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VR Dirt and Other Stuff

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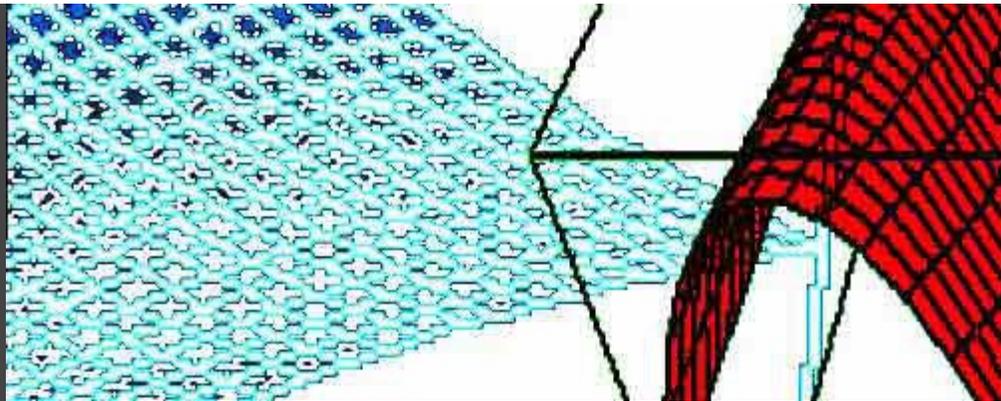
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VR Dirt and Other Stuff

P.D. Quick on Sep 1 1995

issue 02

Effects of Virtual Reality systems on users

VR Dirt and Other Stuff

It seemed like no matter which VR class, paper or panel I attended, and I attended several of them, the same issues kept coming up: Concerns about the physiological and psychological effects of VR systems on users, the need for more useful interfaces, and the desire to provide more sensuous feedback to users. In fact, all of these issues came up during the panel on "A National Research Agenda for Virtual Reality: Report by the National Research Council Committee on VR R&D" (NRCC). The panelists presented recommendations made by the committee which have been published in a new book, *Virtual Reality: Scientific and Technological Challenges*.

Physiological

The physiological and psychological effects of VR systems will be a deciding factor in the development of VR as a useful technology. Symptoms such as eye strain, motion sickness, **sopite syndrome** and others associated with prolonged use of HMD's must be addressed before VR can become a practical technology and environment to use and work in. One panelist, Randy Pausch of the University of Virginia, mentioned a Sega VR HMD which was supposed to be released but was never heard of again after Sega commissioned a study of the effects of long term use of HMDs. No news in this case may not necessarily be good news. Researchers were unable to say conclusively whether prolonged exposure to the HMD would not be harmful. The researchers made no statements that it was harmful, just that it was impossible to say it was harmless. Pausch later suggested that these kinds of issues make or break an industry and that if there was any threat of lawsuits companies may be reluctant to invest in products that may place them in jeopardy. To address these concerns, the NRCC recommended further research into the physiological and psychological side effects of VR.

Psychological

Although physiological side effects were addressed in more detail at the conference, psychological side effects of VR were mentioned and are discussed in the NRCC publication. In the report, questions are posed regarding the effects of extended exposure to VR systems on the users sense of presence in their usual environment, on the possibility of altering the mental model held of the user's own body, and on attitudes toward social behaviors such as sex, violence, and fantasy role playing. The report seems to suggest that immersive experiences in VR may have a greater impact than computer role playing games. There have been reports of individuals giving up most of their real lives and identities for these fantasies. There is also some evidence that violent video games may be connected to aggressive behavior in children. It is

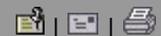
important to remember that there is a great deal of research that needs to be done before any of this can be substantiated and the NRCC recommends that more research should be conducted to examine the possibility of these side effects.

Interfaces

During several of the VR panels, projects were discussed that incorporated the use of physical interfaces. Ian Angus of Boeing Corporation presented a CAD system that incorporated a clipboard that is used as an input device. In his presentation, he emphasized the benefit of using physical devices to orient users in virtual environments. Physical devices provide users with the ability to feel objects in these environments as opposed to reaching out into an empty space to push a button or bring up a menu. In this case, the clipboard corresponded to a panel in the virtual environment which allowed access to menus and diagrams. Angus pointed out that one of the limitations of his device was that it was too small to view large diagrams. But this seemed to be a problem that could be addressed through software by adding features that allowed you to zoom into a specific area of a diagram or by allowing you to change the size relationship between the input device and the image display. Randy Pausch also presented several projects developed at the **University of Virginia Department of Computer Science** that incorporated unusual interfaces such as a tennis ball and a toy bow and arrow. These were pretty amusing to watch and the audience had a good laugh. But fun and games aside, these projects illustrate the ease with which users can relate to virtual environments when provided with tangible interfaces.

Feedback

Haptic devices are the next big step in achieving more sensuous and vivid experiences in VR. To make virtual environments useful and far more enticing, **sensory output** will have to be provided to users. Aside from the **PHANToM** there were few haptic devices used in VR systems presented at any of the panels. This is probably due to the fact that a large proportion of VR research is dedicated to visual and audio feedback. To examine some of the current projects being developed with haptics check out the **Switch Gateway** in this issue.



:::CrossReference

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