

Avatar Initiatives in Virtual Reality

Introduction

“Virtual Reality,” through its very concept and terminology, is an aesthetic idea. *Aesthesis* (from the Greek verb *aisthanesthai*) includes perception throughout the entire sensory spectrum, not only through the eyes. The goal of simulating complete perceptual experience has attracted artists since the dawn of culture and variants of VR (virtual reality) can be found across many media. The computer simply provides the most recent host for immersive simulations. But no sooner had the computer wrapped human senses inside helmets and goggles than computer artists began abstracting and highlighting certain limited aspects of VR. Instead of seeking the total domination of the senses, artists began exploring distinct components of the human-reality interface, components such as tactile feedback, point-of-view, rapid spatial rendering, and humanoid-form avatars. Abstracting from reality is, after all, an intrinsic function of any communication medium, and each adumbration of reality highlights a distinct aspect of a larger phenomenon. So the slavish replication of reality gradually gave way to computer experiments that engage viewers without aiming to capture the totality of experience through full-body suits, goggles, and tight-fitting apparatus.

Virtual Reality discussions in the mid 1990s forked into two directions: One path entertained philosophical speculations based on science-fiction and movies like *The Matrix*, while the other path went into art experiments either with physical installations or with the widely available Internet. The speculative direction remained true to the idea of a total surrogate reality indistinguishable from the primary world, and the speculations of theorists and movie makers pondered the paradoxes of a completely successful illusion. Such thoughts were mostly the work of writers who had not become involved with the actual hardware and software of VR. Had they explored actual experiments, what would their literary and cinematic imaginations have created? Would the delight and success of a less-than-perfect illusion have altered their reflections?

The other path, the ongoing experiments with art installations and with the Internet, draws on hardware and software that create limited, scaled-down versions of VR. Video-game players on the Internet, for instance, use simultaneous distributed networking, force feedback joysticks, 3-dimensional representations, and graphic renderings that re-create the player’s point-of-view moment-by-moment in real time while still, however, remaining restricted to the small frame of the computer screen. The more restricted implementations of VR proved very successful in the commercial world, rivaling and sometimes even surpassing in commerce the centuries-old cinema of popular culture.

Art experiments on the Internet have included a number of initiatives that use real-time meetings through “avatars.” While not full-blown virtual realities, avatars are real-time graphic self-presentations that enter networked, multi-user virtual environments to communicate with other avatars, and these avatars constitute a new social-aesthetic dimension, a new layer of reality rather than a reality replacement.

In the rule-governed context of computer games, the avatars reveal each player's role, disposition, and location within a virtual environment. Avatars manifest the human player not only through chat (writing which often uses abbreviations and emoticons) but through gestures, animated movements, and other body-based signs. But avatars also exist in contexts that are not restricted to role-playing. Avatar worlds – by which I mean virtual environments dedicated to avatar encounters - are event-based worlds that can be designed or customized by users to whatever extent a particular software platform allows. While role-playing games, like *EverQuest*, *FreeSpace*, or *MechWarrior*, allow users in small degrees to customize their avatars, other avatar universes allow greater freedom to shape self and world. These more open avatar worlds during the past decade have included such online multi-user communities as *ActiveWorlds*, *Blaxxun's Cybertown*, and *Adobe Atmosphere 3D Browser*. The custom avatar world has not yet blossomed on the popular Internet, which has an installed base dedicated to more conventional communication, but avatar initiatives have germinated quietly in small test beds of hobbyists and avant-garde artists.

The graphic avatar, because of its bodily references, projects the human psyche powerfully and does so, because of its software plasticity, more immediately than theatrical costumes or everyday fashions. Added to the avatar's immediacy and plasticity is the fact that the aesthetics of self and environment, of theater and architecture, of ego and society become more evident through avatars. Avatar worlds can be holistic art works, and these works, such as the CyberForum, "avatecture," and "avatar diplomacy," indicate a wide range of contexts in which the VR design finds its applications. Let us look at some of these avatar initiatives.

