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Theorizing Digital Cultural Heritage

A Critical Discourse

Edited by Fiona Cameron and Sarah Kenderdine

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Introduction

The early 1980s witnessed the first application of computer graphics to historical reconstruction in a project on the Roman Baths (Woodward 1991, 18–20). Since then, digital media have been used to create increasingly complex, rich, and interactively-driven projects focusing on historical sites and contexts around the world (Forte and Siliotti 1996). These visually and aurally stunning digital representations of objects and events raise problematic issues for the creation of meaningful virtual heritage environments. One of the central objectives in many of these environments is to communicate experiential dimensions of another place from another time. If a sense of *place-centeredness* is an important goal in virtual heritage projects, how should they support something more than, to borrow Naimark's terms (1998), either *moving around* or *looking around*? Can virtual environments help us question or modify people's understanding of the cultural significance of heritage sites? What kinds of activities may foster a richer sense of place?

Despite the centrality of *place* as a structuring concept in virtual heritage environments, what this specific sense of place might be remains an elusive question. Instead of grappling with a potentially circular argument such as *here is a place because it was designed to be a place*, this essay develops a more graduated approach to understanding features of different kinds of virtual places and the cultural and social functions they facilitate. It is hoped that such an approach will enable us to both analyze and design various virtual environments. According to this approach, most current virtual heritage environments can be categorized—based on designer intention—into spatially visualized, activity-based, or hermeneutic environments.

The essay is organized as follows. Section 16.1 provides a brief overview of the passage from the early days of digital imagery to the current interactive multimedia

representations, and how the notion of place has come to occupy a central position in interactive digital environments. In the context of virtual heritage applications, we discuss place and "placeness" and suggest that it is more than just visual realism of the highest possible order. We draw upon concepts from architecture and cultural geography to suggest that place is much more than just a locator of objects.

Section 16.2 extends the preceding general discussion into specific elements of "placemaking." Using selected perspectives from literature on virtual environments, the discussion identifies a number of specific features of placemaking. It is suggested that virtual heritage environments need to support hermeneutic features of place.

Section 16.3 introduces a graduated matrix for correlating types of virtual environments, features of place, and the types of relations they engender. Section 16.4 describes a research project that explores some of the issues introduced in this essay in a specific virtual heritage project, followed by concluding remarks.

16.1 Finding Place

Once Ivan Sutherland likened computer graphics to "a looking glass into a mathematical wonderland," it was only a matter of time before other wonders and lands became visible through this looking glass (1996, 506–508). The developments in digital media that have followed have led to production of many seductive and mesmerizing wonderlands based on real and imagined environments.

Aspen Moviemap, for example, was one of the earliest projects to allow interactive exploration of the city of Aspen (Lippman 1980, 32–42). While Aspen Moviemap was an experiment in re-presenting real-world using digital media, more recent projects have been developed with a view to digitally rendering not just existing but also past environments. The projects in virtual archaeology range in scope from single monuments to entire landscapes, and represent a singular moment in time or encompass historic development of place over time (Forte and Siliotti 1996). Even if many of these projects are driven by what the technology can do, there is increasing awareness that such projects are interpretive exercises¹ and a place may be only partially reconstructed through digital representations.

Some interesting responses to the nature of place are explored in multiuser and role-playing environments (especially in games and entertainment). These projects revolve around the notion of users doing something besides moving around or looking around. Further, the awareness of actions of others interacting with the information at the same time is an essential design element. Thus besides a three-dimensional setting

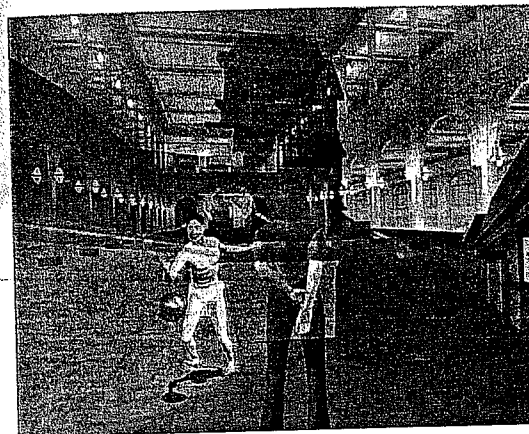


Figure 16.1 Parallel worlds (Palenque project).

we now see the introduction of multiple layers, e.g., awareness of others, causality, moveable artifacts, etc., being introduced in interactive digital environments.

Although sense of place did not dominate Sutherland's mathematical wonderland, we now regard place as one of the most recurring and binding themes in the current projects, especially in virtual environments. For example, historical reconstructions need a grounded anchor whether it is a landscape or a map. Even fictitious Active Worlds communities revolve around territorial demarcations in an imaginary space (figures 16.1 and 16.2).

This raises another nagging question. Is the notion of place in interactive games somehow identical to the notion of place in virtual heritage projects? If not, in what ways are they different? Is there any "there" *there*?

As suggested earlier, it is not enough to claim that these digital environments constitute places simply because they are designed as places. Something more is needed to be able to distinguish one place from another and also to tell if it succeeds in its version of "placeness."

