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When Windmills Turn Into Giants: The Conundrum of Virtual Places

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Abstract

While many papers may claim that virtual environments have much to gain from architectural and urban planning theory, few seem to specify in any verifiable or falsifiable way, how notions of place and interaction are best combined and developed for specific needs. The following is an attempt to summarize a theory of place for virtual environments and explain both the shortcomings and the advantages of this theory.

Introduction

What is Virtual Reality (VR)? According to Schroeder (1996, p. 2) it is "often taken to refer to a computer linked to a head-mounted display and a glove. VR systems give the user a sense of being inside a computer-generated environment and of being able to interact with it." The head- mounted displays (HMDs) track where the user's head is looking and update the virtual scene accordingly. While pictures of HMDs grace many computer science labs, few will readily admit they are typically low-resolution with limited field of view, can damage vision (especially in children), have latency problems (Brooks, 1999, p. 19) in updating the screen quickly enough, are typically wired (so the user cannot easily move freely) and the HMDs with good screen resolution are fiendishly expensive.

Due to some of the difficulties of expensive "VR" equipment, I am going to refer to virtual environments rather than to VR. VR has many sci-fi connotations that are often best to avoid and I also wish to talk about the virtual environments commonly used by people, viewed on desktop computers and not via head-mounted displays.

Arguably, the only successful virtual environments so far have been games, flight simulators and architectural walk-throughs. However, commercial success does not necessarily mean that these examples are successful virtual instances of "place." For example, Weckström has recounted how a class of Media students at Arcada in Helsinki found virtual environments "sterile." They surveyed simulators, chat-worlds and games, including *Microsoft flight simulator 2004, TRANSIMS Visualizer, Habbo Hotel, The Sims Online* and *EverQuest.* As a result of this analysis Weckström (2004, p. 38) declared:

> ...a virtual world has to support the following factors: there has to be a feeling of presence, the environment has to be persistent, it has to support interaction, there has to be a representation of the user and it has to support a feeling of specific worldliness.

So there are elements of real places that somehow have been left out of virtual environments. Many writers, frequently from architecture, have made the distinction between place and cyberspace (Benedikt, 1991). Some of these researchers have further attempted to propose features that are needed for place making (Kalay and Marx, 2003). However, they have listed all the features that create a sense of place, not which features create a sense of place for specific audiences and conditions. It is obviously impractical to attempt to provide all place-making features when one designs places for specific purposes, especially considering that real world places do not typically use all these place-making elements. Are there unique aspects to real places as opposed to virtual places?

Realism, Agency and Experience

Perhaps at a conceptual level *place* is fundamentally different from *space* (Harrison and Dourish 1996). It is not however immediately clear to me how a theory of place can be applied to the success or failure of both designed real places and virtual places. Not all virtual environments are intended to be realistic simulations of the real world. And even the most accurate, realistic and powerful virtual environments do not necessarily produce a corresponding increase in user enjoyment (Mosaker, 2000). Such research indicates that lack of engagement have been due to a lack of meaningful content rather than to a lack of realism.

The use of realism may actually cloud the message that the content needs to get across (Mosaker, 2000; Gillings, 2002; Brown and Bell, 2004). By concentrating on achieving photo-realism rather than on understanding any unique capabilities for digital media to enrich the user-experience, some researchers are concerned that the playful potential experience of digital media could be under threat (Brown and Bell, 2004).

To further complicate the matter, many virtual environment designers may desire to allow the visitors to interact or collaborate in the place in a way appropriate to that place rather than to personal tasks or conceptions held by the visitors. A sense of being engaged with different local cultural perspectives is not always possible as a real-time 'tourist' or 'student' (Cipolla, 2004), hence we may, for example, wish for visitors to a virtual environment to encounter mythical or culturally specific perspectives of reality. Digitally mediated technology can attempt to reproduce existing data but they can also modify the learning experience of the user through augmentation, filtering, or constraining. They may also be used to communicate a certain experience, or aesthetic sensation. So attempting realistic places is not always conceptually required, let alone technically possible (especially if being streamed over the Internet).