“Avatar (pronounced AV-uh-tar): A word adopted by computer users to denote the digital manifestation that humans take on when entering virtual worlds. The word is Sanskrit for the earthly incarnation a god takes on Earth. Vishnu, the Hindu god responsible for maintaining the existence of the universe, has 10 important avatars, including Krishna, the philosopher king, and Varaha, the boar who rescues the planet after it is inundated by the oceans. The 10th avatar of Vishnu, Kalki, will arrive in the future to destroy the world with fire and begin a new age of purity on the planet.” (from *The Glossary of Internet Terms* at PCNS, a division of MoveWare, <http://www.pcns.net/internetterms.html>).

The CyberForum Experiments

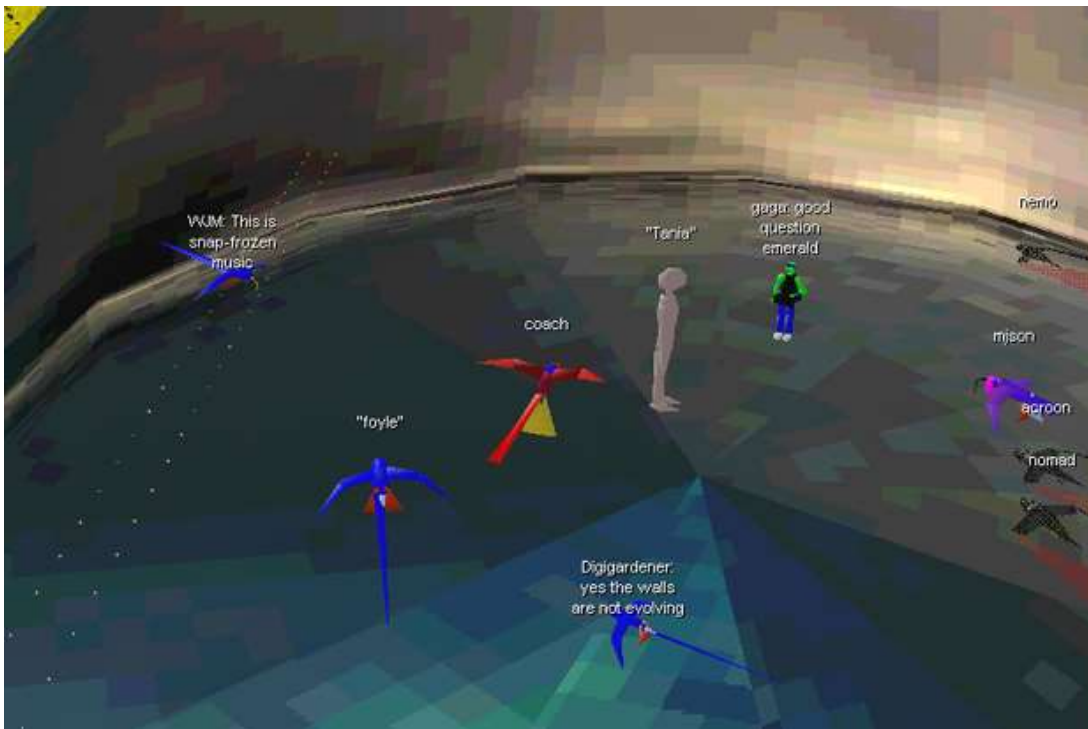
While avatar universes like *ActiveWorlds* are free from *a priori* game rules, they often dissolve into anarchy and pointless wind tunnels where real-time chat happens as an accident without shape, context, or goals. To explore how goals might enhance the avatar experience without imposing linear narratives or game-based rules, a group of artists at Art Center College of Design (Pasadena, California) began a series of public experiments in January 2000. The *CyberForum@ArtCenter* was an experimental online series that discovered and then amplified some inherent principles of avatar chat in virtual worlds. Design students created virtual worlds that were visually tailored for each Forum event, and theory students shaped the events by inviting authors and artists who had written about virtual worlds or who had themselves created other avatar worlds. The open-to-the-public events were moderated by skilled discussion leaders. For each event, participants arrived online from several continents to participate. From its inception, CyberForum sought to channel events into short time slots of one hour's length, accommodating international time zones - and then those events were later extended and preserved in log files and discussion boards. Extensive log files with screen shots from the events are available at www.mheim.com/cyberforum. The series includes the following events:

- "Digital Dialectic" with Peter Lunenfeld, February 2, 2000
- "New Memory Palace" with Michael Heim, February 9, 2000
- "Virtual Bodies?" with Katherine Hayles, February 26, 2000
- "VR & Immersion" with Brenda Laurel, March 1, 2000
- "BioTech Evolution" with Carol Gigliotti, March 11, 2000
- "New Media & Cinema" with Lev Manovich, March 25, 2000
- "Cyberspace Architecture" with William J. Mitchell, April 12, 2000
- Bruce Damer, Author of *Avatars*, June 14, 2000
- Francis Heylighen on *Principia Cybernetica*, June 28, 2000
- "Malaysia and Global Brain" with Niranjana Rajah, July 8, 2000
- "Global Brain Evolution" with Howard Bloom, July 29, 2000
- "The Global Brain II" with David Weinberger / Cliff Joslyn, August 9, 2000
- "Pearly Gates of Cyberspace" with Margaret Wertheim, September 8, 2000
- Milos Manetas, Andreas Angelidakis, and Francois Perrin, April 11, 2001
- Thomas B. Sheridan, MIT Editor of *PRESENCE*, April 18, 2001
- Brandyn Webb, Producer of *ChezWhat World*, July 11, 2001

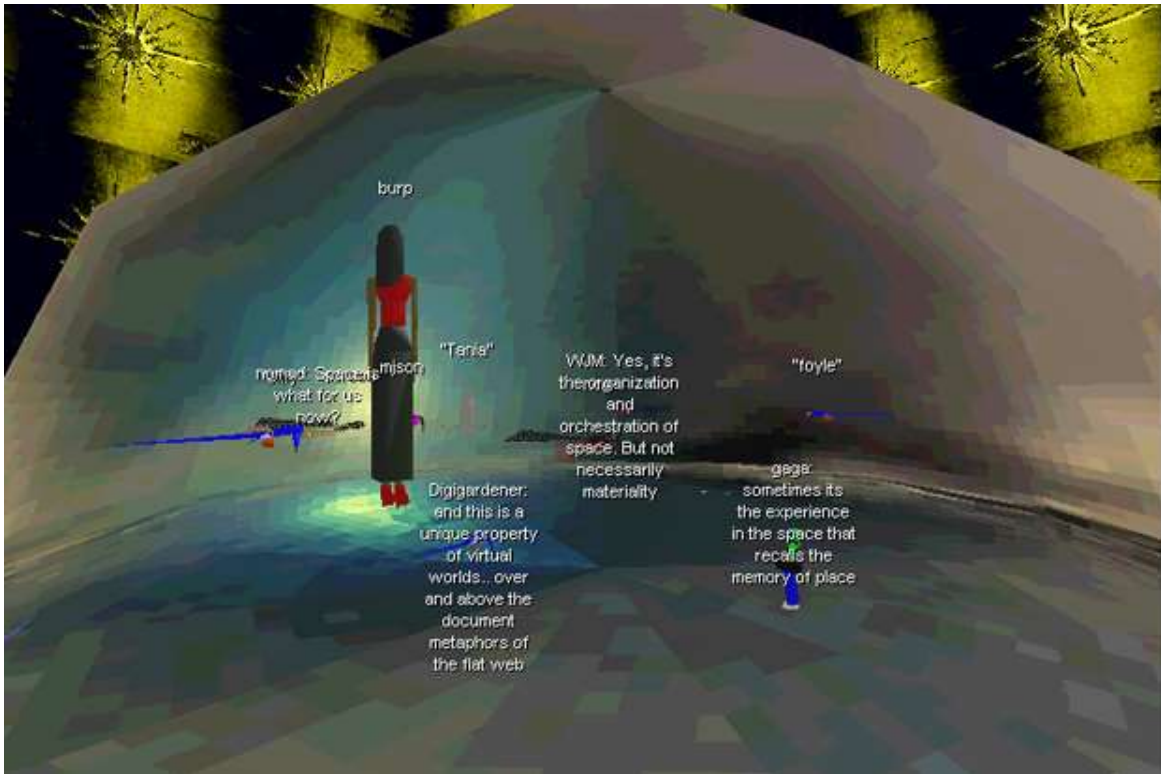
Instead of the unfocused, informal chat worlds used by hobbyists and gamers, the Forum adopted the compressed event format of academic lectures but placed these events inside fantasy avatar environments which were fashioned to fit each specific topic and its four talking points. Avatar movements and shared activities injected a spirit of relaxed fun into the topics addressed by each of the authors or artists who were central to each event.