Since many virtual heritage projects invest significant effort in achieving a high degree of visual fidelity, it is tempting to use a degree of realism as one of the yard sticks to distinguish different kinds of places. For we have many technologies at our disposal

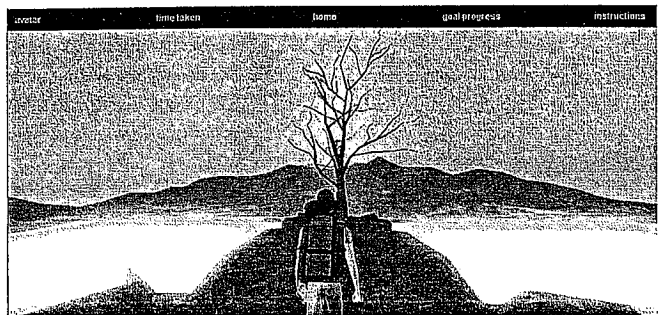


Figure 16.2 Crocodile mountain (Palenque project).

to increase the realism of virtual places, 3D laser scanning, dynamic level of detail, and procedurally generated texture maps for dynamic and fluid objects.

However, saturating a virtual environment with detail does not necessarily create a strong sense of "place." In fact, if viewers of such information only remain as spectators to overwhelmingly precise details, we would not have advanced any further than being passive wanderers in such environments.

Photorealism certainly has value but not as the most essential and differentiating feature to foster a sense of place. For example, fog and London appear as almost inseparable in literature, paintings, and most people's memories of the city. This suggests that we often remember a place through its atmosphere rather than through accurate recall of details of objects that populate a place.

Our knowledge of a place is also deepened not by being passive receivers but by our activities as shaped by that place, and our identification with or against that place. Instead of virtual environments simply being locators of objects, we need some way to communicate the cultural dimensions of such environments. Instead of evoking "cyberspace," such environments need to support interactive *construction* of a shared notion of "place" around some cultural beliefs and encounters of human transactions in real space.²

If the above suggests that photorealism may be seductive but not enough, and that interactive *construction* of something exceeding that which is visible is needed to convey a sense of place, where can we begin?

Although interactive digital media encountered placemaking rather recently, there are other richer and older disciplines that have grappled with these issues. For exam-

ple, architecture, literature, and film revolve around designing place as a locus of possibilities through suggestion rather than through attention to exhaustive details that exclude any other possibilities.

Architectural design, for example, is more than just an assemblage of building elements or physical objects. Truly successful design of spaces uses composition of physical objects, spaces, and contextual conditions to evoke associations that may be metaphorical, allegoric, or thematic. In this process, the interactions between buildings and spaces, the environmental context, and people and their beliefs and values all come into play to create unique places.

As Christian Norberg-Schulz (2000) notes, place is where there is "a dynamic unity of architectural elements, inhabitants and interactions between/among them." Architectural experience is thus interactive. Memorable places, accordingly, are referential and suggestive of possible associations waiting to be made—individually and collectively—only when someone actually experiences the architecture.

For cultural geographers, culture has a setting and this setting is enabled through a perceived sense of place. As culture requires a setting, it must be "embedded in real-life situations, in temporally and spatially-specific ways" (Cragg 1998).

While unique, place is further an "integration of elements of nature and culture . . . interconnected . . . part of a framework of circulation."³ The interactions between these objects and their setting may be quite complex (Canter 1974).

Thus culture is a feedback loop. A visitor appropriates space to make it a unique place according to cultural constructs, place "perpetuates culture," and thus influences the inhabitants in turn. Further, culture almost inevitably involves objects of shared transactional value that are created, used, exchanged, and transmitted from one group or generation to another group of people via social and individually-constructed places.

Place-based transactions thus enable travel through time and space, to explore, and to interact with people and objects, and share in the place-specific relations. Carla Cipolla (2004) would see this as travel as opposed to tourism: "The *relation* can begin when a traveller, without preconceptions or prefigured images, encounters a community, a monument, a natural environment or a cultural expression" (original emphasis).

16.2 Elements of Placemaking

Instead of focusing solely on creating spatially accurate digital reconstructions in virtual environments, we need ways to support a sense of place by drawing upon what we understand about representations and lived experiences. Based on the kinds of disciplines

cultural setting (a place that indicates certain types of social behavior), *artifacts* (and how they are used), and *social agency and contextual tasks*, i.e., people teaching others a social background and how to behave *along with* one's personal motives.

One way to approach this issue is to view (and design) digital environments which represent human cultures within a *hermeneutic* dimension or capacity, (that afford an actively engaged interpretation of the lives and intentions of past inhabitants). The hermeneutic features of place in digital environments are almost certainly more difficult to incorporate, but that does not negate their importance. Luckily for virtual environment designers, these hermeneutic features have been described by social scientists who maintain that people develop shared cultural perspectives of place in many different ways.

Places and Functions

Instead of using the degree of visual correspondence between real and virtual worlds to discuss *place*, we propose a matrix (table 16.1) that correlates multiple dimensions of virtual environments in terms of purposes they serve, features they require, and experiential potential they offer.

Such a graduated categorization, on the one hand, allows us to correlate placemaking features to general aims of virtual environments (spatial visualization, entertainment, social and participatory to culturally immersive experience). On the other hand, it also suggests that a hermeneutic virtual environment (one that has to be actively interpreted by a participant) may be the most difficult to compose (table 16.1).

According to the proposed matrix, the most easily achievable kinds of places comprise visualization and manipulation of three-dimensional objects. A more advanced representation of such places may include their contextual settings (e.g., landscapes) and the ability to navigate through them. Although we can now adequately capture realistic detail and approximate believable physical behavior of objects, this type of digital environment, while achievable and useful for various scientific purposes, only represents spatial configurations and navigation through them.

The second type of virtual environment, the one that affords activity-based behavior, allows a more interactive form of empathetic insideness. Tasks can be accomplished inside the environment through interaction, supplemented with decision-making and navigation for a more immersed experience. Computer games and flight simulation applications perhaps best convey this type of digital environment.

