

## Step into a world where reality is not as it seems

### Virtual reality lab at Stanford explores identity

January 18, 2005

By Simon Shuster

Have you ever wondered when science would catch up with Star Trek and finally let you travel to different worlds or even assume a new identity, all before you can say, "Beam me up, Scottie"? Well, Stanford's Virtual Human Interaction Lab, VHIL, may be one step closer to realizing this sci-fi fantasy.

Founded and currently run by Communication Prof. Jeremy Bailenson, VHIL is transporting volunteers into virtual worlds, where they interact with one another under the guises of various computer-generated personas, known as avatars. By studying these interactions, researchers are trying to understand how virtual reality environments can influence all kinds of social behaviors — from stereotyping to confidence to feeling empathy for others.

What makes this lab unique, said Bailenson, is not only the quality of the virtual simulation, but also its commitment to social science.

"We want to study what happens when humans interact with other virtual humans," he said. "There are tons of [ideas for] consumer products people offer us that we don't do. We're social scientists."

Yet even in the more restricted realm of social science, the possible applications of virtual reality technology seem limitless.

"Anything you can fathom, we can do," Bailenson said. "[Your virtual representation] can look as much or as little like you as you want, and it can behave as much or as little like you as you want."

To illustrate, Bailenson described an online virtual classroom, in which a student can render his avatar as "paying attention, mimicking the teacher, while actually being in the other room smoking a cigarette."

While this may sound like child's play, the virtual worlds that have actually been realized at VHIL may have influential social applications.

"We're using [the simulations as a way to desensitize people who have social anxiety," Bailenson said. For instance, someone fearful of public speaking can be placed before a virtual audience, which can either heckle or encourage the speaker. In this way, a common phobia can be overcome with relative ease.

Practically any fear can be faced in a virtual reality setting because the simulated experience mimics the real world so convincingly. In my personal venture in the virtual world (see box, right), the graphics were real enough to cause vertigo. In some experiments, the visual sensations have been almost too convincing, causing the subjects to react as if they were truly in danger. For instance, when subjects were asked to step into a virtual pit, according to Bailenson, some subjects fell to the floor or tried to grab on to the ledge, and about one-third of the volunteers refused to take the virtual leap altogether.

In other cases, Bailenson added, "We've had people try to run away from a virtual person that's running at them."

#### Deception and virtual reality

As with most groundbreaking technologies, virtual reality can also serve ill intentions.

"In a virtual world I could look like someone completely different," said sophomore Claire Clarenson, lab manager at VHIL.

According to Bailenson, technology could be abused for the sake of manipulating or deceiving the public.

“Of course there are ethical questions,” he said. “If you’re a politician and you’re trying to petition a group of Latino voters, you can make yourself look Latino. If you’re trying to petition Caucasians, you can make yourself look Caucasian.”

Still, this kind of deception is hardly a new phenomenon, Bailenson added, likening it to someone wearing make-up to obscure his appearance.

“People that lift weights change their muscles. These things happen all the time, it’s just a lot easier to make these things effective when you’re in an online medium,” he said.

Notions of personal identity can also be obscured in the context of virtual reality.

In designing an avatar, photographs of an individual are “wrapped around” a stock, a three-dimensional model of a human head, explained Nick Yee, graduate student researcher at VHIL. In addition to the photographs, a person’s characteristic facial gestures are recorded and applied to the 3-D model.

“[The resulting virtual person] captures about 95 percent of a person’s facial variance,” said Bailenson, referring to the accuracy of the simulations.

“But what happens if I take Nick’s face, and then I throw your [facial] gestures on it. Who is that an avatar of? Is that Nick or you?” Bailenson asked.

“It looks like Nick, but it’s gesturing like you. You get all these hybrid identity questions that arise,” he added.

Projects in the works

Nonetheless, Bailenson said that virtual reality technology promises to help us answer questions about personal identity that might be impossible to answer using other methods.

On the project Web site, the question is posed, “How much does an avatar need to resemble (both visually and behaviorally) its respective owner in order for person-specific influences to take effect?”

VHIL experiments hope to answer this question by testing how much a person’s appearance can change before others in the virtual setting no longer react to him as the same person. In these ways, Bailenson’s lab can guide the social sciences toward a clearer definition of what it means to be oneself.

Looking into the future of the project, Bailenson and his research team also envision less abstract applications.

One virtual world at VHIL promises to make police lineups more effective. Using virtual reality, police departments may one day be able to graph the photographs and gestures of suspects onto a group of avatars, instead of making live suspects line up behind the glass.

That way, a witness can enter a virtual world and inspect the suspect-avatars as closely as needed, all while remaining completely anonymous.

“It can also help us parse out false alarms,” Bailenson said.

Presumably, a witness would not come too close to the avatar of someone who had assaulted him. By monitoring the behavior of the witness in the virtual world, police would be able to judge the truthfulness of a witness’s testimony.

Various experiments are also testing the nature of empathy. The VHIL Web site describes one world “designed to demonstrate what it is like to walk a mile in the shoes of another.” Researchers are hoping to study how gender, status and race influence human relationships.

One experiment, still in the first phases of development, hopes to foster empathy across cultural and economic divides. By placing people in a virtual third-world environment, modeled on a region of India, this virtual

simulation would allow us to experience the plight of fellow human beings from halfway around the world.

