

Edith Cowan University
Research Online

Theses : Honours

Theses

2000

Virtual Reality and the Modern Ideology of Order and Control

Craig I. Murrihy
Edith Cowan University

Follow this and additional works at: https://ro.ecu.edu.au/theses_hons



Part of the [Graphics and Human Computer Interfaces Commons](#), and the [Philosophy Commons](#)

Recommended Citation

Murrihy, C. I. (2000). *Virtual Reality and the Modern Ideology of Order and Control*. https://ro.ecu.edu.au/theses_hons/868

This Thesis is posted at Research Online.
https://ro.ecu.edu.au/theses_hons/868

Edith Cowan University

Copyright Warning

You may print or download ONE copy of this document for the purpose of your own research or study.

The University does not authorize you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site.

You are reminded of the following:

- Copyright owners are entitled to take legal action against persons who infringe their copyright.
- A reproduction of material that is protected by copyright may be a copyright infringement.
- A court may impose penalties and award damages in relation to offences and infringements relating to copyright material. Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.

USE OF THESIS

The Use of Thesis statement is not included in this version of the thesis.

**VIRTUAL REALITY AND THE MODERN
IDEOLOGY OF ORDER AND CONTROL.**

by

Craig I Murrphy

A Thesis Submitted in Partial Fulfilment of the
Requirements for the Award of
Bachelor of Communications (Honours) Media Studies.
At the Faculty of Communications, Health and Science, Edith Cowan
University, Mt Lawley.

Date of submission: 2,000

ABSTRACT

In this thesis I will examine the construction of the concept of Virtual Reality. I argue that rather than a technology of liberation as it is often perceived, virtual realities' conception has been influenced significantly by a discourse of control and order. I examine books, articles and films concerning Virtual Reality to support this claim. Furthermore this discourse of control and order is born out of a larger ideology of Western culture that values order and control. Throughout modernity this ideology has manifested itself through techniques and technologies of social and environmental control. I provide a brief historical outline highlighting some of these techniques and technologies focusing particularly upon surveillance. I suggest that under the guiding influence of the ideology of order and control one possible future use for Virtual Reality technology may be as a surveillance technology. The ideology of order and control is born out of a desire to transcend the unpredictable nature of life. This desire is reflected in the VR proponents aim to create a totally known and controlled artificial environment. I contend that an alternative way of thinking is needed so that objects such as Virtual Reality can be used for more appropriate purposes other than controlling and ordering. I draw upon the philosophy of Martin Heidegger to outline a thinking that is more open, and reflective, and that embraces the chaotic nature of existence. Such a thinking that is focused more upon the actual conditions of our everyday lives, may yield uses for technologies such as Virtual Reality that are more focused upon people's needs.

DECLARATION

I certify that this thesis does not, to the best of my knowledge and belief:

- (i) incorporate without acknowledgement any material previously submitted for a degree or diploma in any institution of higher education;
- (ii) contain any material previously published or written by another person except where due reference is made in the text; or
- (iii) contain any defamatory material.

Signature _____

Date _____

8/2/00

ACKNOWLEDGMENTS

I would like to thank my parents, Rick and Glenis for supporting me through the last four years of University. I would like to thank my girlfriend Natalie Diggins for her timely trip overseas that gave me plenty of time to write my thesis, as well as the support she has given me over the last three years. I would also like to thank Chris Langford for his inspiration and my supervisor Rod Giblett, for his assistance and good advice in preparing this thesis.

TABLE OF CONTENTS

Abstract	ii
Declaration	iii
Acknowledgments	iv
INTRODUCTION	1
CHAPTER 1: THE HISTORY OF THE MODERN IDEOLOGY OF ORDER AND CONTROL.	5
CHAPTER 2: THE DISCOURSES OF VIRTUAL REALITY.	18
CHAPTER 3: A POSSIBLE DYSTOPIA.	27
CHAPTER 4: AN ALTERNATIVE WAY OF THINKING.	36
CONCLUSION.	48
LIST OF REFERENCES.	50

INTRODUCTION.