Table 16.1
Graduation of Place and Cultural Functions

Type of VE	Relph's categories	Features	Personal/Cultural Attachment
Spatial Visualization	Existential outsidership- (Objective)	Locational (links)	Locates setting
		Navigational (orients)	Locates paths and centers
Activity-based	Vicarious-behavioral-empathetic insideness (Activity and Events)	Memorable (unique)	Has uniquely occurring events
		Territorial (protects)	Locates shelter; repose in regards to dynamic environment
Hermeneutic	Existential insideness (Symbolic)	Modifiable	The artifacts and surrounds can be modified
		Culturally coded	Supports an idea of agency-directed symbols that reveal secrets of the environment
		Abandoned inhabitation	Evokes an idea of social agency and past inhabitation
		Lived-in inhabitation	Supports interpersonal social behavior through human and/or computer agents
		Home	Affords personal shelter, primary orientation, identification, possession and collection of artifacts

However, only if the environment evokes a notion of others interacting with the environment in ways similar or dissimilar to us, does the digital world begin to form, or, to quote Heidegger, "worlds world" (the world around us unfolds as a world of possibility). While online game communities appear to create and record meaningful encounters (via "mods" and online forums and the selling of virtual roles or equipment), their add-on meaning is generally outside of the virtual environment. Only where the environment itself shapes and is shaped by interaction that is informed by appropriate and extensive social and cultural learning, can we begin to say that it is a "world" (Weckström 2004).

briefly mentioned above, we find some specific criteria emerging. For example, Yehuda Kalay and John Marx propose eight criteria for "cyber-placemaking" based on several concepts in architecture and town planning (2001, 230–240). These include place as setting for an event, that is engaging, provides relative location (i.e., orientation), provides authenticity, is adaptable, affords a variety of experiences, affords choice and control over transitions, and is inherently memorable. Although these criteria are useful, they do not help us to determine which of the above features are most important, necessary, or even desired, for different types of virtual environments. Further, they do not address several important features of place.

For instance, places are not just memorable but also evocative. Hartshorne said geography is a need to "fix the memory of the places which surround us" (Relph 1986, 5). Geography indirectly highlights our schemas of place—be they telluric, projected landforms, or urban. When triggering mental associations to these schemas, place is evocative, evoking remembered sensations of its previous self, of related activities or even of similar places.

Place gains unique character through time and use. Place is not just adaptable, but also markable, recordable, it leaves signs of its use; it reveals the way it was used and perceived by the way in which it has eroded (Massey 1993, 230, 240). In this sense one can argue that place is an artifact, as past events can often be inferred from it.

Place implies a certain type of setting, of occasion (Neumann 1996). A designer is required to invent cities, individual buildings and spaces and to provide them with a history, and with patterns and allusive traces of use in order to connect them to underlying narratives and to endow them with meaning. For while many see environmental designers as creating products, many actually create products that appear to have been eroded by use, in order to make them seem more familiar or appear more popular (Champion 1993, 81–84).

Place is also defined by its relation to other places, we often populate place with artifacts from other places. Hence some of its uniqueness is ironically formed in relation to *other places* where a traveler has been (Massey 1993).

To approximate reality requires settings for social transactions that are location-specific and task-specific. There is also a need for transition zones of perceived physiological comfort and discomfort. These features are often associated with thematic symbolism in architecture (Champion 1993). Architecture modifies behavior through symbolic cues, offers paths and centers so that we can navigate and orient ourselves, and suggests the passage of time as well as records the meetings of people.

These encounters are marked through the wearing of surface and the development of portable artifacts that locate and define social rituals.

Coyne (1999) argues one way of creating virtual space is where "cyberspace enables and constrains human interaction in ways similar to physical space." Architecture is also a filter of human-environment interaction, yet is not fully utilized in virtual environments as either affordance or as constraint. A feeling of place is dynamically impacted by environmental constraints. These constraints help define the place and suggest certain ways of acting inside that place. For example, we place or site and center ourselves optimally inside a field of forces that affect our task efficiency (e.g., path of least resistance), our social standing, and our feelings of comfort.

Place is also "artificially" defined. We place artifacts in relation to our perception of how we appreciate or dislike environmental features. A bed may be close to the window but turned away from intense morning light. So our idea of place is identifiable as a locus between environmental features and personal or physical preferences. "Placed" (spatial) artifacts can indicate social relations between people and between artifacts, such as houses close to or far from each other (Schiffer and Miller 1999).

And artifacts are not just social, they are also cultural; they have a past meaning that informs a current use. The artifacts act like a library of memory cues to remind people how to behave according to certain events or locations.⁴ Not just objects but also the wider environment can act as an artifact. Place is also a collection of symbolic cues for inhabitation and for territorial possession (Rapoport 1982).

As Edward Relph noted, "The identity of a place is comprised of three interrelated components, each irreducible to the other: physical features or appearance, observable activities and functions, and meanings or symbols" (1986, 25). So the placemaking criteria of Kalay and Marx address only two major types of environments addressed by Relph, environments that afford "physical features or appearances," and those that afford "activities." The Kalay-Marx criteria, being based on modes of reality, do not address virtual environments that attempt to offer interpretations of past and present cultures.

Partly this omission is due to the fact that it is difficult to simulate culture, virtually or otherwise. As Yi-Fu Tuan (1998) notes, "Seeing what is *not* there [our emphasis] lies at the foundation of all human culture," yet virtual environments by convention attempt to simulate what *is* there.