Over the course of months as the events were analyzed, several principles of 3D interactivity emerged. One principle was the importance of flow, what Asian philosophy calls *feng shui* (Chinese for “clouds and rivers”). Maintaining Flow is imperative for optimizing events: Avatars need to move together frequently, at least every quarter hour. Ritual play, active social positioning, and timely topic shifts proved important. Fresh environmental designs were usually injected four times per hour to fit emphasize different aspects of the topic, with each new environment fashioning a “reverse memory palace” that imprints the topical points on the memory of participants.

The Flow principle proved important for pumping the wellsprings of discussion. A poorly designed environment would block the flow, and the discussion would lag and falter. A well designed environment – sized for the appropriate amount of intimacy and interiority – would provide smooth flow to the discussion. **Figure 1** illustrates a successful environment, which appeared from the outside to be a floating dome. The avatars can fly around and penetrate the walls of the Dome but once inside, the avatars experience the Dome as a sealed enclosure with soft mottled highlights. **Figure 2** shows the *ActiveWorlds* browser on the desktop where the Dome is framed in a non-immersive way. Here “immersion” becomes a psychological on-screen involvement through keyboard navigation. **Figure 3** shows another version of the Dome transformed by a fresh virtual design.



[Figure 1: Dome Seen In-World]1



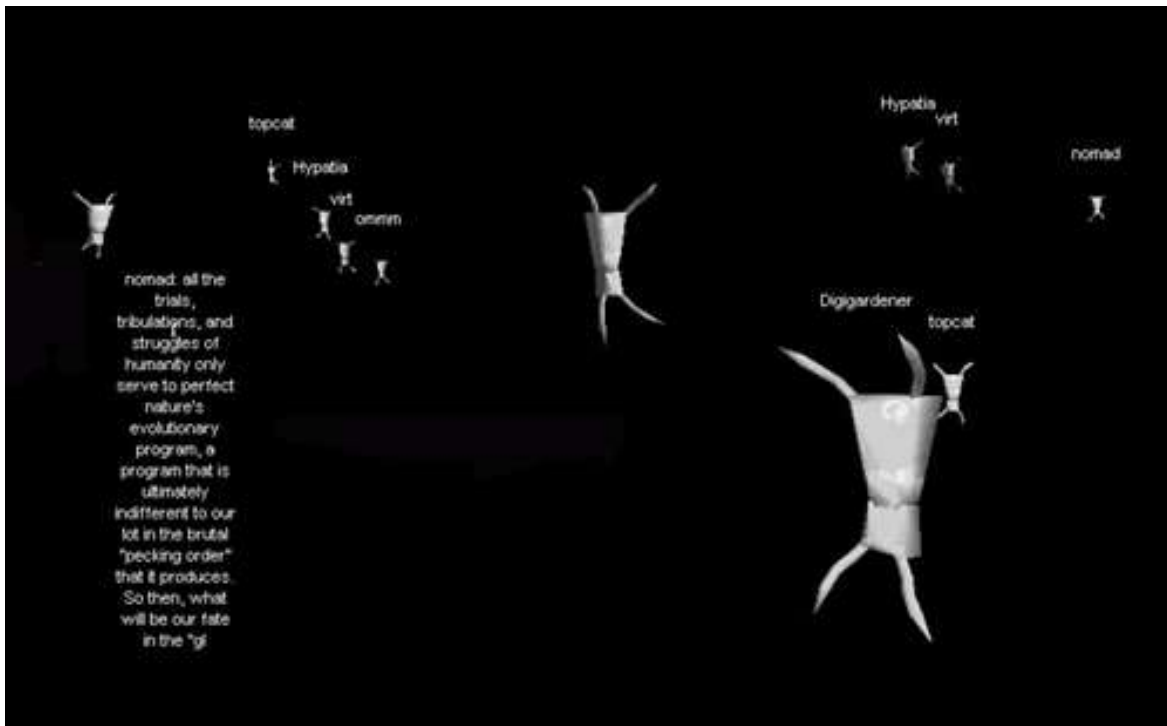
[Figure 1b: Dome Seen On-Screen]



