

Hyper-Augmented Reality: Looking at AR Through Some Old Postmodern Goggles

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Introduction

Augmented reality (AR) refers to a family of technologies that allows us to see images of the real world and computer generated images in the same field of view in such a way that they appear to be part of the same reality. It has existed as a field of research for more than a decade but most theoretical writings confine themselves to technological problems and evaluation of their solutions, or to attempts to taxonomise the solutions in some way. The actual content, and issues surrounding its design, is mostly ignored. This could be for a number of reasons:

Firstly, augmented reality, and the technology surrounding it, is still in its infancy and taking its first shaky steps out of the laboratory into the consumer domain. This makes it hard to see AR as a medium since the technology itself still barely works, and has few established standards and high level tools. It will be some time then, before designers can gain full access to it, and even longer before an audience can begin to engage with it.

Secondly, the very idea of *content* implies the existence of a *container* and that a communications technology should aspire to total transparency, to effectively disappear from the awareness of the user. In doing so, we ignore the effects that medium and message can have on each other (or that they may be the same thing). We also implicitly deny the possibility that a medium can hold and convey meanings in, and of itself. The idea that one can make a technology, completely free of the norms and values of those who conceived of, built and financed it, is the kind of belief that we associate with a Modernist world view.

By Modernist, I refer to an early twentieth century world-view built around scientific progress. Modernism is characterised by belief in the human power to improve the world through science and technology. It is driven by an idea of the individual creating new and original ideas that obsolesce pre-existing ideas —

an abandonment of tradition (Wikipedia, 2008a). In technology, it is understandably the default approach to theory and reinforces its position with experimental evidence upon which are built frameworks, taxonomies and hierarchies. Because this has been highly effective in driving the continued development of technologies, it is naturally the foremost discourse in technological circles. Unfortunately, the prominence of the Modernist world-view can deafen us to other voices that might influence how we think about how technology might contribute to human experience.

Video see-through augmented reality is of particular interest to me. It typically uses a head-mounted display (HMD) with a camera mounted on it. Special markers are attached to objects in the real world so that, using the attached camera, the computer can read them and determine the identity, position and orientation of each marker (Kato & Billinghurst, 1999). The computer then uses this information to place computer-generated objects and imagery so that they appear to follow or be part of the real-world objects. When viewed on the HMD screen, we see CG elements inserted into our view of the real world. It is worth noting that the real-world image is actually not real, but is instead a video image and is therefore open to the same manipulations that can be applied to other video images. Also, objects can have both real and computer-generated aspects. The real part can be picked up and manipulated by the participant whereas the CG part can change and respond to data in ways that a real object can not. This tenuous portrayal of reality and the ambiguous relationship between signs, signifiers, and the things or ideas to which they might refer, reminds me of issues raised by writers associated with the postmodern movement.

Postmodernism

Postmodernism is a term used to describe a variety of schools of thought that arose in the mid twentieth century as a response to world war two and a growing disillusionment with the tenets of modernism (Wikipedia, 2008b). Postmodernism is characterised by diversity,

contradiction, fragmentation, collapse of hierarchies, erosion of boundaries, interrelations and complexity to the extreme.

Jean Baudrillard's writing actively undermines the order of modernism by digging at its foundations. He claims that signs have developed a life of their own and that signifiers have broken free of that which they might have originally signified. This has led us into a situation where simulation takes over various social processes and our sense of reality itself (Jean Baudrillard, 2001). Beginning with the signs of status that fix our rank in society, counterfeits appear being signs that mask or pervert reality. Before long, mass reproduction creates millions of copies that mask the absence of an original. Finally signs begin to bear no relation to any kind of original. We make maps for which there was never any territory (J. Baudrillard, 1988). In the absence of territory, we inhabit the maps. The maps go beyond territory in detail and become *hyperreality* — a real that is more real than real.

In video see-through augmented reality, we have a camera located at the center of the universe. It is fixed in position so that the universe revolves around it. The computer program that looks out through the camera ignores most of what it sees except for special signs in the form of special fiducial markers. As Milgram (Milgram & Kishino, 1994) points out, the extent of the system's world knowledge is an important factor in merging the real and the virtual. In this case, the system's world knowledge is complete, but only in terms of a universe bounded by the camera's frustum and populated only by floating markers whose positions and rotations are moments of significance in an otherwise empty void. These can be seen as floating signifiers that are finally linked only to other signifiers. Like Paul Virilio's *vision machine* (Virilio, 1994), a shared seeing takes place where the human and machine are both trying to interpret the same signs in the world. The computer then presents an altered version of the world surrounding the markers. The human must once again interpret the computer's interpretation and, by responding, changes the situation again for reinterpretation by the computer. Here, the technology is as much a technology of seeing as it is one of display. Because the computer is modeling the world and potentially making predictions based on its models, we might be 'witnessing' events that have not yet happened except in the accelerated sight of the vision machine. Virilio, often described as *hypermodern*, talks about machine mediated vision in terms of big and small

optics. Small optics is our normal level of magnification and use of optics. Big optics allows us to collapse physical space by seeing events at great distances at the moment that they happen. This confers advantages of elite status to the privileged few granted this vision, further disadvantaging what Armitage (Armitage, 2000) calls the '(s)lower classes'.

Conclusions

Having barely scratched the surface of postmodernism and how it might relate to augmented reality, there is still much to say and many other writers whose work could inform augmented reality as a medium. Admittedly it is putting the cart before the horse to try to theorise about a medium for which there exists almost no creative practice. However, I hope to extend some of the ideas put forward in this paper in the form of a longer paper and hopefully an augmented reality art work about augmented reality. I see such a text as helping 'prime the pump' for those who might wish to make augmented reality, not as a display technology, but as an artistic medium.

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