

Immersive Virtual Environment Research in the College of Fine Arts

Lucy Petrovich
Digital Arts, University of Arizona
lucy@u.arizona.edu

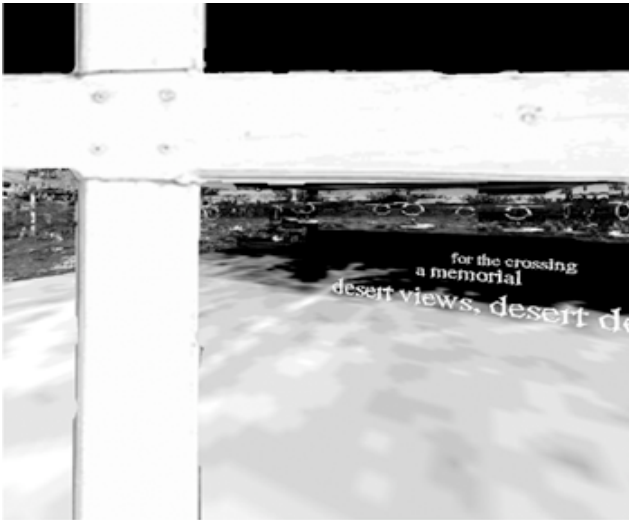
In every century and for every artist a major factor and concern has been the relationship between the work and the public consumption of that work. From conception artists often envision how their work will be displayed in galleries, museums or specific art shows. Interactivity through the use of new technology has introduced an entirely new set of display issues along with a new aesthetic. The non-availability and non- portability of supercomputers that were originally needed to run virtual reality software made it difficult for artists to work in this medium. The creation of high-end virtual reality (VR) software on PC computers has eliminated this problem and made VR an accessible medium for artists to explore.



Desert Views, Desert Deaths, immersive environment
by Lucy Petrovich

At the University of Arizona a new Digital Arts MFA program has been established. This is an interdisciplinary program that includes faculty from all of the arts – visual, media, music, and performance – and will encourage projects that involves multiple disciplines. As part of the core curriculum a ‘programming for artists’ course, will

allow art students to program virtual immersive environments (IE). Using the CAVE Libraries with added utility functions, art students who have never programmed before can learn the fundamentals of programming while working in a highly technical medium.



Desert Views

With limited funding sources, the Fine Arts College chose to purchase the 'affordable' immersive environment system that Dave Pape and Josephine Anstey presented at SIGGRAPH 2002. This system consists of using CAVE Libraries on a Linux PC dual processor for a one wall, passive stereo, rear projection using a Wand for navigation.

Modest budgets can build this system slowly over a period of two years. The first year a desktop system can be purchased to start the development process. The second year's budget can be spent on the display system – the rear projection screen, two projectors, and the Wand. The total cost of this system is about \$25,000.

The CAVE Libraries are well documented and have a growing and supportive community. Nevertheless, it is a challenge for artists to set up this system and to begin developing applications. Much of the documentation is written for people with technical expertise making it challenging for artists to implement.

For our IE system no head tracker is used. Our concerns were to design a display system that multiple viewers could experience; to have a non-disorientating viewpoint for those viewers; and to incorporate an interface with a reasonably instantaneous learning curve without requiring constant supervision. The Wand without the head tracker works well for first time CAVE users with minimum time to adapt to the navigation. In practice eliminating the head tracker allowed us to accomplish these goals. Another element to consider when exhibiting interactive projects in a public location is the reluctance of people to use unfamiliar technology. Again by keeping the interface simple and with the Wand being very similar to a mouse, much of this shyness can be eliminated.



Desert Views

The Digital Arts Program and the Computer Science Department at the University of Arizona have begun a new collaboration investigating user interfaces for IE systems. We are examining the video capture of human movement in three-dimensional space. The goals of this research are to identify and refine interfaces that give humans unencumbered access to computers, making the computer an invisible tool.

The immersive environment is a powerful medium with unlimited potential for exploring important cultural issues. Interface design fosters dialogue and awareness of immersive technology's potential for communication. A goal of virtual worlds being

created in the CFA, UA is to affect our cultural transactions using technology. The results are designed to promote human collaboration and understanding with the assistance of technology. The first two projects that were created in the CFA, UA deal with cultural concerns and foster dialogue.

Desert Views, Desert Deaths by Lucy Petrovich, is a memorial for those who have died in the southern Arizona desert while crossing the U.S. / Mexico border. Strict enforcement of border crossings have forced immigrants away from the main routes and cities they have taken in the past, to more remote desert locations. In the summer the desert temperatures reach 100F-120F degrees for more than three consecutive months. Last year a record number of people died of heat stroke or dehydration while crossing the border. This year hundreds more will die in the Sonoran Desert. This immersive environment depicts a virtual unreality of illusive and lucent images representing death and the desert.

In the Fall 2003 semester I presented an initial offering of the new Digital Arts course entitled 'Interactivity'. In this course, art students learned programming to create interactive immersive environments. Working in groups, these students were successful and created there first immersive environments for public viewing.



Perspectives of Contradiction

Perspectives of Contradiction is a collaborative project by students from the 'Interactivity' class. This work is a virtual space filled with visual and conceptual contradictions that challenges the viewer to approach the environment from different perspectives: self and identity, motion and time, nature and man-made environments, positive and negative space, and optical illusions using color and motion.

Both of these projects were exhibited publicly for several hundred people during a two hour reception this past February. Using the Wand with a one wall, stereoscopic display resulted in a very effective and well received immersive experience.

For additional Information:

web.cfa.arizona.edu/digitalarts/

www.arts.arizona.edu/lucy/

www.arts.arizona.edu/art532a/

www.arts.arizona.edu/lucy/desert.html

Digital Arts at the University of Arizona

Author's web site

Interactivity course, Digital Arts MFA

Desert Views, Desert Deaths