their address to an embodied user these houses seem to exhibit a procedural rhetoric which unfolds through the exploration of their rooms as "possibiility spaces" whose meaning does not depend on a specific linear order but rather is discovered through multiple paths of exploration--a kind of spatial play (Bogost 2008). As the houses allow different pathways through their systems of imagery, they alternately support and challenge the rules of Roman social hierarchy, frequently through an erotic repertoire that allows shifting identification with active and passive roles. In this regard an approach to texturing which stresses immersion is consistent with the visual rhetoric of the imagery in the houses, which self-consciously embodies the viewer by confronting her or his gaze at the eroticized bodies in mythological wall painting.

A good example of this is provided by the House of Octavius Quartio, in the southeast quarter of the city, close to the amphitheater. This house is composed of an atrium sequence at its north end, a small peristyle garden, a water channel running east-west and terminating in a decorated niche for dining, and an enormous lower garden with a water channel running north-south. In its northern section, the house contains two different "cycles" of mythology, one epic and heroic, and the other strongly erotic (Clarke 1991, Tronchin 2006). The epic cycle combines the sack of Troy by Hercules with its later sack during the Trojan war, and is entirely contained in the main dining room of the house (room h). Situated at a key juncture in the circulation network of the house, this dining room commands a main view over the long rear garden of the

house and a lateral view to its smaller peristyle garden, combining heroic masculinity with the visual framing and subordination of nature. The erotic cycle, meanwhile, unfolds along, and even inside, the water features that define the upper and lower garden. Central to this cycle is the story of Diana and Actaeon; the house presents this myth twice, and both time surprises the viewer with his/her identification with Actaeon, caught looking at the nude goddess and turned into a stag. The first of these depictions is in two large panels flanking the entrance to room e, while the second is located in a secluded grotto which serves as the source of the long artificial river that defines the lower garden. Contrary to the heroic masculinity and visual control of nature found in the main dining room, Actaeon as stag is dissolved into the natural landscape, literally torn apart by his dogs. The theme of the user dissolved into landscape is repeated in the depiction of Orpheus on the west side of the south door of triclinium h. Opheus initially charms and controls the landscape through his song, but is eventually torn apart by an angry group of maenads, who resent his rejection of them sexually in favor of boys. The theme is restated a third time in the depiction of Narcissus caught by his own reflection biclinium k; Narcissus, of course, will eventually waste away and be transformed into the flower that bears his name. At the same time, a diner reclining on one of the couches would, as she or he caught the reflection of his or her face in the water of the upper channel, literally embody the story by looking at virtual image of his or her face. In the second depiction of the Actaeon myth, the mobile, embodied user literally enacts the story as Actaeon, descending the stairs, turning the corner, and discovering Diana, and then discovering her or himself as Actaeon painted on the wall opposite Diana. As the grotto contains a fountain, the viewer is stunned and immersed not just by visually, by the recognition of him/her self as Actaeon, but aurally, by the sound of the water itself.

As is clear from this summary, embodiment and space are not conceptually simple in the House of Octavius Quartio. Rather, the user is invited to occupy, alternatively, a Cartesian perspective with a dominant, controlling view of the garden landscape, and an immersed, entrapped position where the body is distorted if not literally pulled apart. One discovers, in the presentation of the myths of Actaeon, Orpheus, and Narcissus, what Eugénie Shinkle has termed the "anamorphic" subject, which "consistently interferes with perspectival theories of vision and

subjectivity, and a politics that insists on this body as mute" (Shinkle 2003). Rather than a body disciplined and subordinated to the educated eye that could appreciate the presentation of landscape views as aesthetic objects, anamorphic subjectivity pulls the user toward extremes of bodily pleasure or pain, a subordination to landscape rather than a standing apart from it. As Shinkle remarks of the Shades in 18th-century English gardens, "In the absence of a precise point of view, 'nature' appeared in all of its chaotic sensual materiality, amorphous, unframed, unresponsive to the look" (Shinkle 2003). The painted landscapes of Mt. Cithaeron in the myths and Narcissus, or Mt. Rhodope in the myth of Orpheus, are "the Shades" of the House of Octavius Quartio, become "real" in the grotto of the lower garden.

Meanwhile, at the other end of the lower water channel is a statue of Hermaphroditus, discovered only by a long walk down through the garden. In a recumbent posture familiar to students of Roman art history as the "come-hither pose," Hermaphroditus looks female until the viewer is practically on top of the sculpture, at which point she/he discovers the sculpture's erect phallus, hidden in a circle of drapery (Clarke 1998). The astute ancient viewer would recognize that (he?) (she?) has been typecast again, this time as Pan, who in several examples of Roman art creeps up on Hermaphroditus, thinking this bi-gendered divinity is a nymph he will rape, only to discover her/his erect phallus and find the roles reversed--a restatement in explicitly sexual terms of the reversal of active/passive positions found in the Actaeon story.

