TECHNOLOGY WHITEPAPERS

Virtual Reality

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What is it?

Virtual Reality (VR) is a technology that aims to create an immersive effect by presenting imagery which simulates some environment that is different from your actual one. When the device contains a gyroscope—as most smartphones do—it can sense which direction you're facing and change the imagery accordingly. When you see that imagery to the exclusion of all else, such as with a headset or goggles, the effect can be immersive.

There are several forms of VR:

- Computer-generated virtual reality, in which everything you see has been created digitally. An example is Nefertari: Journey to Eternity, a simulation of the interior of an Egyptian tomb.
- 360° video is a form of VR that is not computer generated, but an actual video recording made from a camera that records from all directions, i.e. spherically. When playing it back, the user can choose to look in any direction. YouTube has compiled a playlist of educational 360° videos.
- Augmented reality (AR), in which computer-generated imagery is displayed as an additional layer over your view of your actual surroundings. An example would be using Google Glass to see virtual text descriptions superimposed over artwork in a museum.
- Mixed reality (MR) is an enhanced version of augmented reality, in which the digital objects seem to be merged with your actual surroundings in a very integrated, interactive way. So for instance, you might be able to kick a virtual ball under your desk and no longer be able to see it.

How does it work?

360° video is relatively easy to create, given the right equipment (and there are now consumer-level 360° cameras that cost only a few hundred dollars). Of course, creating good quality, immersive 360° video calls for all of the artistic and technical skills that traditional filmmaking does, along with some additional considerations.

Creating computer-generated VR can require some sophisticated software with a steep learning curve, although some very simple materials could be created with inexpensive programs like Unity© and Unreal Engine©.

How is it being used in higher education?

- Stanford has created "1000 Cut Journey," an award-winning VR film, in which the viewer experiences racism while walking in the shoes of Michael Sterling, a fictional African American man, in an effort to develop empathy.
- Instructors at Collège LaSalle had their students view 360° videos created by the United Nations Virtual Reality project to virtually immerse themselves into crisis environments, such as a refugee camp in Jordan and a region in Nepal three days after it experienced a major earthquake.
- A project at Wellesley College aims to create a fully immersive VR environment for students in biological anthropology courses, using high-resolution 3D scans of existing human skeletal and fossil replicas.
- Washington & Lee University has made a short compilation video showing a number of different VR materials that they've developed.

How is it used at Vassar?

- VR is still in its infancy at Vassar. Academic Computing Services acquired its first VR equipment in the summer of 2018 and has been learning about and exploring it. We've more recently set up a VR workstation in the library, where anyone can explore a number of VR experiences that we've curated.
- Prof. Zachary Cofran (Anthropology) is working to create VR materials similar to those created at Wellesley.
- Prof. Anne Brancky (FFS) has looked at Mondly, an augmented reality app for language learning, and plans to develop 360° videos that will provide students with immersive simulations of French-speaking situations.
- The Earth Science department has an AR Sandbox, a box in which users can move sand around to see a projected elevation color map updated in real time.
- Prof. Stephen Rooks (Dance) is experimenting with recording dance performances in 360°.
- Prof. Shane Slattery-Quintanilla (Film) will be developing modules for teaching immersive storytelling practices and technologies, including 360° video production.

How can I get started with VR?

The instructional and scholarly possibilities of virtual reality are infinite. Check out dozens of VR applications for yourself in the studio area of the main library and contact ACS if you have ideas about using VR in the classroom that you would like to further develop at acs@vassar.edu.