But the second major issue, once we have solved how the place is to be depicted, is how to interact with it. Not only do people learn through interaction, they learn through watching or inferring the interaction of others. And their interaction and traces of their interaction may interfere with the experience of others. We may or may not wish to see how people have tried to annotate, augment, or vandalize virtual places, but we may not want to be pushed around or obstructed by them. On the other hand, if physical collision is not enabled, we may not feel that we co-inhabit an actual place.

Traditional usability studies will not fully explain the huge recent popularity of online multi- player games (MORGS), nor will they tell us how to create meaningful interaction. Many of these games are crying out for help from HCI specialists to design improved interfaces, they do not necessarily create entirely new forms of narrative or cinematic innovation and yet they are still commercial successes. And unlike a typical software package, which ideally is designed to be easy to learn and easy to master, a virtual place is elusive in boundary and contrary in nature: humans often wish to experience both the periphery and the center, simultaneously. Similarly, a digital game is often designed to be challenging, difficult to learn, and difficult to master (Brown and Bell, 2004). Does it follow then, that these game-worlds are places? Not necessarily, for if a game is perpetually challenging, it will not help afford typical symbolic elements of place, such as rest, stability, shelter and identity. There must be a spatially (and perhaps chronologically) locative distinction between activity and rest, which the player can choose between.

The issue of agency, the degree of interactive control and how that interactive power and interaction history is communicated, is a central concern of game design. However, game designers cheat, using thematic notions of fantasy to ignore, restrict or expel interaction that is too time-consuming or computer memory-intensive to develop or process. Players in a game are consciously entering a make-believe world, so a game designer has more freedom to abstract and reduce extraneous detail.

The issue of fantasy as an important, perhaps necessary game design component was observed over twenty years ago by Malone (1982). Malone explained that HCI traditionally seeks to design software that is easy to learn and easy to master, but noted the founder of Atari said games are designed to be easy to learn but difficult to master. Malone argued that computer games are more like toys than other software applications,

which in turn are more like tools. Unlike shopping web pages, or software designed for office use, games have goals but they do not have to have clear outcomes. They do however incorporate challenge and fantasy, and stimulate curiosity.

Based on his empirical studies, Malone stated that fantasy, curiosity and challenge enabled games to entertain and to captivate. He defined fantasy as incorporating emotionally appealing features, or well mapped cognitive metaphors. Curiosity is an "optimal level of information complexity." It may incorporate randomness or contextual humor. Challenge is based around "a goal whose outcome is uncertain," as there is often variable difficulty level or multiple goals (potentially distributed over different levels). Challenge is not merely about making things difficult, but also making these barriers tantalizing, enticing players to surpass them.

Figure 1: Screenshot of The Elder Scrolls IV: Oblivion by Bethesda Softworks

For example, two of the most popular computer games have been *The Elder Scrolls IV: Oblivion* (single player medieval-styled quest fantasy for game consoles and computers) and *World of Warcraft* (an online multiplayer role-playing fantasy). The degree to which players can choose their character attributes, magical star sign and class, allows them to undertake the game using a myriad of skills and strategies (steal, fight, bribe, trade, charm, enchant, or heal), in order to solve a variety of challenges. They do not buy these games because the games are programmed to have conditions and triggers, they do not play these games because the games are rule-based systems; they play these games because the games *challenge* them to change the world and to explore how these character roles embody and express aspects of their own personality.

Juul (2003) defined a game as "a rule-based formal system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels attached to the outcome and the consequences of the activity are optional and negotiable." Salen and Zimmerman (2003) also wrote that "A game is a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome."

Where is the fun in that? Definitions of computer games as systems, do not address why users find games enjoyable. Despite being in relatively recent publications, these definitions do not directly lead us to producing better games (or, in my case, virtual environments), that users enjoy more. Malone's paper reminds us that games are not played *because* they are systems, so defining games in terms of rules-based systems does not shed any light on the user experience.

