

Virtual Reality: 500 years in the making!
By Jeanette Juryea – May 2009

Nothing on TV? Go on an African safari instead! Or travel back in time to ancient Egypt, or into the future to wage war against an alien colony.

No, it's not a teleporter or time machine. It's virtual reality. And it might soon be available as a new way to learn and play.

Imagine your feet firmly planted in your bedroom, but you feel like you're really on a safari in Kenya. You can see the landscape, hear the birds calling overhead, feel the heat of the sun, taste the pawpaw fruit, and smell the elephant dung. That's what makes virtual seem like reality. We can see it, hear it, smell it, taste it and feel it. All five senses must be involved.

Sight

Man has been perfecting images (sight) for a very long time. The first part was to transfer images so we can "see it." In 1519, Leonardo DaVinci first explored the visual uses of a dark room that he called "Camera Obscura." This dark room was studied as a way to help artists see only what was in front of them. Over the next three centuries, scientists also studied chemical reactions to light. But they didn't put the two together until 1827 when a man named Joseph Nicephore Niépce (pronounced Nee-ps) invented the first photograph.



It took eight hours to snap this very first pic in 1827!

Film was invented in 1884 by a man named George Eastman. This was important because it meant that regular people could take pictures, not just scientists and skilled photographers. Thomas Edison took that idea to the next level. He wanted to make a machine that could "do for the eye what a phonograph did for the ear. He called his inventions the kinetograph (camera) and a kinetoscope (viewers) and used a new type of 35mm film that Eastman invented. Edison eventually figured out how to connect photographs into a string that led to "motion pictures" — and the movie industry was born.

Sound

Thomas Edison invented the phonograph while working on his telegraph machine. The two work off a similar principal: The telegraph was a series of punch holes in paper; the phonograph was a series of punch holes in a metal cylinder wrapped in tin foil, the result of recorded vibrations from a mouthpiece.

In the very early movie days, the visual movie and the sound were separate. While the movie was running, a piano played to give us sound. The producers added words at the bottom of each scene so we knew what the actors were saying — just like closed captioning today helps people who can't hear. Meanwhile, in 1918 a Hungarian named Dénes Mihály invented the "sound film" and by the late 1920's, everything produced in Hollywood had sound.

Making those images and sounds digital didn't happen until many decades later with the evolution of the computer. But these two sensory projections have come a long way. You can now watch YouTube videos and snap pics of your friends using your camera phone. And you can email those videos and pics back to them with the same phone.

Touch

In today's digital world, the sense of touch is still being refined. You can already buy data gloves, body pads and floor mats to simulate physical movements in video games. The next phase will be adding the sensation of feeling the other side of that interaction. For example, when you swing a virtual bat, you should be able to feel the impact of hitting the ball. It's all about how the equipment you're using is made.

Taste and Smell

The hardest part of true virtual reality will be unlocking the secrets to digital taste and smell. In the 1950's Morton Heilig, a film-maker, wanted to create a movie theater that allowed people to experience all five senses artificially. His *Sensorama* was the earliest known example of this "multimodal" technology. It was very expensive, though, and didn't catch on. By today's standards, the Sensorama is not considered true virtual reality because it was not digital. Something had to physically touch you for you to feel it. The machine had to carry vials of flavors and scents for you to smell and taste. And then you were limited only to those flavors and scents that the machine had in stock.

In March 2009, scientists in the United Kingdom (university of Warwick and University of York) think they've made an important breakthrough. From their *Towards Virtual Reality* project, the scientists believe they have discovered how to write code in order to generate smells electronically. And they expect taste will be closely related. That means, we may very soon be able to download a smell file and actually breathe it in as if someone opened a vile containing flowers — or elephant dung!

Putting them together

When all five senses can be produced electronically, you can expect a whole new world of virtual reality. And it's estimated to be only a few years away. The very first virtual reality experience — a safari — is already in the making. Watch for advances in gaming technology to open a whole new world of household and classroom experiences. You could take a class trip to the top of Mount Everest, pitch in the World Series, attend the Academy Awards, or have a beach vacation in the middle of winter — all without leaving home.

Put your imagination to work. What would you like to do with virtual reality?

Read more about the progress toward true virtual reality

[Project VRC](#)

[VR Gaming](#)

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