[Figure 2: Another Perspective of the Dome]

One example of a fantasy ritual during a lecture event is the “Plankton Float” which took place on several occasions during the Summer 2000 *CyberForum* series. The general theme of the series was “The Avatar and the Global Brain.” The theme centered on contemporary theories that describe the Internet as an evolutionary mechanism for shaping global consciousness. Two speakers for the series came from the *Principia Cybernetica Program (PCP)*, based in Brussels (Belgium) and Los Alamos (New Mexico). Their theories are loosely described as “global brain” theories since the *PCP* group sees networked information systems as driven by an internal evolution that is self-correcting and self-generating (*autopoietic*). Especially hyperlinked systems, such as the Internet, are considered self-evolving because of their continual self-selection: Frequently used hyperlinks become embedded and replace less useful links which gradually disappear. In this way, the system as a whole becomes 'self-aware' and increases its intelligence, as understood by *PCP*. If we imagine the Internet as a global nervous system, the brain of advanced society grows collectively smarter over time. Such automatic evolution leads some *PCP* theorists to make analogies that sometimes cast individual humans as passive victims. If individuals are off the grid for one reason or another, *PCP* theory devalues them. One phrase used in a *PCP* paper describes humans who are reluctant or unable to get to the Internet as “plankton” for consumption by the evolutionary behemoth, suggesting that individuals with their aberrant private thoughts are irrelevant. It was this image of helpless plankton that inspired designers to create avatars that resemble plankton and to devise a ritual for the Forum that would enact the human plight so mercilessly described by the *PCP* group.

The Summer Forum invited Drs. Francis Heylighen and Cliff Joslyn, co-founders of *PCP*, to speak. The event revolved around the avatar ritual called the “Plankton Float.” For the *Plankton Float*, participants don avatars shaped like awkward plankton and descend into a dark ocean-like pocket of cyberspace to perform vertical floating movements which exercise the limited functionality of stubby plankton avatars while moving amidst animated bubbles. With their embryonic arms and legs, the plankton can hardly do more than float vertically or swim horizontally. The plankton-like avatars appear passive and helpless in the belly of cyberspace while they bob up and down slowly past one another, remaining within a small enough area to be visible as an ensemble and to continue their chat. The *Plankton Float* ritual required the participants to navigate cyberspace vertically in a smooth, varied line within eyesight of one another while at the same time chatting and discussing the issues of *PCP* theory. Once the bobbing started and the plankton achieved smooth synchronization, the group began talking about the de-humanization implied by the plankton metaphor of evolutionary survival. Speakers from *PCP* realized some unfortunate aspects of their metaphor and promised never to forget the *Plankton Float*. **[Figure 4]** The ritual demonstrated the value of participatory avatar play for engaging users and for bringing about a realization through avatar activity. The immersive engagement with avatars opens inroads into the deeper recesses of the psyche and creates powerful memories through visual imprinting.



