The Aesthetics of Virtual Worlds: Report from Los Angeles

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Welcome to a Virtual World! Strap on your avatar! Don't have the programming skills or time to build your own? No problem. We provide a complete library of pre-assembled characters; one of them is bound to fit you perfectly. Join the community of like-minded users who agree that three-dimensional space is sexier! Yes, there is nothing more liberating than flying through a 3D scene, executing risky maneuvers and going for the kill. Mountains and valleys can represent files on a network, financial investments, the enemy troops, the body of a virtual sex partner — it does not really matter. Zoom! Roll! Pitch! Not enough visual realism? For just an extra $9.95 a month you can update your rendering speed to a blistering 490,000 polygons a second, increasing the quality of the experience by a staggering 27.4%! And, for another $4.95 you will get a chance to try a new virtual world every month, including a mall, a brothel, the Sistine Chapel, Paris during the Revolution of 1789, and even the fully navigable human brain. A 3D networked virtual world is waiting for you; all we need is your credit card number.

This advertisement is likely to appear on your computer screen quite soon, if it has not already. Ten years after William Gibson's fictional description of cyberspace and five years after the first theoretical conferences on the subject, cyberspace is finally becoming a reality. More than that, it promises to become a new standard in how we interact with computers — a new way to work, communicate and play.

Virtual Worlds: History and Current Developments

(If such words as SIMNET, VRML, Quicktime VR and WorldChat are familiar to you, skip to the next section.)

Although a few networked multi-user graphical virtual environments were constructed already in the 1980s, they were specialized projects involving custom hardware and designed for particular groups of users. In Lucasfilm's Habitat, described by its designers as a "many-player online virtual environment," few dozen players used their home Commodore 64 computers to connect to a central computer running a simulation of a two-dimensional animated world. The players could interact with the objects in this world as well as with each other's graphical representations (avatars). Conceptually similar to Habitat but much more upscale in its graphics was SIMNET (Simulation Network) developed by DARPA (U.S. Defense Advanced Research Projects Agency). SIMNET was probably the first working cyberspace — the first collaborative THREE-DIMENSIONAL virtual environment. It consisted of a number of individual simulators linked by a high-speed network. Each simulator contained a copy of the same world database and the virtual representations of all the other simulators. In one of SIMNET's implementations, over two hundred M-1 tank crews, located in Germany, Washington D.C., Fort Knox, and other places around the world, were able to participate in the same virtual battle.

I remember attending a panel at a SIGGRAPH conference where a programmer who worked for Atari in the early 1980s argued that the military stole the idea of cyberspace from the games industry, modeling SIMNET after already existing civilian multi-participant games. With the end of the Cold War, the influences are running in the opposite way. Many companies that yesterday supplied very expensive simulators to the military are busy converting them into location-based entertainment systems (LBE). In fact, one of the first such systems which opened in Chicago in 1990 — BattleTech Center from Virtual World Entertainment, Inc. — was directly modeled on SIMNET. Like SIMNET, BattleTech Center comprised a networked collection of futuristic cockpit models with VR gear. For $7 each, a number of players could fight each other in a simulated 3D environment. By 1995, Virtual World was operating dozens of centers around the world that, also like SIMNET, depended on proprietary software and hardware.

In contrast to such custom-built and expensive location-based entertainment systems, the Internet provides a structure for 3D cyberspace that can simultaneously accommodate

millions of users, which is inherently modifiable by them and which runs on practically every computer. A number of researchers and companies are already working to turn this possibility into reality.