What is also striking about computer games is how they can motivate people without explicitly showing them what lies ahead. These games are mysterious knowledge structures that loom out of the dark, closed portals surrounded by long-lost instructions, or meeting grounds of conflict and competition where players do not actually know what happens next, only that there is the possibility of eventual success.

I do not however wish to suggest that challenging digital places are infinite in scale or detail. Even if technology allowed us to create limitless space with infinite power, the lack of constraints may actually bore people. While we may wish to wander through eternal lands, with eternal space we may never find interesting things to experience, we may never meet other humans. If there are too many activities, we may also feel overwhelmed. The possibility that people will be overawed, cognitively overloaded, or even physically exhausted by the technology, is another layer of difficulty in designing virtual places.

To avoid discomfort or boredom, can we evaluate the experience of place? Real places are experienced as a gestalt. And the closer virtual places are to environments, the more that intentions, expectations and experiences may vary spectacularly, according to the differing needs, memories and associations of patrons, users, or clients (Slater, 1999; Mitchell et al. 2000). Such issues compound the difficulty of evaluating whether people thought they were in a different place, rather than staring at a computer screen. For example, Slater (1999) has noted:

> This 'experiencing-as-a-place' is very much what I have tried to convey as a meaning of presence in VEs: people are 'there', they respond to what is 'there' and they remember it as a 'place'. If during the VE experience it were possible to ask the question 'where are you?' - an answer describing the virtual place would be a sign of presence. However, this question cannot be asked - without itself raising the contradiction between where they know themselves to be and the virtual place that their real senses are experiencing.

I don't believe it is a radical claim to therefore suggest there is a shortage of research integrating theory and practice on how best to augment or invoke the context-specific user-experience of place through interactive digital media and others have agreed with me (Gillings, 2002; Weckström 2004). Why do we still have these problems? Partially this is because we are still debating what exactly "place" means, connotative wording and personal agendas are heavily implicated in this debate, a great deal of money has been paid to create and present rather than evaluate virtual environments and virtual environment technology has struggled to provide either a unique "killer application" of place, or directly testable results that show a theory of place can directly help create a better experience of a virtual place.

Designers Require Useful Guidelines

Research into place-making can be described as involving three stages, critiquing the absence of place, prescribing which elements of place are needed and evaluating and extending place- making in virtual environments. For the sake of simplicity, I would argue that the first stage was reached as recently as the mid nineteen nineties. However and despite the increased power and sophistication of technology, we are still somewhere in the second stage of theorizing which elements of place go where. Part of the problem is perhaps that the critical literature is so far descriptive rather than prescriptive. That is, it describes what is wrong or missing with virtual environments, but not how to test possible design solutions.

A paucity of clearly defined concepts prevents designers from developing appropriate place making elements for virtual environments. The challenge of selecting appropriate place making features is not helped by the slippery (and circular) nature of language in the literature and discussion of virtual environments. Perhaps part of the problem is that social notions of place are thematic, symbolic, and circumscribed by habitual use or social ritual. Yet until recently, many designers considered the degree of visual correspondence between real and virtual worlds as a sufficient measure of successful virtual environments. For example, Kalay and Marx use such a scale to classify 'cyber' environments into the following: hyper-reality; abstracted reality; hybrid cyberspace; hyper-virtuality (Kalay and Marx, 2001). However, terminology based solely on appearances or delivery does not explain the aims of designers, the goals of users, or the interactive content that arises out of virtual interaction and interpretation between users in their attempts to solve tasks.

As a provisional answer to the above problem of classification, I wish to suggest five major features of place that could be but often are not addressed in virtual environment design. One caveat: while these features may not be held by all places, most places have at least a few of these features.

Firstly, real world places are dynamic and changeable. Their boundaries may be vague and amorphous. To replicate this effect in a virtual environment we may need to simulate or suggest attenuating environmental forces (for example, wind, fog, rain, directional and dynamic lighting, sound, perhaps even varying vision acuity). Games are beginning to develop this dynamic environmental change. Some games, such as *Black and White*, even updated the game environment with actual local weather conditions via the Internet.