Virtual Reality (or for short, VR) is a vague concept that has been defined in many different ways. Those in the field often have different conceptions of what it actually is. Definitions capture certain elements, but leave out others. For example, Sherman & Judkins (1992, p. 17) associate Virtual Reality with *immersion* in an artificial environment: "Virtual Reality allows you to explore a computer generated world by actually being in it". By contrast Aukstakalnis & Blatner (1992, p. 7) associate VR more with the notion of *interaction* between a user and a computer: "Virtual Reality is a way for humans to visualize, manipulate, and interact with computers and extremely complex data... Instead of using screens and keyboards, people can put displays over their eyes, gloves on their hands, and headphones on their ears". *Immersion* and *interaction* are just two aspects among several that make up the complete picture of Virtual Reality. Heim (1993, pp. 110-117) outlines *simulation*, *artificiality*, *immersion*, *telepresence*, *interaction* and *networked communications* as the six areas of Virtual Reality technology. Often these concepts overlap and a VR system may contain several of them at once.

Simulation refers to the acting out of possible situations through the use of VR technology. The most obvious example is a flight-simulator where the aim is to simulate the situation of flying an aeroplane without actually having to physically fly a real plane. The technology used in a flight simulator may be as simple as a visual screen, or may include the construction of a complete cockpit—the intent is still the same. Closely linked to simulation is the idea of *artificiality*. The experience in the cockpit of the flight simulator may seem identical to the real thing, yet it is an

artificial experience without the same consequences as flying a real aeroplane.

Immersion refers to the sensory experience of actually being within the virtual environment. The watching of a screen is a remote experience. The viewer is separate from what is occurring on the screen. VR reduces this boundary by making you feel as if you are in a three dimensional environment. One way this phenomenon is created is by the use of three dimensional visual displays located directly over the eyes.

Immerision is a form of *telepresence*. Literally telepresence means to be remotely present. It refers to the phenomenon where you are represented as being present within a virtual environment, whilst you are actually physically somewhere else. Your sensory immersion in the environment adds to this phenomenon of telepresence.

Virtual Reality has several different forms of *interaction*. It has the interaction between you and the hardware. When you move your hand within the data glove, you send a signal to the computer. There is also the sense that you interact with the artificial environment. You remotely move around the environment and influence its composition. Another possible form of interaction is with other people in the artificial environment. Perhaps there are other people plugged into the same VR system as you, giving you the opportunity to interact with them.

This third type of interaction brings up the area of *networked communications*. This is a phenomenon that is not directly related to Virtual Reality. Networked communication is not a necessary aspect of the

experience of VR, such as the feeling of immersion. Rather it is a possible use that has been associated with Virtual Reality technology. Instead of communicating using the phone with only aural cues we could communicate in a virtual environment, conveying an experience that, with the continuing advancement of VR technology, could be tantamount to face to face communication.

This is one of the chief goals that VR proponents espouse – a virtual agora. On this point I think there is some overlap between Virtual Reality and the Internet. Any networked communication needs a system that connects people together, and the Internet is the perfect tool for this. Rheingold espouses this ideal of a community connected to each other through the Internet in his book, The Virtual Community (1993).

This notion of an on-line virtual world is captured in the word 'cyberspace'. Coined by William Gibson in his novel Neuromancer (1986), the concept of cyberspace has been taken and appropriated as a utopian vision of the Virtual Community – as a "massive interactive cyber fun park" (Dovey, 1996, p. xiv). Benedikt (1991, p. 122) defines cyberspace as "a globally networked, computer sustained, computer-accessed, and computer generated, multidimensional, artificial, or 'virtual' reality". It is this idea that I see as central to the hopes of the VR gurus. It is their ultimate dream to create an alternative reality that we can access from wherever we are in the world. It has not yet been achieved but is the goal that the prophets of cyberspace are aiming for. Raymond Kurzweil (2000, p. 24) predicts that by 2020 "web-based, high resolution, three dimensional visual and auditory virtual reality, and realistic all-encompassing tactile environments will enable people to do virtually

anything with anybody regardless of physical proximity". 'Internet2' is a research project involving 170 academics and 50 corporations that is currently trying to create the technology to enable these on-line virtual environments (Ditlea, 2000, p. 28). This conception of cyberspace has often been described as a liberatory project. As Robins and Webster (1999, p. 2) point out, "a distinctive technoculture emerged in the 1990's, fired with enthusiasm for what were perceived as the emancipatory possibilities of 'cyberspace' and 'virtual reality'". This dream of a techno-utopian realm is the particular conception of Virtual Reality that I examine within this thesis.