In order to create culturally evocative environments, we need to understand how elements disseminate cultural information. According to Schiffer and Miller (1999), we learn about a culture by dynamically participating in the interactions between

A hermeneutic environment requires the ability to personalize and communicate individual perceptions through artifacts, and the more deeply this cultural communication can be unselfconsciously expressed through our modification of our surrounds, the more this environment becomes a dwelling, a home, a place. The degree of complexity of such a virtual environment may range from merely believing people with a different worldviewpoint existed in an environment, to feeling that we are being rejected or assimilated by another culture, to feeling that we are "home" and that we "belong."

At the moment, we know of no virtual environment that can compare in emotional attachment to a real-world home, and hence we argue that this is the most difficult type of virtual environment to create (Weckström 2004). However, we can test for "mild" hermeneutic immersion in a virtual world, where a participant begins to use and develop the codes of other cultures in order to orient and solve tasks, and to communicate the value and significance of those tasks and goals to others.

The distinction between the three types of environments is determined by the degree to which the virtual environment can support tasks and activities through which one is able to form a mental model and understanding of another place and time. The particular type of virtual environment that might be required thus depends on the amount and intensity of cultural perspective that needs to be generated and communicated.

Place and Interpretive (Re)constructions

For creating a virtual environment with a notion of a "place" (a region recognizable to a user as a culturally coded setting), we need to have more than merely identifiable or evocative virtual environments. A virtual environment must allow us to see as much as possible through the eyes of the original inhabitants. It must also suggest ideas of thematically related events, evidence of social autonomy, notions of territorial possession and shelter, and focal points of artifactual possession. In other words, the virtual environment must provide a perspective of a past culture to a user in a manner similar to that deduced by trained archaeologists and anthropologists from material remains (fossils, pottery shards, ruins, and the like).

In addition to goals for participants in virtual environments, interactive elements are needed to enable and encourage participants to reach those goals. We suggest that there are fundamentally three such interactive elements: social agency, modifiable artifacts, and dynamic environments.

There is a growing support for the view that physical space and engagements need to address perceptions of appropriate or believable social behaviors (Schuemie 2001, 182–202). If social behavior is an important way of transmitting cultural information in relation to artifacts, then we require some form of seemingly autonomous social agents, whether computer-based or other participants.

Designers of real and virtual environments also need to build on the relationship between patterns of inhabitation and usage of spatial artifacts, such as furnishings.⁵ Even if the word "culture" is a noun and not a verb, cultures are intangible processes acting through tangible objects. Cultures can only exist socially through artifacts, labeled by Sauer as "agents of change" (Crang 1998). However, artifacts alone constitute only a fragment of the cultural process. To fully understand a cultural environment, one requires both artifacts and an idea of the task that motivates using them.

Some of the most effective constraints in both physical and virtual realms that offer and often dictate behavioral cues are derived from the dynamic nature of real-world environments. Modeling such dynamic environments can range from shelter and familiar territory, to a hostile world, depending on task direction, artifacts carried, and their impacts on users' abilities.

Such environments can be permanently modified by user interactions. Some parts of the environment may impede the progress of the user in order for the user to recognize trails and paths, and socially accepted ways of traveling through the environment. The other parts of the environment may be deleterious to the avatar's metaphorical health—in other words, they act as constraints. The dangers and opportunities of the environment could be contextually related to the local cultural perspective. Thus, to advance through the environment the user must develop an awareness of the cultural context as it supports or impedes his/her progress.

Construction of "Place"

In the Collaboratory for Architectural and Environmental Visualisation (Dave 2001, 242–247), we are exploring and investigating whether digital environments that are *recordable, evocative, referential, and hybrid* contribute to a more engaging sense of "place" (figure 16.3).

One recent research project revolves around Palenque, Mexico, a major Mayan site full of rich details from geography to myths, from highly advanced scripts to ritually charged architecture. In this project, meaning is conveyed through the type of interaction and goal achieved, rather than through the quantity and quality of

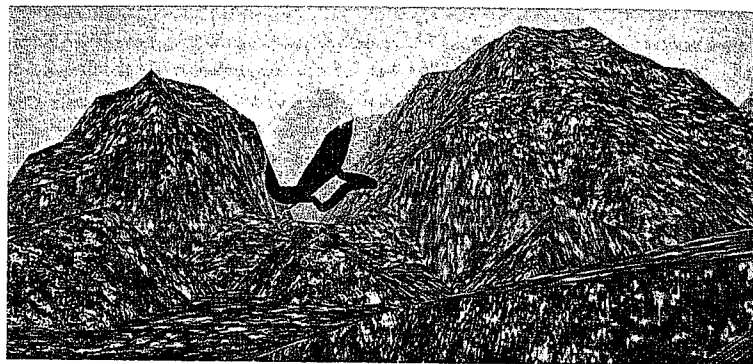


Figure 16.3 Mythological sky snake (Palenque project).

photorealistic material. In future research we hope to also ascertain how cultural learning and a sense of authenticity is affected by the existence of others in the same virtual environment.

The digital information is purposefully designed to be abstract and suggestive rather than being perceptibly complete at a first glance. The digital environment employs tasks, events, artifacts, and interactors that are a function of place, time, and the user's understanding of Mayan beliefs and actions.

The underlying motive is to enable users to construct an understanding of another place and time (even if this may lead initially to erroneous choices and interpretations by the user). Further, in order to investigate various dimensions of how users develop such constructions of another culture, this project supports three separate interaction modes: observing (moving and looking around), being instructed (by scripted agents), and acting (manipulation of objects in order to accomplish tasks).

