



The Tech
EFFECT

Changing Lives Through
VIRTUAL REALITY

James Roland



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Entertainment

Long before computer-generated images found their way into games and movies, the concept of VR had a firm place in popular entertainment. Massive 360-degree panoramic paintings depicting cityscapes and historic battles drew big crowds in the 1800s. During the same era there emerged handheld stereoscopic viewers that used photographic tricks to create some of the first 3-D images ever seen. Stereoscopic films that relied on dual projectors to create moving 3-D images emerged in the early 1920s, but movie studios were more interested in improving the quality of standard 2-D films and adding sound to motion pictures than innovating 3-D. Interest in 3-D movies waned until the 1950s, when 3-D became a popular gimmick, mostly used in horror films like *House of Wax* or low-budget science fiction movies such as *Robot Monster*. In the decades that followed, revolutionary advances in computer technology brought VR to where it is today.

In the 1980s, when the term *virtual reality* was coined and the worlds of VR began to look more like their current renderings, VR technology remained primarily planted in the realm of entertainment. VR applications in medicine, education, engineering, and other fields were either nonexistent or were only vague ideas of engineers, scientists, and especially imaginative VR pioneers.

Video games, movies, theme park rides, and other forms of entertainment continue to be the forces that drive innovation in VR and the ways most people in the general public still think of and use VR technology. And video

games continue to be the center of that VR universe. “Games are still the primary driver of the industry, with 59 percent of developers’ current or potential VR and AR projects falling in the gaming space,”⁴ writes Peter Rubin for *Wired*.

Video Games: The Heart of VR Innovation

Players feel the sensation of soaring through the clouds, mysterious high-tech aircraft firing earsplitting rockets at them from everywhere they look. They fire back with powerful energy pulses and hope that their Iron Man armor holds up. After years of watching Marvel’s Iron Man battle the bad guys on the big screen, audiences can don Tony Stark’s iconic Iron Man suit—at least a virtual one—in Marvel’s *Iron Man VR* game for the Sony PlayStation. “It’s the perfect marriage of technology and character, a fusion of human and machine, just as Tony himself,”⁵ says Bill Rosemann with Marvel Games.

Video games like *Iron Man VR*, the award-winning space adventure *No Man’s Sky*, and the VR version of the classic *Skyrim* place users in the middle of superhero clashes, sword-and-sorcery adventures, modern-day battlefields, haunted houses, outer space explorations, and other environments. These novel experiences are competing with traditional games for the attention of players looking for new fun and thrills. The VR industry website VRROOM says immersion is what sets VR games apart:

The feeling of being placed in a virtual gaming world, where when you look to your left then look to your right, when all you can see and all you can feel is that virtual world . . . that’s immersion. Being allowed to interact with your hands by picking up virtual objects within the game . . . that’s immersion. Immersion is the difference maker in what virtual reality can truly offer the gamer.⁶

fusion
The joining of two
or more separate
items

Players wearing virtual reality gear battle the bad guys in Marvel's Iron Man VR game for the Sony PlayStation.



And though the early generations of VR video games were often limited in scope—players could usually complete all the levels within a few hours—the potential for an exciting future in immersive games was obvious from the outset. The attraction is not just the opportunity to feel surrounded by a new environment but the interaction with characters in ways that flat-screen video games cannot provide. VR puts players alongside 3-D characters so that the users can more deeply identify with these characters and not just watch them from a distance.

VR games are also just starting to bring their unique immersive qualities and

immersive
Relating to a computer-generated 3-D environment that appears to surround a person

character interactions to the world of massive multiplayer online role-playing games, in which players from anywhere can come together via the internet to compete and share adventures. “The combination of presence and empathy has the ability to help socially connect people in new ways, help people experience fantastical and real places in new ways, and open up new ways of looking at and experiencing play, content, live experiences and more,” says Jeff Pobst, CEO of Hidden Path Entertainment, makers of the popular VR game *Raccoon Lagoon*. “That sounds pretty exciting to me.”⁷

empathy
The ability to understand and share another’s feelings

The Comfort Challenge

While no one disputes VR’s potential as a game-changing innovation, one thing that may slow down its popularity is the headset itself. Many people find a headset uncomfortable to wear for long periods. Pobst says:

There is the inherent friction for many people around putting a large headset onto their head, and the miniaturization of headsets over time will likely be one of the largest technological advances that will help reduce the difficulties for players and help grow adoption of VR. Allowing more and more people the opportunity to comfortably and easily give VR a try will make a big impact.⁸

Another concern for VR game developers is that the headset technology and game images trigger nausea and dizziness in some users. VR headsets continue to be a one-size-fits-all piece of equipment, yet users have differences that can keep them from fully enjoying VR games. Jason Kingsley, cofounder of the British game company Rebellion, makers of the VR version of the classic tank game *Battlezone*, says:

How headsets display the virtual world to you is always a challenge, and people's biology differs a lot. People see things differently, have different vision in different eyes, are nearsighted or farsighted, have issues with motion sickness, and so on. There are all sorts of components that go into creating a comfortable illusion of being elsewhere. That's a major area that requires continued innovation.⁹

Along with finding ways to make VR work for all types of users, developers are also working to fine-tune the graphics so that the detail and action live up to the imaginative ideas of game designers. The resolution of the castles, aliens, and other VR elements needs to catch up to the stories, settings, and characters finding their way into VR headsets everywhere. "I've demoed VR to dozens of first-timers, and after the initial 'wow factor' wears off, they often ask why the world is so blurry,"¹⁰ says Ryan Payton, founder and designer at Camouflaj, a VR production studio.