[Figure 4: "Plankton Float" for Avatars]

Avatecture Experiments

Avatar worlds can also become components of contemporary architecture. Working with architect Christophe Cornubert of PUSH Architects in Los Angeles, the author contributed the idea of "avatecture" to one of the finalist submissions in the *Hotel Pro Forma* competition in Denmark, 2001. Avatecture envisions the conjuncture of avatar worlds and physical buildings. Today's buildings exist in information space as much as in physical space. Buildings manifest their souls, what they are about, in cyberspace. Google a building and see what it means and what kind of soul it has. Without soul, a building exists as dead materiel that falls beneath 21st century dwelling. Without informational life, a building collapses into a collection of materials or isolated functions or merely local aesthetic experiences.

The 21st century is learning to build in information space. Because buildings now enjoy informational life, their architecture transcends material and functional components and consists of more than rooms of physical light and local climate. Buildings manifest their souls in cyberspace as virtual communities. Likewise, today's physical buildings convey transnational meaning as they welcome the phosphorescent glow of information screens and video projections.

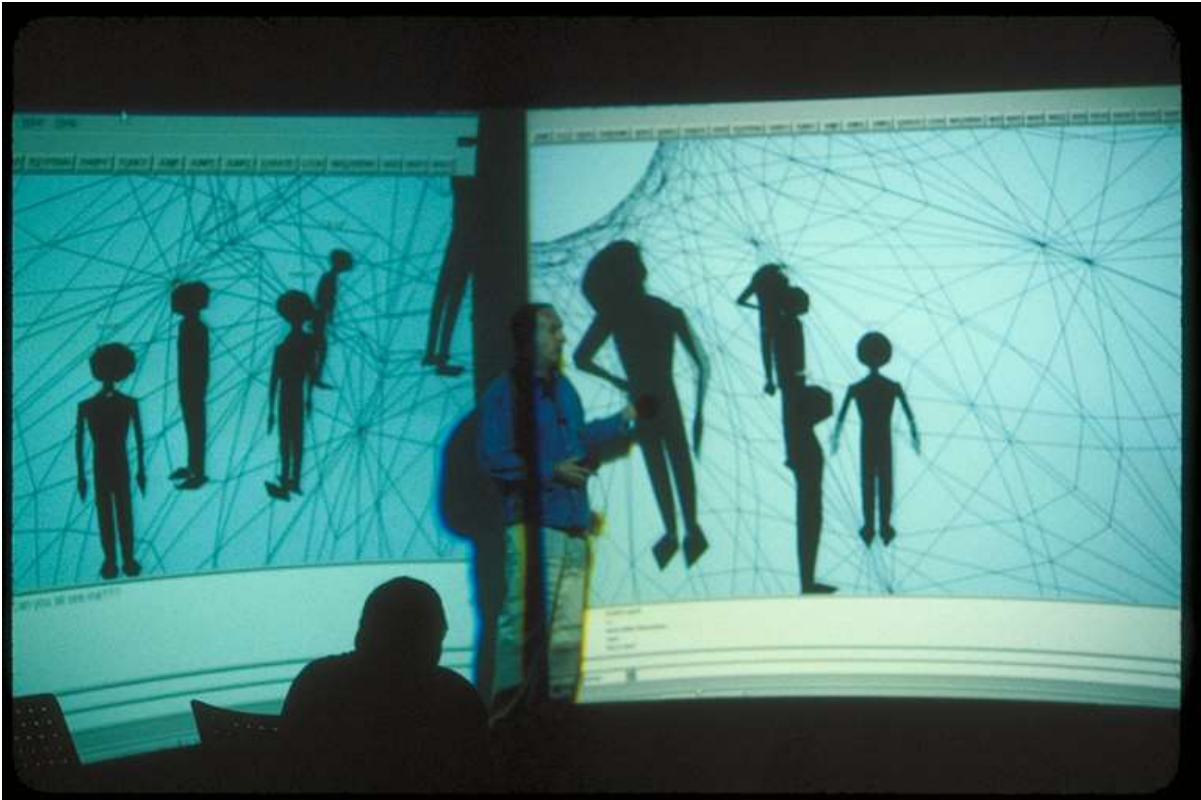
A building in cyberspace can become manifest as an avatar community that makes public the soul of an institution and its frequent physical inhabitants. Each community is a performance community, with rituals that embed and project information into the physical structure. The community that inhabits a building can express its inner activities and

commercial behaviors through cyberspace proxies, just as every big business today owns a commercial website.

