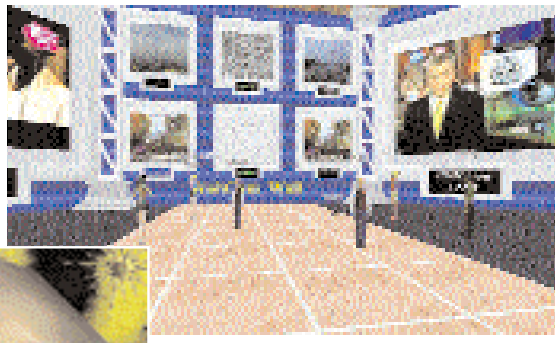
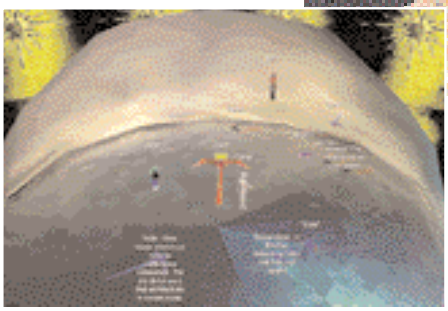
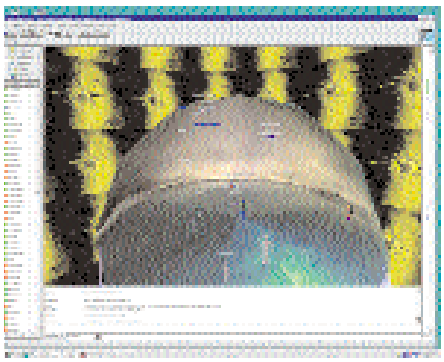
The Feng Shui of Virtual Worlds

As conceived by the ancient Chinese civilization that developed Feng Shui—the art of arranging things to enhance the flow of energies and to minimize dissipation—everything in the universe consists of subtle patterns of moving, flowing energy. According to the tenets of Feng Shui, optimal flow for living organisms occurs when the atmosphere feels like a spring breeze—neither fast and vehement, nor sluggish and stagnant.





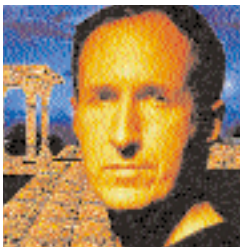


A virtual environment need not be realistic in order to succeed. In fact, the simulated convention hall at upper right proved an awkward atmosphere for a virtual chat with an author. When the same participants moved to the more intimate, organically shaped location at right (and above inset), the avatars began to focus on the scheduled discussion with the author.

Just as flow is a subtle but significant factor in the physical world, so is it important to the design of virtual worlds. But in order to study flow in cyberspace, we must learn a new way of looking at both phenomena, similar to the way scientists after Newton revised their approach to studying physical phenomena. Pre-Newtonian physics, influenced by Aristotle, focused mainly on substances. Conversely, modern physics has turned its attention from substances toward fields of energy in which substances relate to one another. Theories of relationships have taken precedence over theories of substances.

As humans, we tend to look for objects rather than the processes supporting those objects. With regard to computing, for example, we focus on the user and the user's software tools. This subject (user) and object (tool) orientation downplays the role of flow because it creates a split between the two, focusing on the user/subject staring at the screen/object rather than the relationship between the two.

Designers should go with the flow when creating online environments



BY MICHAEL HEIM

Just as the paradigm of physical science had to shift so that new phenomena could come to the fore, the study of flow in virtual environments must likewise turn attention from the user-tool model and focus on the interactive context in which the user is immersed. From the viewpoint of the user, the successful environment flows smoothly around the uses to which the participant puts it. Instead of the subject-object relationship, the virtual environment creates a relationship in which participants swim through information as skilled athletes move through the liquid element of water. Through deepening involvement, the participant becomes less of a "user" or detached tool-wielder and increasingly adapts to the environment.

Online Worlds

This deeper dimension of flow became apparent during experiments conducted by the virtual worlds team at the Art Center College of Design in Pasadena, California, over the past few years. Using a variety of already existing multi-user worlds, including ActiveWorlds (www.activewords.com), CyberTown (www.cybertown.com), and Eduverse (www.activeworld.com/edu), the team began building and hosting online events. While experimenting with the CyberForum@Art Center, as the body of experiments came to be known, we observed many different aspects of flow and their corresponding blockages. Eventually, we categorized four main aspects: words with visuals; atmospherics; group dynamics; and the relationship between virtual and physical architecture, or avatecture.