In the first chapter I look at the historical context in which the ideology of control and order was created and how this ideology paved the way for the conception of Virtual Reality. In the second chapter I examine how a discourse of Virtual Reality purporting to be about liberation in fact reflects the ideology of control and order. The third chapter explores some of the implications of Virtual Realities' alignment with the modern rational mindset. I show how technology under this ideology has been used as a tool of social control. I suggest that Virtual Reality might be used for similar purposes. The final chapter offers an alternative way of thinking that may provide a different conception of Virtual Reality and technology. This thinking may yield more open and positive uses for technologies like Virtual Reality that have not been widely discussed in the atmosphere created by the ideology of control and order.

THE HISTORY OF THE MODERN
IDEOLOGY OF ORDER AND
CONTROL

In this chapter I will look at the ideology that gave rise to Virtual Reality. All technologies, including Virtual Reality, were not created in a social vacuum but are products of a set of social circumstances. The way technologies are used, and the discourses around them reflect the attitudes of that society. As Dickson (1974, p. 41) points out:

we must look at the specific set of conditions that initially gave rise to these developments by retracing the history of technology. Some idea will begin to emerge of the incentives behind the process of technological innovation. These will indicate the type of social and political values implicit in the design of contemporary technology.

To outline the complete history of technology is beyond the scope of this dissertation. I will instead provide a brief sketch of how Virtual Reality is a cultural artifact of modernity. More specifically I argue that Virtual Reality is based upon the valuing of rationalist control and the power to order things that is an essential element of modernity.

Modernity.

It is almost impossible to define modernity as any one thing. For Berman (1983, p. 15) the phrase that most accurately describes modernity comes from Marx's Communist Manifesto: "All that is solid Melts into air". Berman is essentially drawing on Baudelaire's (cited in Foucault, 1991, p 39) view of Modernity as, "the ephemeral, the fleeting, the

contingent". It is remarkable how much these statements reflect the phenomenon of Virtual Reality, yet as practical definitions they fail to tell us what modernity is.

Thompson (1995, p. 45) takes a more practical stance saying that, "Modern societies involved a distinctive set of economic changes through which European feudalism was gradually transformed into a new system of capitalist production and exchange". Although the capitalist economy is a crucial element of modern societies, modernity involved more than just an economic system. It included new attitudes towards science, art, politics and theology that are difficult to capture in a succinct definition. As Hall (1992, p. 6) contends, modernity "was the outcome, not of a single process, but of the condensation of a number of different processes and histories...it is these features which, taken together, provide us with a definition of 'modernity'". I cannot list all these features here, but we can now conceive modernity as: various modes of social organisation and attitudes that grew out of medieval Europe and became widespread throughout the Western world.

Trying to locate when modernity began is just as difficult as trying to define it. Thompson (1995, p. 48) chooses the time when the printing press was invented as the symbolic beginning: "by 1450 a distinctive system of commodity production and exchange had emerged in Europe". Giddens (1991, p. 1) opts for the Seventeenth century, whilst Berman (1983, p. 16) prefers the sixteenth century.

When Modernity began and how exactly to define it is peripheral to this project. The aim is to locate the ideology valuing control and order

as a part of the culture of modernity. I can then later reveal how Virtual Reality as an object of modernity has those same values of order and control inscribed into its development as a concept.

The Enlightenment.

The valuing of control and order that is a part of modernity is crystallised in much Enlightenment thought. The Enlightenment is a movement that approximately occurred during the seventeenth and eighteenth centuries. Like modernity, trying to locate a beginning and an end to the Enlightenment is difficult. Outram (1995, p. 3) instead views the Enlightenment as a process:

It is more helpful to think of the Enlightenment as a series of problems and debates, of 'flash-points', characteristic of the eighteenth century, or of 'pockets' where projects of intellectual expansion impacted upon and changed the nature of developments in society and government on a world wide basis.

So what was the process that the Enlightenment centred around? According to Horkheimer and Adorno (1979 p. 3), "the program of the Enlightenment was the disenchantment of the world". There was a change from the dominance of religious and mythical explanations of the world to a scientific one. People such as Galileo Galilei, Isaac Newton, Francis Bacon and Rene Descartes began to question long held beliefs. Gay (cited in Outram, 1995, p. 8) defines the program of the Enlightenment as one of, "hostility to religion and as a search for 'freedom' and 'progress' achieved by a critical use of reason to change man's relations with himself and society". Linked to this 'disenchantment of the world' were two key

words of Enlightenment thinking: reason and rationality. In Cassirer's words the Enlightenment was, "a value system rooted in rationality" (cited in Outram, 1995, p. 3). It was a body of thought that put faith in the power of the rational mind to discover the 'true' nature of things.

