Chapter 9
Design and Virtual Reality

ABSTRACT

Virtual reality (VR) technology is a sophisticated high-tech form of ICT that has recently been enthusiastically promoted as having a great potential benefit to both design activity and design education. VR is a computer-generated visualized form of communication in which participants visit a fantastic world where they feel a sense of presence and interact with each other through the use of first-person perspective screen representations known as avatars. It is often thought that VR is created by computers, but it is in fact a creation of the humans who program computers with their own ontological assumptions, especially about cause and effect relationships. In other words, VR is not an accurate representation of reality. It may – as in VR games – be a gross distortion of reality. Unlike the real world, VR is not independent of human control, and it is nowhere near as complex as everyday life experiences. Therefore, the use of VR for educational purposes remains dubious, especially in regard to the transference of the behaviour of avatars in VR to the understanding users of the technology in real life. So too is the use of VR technology questionable for the work of design, for the simple reason that it does not provide accurate and thorough representations of reality. When VR is compared to the visual representations that human beings make by the mysterious co-ordination of brain and eye and hand, they fall far short of realizing their grandiose claim of being "virtually" real.

PRELIMINARY CONCERNS ABOUT VIRTUAL WORLD TECHNOLOGY

The Relation of VR to Design

Before examining the issue of using virtual world technology for design purposes, both in practical and in educational settings, it will be useful to clarify and explicate the terminology involved in such an enterprise. Soraker (2009) is instructive here. This author begins by distinguishing virtual computer-generated media from the traditional transmission model of communication proposed by Shannon and Weaver (1949). According to the transmission model, messages are encoded by a sender, transmitted via technology, and decoded by a receiver. In this sense media are channels, but in the new technology of virtuality media

DOI: 10.4018/978-1-4666-1999-9.ch009

are places. Information is not simply exchanged through computers; instead, it is stored and accessed at will by any number of users. Indeed, the sense of place is an essential feature of virtual world technology, as is the sense of being present in the virtual places generated by computers. Moreover, because information persists in these virtual places, and because it is constantly being accessed by multiple users, interactivity among users is also a central feature of virtual world technology. Soraker (2009, p.9) defines the new technological understanding of the virtual as "interactive computer-simulation."

The key thing to note here is that much of the simulation generated by computers is not an imitation or an emulation of anything that actually exists in the real world. Virtual simulations may be of universal type-to-universal type or of particular token-to-particular token, as theses types and tokens actually exist. More importantly, computer simulations may be of both existing or concrete entities and non-existing or abstract entities. Thus computers may simulate a horse, but they might just as easily simulate Pegasus. It is precisely this ability of computers to simulate – or generate images of – non-existent entities that makes virtual world technology problematic in the realm of design. A building or a product may be possible to construct in cyberspace, but impractical, if not impossible, to construct in real space. In other words, virtual worlds are infinitely fascinating because they are the latest manifestation of "high tech" culture, but they are often insubstantial and easily replaced with ever-newer (freshly fascinating) designs.

It is often stated that humans and computers interact in virtual technologies, but it is often forgotten that computers bring more to the interface than the mere ability to generate images. Soraker (2009, p. 13) reminds us that computers provide "a causal engine" for the interactivity that happens in virtual technologies. In effect, computers act as God in the universe of virtual reality, ensuring that causes always produce the effects that they should. This ability is what makes computers useful for the scientific modeling of natural phenomena. As we have seen in Chapter 4, complexity theory suggests that it is impossible to program the almost endless variety of variables involved in any natural process so as to obtain truly reliable predictability (Thrift, 1999). In fact, complexity theory is generally critical of the concept of causality itself, because the parts of any system are too numerous and interconnected to identify causes and effects. Needless to say, the artifice of design – as in the construction of virtual buildings and product in virtual worlds – is not only less predictable than the workings of natural causes and effects, but they are also more difficult to transfer to the actual world.

Human-computer interactivity is not just a salient feature of technological virtuality. It is, as Soraker (2009) observes, absolutely necessary to the existence of this form of virtuality. Without a "human in the loop" making choices nothing would happen in the world of computer simulations that would not be absolutely predetermined. Moreover, without interactivity it would be impossible for a user to have the three-dimensional experience from the first person perspective that is an essential feature of technological virtuality. Ultimately, interactivity implies that participants in mediated virtuality can modify the environment and make each interchange unique. This is a large part of what makes the experience of computer-simulated virtuality "almost real."

In addition, Deborah Gordon (2010) suggests that it is precisely because computers are programmed by humans that they are able to assist in the development of complex design features and processes. "One way that living systems are unique, so obvious that it's easy to forget, is that they cause their own development and activity. For example, a basic difference between a collection of robots and an ant colony is that people make the robots, while ant colonies are made by other ant colonies....Human designers are behind everything a robot does. In an ant colony, there's

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