

Assignment 3

Annotated Bibliography:
Virtual Reality and
the Spatial Perception of Cyberspace

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Research Area

How does the promotion and development of virtual reality affect expectations and perceptions of the future of cyberspace?

Annotated References

Active Worlds. <http://www.activeworlds.com/>

ActiveWorlds provides a screen-based 3-dimensional (3D) environment where participants inhabit a shared experience, allowing them to interact via text-based chat and limited avatar-based motion. Users may create their own virtual home within the ActiveWorlds environment, and can invite other users to interact with them within their created environment. This is one of the most popular and successful examples of a shared, flexible 3D environment which is accessed online.

Integrating things like web-browsing, online commerce and direct, user-to-user communication puts ActiveWorlds at the forefront of virtual reality technology, even if it doesn't allow for sophisticated interfaces such as immersive, head-mounted displays (HMD) and data-manipulation gloves. ActiveWorlds may well be an early representation of what is to come in cyberspace.

Briggs, J. C. (2002). Virtual reality is getting real: Prepare to meet your clone. *The Futurist*. 36 (3), 34. Retrieved April 20, 2004, from http://80-gateway.proquest.com.dbgw.lis.curtin.edu.au/openurl?url_ver=Z39.88-2004&res_dat=xri:pqd&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&genre=article&rft_dat=xri:pqd:did=00000114301418&svc_dat=xri:pqil:fmt=html&req_dat=xri:pqil:pg_clntid=22212 (log-in required)

Briggs gives a rudimentary overview of the history and past failures of virtual reality, before going on to look at the current and future prospects of the technology. He covers topics such as tele-immersion (See Lanier), entertainment, medicine, engineering and construction prototyping and augmenting the abilities of disabled people (albeit virtually). He appears to hold a common view of inevitability regarding the widespread use of immersive virtual reality in daily life. This article provides a useful summary of some of the likely earlier mainstream implementations of VR in the future, with mention to some of the bigger players (commercial and individual) in the field.

Chesher, C. (1994). *Colonizing Virtual Reality: Construction of the Discourse of Virtual Reality, 1984-1992*. Retrieved April 20, 2004, from <http://eserver.org/cultronix/chesher/>

Chesher offers an excellent essay, building up a collection of resources which have contributed to the meaning and accepted discourse around cyberspace and virtual reality. He provides a detailed history of the milestones along virtual reality's history, including details of its military and cultural influences. There is also discussion about the 'place-ness' of virtual reality when Chesher looks at the "new frontier" idea that many early developers held. This concept is tied with the idea that cyberspace is embodied within virtual reality, so that we can envisage this frontier we are colonizing, and create a sense of excitement, luring people in.

Overall this piece provides a very useful look at the contributing factors to both VR's development, and its acceptance as a desired outcome to the further expansion of cyberspace.

Dodge, M. & Kitchin, R. (2004). *An Atlas of Cyberspace*. Retrieved April 20, 2004, from <http://www.cybergeography.org/atlas/atlas.html>

A very interesting website (which spurred on a book) looking at alternative strategies which attempt to map, chart or visually conceptualize cyberspace and the Internet. This site is useful when considering the spatial perception of today's cyberspace (the Internet) and comparing that to the likely future of cyberspace – virtual reality. Will maps of VR look similar to maps of today's Earth? This site even includes a page detailing maps of virtual worlds and MUDs (http://www.cybergeography.org/atlas/muds_vw.html). The variety of different map formats presented on this site, along with the obvious difficulty of truly mapping something which does not physically exist are interesting points to note when considering the representation of non-physical spaces within a simulation.

Gibson, W. (1984). *Neuromancer*.

The defining work for cyberspace as a concept, *Neuromancer* popularized the image of cyberspace consisting of what we now generally call VR. Gibson defined cyberspace as "[a] consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts...A graphical representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the non-space of the mind, clusters and constellations of data." This mental image was and is the basis for many books and movies in the years to come, and continues to be an accurate description of where VR appears to be going.

Heim, M. (1993). *The Erotic Ontology of Cyberspace*. Retrieved April 20, 2004, from Google's Cache (original page moved)

<http://216.239.57.104/u/rochester?q=cache:8qTxBg4N7RAJ:www.rochester.edu/College/FS/Publications/HeimErotic.html&hl=en&ie=UTF-8>

Heim takes things further with his discussion of cyberspace, presenting it as "more than a breakthrough in electronic media or in computer interface design." His analysis covers topics describing us as individual, discrete beings containing a universe of our own (monadology), the simulation of romantic encounters and the reduction of humans' entire existence to the presentation of information. His discussion also touches on the paradox of creating a simulated reality, and how it will destroy the human desire to discover, because everything will be artificial. He warns of being careful in the future to avoid getting lost in the quest for an artificial world, at the cost of ignoring our own living world.