This type of thought is exemplified by Rene Descartes. At the beginning of his *First Meditation* Descartes (1997, p. 134) sums up the project of the Enlightenment by announcing:

It is now some years since I detected how many were the false beliefs that I had from my earliest youth admitted as true, and how doubtful was everything I had since constructed on this basis; and from that time I was convinced that I must once and for all seriously undertake to rid myself of all opinions which I had formerly accepted, and commence to build anew from the foundation, if I wanted to establish any firm and permanent structure in the sciences.

From there Descartes begins a process where he attempts to understand what he can be certain about and what he should doubt. He comes to the conclusion that the only thing he can be certain about is his own mind because "I am, I exist, is necessarily true each time that I pronounce it, or that I mentally conceive it" (Descartes, 1997, p. 140). Descartes elevates the conscious mind to the one absolute. A consequence of this is that there is a separation between subject and object. Due to the assertion that the mind is the only absolute there is no sense of interrelation between the human subject and the environment. Everything separate from the mind becomes objectified, and can be manipulated and controlled. There is a distance between humans and their environment. This is evident in Descartes'

belief that animals are similar to machines, (1997, p. 107) and also in his view that, "the difference between a living and a dead body was analogous to that between a watch wound and unwound" (Turney 1998, p. 15).

This, and other similar views of the Enlightenment, gave rise to a consciousness within western society that accepted the primacy of rationality in order to regulate the environment. This type of thought was essential in the creation of the social structures that came to be known as modernity. Society was no longer dominated by unchallenged sources of authority, such as the church. As the phrase, 'Disenchantment of the World' suggests, there was an emphasis on laying the world bare, so that it could be examined and controlled. Descartes' hopes reflected the emphasis on control in Enlightenment thinking:

Instead of that speculative philosophy which is taught in the Schools, we may find a practical philosophy by means of which, knowing the force and the action of fire, water, air... as distinctly as we know the different crafts of our artisans, we can in the same way employ them in all those uses to which they are adapted, and thus render ourselves the masters and possessors of nature (cited in Leiss, 1972, p. 81).

Thinking along these lines became prominent during the Enlightenment and has influenced the trajectory of Western society.

Horkheimer and Adorno develop a sustained critique of this perspective of the Enlightenment. They argue that the type of reasoning valued in the Enlightenment by those such as Descartes is defined by "the creation of a

unified, scientific order" (1979, p. 81). Reason is "the organ of calculation, of planning...its element is coordination" (Adorno & Horkheimer, 1979, p. 88). They believe that this joining of thinking with order and control set western society along a path that ultimately led to the development of totalitarian regimes. They claim that "Enlightenment is totalitarian" (1979, p. 6). I argue that it is the values of the Enlightenment outlined here, and exemplified in Descartes' work that are now inscribed in the concept of Virtual Reality.

Heidegger's Theory of 'Enframent'

A primary way this consciousness of control manifested itself within western society was through the rise of modern science and technology. As Heidegger (1977, pp. 167-168) states:

Science sets upon the real. It orders it into place to the end that at any given time the real will exhibit itself as an interacting network, i.e, in surveyable series of related causes. The real thus becomes surveyable and capable of being followed out in sequences. The real becomes secured in its objectness.

In many fields of science ordering and categorisation are paramount. The most recent example is the Human Genome Project which is currently outlining the genetic code of all human life.

This striving to get everything under control results in what Heidegger calls the 'standing reserve'. Objects are only seen in terms of their use to serve an end. "Everywhere everything is ordered to stand by, to be immediately at hand, indeed to stand there just so that it may be on

call for a further ordering. We call it the standing reserve" (Heidegger, 1977, p. 17). There are many examples of this within the history of modernity. The advent of mining on a large scale is perhaps the most obvious. Western societies plough the land for fossil fuels and uranium, so that they can be used for energy. Durkheim (cited in Beniger, 1986, p. 219) states that, "the most vital trait of the spontaneous organisation of the industrial order is that its goal, and its exclusive goal, is to increase the control of man over things".

One of the consequences of this is a narrow world view where objects are only seen as part of the standing reserve. Francis Bacon confidently claims that science, "takes off the mask and veil from natural objects, which are commonly concealed and obscured under the variety of shapes and external appearance" (cited in Leiss, 1972, p. 139). Yet there is also the other side where science can be seen to cast a "veil of ideas" over the nature of everyday experience. (Husserl cited in Leiss, 1972, p. 139). Hill (1988, p. 39) expresses the opposing side:

Through today's technologies we stand apart from the world, whilst our relationship to this world is *mediated* through an opaque 'black box' of technique. The relationship of people to this world is thus 'enframed' by what technology *does*, its *use value* in transforming the world for human advantage, and an aesthetic that views harmonious relationship and order as rational control.