Conclusion

A sense of place in virtual environments and real experiences is not just a consequence of being surrounded by a spatial setting but of being engaged in another place. A place is particular, unique, dynamic, and memorably related to other places, peoples, and events, and it is hermeneutic. The essay argues for and proposes a more graduated

approach to understanding features of different kinds of virtual places, and the cultural and social functions they facilitate in order to guide the judicious selection of appropriate design elements and technologies.

Acknowledgment

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Notes

1. See Eiteljorg 1998 and Mosaker 2001.
2. See Benedikt 1991, Johnson 1997, Heim 1998, and Coyne 1999.
3. See Fred Lukermann, cited in Relph 1986, 3.
4. See Johnson 1997, Crang 1998, and Relph 1986.
5. See Rapoport 1982 and Beckmann 1998.

References

- Beckmann, John, ed. 1998. *The Virtual Dimension: Architecture, Representation, and Crash Culture*. New York: Princeton Architectural Press.
- Benedikt, Michael, ed. 1991. *Cyberspace: First Steps*. Cambridge, Mass.: MIT Press.
- Canter, Donald. 1974. *Psychology for Architects*. London: Applied Science Publishers.
- Champion, Erik. 1993. "Scandinavian Architecture Redefined." In *Architecture New Zealand* (January/February): 81–84.
- Cipolla, Carla M. 2004. "Tourist or Guest: Designing Tourism Experiences or Hospitality Relations?" *Design Philosophy Papers*, February. Available at <http://www.desphilosophy.com/dpp/dpp_journal/paper2/dpp_paper2> (accessed 7 January 2005).
- Coyne, Richard. 1999. *Technoromanticism: Digital Narrative, Holism, and the Romance of the Real*. Cambridge, Mass.: MIT Press.
- Crang, Michael. 1998. *Cultural Geography*. London: Routledge.
- Dave, Bharat. 2001. "Immersive Modelling Environments." In *Proceedings of ACADIA 2001: Reinventing the Discourse*, ed. W. Jabi, 242–247, Buffalo, N.Y.: ACADIA.

Eiteljorg, Harrison. 1998. "Photorealistic Visualizations May Be Too Good," *CSA Newsletter* 11, no. 2 (fall). Available at <http://csanet.org/newsletter/#fall98> (accessed 29 March 2005).

Forte, Maurizio, and Alberto Siliotti, eds. 1996. *Virtual Archaeology: Great Discoveries Brought to Life Through Virtual Reality*. London: Thames and Hudson.

Hartshorne, Richard. 1959. *Perspectives on the Nature of Geography*. Chicago: Rand McNally.

Heim, Michael. 1998. "Creating the Virtual Middle Ground." *TECHNOS Quarterly for Education and Technology* 7, no. 3. Available at http://www.technos.net/tq_07/3heim.htm (accessed 29 March 2005).

Johnson, Steven. 1997. *Interface Culture: How New Technology Transforms the Way We Think and Communicate*. San Francisco: HarperEdge.

Kalay, Yehuda, and John Marx. 2001. "Architecture and the Internet: Designing Places in Cyberspace." In *Proceedings of ACADIA 2001: Reinventing the Discourse*, ed. W. Jabi, 230–240. Buffalo, N.Y.: ACADIA.

Lippman, Andrew. 1980. "Movie-Maps: An Application of the Optical Video Disc to Computer Graphics." *Computer Graphics* 14, no. 3: 32–42.

Lukermann, Fred. 1961. "The Concept of Location in Classical Geography." *Annals* (Association of American Geographers), 51: 194–210.

Massey, Dorothy. 1993. "A Global Sense of Place." In *Studying Culture: An Introductory Reader*, ed. A. Gray and J. McGuigan, 232–240. London: E. Arnold.

Mosaker, Lidunn. 2001. "Visualizing Historical Knowledge Using VR Technology." *Digital Creativity S&Z* 12, no. 1: 15–25.

Naimark, Michael. 1998. "Place Runs Deep: Virtuality, Place, and Indigenesness." *Virtual Museums Symposium*, Salzburg. Available at <http://www.naimark.net/writing/salzberg.html> (accessed 29 March 2005).

Neumann, Dietrich, ed. 1996. *Film Architecture: Set Designs From Metropolis to Blade Runner*. New York: Prestel-Verlag.

Norberg-Schulz, Christian. 2000. *Architecture: Presence, Language, Place*. Milan: Skira editore.

Rapoport, Amos. 1982. *The Meaning of the Built Environment: A Nonverbal Communication Approach*. Beverly Hills: Sage Publications.

Relf, Edward. 1986. *Place and Placelessness*. London: Pion.

Schiffer, Michael, and Andrea Miller. 1999. *The Material Life of Human Beings: Artefacts, Behaviour and Communication*. London: Routledge.

Schuemie, Martijn J., Peter van der Straatten, Merel Krijn, and Charles van der Mast. 2002. "Research on Presence in VR: A Survey." *Cyberpsychology and Behavior* 4, no. 2: 182–202.

Sutherland, Ivan. 1965. "The Ultimate Display." In *Proceedings of the IFIPS Congress*, 506–508, New York: IFIP.

Tuan, Yi-Fu. 1998. *Escapism*. Baltimore: John Hopkins University Press.

Weckström, Niklas. 2004. "Finding 'reality' in Virtual Environments." Helsingfors/Esbo: Arcada Polytechnic, Department of Media, Media Culture. Available at http://people.arcada.fi/~weckstrn/Degree_Thesis_NW_2004.pdf (accessed 29 March 2005).

