

Virtual & Augmented Reality

People have changed the world around them, and thought about how to change the world, since the start of human history. The idea of hand held tools to transport people to different worlds, however, appears to be a mostly new idea. The popularity of HG Wells and his science fiction novels, for example, led readers and writers to think and write about how technology might change or replace the world.

What we call virtual reality can be traced back at least to a short story by Stanley G. Weinbaum, *Pygmalion's Spectacles*, published in 1935. The spectacles are goggles that, when worn, transport the narrator into a paradise with people, sounds, smells, and touch. Yet the narrator is aware he actually sits in a chair in a hotel room as he wears the goggles.

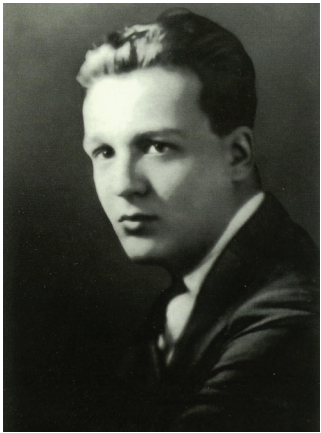
Virtual reality and augmented reality also evolved for practical reasons. In the 1920s, pilots had to learn how to fly with instruments. Early pilots flew mostly by calculating fuel, airspeed, wind resistance, and other factors to determine how far they could fly. Once in the air, they flew based on touch and experience.

In 1927, Edwin Link of Binghamton, NY built a Link Trainer, a metal frame flight simulator that used instruments connected to pumps and switches to simulate actual instrument flight. Pilots could train without the restrictions of weather and availability of planes and teachers. The Link Trainer eventually added movies and were heavily used in World War II. In the 1950s, flight simulators evolved into what we're familiar with today.

Development of personal virtual and augmented reality began in the 1960s with research done by Ivan Sutherland at MIT and the University of Utah. He and his students created the first head mounted displays and started to solve problems like eye tracking and depth perception. Jaron Lanier in the 1980s helped popularize the idea of virtual reality, and at least one attempt at a virtual reality game failed. However, computers were not powerful enough, a few technical problems had to be solved, and the cost of the technology limited its appeal.

Read this story online with links to find and learn more about the history of virtual and augmented reality:

<https://www.KidsCodeCS.com/vr-ar-history>



The first story which describes what we recognize as head mounted displays — a key part of virtual reality, appeared in a short story, *Pygmalion's Spectacles*, written by Stanley G. Weinbaum and published in 1935. He describes goggles that, when placed over the head, transport a person to an alternate universe, a paradise where he can see, touch, hear, and feel a different world despite sitting in a chair in a hotel room. Today people are familiar with VR and AR through TV and movies.

Photo from Wikimedia Commons

Edwin Link, a pilot from Binghamton, NY, in the 1920s grew frustrated at the lack of pilot training. So he adapted knowledge gained from his family's business selling player pianos and organs to build a pneumatic platform with synchronized bellows, motors, and instruments. The Link Trainer he built was used for several decades and throughout World War II to train pilots.



Photo by Roland Turner on Flickr



Photo by Clint Budd on Flickr

If you know what a ViewMaster is — a hand held device you place round slides into then hold up to your eyes to see 3D images — then you might be surprised to learn ViewMasters were created in World War II as a training device. Their use as toys for everyday people happened after the war. View-Masters work similar to Google Cardboard today, with a smartphone replacing the round slides.