The team first noticed the need to develop flow aesthetics during the online convention Avatars 1999. The convention hall into which the CyberForum team took one of its first guests, an author, was a simulation of a physical convention

hall, an atmosphere that encouraged avatars to chat chaotically off topic. The author eventually stopped speaking and the event seemed doomed.

Finally, the master of ceremonies instigated a move to a more intimate cyber location, where the difference in atmosphere was immediate and striking: The guest now occupied a central location that focused attention his way. The author began discussing his book, and the other avatars increasingly concentrated on what he had to say. This forum developed an atmosphere that has come to typify the best of the CyberForum@ArtCenter events: somewhere between a spontaneous party and a formal lecture.

Avatars try to escape from a wireframe cage in a ritual created for the Avatars 2000 conference. "Avatrapment" and rituals like it are designed to promote successful group dynamics.

Another break in flow that the team quickly noticed was how words (chat lines) and navigation (avatar movement through the environment) go in opposite directions when viewed from the user perspective in a 3D browser. The chat lines go left to right, scrolling down the screen, while the avatar moves upward through 3D space. The reader/writer focuses attention downward while the navigator/avatar moves upward, and the movements often occur simultaneously. First-time navigators may not realize exactly what the problem is, but they frequently mention the difficulty they have moving and chatting at the same time. This split creates considerable tension for the human nervous system. The right brain takes in the graphics scene all at once while the left-brain takes in discrete alphanumeric words and phrases, absorbing them piecemeal as grammar to be processed.

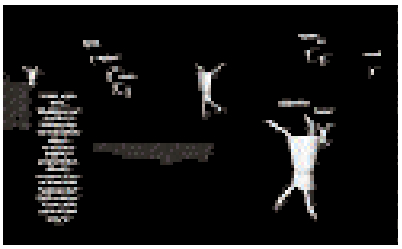
The "Tron" environment was created to complement the discussion of technology topics, in the hopes that avatars could better understand and recall chats and events here.

One aid in dissolving this tension came from the history of rhetorical theory. During the Renaissance, rhetoricians developed a mnemonic technique called The Memory Palace, in which public speakers would remember a number of topics in sequence by imagining a palatial residence through which they could conduct a tour. This notion was a breakthrough for the CyberForum, which created a Reverse Memory Palace (RMP) procedure that yokes text and graphics to a single interactive event or node. An example of the mnemonic technique in action comes from the Spring 2000 series of the CyberForum@ArtCenter, in which a discussion with author William J. Mitchell, whose works revolve around the digital transformation of the urban scene, immersed avatars in structures textured with scanned circuit boards. This node was called Tron, after the 1982 Disney movie of the same name, and brought participants inside the computer in ways that paralleled the movie, providing a recognizable context in which avatars could reconcile text and graphics.

Community

Group dynamics is another aspect of flow that is familiar to most people and crucial to avatar environments. Individuals making up groups must feel a connection to the other members. Because online forums depend on the good will and attention of their remotely connected users, world designers must foster a social flow among participants. The successful forum, as mentioned, has a party-like atmosphere, and the participants must at some point share some enjoyment.

One solution for creating social flow is the performance of avatar rituals, group performances that can be done with little or no rehearsal. In the avatar world, a ritual should require minimal navigational abilities so no participant feels left out. The ritual should also create a strong, memorable visual impression, and encourage banter and social exchange. It should generate topical significance for the Forum discussion and, finally, the ritual should be fun.



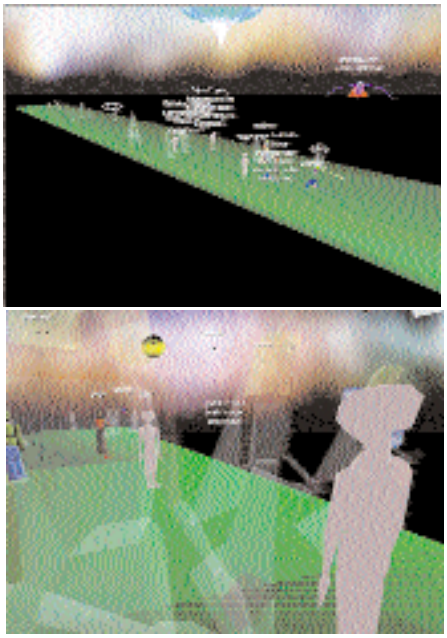
Plankton-like avatars bob past one another in a virtual ritual designed both to promote cohesiveness and to serve as a metaphor for the forum topic of evolutionary survival.