Most important among the attempts to spatialize the Net is VRML (The Virtual Reality Modeling Language), conceived in the spring of 1994. According to the document defining Version 1.0 (May 26, 1995), VRML is "a language for describing multi-participant interactive simulations — virtual worlds networked via the global Internet and hyperlinked with the World Wide Web." Using VRML, Internet users can construct 3D scenes hyperlinked to other scenes and to regular Web documents. In other words, 3D space becomes yet another media accessible via the Web, along with text, sounds, and moving images. But eventually, a VRML universe may subsume the rest of the Web inside itself. So while currently the Web is dominated by pages of text, with other media elements (including VRML 3D scenes) linked to it, future users may experience it as one gigantic 3D world which will contain all other media, including text, inside itself. This is certainly the vision of VRML designers who aim to "create a unified conceptualization of space spanning the entire Internet, a spatial equivalent of WWW." They see VRML as a natural stage in the evolution of the Net from an abstract data network toward a "perceptualized" Internet where the data has been sensualized," i.e., represented in three dimensions.

VRML 1.0 makes possible the creation of networked 3D worlds but it does not allow for the interaction between its users. Another direction in building cyberspace has been to add graphics to already popular Internet systems for interaction, such as chat lines and MUDs. Worlds Inc. which advertises itself as "a publisher of shared virtual environments" has created WorldChat, a 3D chat environment which has been available on the Internet since April 1995. Users first choose their avatars and then enter the virtual world (a space station) where they can interact with other avatars. The company imagines "the creation of 3-D worlds, such as sports bars, where people can come together and talk about or watch sporting events online, or shopping malls." Another company, Ubique, created technology called Virtual Places which also allows the users to see and communicate with other users' avatars and even take tours of the Web together.

Currently, the most ambitious full-scale 3D virtual world on the Internet is AlphaWorld, sponsored by Worlds Inc. At the time of this writing, it featured 200,000 buildings, trees and other objects, created by 4,000 Internet users. The world includes a bar, a store which provides prefabricated housing, and news kiosks which take you to other Web pages.
The movement toward spatialization of the Internet is not an accident. It is part of a larger trend in cyberculture — spatialization of ALL representations and experiences. This trend manifests itself in a variety of ways.

The designers of human-computer interfaces are moving from 2D toward 3D — from flat desktops to rooms, cities, and other spatial constructs. Web designers also often use pictures of buildings, aerial views of cities, and maps as front ends in their sites. Apple promotes Quicktime VR, a software-only system which allows the user of any personal computer to navigate a spatial environment and interact with 3D objects.
Another example is the emergence of a new field of scientific visualization devoted to spatialization of data sets and their relationships with the help of computer graphics. As the designers of human-computer interfaces, the scientists assume that spatialization of data makes working with it more efficient, regardless of what this data is.

Finally, in many computer games, from the original "Zork" to the best-selling CD-ROM "Myst," narrative and time itself are equated with the movement through space (i.e., going to new rooms or levels.) In contrast to modern literature, theater, and cinema which are built around the psychological tensions between characters, these computer games return us to the ancient forms of narrative where the plot is driven by the SPATIAL movement of the main hero, traveling through distant lands to save the princess, to find the treasure, to defeat the Dragon, and so on.

A similar spatialization of narrative has defined the field of computer animation throughout its history. Numerous computer animations are organized around a single, uninterrupted camera move through a complex and extensive set. A camera flies over mountain terrain, moves through a series of rooms, maneuvers past geometric shapes, zooms out into open space, and so on. In contrast to ancient myths and computer games,

this journey has no goal, no purpose. It is an ultimate "road movie" where the navigation through the space is sufficient in itself.

Aesthetics of Virtual Worlds?

The computerization of culture leads to the spatialization of all information, narrative, and even time. Unless this overall trend is to suddenly reverse, the spatialization of cyberspace is next. In the words of the scientists from Sony's The Virtual Society Project, "It is our belief that future online systems will be characterized by a high degree of interaction, support for multi-media, and most importantly the ability to support shared 3D spaces. In our vision, users will not simply access textual-based chat forums, but will enter into 3D worlds where they will be able to interact with the world and with other users in that world."

What will be the visual aesthetics of spatialized cyberspace? What would these 3D worlds look like?