Unfortunately, game environments are not permanently changed by weather conditions, virtual weather is not erosive. And erosion may or may not irritate people who gather in virtual worlds to meet and share

information. If erosion was based on random weather patterns, it may add to the variety of the backdrop, but if it obscured understanding of a conversation (through storms or wind), or if erosion of the virtual world accelerated due to the number of players or the passing of time, a popular virtual world would be a short-lived one. This does not make immediate commercial sense for the creators of social virtual environments.

Secondly, places can range from the comforting to the uncanny, the sublime, to the terrifying. Scale, detail, atmosphere replication, or phobic triggers, heighten the *experiential realism* and are often used in computer games. Unfortunately, what scares one person may not scare another, there are ethical issues in evaluating virtual environments that deliberately terrify, and people become used to the atmospheric triggers or may simply turn the sound down, defeating the purpose of the design.

Thirdly, place is full of references and evocations of related places via the movement of people and their artifacts. It may also evoke images of its previous self, related activities, or other places. Programmers could incorporate a way of triggering past associated environments or events that the virtual environment thinks a visitor has been to. This is perhaps one of the most challenging yet interesting of place-attributes, how to create place-associations. One immediate problem is that the camera view may capture a view of the virtual environment, but that does not mean the viewer is looking in that specific spot or finds it particularly memorable.

Fourthly, place constrains, suggests and localizes activities. The constraints may be highly variable and affect the physical, conceptual, or cultural sides of human experience. This in turn means that place frame communities-ideally one could read a place from the way it frames individual ritual and communal activity. Addressing this feature of place may go some way towards creating a social 'world' which (perhaps counter intuitively) actually limits rather than frees a visitor. The phenomenological world defines itself through limitations and constraints; it is the complexity and interrelationship of these constraints that create opportunities for strategies, not complete agency. Unfortunately, not all virtual environment designers seem to have understood this, preferring to see virtual environments as limitless possibility rather than as an imaginative balance of affordance and constraint (Novak, 1991).

Finally, places are recordable and can be identified through use. Generally, dystopias can be identified by how they do not change according to human use and erosion. Normal places (topias), on the other hand, gain their unique character through the passage of time and use in relation to the ebb and flow and interaction of dynamic physical and climatic changes. As I have noted, real worlds have the ability to be affected (modified) by dynamic and unpredictable environmental forces. Further, the real world is permanently and uniquely changed by our interactions with it. Just as every copper roof changes its patina as a result of the local climate and pollution, so too every page of every book we touch is permanently modified. Research has indicated that one of the pleasures of books is the ability to mark it (Ruecker, 2006), so why not allow this with virtual places? For a real place is a conscious and subconscious palimpsest of our interaction with it.

The above summarizes how five types of place-experiences may be conveyed via digital media. Yet this approach may compel the designer to overload their virtual environment with every possible place feature. The danger of such an approach appears to be already happening in some of the academic literature (Kalay and Marx, 2001; Nitsche et al. 2002; Kalay et al. 2004). Real world places only have some place making features and practical considerations suggest we only create those place features that most effectively trigger the required sensation of place. With this in mind, we can also approach place-experience through designing for different types of audiences and intentions.

Types of Virtual Environments

The simplest stage of visualization is capturing and manipulating and visualizing three- dimensional objects, a more advanced stage is the ability to navigate through landscapes. Technology now allows us to capture adequately realistic detail and to mimic more accurately physical laws, so this type of digital environment, while achievable and useful for various scientific purposes, only represents spatial configurations and navigation through them. But is this not enough for virtual environments and therefore for virtual places? After all, due to the success of architectural computing-based models, it has been suggested that Virtual Environment design be informed by architectural and planning theory (Kalay and Marx, 2001). It might be argued that Computer Aided Drafting (CAD) applications are directly synonymous with building three-dimensional digital environments and therefore the CAD programs used by architects are tailor-made for designing virtual environments.