Arcades

VR games are not confined to headsets and game consoles at home. For bigger thrills and spills or to enjoy VR experiences that require more than a headset and handheld game controllers, users are venturing out to gaming arcades that are making room for the latest in high-tech fun.

Users who step onto the tilting platform of the Extreme Machine simulator at any of the Dave & Buster's arcade restaurants, for instance, can strap on a VR headset, grab hold of the handlebar in front of them for balance, and take virtual rides on roller coasters, waterfall-diving kayaks, prehistoric flying dinosaurs, snowboards, and much more. These kinds of immersive experiences add to their simulated worlds by moving users up, down, and all around in sync with the action on the screen—even blowing air in moments when the wind picks up on-screen.

Many arcades have one or a few such VR games, but the nature of VR-focused arcades is moving beyond the traditional

Virtual Violins

While movies and games are natural fits for VR's immersive qualities, other art forms are using VR to attract fans. Symphony aficionados, for example, may be able to feel like they are joining the string section of their favorite orchestra. Even if viewers have never mastered the violin or the cello, the VR experience can put users onstage with the orchestra. "Imagine being in . . . your local symphony," says Foo Conner, CEO of the digital media platform Jekko. "Virtual reality places you there. Not mono, not stereo, but hundreds of movable points of sound. Want to hear that violin? Move closer."

The Los Angeles Philharmonic led with this idea in recent years with its Van Beethoven project. A van equipped with VR equipment travels to museums, arts festivals, and other locations, allowing users to put on a headset and feel like they are onstage with the musicians performing Beethoven's Fifth Symphony. The goal? Use new technology to create new fans. "We tried to have it emulate real life as much as possible," says Pietro Gagliano, executive director of Secret Location, the digital studio that worked on the project. For example, users can pick up subtle shifts in sound if they turn their heads to different parts of the virtual auditorium. And for Hyekyung Shin, an early user of the L.A. Symphony's VR experience, the opportunity to feel she was among the musicians gave her a whole new perspective on classical music. "I liked being able to make eye contact with the conductor," she says.

Quoted in *Arkenea* (blog), "16 Experts Predict the Future of Virtual Reality," 2016. <https://arkenea.com>.

Quoted in David Ng, "L.A. Philharmonic's Van Beethoven Takes Virtual Reality for a Classical Spin," *Los Angeles Times*, September 24, 2015. www.latimes.com.

game center. That is because there is not much difference between VR games at home and what many arcades offer. To get people out of their homes to play VR games, developers are creating free-roam experiences, in which teams of players can put on their headsets, fan out across a wide-open arena, and do battle with zombies, aliens, killer robots, and other enemies. It is like a paintball park with a real high-tech twist . . . and fewer bruises.

Introduction: Virtual Reality Opens Doors to Real and Unreal Worlds

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FOR FURTHER RESEARCH

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Michael Wohl, *The 360° Video Handbook: A Step-by-Step Guide to Creating Video for Virtual Reality (VR)*. Self-published, 2019.

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Franklin Institute, "The Science of Virtual Reality," 2019. www.fi.edu.

Bridget Poetker, "The Very Real History of Virtual Reality (+A Look Ahead)," Learning Hub, September 26, 2019. <https://learn.g2.com>.

Valentina Shin, "MIT Explains: How Does Virtual Reality Work," Khan Academy, 2020. www.khanacademy.org.

Websites

ClassVR (www.classvr.com). Find out how VR is being used in education and in a variety of career fields. This website has information about hundreds of VR apps for people interested in

exploring science, the arts, history, and other subjects through virtual reality. Learn how other students are developing VR projects in the classroom.

How Virtual Reality Works, HowStuffWorks (<https://electronics.howstuffworks.com/gadgets/other-gadgets/virtual-reality.htm>). Learn about what goes into creating VR environments, how the headsets work, what is and is not possible with current VR technology, and where virtual reality and augmented reality are headed in the near future. Get a detailed but understandable explanation of the vocabulary of VR too.

Virtual Reality Society (www.vrs.org.uk). Get the latest news and reviews about VR apps and products, as well as information about how virtual reality is applied in sports, medicine, the arts, entertainment, and other fields. There is also information about some of the challenges of VR and some of the controversies and concerns about people spending more time in virtual worlds.

Virtual Reality, TechCrunch (<https://techcrunch.com/virtual-reality-2>). Read the latest news from all over the world about VR products and the business side of virtual reality. Learn who the leaders in the field are and what new games, apps, and other products are coming in the months ahead.

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