

Stanford VR expert on the new tech's promise and limitations

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Jeremy Bailenson may be one of the foremost experts on virtual reality. But, as he puts it, he's no evangelist.

A Stanford professor and the founder of its Virtual Human Interaction Lab, Bailenson has studied VR for 20 years, conducting some of the most extensive research on the technology. He has a good sense of how VR can be used and what works well in virtual environments.

Bailenson is excited about how far the technology has progressed and sees great potential for it to be used as a more realistic simulator or as a therapeutic tool for people with disabilities. But he's worried about how it could be abused. And he thinks the use to which VR will be put in the near future - games - isn't appropriate for the technology.

Bailenson spoke with the San Jose Mercury News about the state of [virtual reality](#), his hopes and worries for it, and what he thinks will be the killer app. This interview has been edited for length and clarity.

Q: What's the state of VR today?

A: The ability to track movements has gotten much easier than it's ever been. And the ability to display using cheap, nonspecialized optics has changed pretty drastically.

Where it is right now more conceptually is there's all this money behind it, and it's crazy. But there's so much energy. I gave a keynote address at

the Tribeca Film Festival, and I brought a version of my lab to New York City, and New York is not the Valley, right? When those folks start caring about VR, it's interesting.

Q: What kinds of experiences are VR good for and for what is it inappropriate?

A: When Commissioner Adam Silver of the NBA came to my lab, he thought that I was going to try to convince him that one should watch an NBA game from VR. And I can't imagine what would be worse than that.

I've never worn an HMD (head-mounted device) for more than a half an hour in my life, and nowadays, I rarely wear one for more than five or 10 minutes. And a two-hour NBA game would be pretty brutal on the perceptual system. I believe VR's really good for these very intense experiences, but it's not a 12-hour-day thing.

Q: Why wouldn't you wear a VR system for more than 30 minutes at a time?

A: Even though the newer HMDs like the Rift and the Vive and Morpheus are much lighter and really comfortable, think about how much time you spend on your device a day. It's more than six to eight hours, and that's a long time to be wearing a pair of goggles. But even if that wasn't the case, the real problem is that the visual experience with an HMD necessarily produces some eyestrain, and that gets fatiguing over time.

Q: But all the new VR systems are being pitched primarily as game machines, and gamers tend to play for hours at a time. Isn't that a big concern?

A: I don't believe that video games are an appropriate market for this. Especially when you get into the highly violent games - do you really want to feel that blood splatter on you? I don't think it's the right use.

I don't believe VR should be used for hours a day. I think VR's great for really particular and specific moments that you try to learn about yourself and learn about others. Maybe I'm in a minority, but when these games come out, I don't think people are going to want to play them for eight hours.

Q: The research you've done in the lab seems to focus on how VR could be used to impart things such as empathy or concern for the environment that many people would consider to be positive. But assuming the effects are as strong as they seem to be, how concerned are you that VR might be used to encourage thoughts or behavior that are less beneficial or even dangerous?

A: VR experience changes the way you think of yourself and others and changes your behavior. And when VR's done well, it's a proxy for a natural experience, and we know experiences physically change us.

I've chosen to focus on the pro-social ones in this lab. I can't look you in the eye and claim that it only works for the good stuff. I can't. Am I terrified of the world where anyone can create really horrible experiences? Yes, it does worry me. I worry what happens when a violent video game feels like murder. And when pornography feels like sex. How does that change the way humans interact, function as a society?

I'm not a VR evangelist. The technology is powerful. It's like uranium. It can heat homes and destroy nations. I'm choosing to work on things that I believe are good for us. But that's my choice.

Q: What's going to be the killer app for VR?

A: I actually think the perfect fit for VR is the quarterback simulator. Most of the time when I show someone VR, they say, "Oh, I can see how this is going to be really cool in a year. I can see how I might use that." When Stanford Coach David Shaw put that on, he said, "We want this yesterday."

But what I want to be the killer app is communication. If I could do really good avatar communication systems, then we can reduce travel. When I want to do it, I can, but I shouldn't have to.

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Jeremy Bailenson

Age: 43

Birthplace: Tarrytown, N.Y.

Position: Professor, Stanford's Department of Communication; Director, Stanford's Virtual Human Interaction Lab

Previous jobs: Electric motor repairman

Education: Ph.D., M.S., Cognitive Psychology, Northwestern University; B.A., Cognitive Science, University of Michigan

Family: Married, two daughters

Residence: Bay Area, California

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Five Facts about Virtual reality

1. The term "virtual reality" was coined by Jaron Lanier, now a researcher at Microsoft, who in the 1980s founded the first company to sell VR products.
2. William Gibson, author of the seminal sci-fi novel "Neuromancer," likens VR to "a consensual hallucination."
3. One of the first public exhibits of VR was a game called "Dactyl Nightmare" that was exhibited in San Francisco.
4. An early head-mounted display created by Ivan Sutherland was nicknamed "The Sword of Damocles."
5. The Sensorama - which provided [virtual reality experiences](#) in an arcade-like apparatus during the sixties - was a date with a hippie.

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