This piece is a very useful backdrop to the VR movement, providing an analysis of what it is that drives us, as humans, to create our own virtual worlds. It uses philosophical supports and looks at the issues involved in living online from an entirely human perspective, rather than focusing on the technology, as with so many other authors.

Lanier, J. (2001). Scientific American.com. *Virtually There*. Retrieved April 20, 2004, from <http://www.sciam.com/article.cfm?articleID=00085286-21C3-1C70-84A9809EC588EF21>

Lanier, a pioneer in VR, looks at creating virtual meeting environments which can re-create the feeling of being in a room with someone else. He looks at the challenges of establishing eye contact, virtual placement within a shared environment and simulating objects which really exist into another person's representation of reality. His blend of reality and simulation brings a realistic, 3D representation of each person involved into a constructed space. He also looks briefly at augmenting the combined reality with artificial objects, such as an experiment where he altered a model building within the shared space. This article is interesting because it explores some of the difficulties of creating an environment which humans can accept as realistic, basing it on the real world, but with artificial supplements.

Mizrach, S. (n.d.). *What do we mean by virtual reality?* Retrieved April 20, 2004, from http://www.eff.org/Net_culture/Virtual_reality/vr_three.models

Mizrach looks at the three different types of virtual reality that he sees as being likely in the future; non-immersive, sensory-immersive and neural-direct. He discusses the features, benefits and disadvantages of each format, and looks at the current state of affairs (which hasn't reached any of these levels). As Mizrach states, "[m]ost of the working going on right now is in developing the technology for immersive VR." One interesting point that he makes

is that VR is a relatively personal pursuit, and people are likely to construct personalities to interact with, rather than having to put up with the vagaries and possible disappointments involved in dealing with real people, even though the shared nature of virtual reality environments would allow interactions between people who are geographically disparate.

After looking at all three formats and focusing on the positive and negative possibilities of neural-direct virtual reality, Mizrach basically concludes that as with all other 'culture-changing' technologies (i.e. telephone, radio and television), there are optimists and pessimists, but the reality will likely be somewhere in the middle. This look at the three different incarnations of virtual reality forms the backdrop of public ideas of what virtual reality and cyberspace really are. General public ideas about virtual reality seem to be at the point of accepting sensory-immersive VR as what is to come, but how long before that moves on to acceptance, if not expectation, of neural-direct?

Morrough, E. Information Architecture: From Craft to Profession. *Boxes and Arrows*. November 4 (2002). Retrieved April 20, 2004, from

http://www.boxesandarrows.com/archives/information_architecture_from_craft_to_profession.php

Although not strictly talking about VR, this piece briefly discusses the spatial nature of the World Wide Web (today's cyberspace) and the power of that metaphor in navigating fundamentally non-spatial information 'spaces'. This concept is interesting in that it shows the power of spatial navigation (which we humans undertake continuously in our lives) even when applied to something which takes up no space, and has no physical form. This spatial metaphor is part of what drives the move towards VR, which provides the ultimate spatial navigation and interaction interface to an information system: a true simulation of physical reality.

Nunes, M. (1995). *Baudrillard in Cyberspace: Internet, Virtuality, and Postmodernity*. Retrieved April 19, 2004, from <http://www.dc.peachnet.edu/~mnunes/jbnet.html>

Looking mainly at Baudrillard's rather dystopian view of the future of cyberspace, but bringing in other authors for comparison and support, Nunes reviews the work of existing authors on the implications of an entirely online existence, immediate global communications and simulated realities as part of daily life. Through Baudrillard, Nunes looks more at cyberspace as embodied in the Web than in VR, but these analyses seem to take similar form to the general view today that the current Internet is just a precursor to some type of immersive VR. This text helps provide a cultural and sociological view towards what we really become in an online, connected environment, and what might change in humanity if we live in a simulated world of our own creation. Also within the discussion is

the interesting idea of the point in the future where the simulation of a world becomes more important, more 'real' than the real world, and thus becomes the world. This idea is valuable to be aware of in the pursuit of ever more convincing and immersive VR.

Leonard, B. (Director). (1992). *The Lawnmower Man* [Film]. Information retrieved April 20, 2004, from <http://www.imdb.com/title/tt0104692/>

Despite getting rather abysmal reviews, *The Lawnmower Man* looks at an interesting aspect of VR – that of education and experience in an immersive VR environment, flowing over into 'real life'. It looks at the possibility of using a simulation of reality to not only touch areas of the mind which are not normally touched (promote new learning), but also to present reality in fast forward (accelerated learning). As I've mentioned, although the movie didn't really make it with the critics, the ideas contained within it are interesting nonetheless, and could become important considerations (experiments?) in the future, if VR can truly and convincingly simulate reality.