For Heidegger modern society's striving to control and master everything is at the heart of technology. He calls the process of ordering

everything for the standing reserve, 'Enframing'. "We now name that challenging claim that gathers man thither to order the self revealing as standing reserve: "*Ge-Stell*" [Enframing]" (Heidegger, 1977, p. 19). Enframing is what drives modern science and technology.

The ideology of control and order may result in the objectification of the environment, but it also results in the objectification of people. With the separation between subject and object other people are seen as no different to the items that make up the natural world. They are both separate from the personal ego, and are consequently seen as object. Humanity is part of the natural environment and is treated in the same manner. As Leiss (1972, pp. 15-16) argues:

the attempt to master external nature has a close and perhaps inextricable relationship with the evolution of new means of exercising domination over men or, alternatively, human activity becomes so much a part of the natural environment that mastery of nature and mastery of man are only two aspects of the same process.

Heidegger feared that man would become part of the standing reserve—a commodity for use:

As soon as what is unconcealed no longer concerns man even as object, but does so, rather exclusively as standing-reserve, and man in the midst of objectlessness is nothing but the orderer of the standing-reserve, then he comes to the very brink of a precipitous fall; that is, he comes to the point where he himself will have to be taken as standing-reserve (1977 p. 27).

This is something that has afflicted modern 'man'. With the advent of industrial society, and then a more advanced form of capitalism, people have been used as a resource to be controlled and ordered.

The Valuing of Order and Control: Industrial Society.

Oppression existed before the advent of modernity within Europe, yet not with the same emphasis upon rationalisation and efficiency that was an integral part of the emerging modern consciousness. The process of industrialisation that began in England in the eighteenth century changed the Western world (Cameron, 1993, p 163). The industrial revolution marked a divergence where, "most production moved from the domestic unit to the factory, markets existed for just about everything, the scale of operations expanded, economic activity became increasingly internationalised, and products, services, and techniques that were totally unknown before came into existence" (Rider, 1995, p. 177).

One of the major changes that occurred was the introduction of the factory. According to Heilbroner (1993, p. 78), "the Industrial Revolution was characterized by the rise of the factory to the center of social as well as economic life". One of the impetuses behind the creation of these factories was the increased ability of employers to control their employees. Rider (1995 pp. 197-198) sums up the situation:

The factory concentrated workers in one place, aiding employer supervision. This contrasts with the domestic, putting out system, in which... the worker controlled the pace at which work was accomplished. This limited the merchant-capitalist's complete control of production and his

profit making ability.

Many of those employed in the factories were women and children because:

Employers believed them to be more efficient, most likely because they were more obedient, and thus a docile, more controllable labour force than men.

In conjunction with the rise of the technological society, more sophisticated techniques of controlling people were created. In the third chapter I look at the techniques that have been used in more recent times.

Mass Production.

The establishment of the industrial society coupled with more advancements in science and technology were part of a complex process that cleared a path for the system of mass production that became so evident in the twentieth century. The ever increasing scale and complexity of industry around the turn of the twentieth century precipitated what Beniger (1986, p. 427) has called a "crisis of control". More advancements in technology and procedures were needed to bring the complete system of production under greater control. Order and control became esteemed values and were embedded further into Western consciousness.

By the 1880s the concept of 'scientific management' had been introduced by Frederick Taylor and Frank Gilbreth. They tried to break the production process down into its simplest components, and create a standardized system in order to improve efficiency. They:

studied all the different operations involved in production,

selected the fastest way of accomplishing any given function (which involved eliminating any inefficient movements) and then recombined the operations into an efficient series. This series became the 'standard' method of performing a particular task (Rider, 1995, p. 423).

This type of organisation became widespread, and was epitomized by the Ford motor company which applied the processes of scientific management and mass production with great success at the beginning of the twentieth century (See Rider, 1995, p. 329). One of the implications of scientific management was that workers were only seen as parts in the production machine. Taylor wrote: "In the past, the man has been first, in the future the system must be first" (Cited in Beniger, 1986, p. 294).

This emphasis upon managing everything for efficiency resulted in what Beniger called a 'control revolution'. This is:

a complex of rapid changes in the technological and economic arrangements by which information is collected, stored, processed, and communicated and through which formal or programmed decisions can effect societal control (Beniger, 1986, p. 427).

