

# Review: VR's father worries about the technology's future

May 25 2016, by Troy Wolverton, The Mercury News

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One might think that Jaron Lanier would be elated right now.

More than 30 years after his pioneering work in virtual reality, VR finally appears to be on the verge of becoming a mass market phenomenon. Major companies are investing in the technology, high-profile products are hitting store shelves, and developers of all sorts are creating VR experiences.

But rather than being excited, Lanier is deeply worried.

In particular, he's concerned about how [virtual reality technology](#) will put even more power in the hands of a very small number of already powerful companies.

"We can't keep on pretending that this isn't a gigantic problem," Lanier told me in a recent phone call. "We have more power than we can handle."

I called Lanier to get his thoughts on Daydream, Google's effort to create a standard for virtual reality on smartphones. Lanier demurred on that topic, noting that he had numerous conflicts of interest. He works for Microsoft, one of Google's competitors. Google purchased the technology owned by one of his companies. He knows and is friends with many of the people who work on Google's virtual reality projects as well as those who work for other companies.

"I'm very much not a neutral person," he said.

But while Lanier didn't want to critique any [company](#)'s particular VR effort, he did want to discuss the dangers he sees in how the technology is developing.

"This, more than the (artificial intelligence) stuff, is where we're going to face the greatest ethical challenge in coming years," he said.

Part of his fear stems from the amount of data that's likely to be collected by virtual reality systems. To maintain the illusion of [virtual reality](#), such systems have to keep track of what users are doing, what they're paying attention to and what they're responding to, Lanier noted. From that kind of data, such systems - or the companies behind them - might be able to glean or infer all kinds of things, such as what we're attracted to. They may even - by how we move or react - be able to identify medical conditions.

Lanier's outlook is also informed by how control over the technology is being concentrated into the hands of a relatively small number of companies. Right now, the companies at the forefront of VR are Facebook, with Oculus; Google, with Cardboard and Daydream; Samsung, which is collaborating with both Facebook and Google; Sony; HTC and Steam, who have collaborated on the HTC Vive. You can also add in Microsoft, which is working on augmented reality, a related technology; and Apple, which is reportedly working on both AR and VR projects.

Many of those companies have already collected reams of data on their users. VR will add to their trove in significant ways.

That's important, because many of the companies' businesses revolve around advertising, which, as Lanier notes, is all about influencing

behavior. Social science researchers have known for years that people's behavior can be manipulated by the type of feedback they receive. By placing users in worlds that can be as believable and immersive as the real one, with new ways of providing stimulating feedback, VR will give companies new ways to manipulate their users - potentially without the users being aware of the influence or at least the extent of it.

"The reason anybody pays us (in the tech industry) money is to influence people," Lanier said. "Each one of these companies can find occasion to act creepily, and each one has."

The problem is not that the tech companies have unethical or bad people working for them, he said. In fact, with few exceptions, the people Lanier knows at Facebook, Google, Apple and other tech companies are good and well-intentioned.

But having that much power concentrated in one place is inherently dangerous, especially if leaders come along who are not so hung up on ethics, he said. And whenever one side of a relationship has far more information than the other side, there's the potential for abuse, he said.

While it may seem strange that Lanier is more worried than excited about the state of VR, he has for years served as something of a public intellectual and critic of the tech industry. His two books are entitled, "Who Owns the Future" and "You Are Not a Gadget." Both warn about individuals losing control of technology to corporations.

"We have to get the power relatively moving in an ethical direction, or we're in trouble," Lanier said.

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