

# SWITCH

---

Volume 2  
Number 1 *Virtual Reality*

Article 10

---

9-1-1995

## VR Projects

P.D. Quick

Follow this and additional works at: <https://scholarworks.sjsu.edu/switch>



Part of the [Chemistry Commons](#), [Digital Humanities Commons](#), [Equipment and Supplies Commons](#), [Interactive Arts Commons](#), [Interdisciplinary Arts and Media Commons](#), and the [Other Arts and Humanities Commons](#)

Archived from [http://switch.sjsu.edu/archive/nextswitch/switch\\_engine/front/front.php%3Fartc=196.html](http://switch.sjsu.edu/archive/nextswitch/switch_engine/front/front.php%3Fartc=196.html). Documentation of the preservation processes used for this collection is available at <https://github.com/NickSzydowski/switch>. Metadata for this item was created and augmented by Alex Kajikami, Spring 2022, art 104

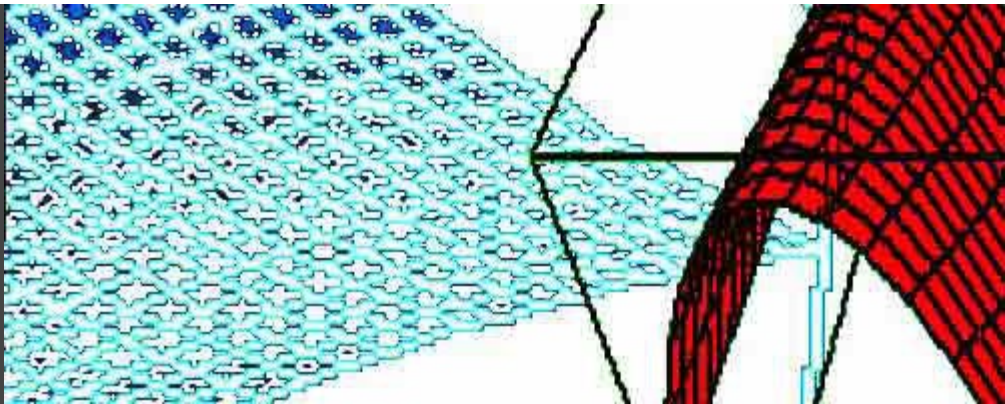
---

### Recommended Citation

Quick, P.D. (1995) "VR Projects," *SWITCH*: Vol. 2: No. 1, Article 10.  
Available at: <https://scholarworks.sjsu.edu/switch/vol2/iss1/10>

This Article is brought to you for free and open access by SJSU ScholarWorks. It has been accepted for inclusion in SWITCH by an authorized editor of SJSU ScholarWorks. For more information, please contact [scholarworks@sjsu.edu](mailto:scholarworks@sjsu.edu).

virtualreality



## VR Projects

P.D. Quick on Sep 1 1995

issue 02

### Virtual Reality Projects

#### Nanomanipulator

Several university projects stood out as some of the most promising research in the field of virtual reality. The most fascinating of these projects is the **Nanomanipulator**. Developed at the University of North Carolina Chapel Hill Department of Computer Science in conjunction with the UCLA Department of Chemistry in 1991. The project was first presented at Siggraph in 1993 but has since gone through several modifications. The Nanomanipulator incorporates a scanning tunneling microscope connected to a realtime virtual reality interface with images generated by a PixelPlanes 5 graphics engine. It allows users to see and manipulate microscopic structures which were previously only visible through an electron microscope in a two dimensional image on a monitor. In 1994, an atomic force microscope was added to manipulate microscopic particles. In the videotape shown by Warren Robinett, who conceived of the interface in cooperation with Stan Williams of UCLA, gold particles were moved across a gold substrate by the nanomanipulator. The most recent addition to the project is a haptic device called **PHANTOM** which fits over the finger and provides forced feedback, allowing the operator to feel the surface being manipulated.

#### Augmented Reality

Also developed at the Chapel Hill Department of Computer Science, is the **Augmented Reality Project** which incorporates ultrasound data to create three dimensional images of the human body allowing one to see beneath the surface without actually opening it up. The project presented at the conference allows doctors to see 3D images of tissue, in this case a woman's breast, which appear over the actual breast. In this case, the subject was only being examined for a cyst believed to be benign, but needed to be aspirated. The hope is that doctors will soon be able to use the HMD to perform procedures such as cyst aspiration. Project developers also hope that seeing anatomical structures in 3D will make it easier to get a sense of where the target (the cyst) is, reduce the time it takes to train MDs to do procedures such as cyst aspiration, and possibly reduce the time it takes to do such procedures. It would seem that another possible benefit would be that viewing internal structures using this technology would facilitate medical procedures with minimal incisions, especially with procedures such as this. At present the HMD does not provide 3D images but researchers are hoping to be able to perform the procedure with a 3D HMD within a year.

#### Phobia Project

**The Phobia Project**, developed by the Georgia Tech Graphics Visualization and Usability Center explores the use of virtual environments for behavioral therapy. Currently they are working on a treatment for acrophobia, the fear of heights. Subjects

can use this system to enter three virtual environments which allow them to take an elevator up 49 floors, cross three bridges which span a river running through a canyon, or step out onto a series of outdoor balconies.



## ::CrossReference

### last 5 articles posted by Quick

:: the Emergence of ALife - May 1 1996

:: VRware Beware:VR at Siggraph - Sep 1 1995

:: VR Projects - Sep 1 1995

:: VR Products - Sep 1 1995

:: VR Dirt and Other Stuff - Sep 1 1995

[about](#) | [contact](#) | [credits](#) | [subscribe](#)