My concern here is that CAD was designed to get buildings built, to quantify rather than qualify the architectural experience. They show static additions to the environment, rather than environmental changes

acting and interacting over time. There is no fog, no dirt, no wind and often even no people (Figure 2). Yet the real world experiencing of architecture is always mediated through a dynamic and imperfect sensory interface: our minds and our bodies.

Figure 2: An archaeological visualization of a 19th Century mining town with real-time rendering. Without people or dynamic environmental forces, the place lacks human scale and seems to float.

More than a straight visualization of objects, an activity based virtual environment allows one or more users to alter some character or element in pursuit of a defined goal. Activity-based virtual environments allow activities to take place. Many are games or training programs, which are arguably the most commercially successful type of virtual environment. They can also appear to have 'atmosphere'. There are tasks to complete, navigation reminders, inventories, records of interaction history (such as damage to surroundings) and social agency (such as real or computer directed opponents). These features of games could be employed in creating effective virtual environments as a form of performance space and some designers have worked from this idea of 'place' as purely a container for an activity. Yet 'place' is the very reason why we should treat the spatial experience as part of the learning experience, otherwise one may ask why conventional two-dimensional media do not suffice. For three and four-dimensional media add an extra feature to learning environments: we can interpret the habits of other *embodied* agents as they attempt to orient themselves in the [virtual] world.

This three-dimensional interaction with a world can also create erosion that signifies embodiment. Being able to see how our appearance or interaction is perceived as human by what appears to be other humans may help create a sense of *social presence*. Recent research has shown that the spatial distances we create between ourselves and others is reflected in how we space our avatars in virtual environments, "Male avatars (whether created by a man or a woman) stood further apart than female avatars, for instance, and were more likely to avert their gaze... Men are also less likely to maintain eye contact. And both sexes will reduce eye contact if the person they are talking to gets too close..." (Giles, 2006).

However, I believe that the notion of place helps create a related sense of *cultural presence* which does not necessarily have to rely on the apparent existence of other sentient beings in the same virtual space, but it does rely on material manifestation of their customs and values that affords interpretation. They do not however have to speak or use the same language or visual symbols as us. An idea of cultural presence may mean that people with a similar or different cultural perspective to ours, can occupy a place and be identified as like or unlike, by us and therefore allow us to be present "in a place that has some present meaning" (Slater, 1999). Of course a place may also suggest a past and now lost meaning. As Relph (1976) 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.

So the third type of environment identifies us and our personal form of physical embodiment through how we modify artifacts and the environment. Ideally, it identifies us as well as helps us understand the identity and intentions of other intelligent beings through how they appear to have modified artifacts and the environment. For either purpose, it caters for symbolic interaction. This third type of environment is thus like a symbolic stage or palimpsest. It may either allows us to express our identity and intentions to ourselves and to other people, or it allows us to feel that we can interpret identity and intentions of others through how they appear to have modified and personalized the environment to better express themselves.

In order to create a virtual environment with Relph's third notion of a 'place' (a region recognizable to a user as a culturally coded setting), we need to have more than merely identifiable or activity-based virtual

environments. A place can also carry cultural indications of inhabitation driven by a similar or different cultural perspective to that of our own. For example, unlike a conventional computer game and even unlike a social game-world, a virtual heritage environment must allow us to see through the eyes of the original inhabitants, or at least feel that this place once belonged to someone else. Such a virtual 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.

We can test for "mild" cultural immersion in such a virtual environment, 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 particular type of virtual environment that might be required thus depends on the amount and intensity of cultural perspectives that needs to be generated and conveyed. The degree of complexity of such a virtual environment may range from merely believing people with a different world-viewpoint existed in an environment, to feeling that we are being rejected or assimilated by another culture, to feeling that we are 'home'.

Only if the environment evokes a notion of other people interacting with the environment in ways similar or dissimilar to us, does the virtual environment as a *world* begins to form. To paraphrase Heidegger, that moment is when "worlds world." The notion of world is very interesting and complex, often vaguely defined (Bartle, 2003; Maher and Gu, 2003) or assumed by game players (Bartle, 2005) but sometimes used to mean a shared social perspective (Weckström, 2003) or the manifestation of both individual potential and predetermined fate as part of a wider social mindset (Champion, 2006). However, in its real world sense, a world covers all that we can do, with all that we decide not to do. It provides us with the chance to cement our identity and social purpose while defending against those values we reject or feel threatened by.