Lisberger, S. (Director). (1982). *Tron* [Film]. Information retrieved April 20, 2004, from <http://www.imdb.com/title/tt0084827/>

Tron was one of the very first movies to look at the idea of a 'world inside the computer', doing so early in the years when VR was being explored (1982). The simulated reality (inside the computer) presented in *Tron* was brutal and savage, with the main character being required to fight for his life to escape the control of the computer system. Artificial Intelligence was also explored (Intelligent Agents) with the introduction of a security program which assisted the main character. Movies such as *Tron* contributed to the popular culture of the time which believed that immersive VR was not too far away. At the time, some industry pundits expected VR to be in most homes by the turn of the century.

Palace Planet. <http://www.palaceplanet.net/>

This site is a resource point for the Palace Chat community, providing access to information, tools and resources for taking part in Palace Chat and getting in touch with other participants. According to the site, "Palace Chat is a [sic] online community of graphical chat sites with interactive content... You can visit a diverse range of communities, many are personal sites where you simply can go to chat and socialize with friends and family"

(http://www.palaceplanet.net/modules.php?op=modload&name=FAQ&file=index&myfaq=yes&id_cat=3&categories=What+is+the+Palace%3F&parent_id=2#61). So Palace Chat is a designated 'corner of cyberspace' which provides a visual representation of participants to each other, providing a sense of co-presence which supercedes that of text-based chat.

Palace Chat could be seen as a precursor to an immersive cyberspace/VR, somewhere that already provides visual interactions, albeit on-screen rather than immersively.

Ryan, M. (1994). Immersion vs. Interactivity: Virtual Reality and Literary Theory.

Postmodern Culture. 5 (1). Retrieved April 20, 2004, from

<http://www.iath.virginia.edu/pmc/text-only/issue.994/ryan.994>

Looking at immersion mainly, this piece by Ryan talks about our history of desiring immersion in events, using narrative and today's "docu-drama" as examples. From these roots, we bring this desire to the computer-mediated world and rather than accept a presented body of information, we demand to be immersed in it. There is discussion of how most other media cannot strive for immersion beyond providing prompts for the participant to immerse themselves within the proposed environment (i.e. fiction novels), and how VR offers the ability for people to immerse themselves within a 'movie' to completely new levels.

This theoretical (rather than technical) discussion of the difficulties of creating immersive, interactive environments helps to understand some of the complexities of human perception which make true VR difficult to attain. The ideas presented are useful to keep in mind, tempering expectations of a simulated world which we can truly accept as 'real'.

Softley, I. (Director). (1995). *Hackers* [Film]. Information retrieved April 20, 2004, from

<http://www.imdb.com/title/tt0113243/>

A relatively recent look at the counter-culture of computer hackers, *Hackers* presents an apparently concurrent world (which only true hackers inhabit) where control of large systems takes place in a 3D environment, employing a very Gibsonian 'city of lights' approach to providing an interface. *Hackers* also makes use of a Head Mounted Display (HMD) in one of the final scenes, where the hackers require a more advanced interface to control the system they are working on. This presentation of advanced control being available through 3D, graphical interfaces, optionally using the immersion of a HMD helps to enforce the belief of pop culture that VR is coming, and is in fact already here, but only available to the "elite" users of the system, such as system operators ("The Plague" from the movie), and hackers.

Stein, L. D. (2003). Get real: Internet-enabled gaming shows how virtual reality is about to take off.

New Architect. 8 (1). p. 48. Retrieved April 20, 2004, from [http://80-](http://80-gateway.proquest.com.dbgw.lis.curtin.edu.au/openurl?url_ver=Z39.88-)

[gateway.proquest.com.dbgw.lis.curtin.edu.au/openurl?url_ver=Z39.88-](http://80-gateway.proquest.com.dbgw.lis.curtin.edu.au/openurl?url_ver=Z39.88-)

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Stein provides a personalized, brief look at online gaming, comparing it to the fabled virtual reality cyberspace that we all await. His brief article shows how gaming already provides interactive, multi-player, co-present environments which can be manipulated (even created) to suit the whims of the players, and uses this to show just how close we really are to virtual reality environments. Games are an important platform from which we can build realities. Although many current games are based entirely on fantasy or science-fiction oriented themes, there are also numerous realistic games (especially in the combat genre) which display extremely high levels of reality (physics, responsiveness to motion/perspective, interactive environments, life-like character motion etc). The funding being poured into gaming, and the technology being developed as a result are likely to be the building blocks of a virtual future.