This control revolution stems from the Industrial Revolution and continues, "unabated to this day" (Beniger, 1986, p. 427).

Advanced Capitalism.

The capitalist marketplace has progressively become more and more complex and has required greater rates of information processing.

This problem led to the introduction of the computer: "Microprocessing and computing technology, contrary to fashionable opinion, do not represent a new force only recently unleashed on an unprepared society but merely the most recent installment in the continuing development of the Control Revolution" (Beniger, 1986, p. 435).

The prime task that the computer performs is ordering. IBM, one of the largest computer companies in the world, was considering calling their first personal computers, '*ordinateur*', a French word: "God was the great *ordinateur* of the world; that is to say the one who made it orderly and according to plan" (Woolley, 1992, p. 74). This machine of order has now become one of the most pervasive and obvious symbols of western capitalist society today. The uses for computers are varied yet they are primarily used for organisation and categorisation. The computer's role as orderer is revealed in the term 'word processor'. Language is seen as something to be arranged. As Postman (1993, p 111) points out, "the computer redefines humans as 'information processors' and nature itself as information to be processed". The computer aids in reducing things to be part of the standing reserve.

Virtual Reality.

It was the computer's ability to render the world as data that ultimately led to the creation of Virtual Reality technology. In 1965 Ivan Sutherland published an article entitled 'The Ultimate Display'. In it he stated:

We live in a physical world whose properties we have come to know well through long familiarity...We can predict where

objects will fall, how well-known shapes look from other angles and how much force is required to push objects against friction. We lack corresponding familiarity with the forces on charged particles, forces in non-uniform fields, the effects of non-projective geometric transformations, and high-inertia, low-friction motion. A display connected to a digital computer gives us a chance to gain familiarity with concepts not realizable in the physical world . It is a looking glass into a mathematical wonderland (Cited in Pimental & Teixeira, 1993, p. 33).

Sutherland dreamed of a purely abstract world of numbers, a purely scientific, manufactured world. In 1966 he developed the first piece of Virtual Reality technology: the head mounted display (HMD). This was essentially a visual screen that was attached to the head and located directly in front of the eyes so that nothing can be seen except what is on the screen. (Pimental and Teixeira, 1993, p. 35) Around the same time Myron Krueger was "experimenting with combining computers and video systems to create 'artificial realities' (a term he coined) at the University of Wisconsin" (Pimental and Teixeira 1993 p 37). A growing interest in the possibilities offered by these initial projects combined with advancements in computing technology led to the consolidation of the concept of Virtual Reality.

This outline of the modern ideology of order and control was provided to give a historical perspective in which to locate the construction of Virtual Reality. In the next chapter I examine how Virtual Reality continues the valuing of order and control that stems from the Enlightenment.

THE DISCOURSES OF VIRTUAL REALITY.

The Research on Cyberspace is a quest for God. To be God.

Paul Virilio (1997, p. 44).

The development of the ideology of modern technology is long and complex. In the previous chapter I have attempted a brief sketch of that procedure in order to show the milieu that enabled the concept of Virtual Reality to be developed. In this chapter I hope to show how the sphere of thought around the idea of Virtual Reality embraces the technological ideology of power and control.

One of the most striking things about those involved in Virtual Reality is the way they perceive themselves and the technology of VR in religious terms. There are many instances where VR pundits refer to themselves as gods, or of the experience of VR being like that of a god. As the name of the book suggests, Glimpses of Heaven, Visions of Hell (1992), is one text that portrays this understanding of VR. It states: "so to a very large extent VR allows us (or at least the designers of the virtual worlds) to play God" (Sherman & Judkins, 1992, p. 127). Stewart Brand who coined the phrase, 'personal computer' has stated: "we are as Gods, and might as well get good at it" (cited in Kelly, 1994, p. 233). On another occasion when talking about VR Brand said, "junior deities, we want to be" (cited in Slouka, 1995, p. 71).

Laurel (1991, p. 95) starts an article on VR by quoting Genesis from the Bible, "In the Beginning God created the heaven and earth". Myron

Krueger uses the same comparison:

The world described in Genesis, created by mysterious cosmic forces, was a volatile and dangerous place. It moulded human life through incomprehensible caprice. Natural beneficence tempered by natural disaster defined reality. For centuries, the goal of human effort was to tap nature's terrible power. Our success has been so complete, that a new world has emerged. Created by human ingenuity, it is an artificial reality (cited in Woolley, 1992, p. 7).