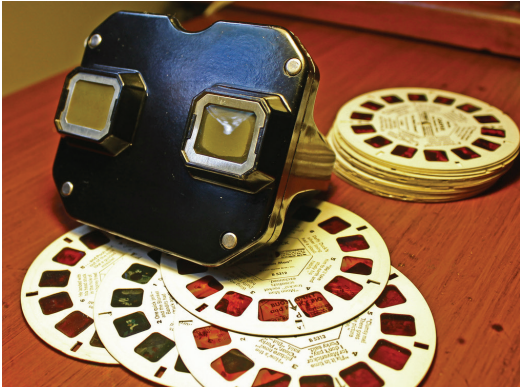


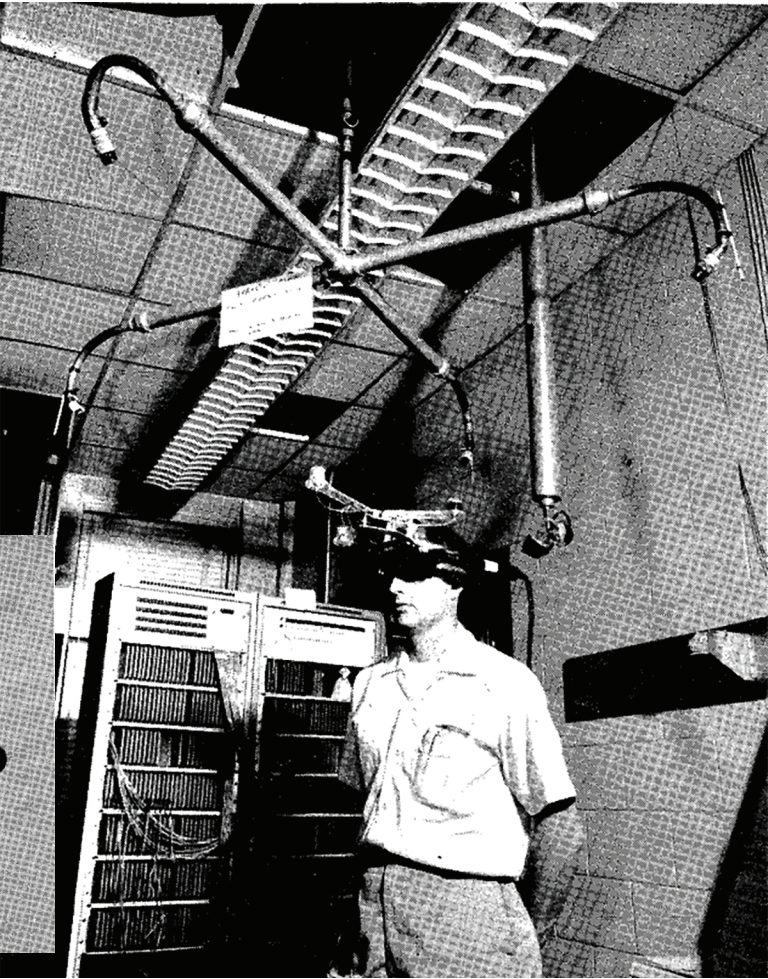
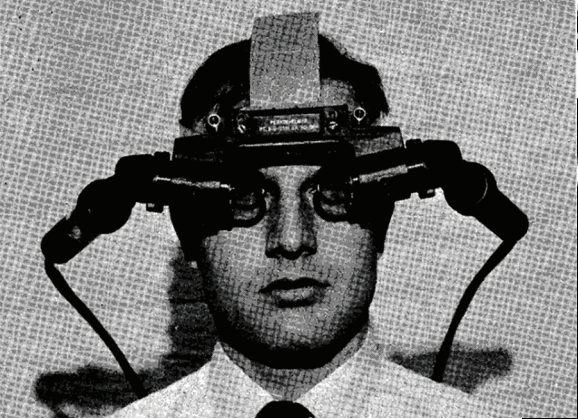
Photo by Jack Pearce on Flickr



Photo by Minecraftpsyco on Wikipedia

In the 1950s, Morton Heilig wrote about an Experience Theatre which could include all the senses while watching movies. He built a mechanical device in 1962 called the Sensorama. It apparently still works.

What we call virtual reality today didn't appear until the 1960s with the research and development of head mounted displays. Ivan Sutherland, a professor at MIT then Utah State, worked with his students to create the first head mounted display, called the Sword of Damocles because it was attached to the lab ceiling.



Photos by Ivan Sutherland for AFIPS publication



Photo by Nan Palmero on Flickr

Today virtual and augmented reality tools are finally powerful enough and affordable to more people than in the past. There are maybe half a dozen head mounted displays available for virtual reality. Plus Google Glass, cars, and other tools display digital data in front of our experience of the real world. These tools can be used train, educate, and entertain, as well as overcome fears like agoraphobia (a fear of heights).