Suler, J. (1999). *The Two Paths of Virtual Reality*. Retrieved April 20, 2004, from <http://www.rider.edu/%7Esuler/psycyber/vrpaths.html>

Suler looks at 2 angles of VR – the real and the unreal. He explores the possibilities for re-creating a realistic ‘reality’, and constructing an entirely new one, which need not be bound by existing rules such as matter, physics, space, time etc. He also makes mention of two types of VR (as opposed to Mizrach’s three types) – Body Immersion Environments (BIE), ala Star Trek’s HoloDeck, and Brain Stimulated Environments (BSE), ala *The Matrix*. This brief piece from Suler is good to consider in relation to the question ‘What will virtual reality look like?’ Obviously there is no real requirement for us to follow any of the existing characteristics of physicality, and yet most demonstrations and expectations of VR include the re-creation of a fundamentally similar world, complete with physics, time, matter and social etiquette.

Tate, S. (1996). *Virtual Reality: A Historical Perspective*. Retrieved April 19, 2004, from <http://ei.cs.vt.edu/~history/Tate.VR.html>

Tate provides a brief discussion about the history of VR, some of its current uses and where it might be going in the future. An interesting point made by Tate, as opposed to some of the distinct pessimists about the technology, is that it is much too early to tell where VR is really going, whether it will present a threat to humanity or the world we know. This is an important point to remember in discussions about the technology, because if the doomsayers had had their way earlier in history, would we even have the computers we have today?

Wachowski, A. & Wachowski, L. (Directors). (1999). *The Matrix* [Film]. Information retrieved April 20, 2004, from <http://www.imdb.com/title/tt0133093/>

This movie captured the hearts of millions of people world-wide when it was released, and has developed a cult following since. The two sequels to the movie were also hugely popular, although to a lesser extent. *The Matrix* presented a truly immersive virtual reality, a neural-direct simulation or BIE which people were born into, unknowingly, and thus completely convinced of its reality. This simulation was completely life-like, replacing the reality of humans and keeping them enslaved. Rather than presenting an ultimate simulation which could be completely controlled, be infinitely flexible, *The Matrix* was used by intelligent machines to control humans entirely. The movie explores a variety of religious and philosophical implications and alternate concepts around the idea of a simulated reality, which are continued throughout all three of the movies in the trilogy. The fact that this movie was so widely accepted indicates a cultural acceptance of VR as a concept, and at the same time raises questions about the control of people once immersed in VR (whether it be by malicious, intelligence machines, or by other humans in the 'real world'), our perception of what is real, and our whether we really desire to know the truth about what is.

Wagstaff, J. (2003). Get a life, virtually. *Far Eastern Economic Review*. 166 (4). p. 34. Retrieved April 20, 2004, from http://80-gateway.proquest.com.dbgw.lis.curtin.edu.au/openurl?url_ver=Z39.88-2004&res_dat=xri:pqd&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&genre=article&rft_dat=xri:pqd:did=00000282209551&svc_dat=xri:pqil:fmt=html&req_dat=xri:pqil:pq_clntid=22212 (log-in required)

This lighthearted look at two new online interactive systems, The Sims Online (<http://www.thesimsonline.com/>) and There (<http://www.there.com/>) appears to be a simple review, but holds a few interesting points that are worth considering in the face of VR developments. Both The Sims Online and There are simplified VR environments, where people can meet and communicate, in some level of a simulation of real life. Wagstaff points out that at least in The Sims Online, there is an expectation of certain behaviours and manners, and that it is harder to fit in that you might expect (a little too much like reality perhaps?). He also comments on the fact that most people choose to have their initial avatar appear to be "svelte, moneyed and have perfect hair" – which raises questions about self-image and personal values in a completely artificial world. Perhaps what people really seek in cyberspace is a place where they can become what they want to be, having the money, image and persona that they connect with power.

Weinberger, D. (2002). *Small Pieces, Loosely Joined: A unified theory of the web*. Chapter 2. Retrieved April 20, 2004, from <http://www.smallpieces.com/content/chapter2.html>

Although more discussing the World Wide Web, Weinberger's look at why we consider the Web 'spatial' is interesting when looking at what drives the desire to create 3D VR. He concludes in this chapter that the Web is not in fact spatial, it is 'place-ial', and so we related that to our normal sense of space. "We are not well-prepared for the distinction between space and place" he says, portraying that there is a fundamental difference, but that in 'real life', there is normally no need to distinguish, because the two ideas go hand in hand. This nature of being able to "move from place to place but without having to traverse distance" is the fundamental nature of VR and one of its main benefits. One might argue that part of the push towards VR is merely to provide a better interface to the computer, a physical, spatial interface with which we are much more accustomed and comfortable.