Benedikt goes a step further and compares cyberspace to Heaven: "The image of the Heavenly City, in fact, is...a religious version of cyberspace" (Benedikt, 1991, pp. 14-16).

Kevin Kelly's book Out of Control (1994) is a perfect example of the scientific attitude that extols the virtues of a near future where scientific and technological control of the world is pervasive. In a chapter called, 'God Games' he discusses conventional computer games and virtual environments. Like others he uses religious terminology. He calls Jeff Haas, a designer of 'god games' a "Super God" (1994, p. 231). He goes on to describe his experience of a virtual world designed by Jaron Lanier one of the most well known VR gurus:

At some point I hopped off the train near an inverted top hat. I stood and watched the train chug around the loop of track without me. I bent to grab the top hat and the instant I touched it, it turned into a white rabbit. I heard someone outside the world laugh, a heavenly chuckle. That was the god's little joke (Kelly, 1994, p. 240).

Like Laurel and Krueger, at the close of the chapter he draws the analogy between the biblical creation story and the creation of virtual environments: "by now some of Yahweh's creatures have begun to gather minerals from the earth to build their own model creatures...The simulacra they have built so far vary. Some species exist on another plane of being – virtual space" (Kelly, 1994, pp. 256-7).

Why is a modern technology described in such religious terms? I believe that this writing about becoming a god reflects the VR proponents' urge for power and control. Those involved in VR research are drawing on their own cultural knowledge (Western Judeo-Christian theology) to explain how they conceive this new technology. As Helmreich (cited in Noble, 1999, p. 171) points out, "scientists invoke normative notions of God and Judeo-Christian cosmology when they speak about artificial worlds". Their identification with Christian doctrine, where "abhorrence of the body is inherent" (Penny, 1994, p. 235) and where God is an all powerful and controlling being accurately reflects their own desires for order and control.

Noble argues that western society since medieval times has drawn on Christian religious myths to explain technology (1999). I believe that this religious element is part of the overall ideology of modern technology that enforces the values of ordering and controlling the human environment. It is part of the same ideology that instigated the Human Genome Project that is credited by Bill Clinton as revealing "the language in which God created life" (Cited in Alcorn, 2000, p. 10). Physicist Richard Seed when speaking about research into human DNA said, "We are going to become one with God. We are going to have almost as much

knowledge and almost as much power as God" (cited in Noble, 1999, p. vii). The Genome Project shares the same value system as the physicist's goal of a 'theory of everything' that according to Stephen Hawking will reveal 'the mind of God' (Cited in Wertheim, 1995, p. 13).

One common way technologies of ordering and control are used most effectively is in the military. VR technology is no different as it is also being applied in the military:

Video games in the wider culture are also about the mastery of anxiety and mobilization of omnipotence phantasies...The parallel with weapons systems runs deep; after all, some innovators have alternated between designing military and entertainment versions of interactive simulation technology (Robins & Levidow, 1995, p. 109).

One of the first commercial versions of VR technology, *BattleTech*, was based on simulators of military tanks (Pimental & Teixeira, 1993, p. 211). The reverse also occurred when the marines adopted the popular computer game *Doom* as a training tool (Jordan, 1999, p. 189). The nuclear bomb is perhaps the most explicit symbol of military and technological power. Stenger (cited in Slouka, 1995, p. 30) unashamedly praises cyberspace as "the new bomb, a pacific blaze that will project the imprint of our disembodied selves on the walls of eternity".

Underneath the religious rhetoric VR is about control. Yet it is a sense of control that goes further than that of many other technologies. Previous technologies have attempted to control the physical environment which is ultimately a futile project. The human race is a grain of sand within the universe. We will never control our complete destiny. VR

attempts to subvert this problem by creating an artificial universe that can be known in every minute computable detail. The goal of VR is flight from the chaotic nature of the physical environment: "all this is driven by a feverish belief in transcendence: a faith that, this time round, that a new technology will finally and truly deliver us from the limitations and frustrations of this imperfect world" (Robins, 1996, p. 2). Within this realm there are no surprises as everything is accounted for. As Heim puts it, "computerized reality synthesizes everything through calculation and nothing exists in the synthetic world that is not literally knowable" (Heim, 1993, p. 105).

