

health

MIND YOUR BODY



Warped Reality

What will it mean when millions of people play—and kill—in virtual reality? **BY ANDREW ROSENBLUM**

I **T'S 1944.** You're an American G.I. on the Pacific island of Peleliu with a Japanese tank creeping your way. You aim your bazooka and pull the trigger, sending the tank flying in a cloud of fire and molten steel. Somebody yells, "One down, keep it up!" You run toward the burning wreck and see a Japanese soldier, whose legs have been blown off, writhing in agony. You pull out your machine gun, point it at his face, and fire.

This execution of a wounded soldier is one of hundreds of savage scenes in the video game franchise *Call of Duty*, which has sold more than 250 million copies since its introduction in 2003. The game's violence is hardly unusual in this multibillion-dollar industry. Now imagine such scenes rendered in virtual reality, or VR—you could literally crane your neck down to see the Japanese soldier begging for mercy at your feet and, when you fire, watch his blood splatter up at you.

After years of anticipation, a host of "immersive reality" consumer devices are beginning to roll out, and game developers are hard at work creating games for the technology—perhaps its most obvious application. Yet some researchers and even industry figures themselves are nervous about the implications for players' mental health, arguing that known correlations between violent video games and aggression, coupled with the intensifying nature of immersion in VR, should give us pause.

"The most immediate concern is desensitization," says Victor Strasburger, a professor of pediatrics at the University of New Mexico who studies the effects of media violence on children. "When you're used to pointing a gun, whether in virtual reality or on a video screen, you're desensitized to the act of killing. I imagine that virtual reality will take *Halo* or *Doom* or *Manhunt* or *Call of Duty* and multiply

the effects of desensitization by a factor of 10, if not 50.”

Decades of research on violent video games haven’t turned up any evidence that they alone cause real-world crimes, although they’re not entirely benign either, despite insistences to the contrary by their passionate defenders. In a 2010 meta-analysis of studies of more than 130,000 people, published in *Psychological Bulletin*, Ohio State University psychologist Brad Bushman and colleagues found that “exposure to violent video games was significantly related to higher levels of aggressive behavior.” Numerous other studies have found links to physiological arousal, stress, anger, and diminished empathy.

It’s unknown how these factors may be affected by VR, in part because the technology is so new and the games aren’t yet widespread. But one of the strongest indications about potential negative effects can be extrapolated from VR’s ability to induce *positive* effects. VR-based therapies have been shown in lab studies to help with a wide range of behavioral health issues, including PTSD, depression, phobias, substance abuse, and body image disorder. Using sensors that measure galvanic skin response, researchers have shown that the illusion of immersion in VR along with the restriction of other stimuli fools the brain into perceiving the virtual world as real. The positive effects suggest that what happens behind the VR mask doesn’t stay behind the mask and that there’s a permeable membrane between virtual life and real life.

Jeremy Bailenson, a cognitive psychologist who heads the Virtual Human Interaction Lab at Stanford University, has studied the effects of VR for more than a decade, and his research has shown that immersion acts as an amplifying factor—which is why, he says, there should be cause for concern. “Media tends to be more

influential when implemented in immersive virtual reality rather than in traditional formats,” says Bailenson. “My lab typically focuses on prosocial outcomes—for example, using VR to teach empathy, foster communication, and deliver science lessons. However, I suspect that violent media will also be more influential in VR. Murder in a [console] game is one thing. In immersive VR, the acts feel real, since the motor and perceptual systems are receiving high-fidelity feedback and input.”

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The worry is not just that violence in VR might accelerate aggression, but that the sheer terror of the experiences will invoke the same neurological and physiological fear responses that they might in real life, and with real-world consequences like PTSD, anxiety, or depression. In a paper on ethical concerns related to VR published in *Frontiers in Robotics and AI* in April, Thomas Metzinger and Michael Madary, philosophers at Johannes Gutenberg University Mainz in Germany, recommended that people not be allowed to do things virtually that they wouldn’t do in real life, as the sense of embodiment in VR is so strong. They also

expressed sharp concern for the psychological health of those who may begin to confuse VR with actual reality. “One thing we are demanding is longitudinal studies of people who stay in VR for longer periods of time,” Metzinger says. “If you let something loose on a population of, say, a million people, there may be some small number who have a vulnerability that nobody thought about.”

Even some game creators have expressed trepidation. Guerrilla Games, a video game developer based in Amsterdam, announced last year that VR violence is so disturbingly realistic that its first-person shooter game, *RIGS*, would allow players to shoot but not kill. At a gaming industry convention, Guerrilla Games director Piers Jackson explained that the decision was made to protect players, because death in VR “is more intense.”

Despite such voices of caution, VR devices will soon be strapped on heads across the country, and violent games are sure to follow. The Oculus Rift headset, which went on sale in March, has already inspired independent developers to design a controversial game-like simulation of the 9/11 attacks for the platform, putting users into the perspective of someone inside the World Trade Center’s north tower, complete with the experience of jumping to one’s death. In October, Sony is to release a VR headset for its PlayStation console with titles such as *Until Dawn: Rush of Blood*, a horror game in which the player must battle an ax-wielding, clown-faced killer, among other terrifying foes. There will be plenty of nonviolent games as well, though if the market has proven anything, it’s that competitive blood sport is what gamers prefer most. How they react when it’s virtually real remains to be seen.

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