Woodward, J. 1991. "Reconstructing History with Computer Graphics." *IEEE Computer Graphics and Applications* 11, no. 2: 18–20.

20 *Geo-Storytelling: A Living Archive of Spatial Culture*

Scot T. Refsland, Marc Tuters, and Jim Cooley

Introduction

While standard archaeological and historical documentation methodologies serve humankind well in accurately preserving and indexing cultural and natural heritage, next generation emerging technologies are now challenging current archival, presentation, and historical versioning practices. While first and second generation attempts at creating a “virtual heritage” experience through technologies like virtual reality have typically fallen dismally short of their much publicized claims, current versions are now succeeding in accurately presenting and documenting history. An excellent example is the University of Birmingham’s seismic data visualization of a spectacular prehistoric landscape previously unknown to science, where early man roamed more than 10,000 years ago, deep beneath the North Sea (figure 20.1) (Stone 2005).

The stabilization of inexpensive and highly usable technology has accelerated the focus upon more sophisticated content development and presentation, adding new multi-viewpoints, new layers of storytelling, and creating dynamic, living archives of spatial culture. These emerging technological paradigms are pushing for new, transforming notions of how historical documentation and indexing might be both constructed and maintained in the near future.

Due in large part to the “off-the-shelf” commercial availability and highly inexpensive usable technologies such as data-capable cellular phones, Geographical Positioning Systems (GPS) receivers, and Smart Personal Objects Technology (SPOT), the notion of location-encoded media has begun to seep into the public consciousness. GPS technologies now appear regularly in Hollywood movies, such as “Mission Impossible,” as well as in mobile, location-aware computing games such as “MOGI,” which utilize GPS to enable players to see each other’s locations (Terdinan 2005). Soon we will

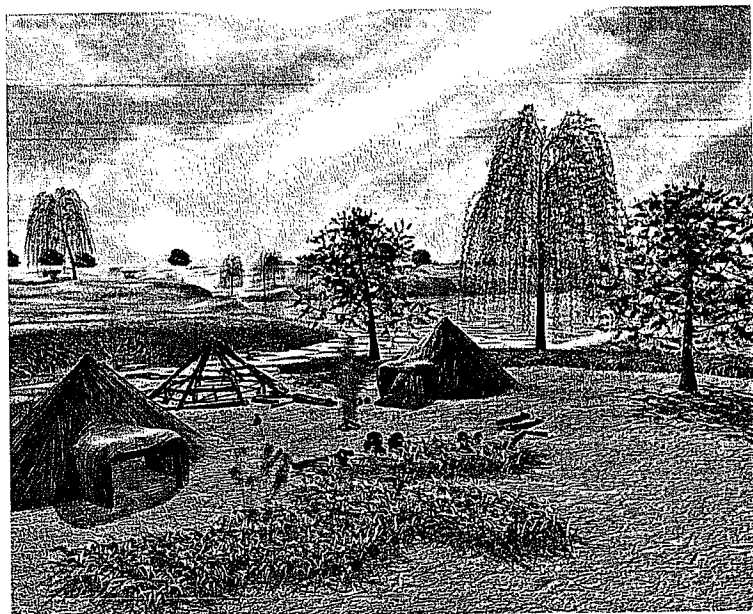


Figure 20.1 Meso House near the Shotton River Stream in a recreation of the prehistoric landscape over 10,000 years ago that is now the North Sea. Credit: R. Stone and E. Ch'ng.

see a sweeping ubiquity of location-aware technology become a standard feature embedded in the next generation of wireless devices.

Location-aware wireless devices will hypothetically permit an immersive experience in which users will be able to browse layers of digital information encoded to a particular place, just as they now surf the Internet, invoking potential models of interaction, that appear "as limitless as the possibilities of reality" (Fisher 1991, 101–111). In its darker manifestation, however, pervasive location-awareness also brings with it the possibility of a user being tracked wherever there is a service signal. This sense of "big brother" has been the subject of much debate among media artists, who are often early adopters/explorers of emerging media, where the field is frequently referred to as "locative media."

Although cultural producers have not been using locative media for long, an unconventional theater group from the UK known as Blast Theory has developed a series of award-winning locative projects modeled on networked interactive entertainment. Blast Theory projects such as *Roy All Around-You* (figure 20.2), allow participants equipped with mobile location-aware devices to interact with other players online. Yet, while these early experiments have proven remarkably popular with audiences, their "command and control" model of interaction is not perhaps as well-suited to cultural heritage asset production.

Perhaps a more appropriate example of locative media for the purposes of virtual heritage can be found in the concept of Geograffiti, which proposes an open-access spatial authoring system for mobile, network-enabled, location-aware devices (Tuters 2004, 78–82). Etymologically derived from the Roman practice of scratching political messages onto public walls (graffito), graffiti has a long political history, throughout many cultures, as a form of public expression, yet today it is widely considered a violation of some basic principle of consensual social order. Geograffiti, however, can be conceived of as a kind of "virtual graffiti" that allows one to interact with a space without visibly altering it.¹ Indeed, what is interesting about locative media in the context of virtual heritage is that it makes possible the notion of a collaborative mapping of space, and the intelligent social filtering or "narrowcasting" of that space, so that it is only experienced by those who so desire, and are so equipped. This has the potential to significantly impact the dominant modes of representation, most notably the linear, expository narrative.