Collaborative Activity in Virtual Places

Recent writings in the field of Computer Supported Collaborate Work (CSCW) have suggested the importance of place rather than space to support meaningful and real-world activity through the use of social computing and tangible interfaces (Harrison and Dourish, 1996; Dourish, 1998). They were right to suggest that place helps provide cues as to appropriate behavior. However, they may not have gone far enough.

Another problem for this subsection of virtual environment research is that people may wish to experience a community that can no longer be authentically recorded, via technology that typically does not remember and integrate social interaction as a real place does. One may well argue that traditional communities like the Well, or a MUD, capture this notion of a platial history, but they typically do so through text, not spatiality. For example, the developers of the Deva CVE system have complained that they could not fit more text onto the screen interface of their virtual environment, they did not complain that they had to use text at all (Mitchell et al. 2000). The developers also admitted that reference to the rules was via text logs, not via in-world activity or research. Having enough to do in a rich social way while in-world can also be a problem for players in the more complex and powerful multiplayer games (Ducheneaut and Moore, 2004).

The virtual communities that offer virtual landscaping and house design may also remember vandalism of visitors, but the actual social history of the visitors and inhabitants is still textual and social interaction is typically outside of the spatial environment, via forum or email, not a materially embedded part of the actual virtual environment as a *hermeneutically self-supporting world*. By this phrase I mean to suggest a world is a self-supporting interpretable medium when participants can communicate and understand communication from not just other people inside the world, but also from the intentional or unintentional messages they leave inside the world. Many games, such as MORGS, (massive online role playing games), are instead a combination of a virtual environment, a chat-box and Internet-based telephony. Communication may be about the virtual environment, but it is, debatably, not inside it.

It is true that games are also *peopled* by virtual characters pretending to be avatars of actual people, but these virtual characters are typically too limited to create a strong sense of social presence. The bots (computer scripted agents) found in computer games are often added to virtual environments, but their most meaningful interaction is to stalk. Bots imply a social agency, but they actually function as an extra cognitive load to make the game more challenging. Further, both these bots and the avatars of the human players lack close up facial expressions (Bedford et al. 1995; Fabri et al. 2004) and the environments do not provide fuzzy peripheral senses (Fraser et al. 1999), social role recognition (Ducheneaut and Moore, 2004), or general social awareness (Prasolova-Førland and Divitini, 2003; Prasolova-Førland, 2004). The inability of characters inside virtual environments to express themselves is compounded by the computer display; a typical screen interface can create tunnel vision which reduces awareness of others (Yang, 2002).

The Past and Place

A virtual place may have the ability to transform current cultural knowledge and behavior to one more appropriate to a place no longer available or accessible to us. This is one answer to those who argue collaborative virtual environments are overrated, being too limited to address real- world problems (Pekkola, 2002). Pekkola and others are working from the understandable but restricted notion that group-work by definition means currently living, co-present and fully autonomous human participants. A notion of place typically includes a notion of time and it is important not just to help support or direct current work activity, but also to help people interpret past activities and the intangible heritage of extant communities.

Many in the social sciences actively interpret remains and ruins (Ashworth and Graham, 2005). For them, virtual places should recapture or remix the past. Place for them can be collaborative, but it must also be mark-able, potentially suggestive and expressive (in order to demonstrate to others various experiences). For example, Frachetti (2006) noted that "Most archaeologists are interested in the locations of human activity-which generally translates into a focus on mark-able places" and that archaeologists themselves are less and less able to work alone due to the increasing power of applied technology. Ideally, virtual environments may help such people to create hypothetical or counterfactual places, meet virtually in these places with colleagues to discuss them, work in these recreations to understand limitations forced on their predecessors, or develop experiential ways to entice a potential new audience to both admire the content and the methods of their area of research.