One such ritual was the "Plankton Float," which took place during the Summer 2000 Forum. Participants donned awkward avatar shapes with limited functionality and descended to a dark ocean-like pocket of cyberspace decorated with only a few animated bubbles. The plankton-like avatars appeared passive and helpless while bobbing slowly up and down past one another, remaining

within a small enough area to be visible as an ensemble. Once the bobbing was underway, the group discussed the de-humanization implied by the plankton metaphor of evolutionary survival (this was germane to the event).

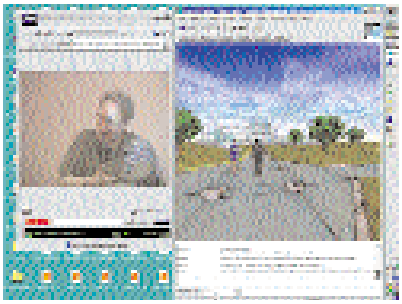
Some rituals, like "Plankton Float," prove a conceptual point, and some are simply playful events. A ritual makes sense in connecting remote participants, but it also helps make the event topics memorable. Forum participants, even speakers whose ideas are called into question by the event, often remark that the experience stays with them as a provocation to thought.

The final aspect of flow is the interplay of avatar places with physical spaces, or avatecture. Avatecture scenarios range from projection technology to innovative connections of the virtual and the physical. CyberForum first came across an avatecture blockage when collaborating with the UCLA Digital Arts Program in the Fall of 1999. This program broadcasts visiting speakers on the Web via streaming video on the desktop. Excellent camera work for the broadcasts made the video highly viewable, much like television. But this was actually a problem: The events felt like broadcasting media and thus inhibited interaction.



A long green slab supports a procession of ghostly brides in "Brides," a mnemonic node created by author Brenda Laurel for a discussion of gender issues in virtual reality.

To enrich the event, the CyberForum team began desktop multitasking by using the UCLA video feed alongside the 3D avatar world and at the same time projecting the avatar worlds on the walls of the UCLA conference room. In this way, the passive video stream of one-way performance changed into the juxtaposed windows of video and avatar worlds. Avatars felt more encouraged to participate.



Video feeds appeared alongside virtual worlds in an event co-sponsored by the CyberForum and the UCLA Digital Arts Program. The avatar worlds were also projected onto the walls of UCLA's physical conference room.

We have examined several meanings of flow in virtual environments: atmospheric, textual-visual, group dynamism, and physical-virtual architecture. In practice, of course, these flows must themselves flow as one, creating a single intense event. This kind of event cannot be fully captured in a sequential script or in a log file with pictures. Despite the Western predilection for substances and permanence, a virtual worlds team must accept the passing, changing, flowing nature of actual occasions. By accepting the flow, participants gain the power of actual experiences in a culture that increasingly receives its realities in pre-packaged formulas.

In avatar worlds, aesthetics becomes indistinguishable from environment. Avatar environments are constructed with varying degrees of critical and aesthetic self-awareness. We are not simply "interface users" who are given "tools" that exist apart from what we do with them. Nor does the software designer wield complete control over what a virtual world is or can become. Instead, users and tools shape each other to make a holistic environment. Once we grasp the dynamism of the flow between user, software, and programmer, we see another, higher order of flow, an extraordinary creative process evolving with us at this moment in history.

Michael Heim is the author of several books on virtual reality. He currently teaches Virtual Worlds Theory and Virtual Worlds Design at the Art Center College of Design in Pasadena, California. Other members of the Virtual Worlds Team at Art Center who helped provide research for this article include Tom Mancuso, Tobey Crockett, Matthew Sloly, Simon Niedenthal, Ekin Akalin, and Alena Lehrer.

This article was adapted from a keynote presentation at VRST 2000, the ACM Symposium on Virtual Reality Software & Technology on October 24, 2000 in Seoul, Korea. A full-length version of the original paper is available at www.mheim.com/html/docs/feng/fs.htm.

For a list of the author's related links, including the CyberForum@ArtCenter, URLs for virtual worlds, and supplemental readings, visit From the Editors on Computer Graphics World's *home page at www.cgw.com.*