Flexible Storytelling

Storytelling is one of the oldest art forms of human beings; initiated in the oral tradition, its form has evolved with changes in society and available media with which to work. The oral storyteller often altered the tale as it was told, choosing words based on response from the listeners to build the collective moment. Of particular relevance here is the Australian aboriginal storytelling tradition in which territory is not perceived as a piece of land enclosed within borders, but as "an interlocking network of 'lines' or 'ways through'" (Chatwin 1987). Sung into existence by the ancestors, these stories actually function as maps of their terrain that can be augmented by the accounts of travelers. Interactive in the beginning, with the advent of the written medium, storytelling evolved into a noninteractive narrative style.

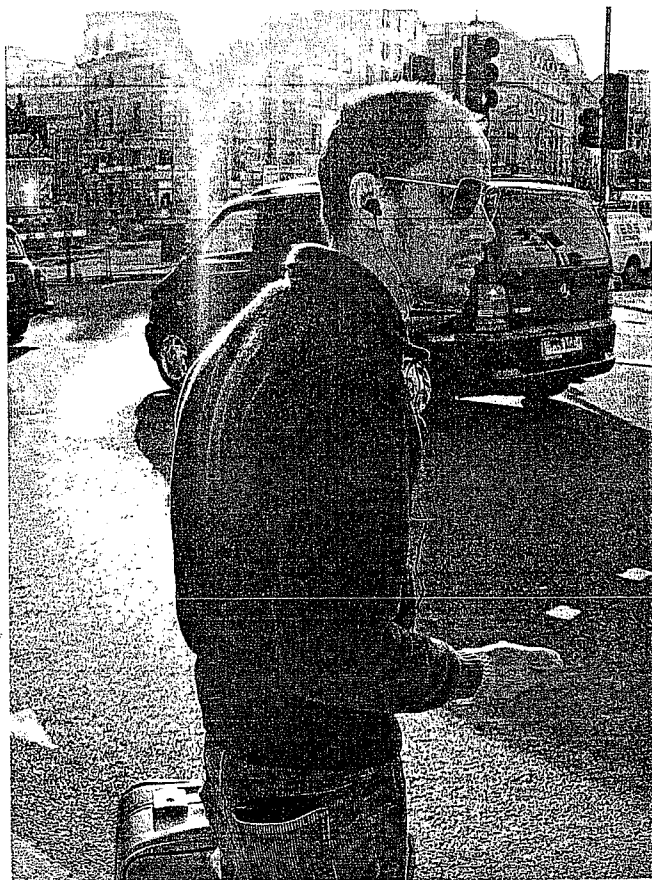


Figure 20.2 A street player using a handheld computer to search for Uncle Roy, guided by an interactive map and messages from online players. Courtesy Blast Theory: Mixed Reality Lab.

The digital era has provided a more flexible medium for storytelling. In the primitive digital sense technology, like hyperlinking, allows weaving of myriad paths through an otherwise linear presentation, and also allows inclusion of side-bar material without disrupting the story for those uninterested in its detail. Stories or articles can be authored statically, ahead of the reading, or dynamically generated "on-the-fly." This provides a medium that can capture more of the richness of the interactive storytelling present in the original oral tradition than previously available. In a mobile context within a cultural heritage landscape, technology can provide rich scenes upon which to set a tale or narrative, allowing the viewer to see details that could previously only be imagined.

Heritage content is typically pieced together from "objective" scientific records, making it almost impossible to intelligently translate a coherent first-person narrative from all the facts. In the context of a museum or heritage display, the physical artifacts are arranged in a collection of linear stories by a curator in order to convey a prepackaged slice of some larger set of holistic events. Yet each artifact has its own story and those stories have different prevailing accepted and controversial depictions.

Collaborative cartography potentially causes a crisis for those areas which had been defined by single dominant narratives. With the anticipated accessibility of locative-media authoring systems, a flood of amateur content producers, eager to contribute to the collaborative map, will inevitably be among the early adopters. With a multitude of voices telling different stories in any given space, one might consider this a kind of ecosystem, which produces a decentralized vision of virtual heritage.

Heritage Ecology

Media ecology is a term coined by the famed media scholar Marshall McLuhan for considering the whole field of production when engaging with a problem regarding media (Haynes 2004, 227–247). In 1977, McLuhan said that media ecology means:

arranging various media to help each other so they won't cancel each other out, to buttress one medium with another. You might say, for example, that radio is a bigger help to literacy than television, but television might be a very wonderful aid to teaching languages. And so you can do some things on some media that you cannot do on others. And, therefore, if you watch the whole field, you can prevent this waste that comes by one canceling the other out.

While having identified a problem regarding the absence of multiple points-of-view in the traditional field of heritage, a media ecologist would argue that if anything, there is an overabundance of "first-person" points-of-view in the broader field of contemporary media production. Perhaps the most obvious example of this is the Web-logging, or blogging phenomenon. While the majority of "blogs" are simply personal diaries, written for niche audiences, the sheer number of blogs means there is something out there for everyone. Because of the fact that blogs tend to be written in machine-readable format, that can be reused across application, enterprise, and community boundaries, bloggers are able to syndicate their data in the form of "feeds," which readers can, in turn, subscribe to. With the emergence of applications that allow one to associate feeds with given locations and the migration of blogging to mobile platforms (moblogs), it may only be a matter of time before these merge (Kellner and Petersen 2004). Such locative media systems would allow tomorrow's mobloggers to interact with as well as to author a multitude of different points-of-view on a particular location.