Avatecture projects cyberspace identities within the physical structures. As physical structures manifest information, information in turn shapes physical structures. One device of avatecture is the *Avatar Alcove*. The *Avatar Alcove* creates a feedback loop between virtual and physical spaces. To experiment with the Alcove concept, two days of CyberForum activity were held inside the *Visualization Portal* on the campus of the University of California, Los Angeles. Researchers from UCLA, Art Center, and SCI-Arc (Southern California Institute of Architecture) gathered physically in front of a 26-foot immersion screen where international avatars were projected so that physical interactions could transpire between the on-screen remotely-animated avatars and the physical bodies of the researchers. **[Figure 5]** The remote avatar users – some of whom were in Sweden, England, and Denmark – could view the physical space at UCLA through *QuickTime* video cameras while using another window to manipulate their avatars. The physical bodies engaged the avatar bodies by dancing, shaking hands, and exercising playful kung-fu kicks. **[Figure 6]**



[Figure 5: UCLA Visualization Portal and Avatar Alcove]



[Figure 6: Avatar Dance / Kung-Fu Meet Physical Bodies]

Avatecture conceives cyberspace as a performance space where graphically designed buildings host virtual communities that are intrinsically transnational and that also house avatar alcoves where the significance of the physical structure is continually alive, in transformation, and projected into the screens of the physical structure as new configurations emerge. The international building exists both physically as a local destination and as distributed across the planet. Avatar communities express the transient soul of an institution by creating performances that reveal the unique intentions of their physical structures. Avatars influence physical structure by conferring significance on materials and by dynamically modifying the arrangement of built structures. As in any shamanistic culture, the visionary activity reinforces the group's conferral of social significance on the physical structures of the community.

The Avatar Diplomacy Initiative

Another avatar initiative was proposed at the May 2003 UNESCO conference in Rio de Janeiro. The initiative builds on and adds further dimensions to the CyberForum experiments. The initiative proposes using avatars to link school-age children internationally, much like the "pen pals" of previous generations. A census by the U.S. Department of Commerce in February 2002 found that children and teens are plugged into computers more than any other age group. Ninety percent of children between the ages of five and 17 use computers, and 75 percent of those between 14 and 17 years old use the Internet. This state of affairs calls for educational initiatives that create constructive

channels for trans-national awareness in school-age children, just as the “pen pals” of previous generations created a feeling of international partnership by connecting children through pen, paper, and the postal system. The Avatar Diplomacy Initiative actualizes the Internet as an international infrastructure, and the children of the video-game era become incipient world citizens. Citizens today transcend the limited viewpoints of national television by accessing multiple Internet sources. World news opens multiple portals to the world, and these portals resemble the avatars of virtual worlds where each participant perceives the shared environment through a distinct viewpoint while each viewpoint is perceived by others in situ as an animated icon. By graphically acknowledging a multi-perspective world, the avatar epitomizes Internet subjectivity and suggests an “inter-language” for youth to acknowledge other cultures.

Beyond television and video games, school children might experience avatar encounters that build friendships or at least memorable acquaintances. Guided by moderators skilled in avatar worlds, youths encounter one another across geographical borders and eventually across conflict zones, expressing mutual understanding through avatar fashions that acknowledge multiple cultural styles and identities. Moderators and local hosts for the avatar encounters are college students who learn the software skills and then mentor school-age children at local institutions like schools, hospitals, and the Intel-sponsored PC Clubhouses located throughout the world. Details of one possible scenario for this pedagogical initiative can be found on the Web at www.mheim.com/iai.

These three avatar initiatives - CyberForum, avatecture, and avatar diplomacy – are only a tiny cross section of the growth and power of avatar worlds as they give new meaning to virtual reality.