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## A WHOLE NEW WORLD

Virtual reality that's breathtakingly real

**T**OM DEFANTI AND DANIEL SANDIN THINK they've found the problem with virtual reality: the virtual part. It's tough, after all, to bliss out on the "deck" of the starship *Enterprise* while strapped into a 5-lb. headset and a knot of fiber optics. So the two bubbly University of Illinois at Chicago professors (an afternoon with them is part Mr. Science, part Laurel and Hardy) dreamed up a better idea. Instead of wiring our heads, they are electrifying entire rooms, scooting virtual reality closer to ... reality. It seems to work. With lights, mirrors and some of the most powerful—and costly—electronic hardware, U.I.C.'s Cave Automatic Virtual Environment does subtly evoke another world. More than pretty pictures, Sandin says, the system offers "the first revolution in perspective since the Renaissance."

Sandin, an art professor (with a master's degree in physics), and DeFanti, a computer scientist, have been plotting that revolution since the early 1970s, when they were first encouraged to collaborate. Since then, on weekend nature walks and canoe trips, the two have dreamed up new ways to mix art and technology, producing a steady series of revelations. (Their early research was behind the breakthrough special effects of the first *Star Wars* movie.) "Sometimes we've felt like a deer in headlights," DeFanti jokes. "But we've had weird beginner's luck. We're at the extreme in terms of technology. Our work is well received—in retrospect."

They aren't having to wait for acclaim for their latest project. Even VR curmudgeons agree that CAVE is miles ahead of other stick-figure and CD-player VR machines. The development version of their CAVE, which they've been perfecting for three years, can transform a drab laboratory on the second floor of a U.I.C. engineering building into a perfectly rendered Greek temple or an elegantly sketched museum. The only obtrusive gear: sunglass-size goggles with small LCD screens and a video-game-size control wand. Says DeFanti of the new technology: "The next step is to bring immersion to the Web, which will make it more than a data structure."

[www.ncca.uiuc.edu/~evl/html/EVL-LAB.html](http://www.ncca.uiuc.edu/~evl/html/EVL-LAB.html)



DEFANTI, RECLINING, AND SANDIN THINK FULLY IMMERSIVE VIRTUAL CAVES ARE A REVOLUTION IN PERSPECTIVE.