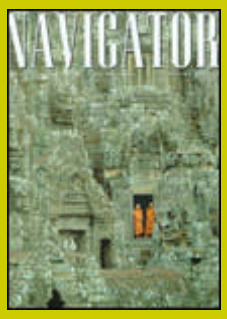

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The Idea Lab

Face-to-Face Across Cyberspace

Our world does not yet resemble Stanley Kubrick's vision for the year 2001: an off-earth lifestyle complete with designer zero-gravity boots a bipolar computer terminals. Today's tele-immersion technology does, however, provide a glimpse into the big bandwidth environment of tomorrow.

By Walt Landy

Although commonplace within the realm of '70s sci-fi, 3-D video teleconferencing is only now virtually becoming a reality. This progress in next-generation communications is due largely t the efforts of the National Tele-immersion Initiative (NTII), a joint effort among American institutions, including Brown University, the University of North Carolina at Chapel Hill, the University of Pennsylvania, and N.Y.-based technology developer Advanced Network & Services, Inc.

Headed by virtual reality (VR) guru Jaron Lanier, the project aims to bypass 2-D teleconferencing and develop full-scale tele-immersion, which as the term suggests, immerse the user in a digitally doctored space. This new application shares only one similarity with videophones that have yet to gain a foothold in the marketplace: the concept of meeting face-to-face without involving rental-car agencies and airports.

Tele-immersion will, conceivably, allow people who are scattered across the world to collaborate in real time within a 3-D environment that replicates shared physical space -- participants feel as though they are sitting in the same room. According to NTII, the "immersive" environment recognises individuals and objects, tracks their positioning and movements, and projects them in realistic environments.

Top: Camera rig for 3D acquisition at UNC.Photo courtesy of UNC.

Bottom: Display in tele-cubicle at UNC. Photo courtesy of UNC.

Besides reducing the need for expensive business travel, crossover uses of tele-immersion include applications for educational, scientific, medical and manufacturing fields. Eventually, researchers look to seamlessly combine physical objects and virtual objects. This will benefit architects and engineers, for example, who already use 3-D modelling but in a restrictive, flat-screen format. The ability to see accurate spatial relationships of visually complex scenes may help repairmen of the future perform maintenance on space shuttles and offshore oils rigs from afar.

The hardware necessary to achieve a 3-D meeting includes: a VR helmet equipped with polarised stereo glasses and headtracker, seven specialised video cameras and an Internet2 connection, which is the next-generation network not yet available for public use.

Moreover, the application demands high bandwidth and low latency variation (jitter).

"Having experienced tele-immersion," says Lanier, NTII chief scientist. "I know people will really want it." He estimates that by 2005, this technology will become standard medical practice. The business world will wait until 2007 for virtual meetings, and home use won't happen until 2010.