When considering locative media, perhaps the field of virtual heritage could highly benefit from this emergent public interest in archiving spatial culture. Endorsing and supporting a program of community review of cultural heritage documentation might facilitate the emergence of a common resource for local knowledge-sharing. As with the online encyclopedia Wikipedia, this would be constructed and maintained by an army of hobbyist volunteers. Such a distributed effort could prove invaluable in maintaining an informative, unbiased presentation of the often-disputed facts of history.

A potentially relevant future direction for this global project to collaboratively map spatial culture might be that of the Geoscope, a project proposed by the visionary philosopher of science, R. Buckminster Fuller (Fuller and Kuromiya 1981, 133–140). Geoscope was to be a fully computerized globe, a tool for planning and stewardship that was supposed to make the entire world "dynamically viewable... to all the world, so that common consideration... of all world problems by all world people would become a practical everyday, hour and minute event." According to Fuller, "With the Geoscope humanity would be able to recognize formerly invisible patterns and thereby to forecast and plan in vastly greater magnitude than heretofore. The consequences of various world plans could be computed and projected, using the accumulated history." The beauty of drawing on Fuller's science fiction utopia as a pedigree for the virtual heritage archiving project is that it does not necessitate the destruction of the old in order to construct the new. To the contrary, in fact, in the service of heritage, locative systems preserve space and culture.

Channeling the current zeitgeist around online collaborative development into a project for mapping cultural heritage as a shared resource would help the field of virtual heritage steward the construction of a definitive archive of spatial culture. Having recognized the validity of this decentralized model of cultural asset production, virtual heritage could greatly improve its efficacy by developing user-centered and dynamic systems for nonlinear storytelling. Such a system would give users the sensation of being able to navigate beyond the official story of heritage into a web of interconnected complexity. Crucially, however, the objective of virtual heritage might also be to help simplify and organize the chaos of "Geograffiti" so as to facilitate a degree of situated awareness among the supertechnologically equipped citizens of the locative future. And while plans to steward such a project might indeed sound like science fiction, in closing we might simply consider the words of Fredrick Jameson (1982) for whom "the 'science fiction' utopia serves not to give us 'images' of the future... but rather to defamiliarize and restructure our experience of our own present" (147–158). We need these new visions of the technological future in order to better manage the present.

Note

1. The Geograffiti project developed a wireless Web-client based on a public waypoint-sharing database known as GPSTer.net. Anyone with an Internet connection could add to the database, as well as search for personal points of interest, encoded with positional information via a system known as WhereFi. Rather than use GPS to obtain such positional awareness, the project sought to transform the wireless landscape of Wi-Fi access points, GSM towers, or bluetooth beacons into a public location awareness infrastructure for collaborative cartography.

References

- Chatwin, Bruce. 1987. *The Songlines*. London: Jonathan Cape.
- Fisher, Scot S. 1991. "Virtual Environments, Personal Simulation, & Telepresence." In *Virtual Reality: Theory, Practice and Promise*, ed. S. Helsel and J. Roth, 101–111. San Francisco: Meckler.
- Fuller, R. B., and K. Kuromiya. 1981. *Critical Path*. New York: St. Martin's Press.
- Haynes, L. W. 2004. "Original Sin or Saving Grace? Speech in Media Ecology." *Review of Communication* 4, nos. 3–4: 227–247.
- Jameson, F. 1982. "Progress Versus Utopia; or, Can We Imagine the Future?" *Science-Fiction Studies* 9, no. 2: 147–158.

Kellner, S., and F. Petersen. n.d. "plazes.beta," by Plazes. Available at <<http://new.plazes.com/>> (accessed 24 February 2004).

Stone, Robert J. "Scientists Reveal a Lost World Discovered under the North Sea." *Virtual Heritage Network*. Available at <<http://www.virtualheritage.org/news/Article.cfm?NID=1543>> (accessed 18 April 2005).

Terdiman, D. 2004. "Making Wireless Roaming Fun." *WIRED News* (online). Available at <<http://www.wired.com/news/games/0,2101,63011,00.html>> (accessed 18 April 2005).

Tuters, Marc. 2004. "Locative Media as the Digital Production of Nomadic Space." *Geography* 89, no. 1: 78–82.

21 Urban Heritage Representations in Hyperdocuments

Rodrigo Paraizo and José Ripper Kós

The Problem of Representing an Urban Heritage Environment

The representation of urban environments has always been a challenge for those who want to portray a city or a town. Several authors agree that even the term "city" is an artificial creation to facilitate theorizations and representations of urban spaces and the lives performed within them.¹ In the past, cities were enclosed by walls and their territories could be easily determined. Once they became larger than their walls—and even walls were forever removed—city limits could be determined by abstract State regulations, in many cases without a distinct physical counterpart. According to Rob Shields, we "classify an environment as a city and then 'reify' . . . that city as a 'thing.' The notion of 'the city,' the city itself, is a representation" (1996, 227–252).

José Barki (2003) reminds us that people can only understand reality through representations, and that representations are constituted by selected elements put together for a partial and focused understanding of reality, given the complexity of real objects. Each person elaborates a different representation of the same object and even the same person represents it differently in distinct moments. Since many different individuals inhabit cities, they generate a very complex set of social relations, and are constantly elaborating different representations of the place in which they dwell. As a result, there is no ultimate representation of an object—let alone of a city.

When representing an urban heritage environment, two other issues should be addressed: one of them is the need to rely upon limited historical documents to support representation, and the other is the lack of documentation of urban tissues—and ordinary people's lives—in order to depict urban dynamics.

On the other hand, urban spaces, and their buildings, are characterized not only by their forms, but also by their dynamics. If an abandoned church can still be praised for its form, in spite of change (or lack) of use, the same thing seldom happens when