However, these academic disciplines are typically book-based and do not see that an academic publication is also a simplification and metaphorical extension of the remains and ruins it describes. These academic publications presuppose a vast domain of knowledge, a certain learned yet creative technique of extrapolation and they do not cover the experiential detective work of experts that visit the real site. Virtual environment technology could perhaps help fill this experiential lacuna, but typically, virtual environments are not complex in their interactional history, the past and the present do not intermingle as they do in real places, the many conscious and subconscious ways that people leave traces in the world are not conveyed in static 3D models. Creating a form of persistent individual *knowledge space* is difficult with current and easily accessible technology (Corbit and DeVarco, 2000).

Teaching history and related social sciences through simulating traditional forms of 'learning by doing' is an understudied research area but of importance to a richer understanding of place (Roussos et al. 1997; Kirner et al. 2001). However, the actual spatial implications of *siting* learning tasks in a virtual environment is still an area largely un-researched, as typical evaluation of virtual environments have been relatively context-free, designed for user freedom and forward looking creativity. The ethnographic techniques used by researchers may be effective in recording activity, but they do not directly indicate the potential mental transformations of perspective that result from being subjectively immersed in a different type of cultural presence (Benford et al. 2002).

Nor is it a given that the best possible way of experiencing the *pastness* of a place is as an immutable godlike viewer, for we learn about places through being spatially and historically *thrown*. A notion that a collaborative virtual environment allows a visitor to do what they want encourages a tourist rather than an inhabitant mentality.

While some may suggest that social agency enhances engagement, it may actually destroy the cultural presence of that place. In at least this respect, culture is not the same as society. This type of collaborative virtual environment to be successful must be able to communicate its values through its *artifactual* quality, as it has been shaped by a particular social agency, which may no longer be present, only imagined. In this case, constraints and not liquid freedom are necessary to gain an understanding of the place. In some modern multiplayer online games, for example, the players are forced to interact with each other in order to advance (Ducheneaut and Moore, 2004). Some of the most popular collaborative environments are a hybrid of game and meeting-place; where constraints actually increase the enjoyment of the experience.

Conclusion

Philosophers have already argued for some time that, our notions of reality are actually cultural notions of a constructed reality (Peschl and Riegler, 2001), yet Virtual Reality is often held up in direct opposition to perceived reality and hence is seen to be inferior, terrifying, or less meaningful. Research has often attempted to delude people into thinking they are in the real world; it has not used the transformative possibilities of Virtual Reality technology to show different forms of perceived reality. Such a notion can be highly limiting in terms of enhancing learning. Hence digital simulation of objects will not by

themselves enable meaningful content that contextually places a virtual environment in an engaging way. Yet by controlling and thematically restricting the interface and agency of the user, designers could disseminate different cultural forms of knowledge, rather than attempt to convey in the user's own terms, a world-view he or she already has.

The idea of creating three types of place and evaluating how interactive and engaging they are and how well they aid learning is an interesting line of research. The simple classification is dangerous if applied prescriptively, but it does attempt to match types of virtual environments with the intentions of their designers. It may also go some way to explaining why certain types of virtual environments such as games are engaging, but they are not meaningful cultural experiences. For culture implies materially embodied beliefs that could identity yet outlive a maker and designer; play, on the other hand, suggests an eternal changing of form without thought as to the consequences.

Virtual heritage and historical environments pose more difficulties than games and but they also raise interesting questions for theories of place and social interaction. An overriding problem continually emerges; how can co-participants meaningfully learn about a past place that appears to have been currently or previously inhabited by others, without distracting each other or destroying a distinctive, appropriate and unique sense of historical or social immersion.

It is much more difficult to create a virtual place that brings the past alive without destroying it (Champion 2004), but even creating a sense of place through digital media is a worthy challenge. One thought that I would like to leave with the reader, is that the virtual is not purely the visual, nor is it solely the digital. The virtual is that which could well be and when we cross its threshold, as Don Quijote did, windmills transform into giants. When virtual environments develop these magical thresholds, they too may be considered to be places.

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