For the visitor to the House of Octavius Quartio, the experience of the epic and erotic cycles does not have a fixed sequence or a single trajectory, but rather can be explored through a variety of paths, with different viewing angles that emphasize epic or erotic, Cartesian subjectivity or anamorphic subjectivity, or the tension between them. Rather than a fixed linear rhetoric, this house unfolds as a "possibility space" of procedural rhetoric, allowing for the playful combination of different takes on its two main themes, and the player's own desire, depending on where she or he moves (Platt 2002, von Stackelberg 2009).

On the one hand, then, *Digital Pompeii* demonstrates the value of a game-based approach in encouraging students to think through issues of historical representation and "truth," particularly in the approach to texturing, shaders, and lighting. On the other, in the effort to get closer to how the Romans experienced their houses, this project asks the students to explore what

it is like to move through the houses as embodied users, rather than scholars in front of 2-D pages. This raises the question: how is the management of dynamic, emergent meaning in the decorative ensemble of house A like that found in house B? This, in turn, becomes a question of tracking the distribution of art against the spatial profiles of rooms: does the decoration of a given room have a predictable relation to rooms in other houses that are similar to it in network topology metrics, visual integration, control, and entropy? How do such relations "feel" as a user moves through them? A question, then, of both a more thorough statistical method for describing space in Pompeii, and a deeper, embodied phenomenology.

References

Allison, P. (2004). *Pompeii households: analysis of the material culture*, Monograph 42. Los Angeles: Cotsen Institute of Archaeology, UCLA.

Beacham, R., Denard, H., & Niccolucci, F. (2012). London charter for the computer-based visualization of cultural heritage. Retrieved from http://www.londoncharter.org/

Bergmann, B. (1994). The Roman House as Memory Theater: The House of the Tragic Poet in Pompeii. *The Art Bulletin* 76 (2), 225-256.

Bogost, I. (2008). The Rhetoric of Video Games. In *The Ecology of Games: Connecting Youth, Games, and Learning*, ed K. Salen. Cambridge, MA: The MIT Press, 117-140.

Carratelli, G. P., ed. (1990-2003). *Pompei: pitture e mosaici*. Rome, IT: Istituto della enciclopedia italiana.

Champion, E. (2011). *Playing with the Past.* London: Springer.

Clarke, J. (2012). The Oplontis Project. University of Texas at Austin. Retrieved from http://oplontisproject.org

Clarke, J. (1998). *Looking at Lovemaking: Constructions of Sexuality in Roman Art 100 B.C.-A.D. 250.* University of California.

Clarke, J. (1991). *The Houses of Roman Italy, 100 BC - AD 250: Ritual, Space, and Decoration*. Berkeley: University of California Press.

Flynn, B. (2012). The Morphology of Space in Virtual Heritage. Chapter 17 from dissertation,

The Somatization of Digital Culture Heritage: Sites in Search of a Body.

Flynn, B. (2005). Gameplay as Interpretive Cultural Heritage. *IADIS International Journal on WWW/Internet* 3.2.1-10.

Frischer, B. (2007). The Hadrian's Villa Project. University of Virgina. Retrieved from http://vwhl.clas.virginia.edu/villa.html

Frischer, B. (2012). Rome Reborn. University of Virginia. Retrieved from http://www.romereborn.virginia.edu/

Gee, J. P. (2008). Video Games and Embodiment. *Games and Culture* 3 (3-4), 253-263.

Montello, D. R. (2007). The Contribution of Space Syntax to a Comprehensive Theory of Environmental Psychology. *Proceedings, 6th International Space Syntax Symposium*.

Platt, V. (2002). Viewing, Desiring, Believing: confronting the divine in a Pompeian house. *Art History* 25 (1), 87-112.

Packer, J. (1997). *The Forum of Trajan in Rome*. Berkeley: University of California Press.

Shinkle, E. (2003). Gardens, games, and the anamorphic subject: tracing the body in the virtual landscape. *Fine Art Forum*.

Stöger, J. (2011). *Rethinking Ostia: a spatial inquiry into the urban society of Rome's imperial port-town*. Dissertation, University of Leiden. http://hdl.handle.net/1887/18192

Strocka, V. M., ed. (1984-2004). *Häuser in Pompeji* (12 volumes). Munich: Hirmer Verlag.

von Stackelberg, K. T. (2009). *The Roman Garden: Space, sense, and society*. London: Routledge Monographs in Classical Studies.