The advocates of cyberspace seem to revel in this idea. Crandall and Levich (1998, p. 86) point out that "Virtual Reality involves a notion of special empowerment—the sense that somehow one can, via machinery, 'graduate' from reality to something better". Jaron Lanier expounds this attitude: "In VR there's no question your reality is created by you. You made it... I think being in that mode of realizing how active every moment in life is will break through the stupor" (cited in Crandall & Levich, 1998, p. 90). Benedikt, another well known champion of cyberspace, expresses the same sentiment when he states that we will be able "to dwell empowered or enlightened on mythic planes" (1991, p. 6). This belief in transcendence is once again closely linked to the Judeo-Christian theology that has been drawn upon to make sense of technology.

Those awaiting the dawn of this new artificial world seem to have an aversion to the uncertain, capricious nature of the actual world. Slouka (1995, p. 21) links their desire for a perfect world with their desire for

control:

Totalists of all stripes, after all, have always been linked by their common desire to transform the world in their own image. Totalitarian visions—whether utopian fantasies or dystopian nightmares—have shared an aversion to the world in all its quotidian messiness, as well as a corresponding preoccupation with cleanliness, order and control. All similarly, have been characterised by a vast arrogance, an unshakable belief in their own vision of a different world.... Theorists in virtual systems, if anything, went further, their disdain for the world was more complete... they wanted the apocalypse.

Slouka dramatises the situation, but his linking of a desire for a new world with an urge for power and control I think is valid.

Noble (1999, p. 207) argues that technologists often display, “a pathological dissatisfaction with, and deprecation of, the human condition”. Hayles’ (cited in Robbins, 1996, p. 5) comments support this claim as she shows an almost phobic distaste for the real world:

In a world despoiled by overdevelopment, overpopulation, and time-release environmental poisons, it is comforting to think that physical forms can recover their pristine purity by being reconstituted as informational patterns in a multidimensional computer space. A cyberspace body, like a cyberspace landscape, is immune to blight and corruption.

This attitude towards the physical world has its grounding in the Enlightenment thinking that I outlined in the first chapter. Descartes (cited in Noble, 1999, p. 144) also looked upon the physical negatively. He

believed that the human body reflected mankind's "epistemological fallenness" and was "opposed to reason". He too dreamed of a perfect realm, except Descartes' heaven was located in the areas of geometry and arithmetic, which were of "heavenly birth" because they, "alone deal with an object so pure and uncomplicated, that they need make no assumptions at all which experience renders uncertain" (Cited in Noble, 1999, p. 145).

Popular Texts

Much of this technological rhetoric has seeped into other more popular discourses. Recently several films have explored the subject of Virtual Reality and have also linked religion to VR. The film Lawnmower man (1992) is about a VR researcher, Larry Angelo, who uses VR technology for speeding up education and intelligence. Larry uses the technology on a young, simple man called Jobe. In Hebrew the name Jobe means "God is the Father" (Benjamin, 1983, p. 157). With the assistance of the technology Jobe learns at an amazing pace and he quickly takes on messianic airs. He decides to project himself permanently into the virtual world where he can be total master, where nothing will be hidden from him. Once in the realm he exclaims, "I am God here!"

In the film eXistenZ (1999) the famous designer of Virtual Reality games Allegra Geller is described as the, "game-pod goddess." The trial run of her latest game, "eXistenZ" occurs in a church, where the prospective players of the game worship and revere Allegra. One of the games she has designed is call 'ArtGod' because, "thou the player of the game art God."

In Wild Palms (1993) the company that makes the Virtual Reality technology doubles as a church: The Church of Synthiotics. The VR program they create is called "Church Windows" and the employees of this company/church regularly pause to pray together. Whilst in Johnny Mnemonic (1995) good and evil spirits dwell within the virtual world.

Yet far from embracing the claims of the 'virtualists' some of these films have portrayed a decidedly pessimistic future that diverges sharply from the techno-utopia that many of the VR gurus envisage. The world of eXistenZ is an unstable, frustrating nightmare where the real and the unreal are indistinguishable. Ted Pikul one of the characters in the film comments, "I'm not sure here where we are is real at all!"

As Jobe in Lawnmower Man becomes more obsessed with VR technology he turns into a maniacal tyrant who wants to take over the world, as does Tony Kroitzer, the master/owner of the Church of Synthiotics in Wild Palms. Kroitzer is revealed as a power obsessed, duplicitous criminal who tries to kill his own son. He tries to attain immortality by projecting himself into the VR world, but fails and dies. The film Brainscan (1994) along with Wild Palms and Lawnmower Man also links the quest for a virtual world with omnipotence fantasies.

The Matrix (1999) aligns Virtual Reality with control. The Matrix projects a dystopian future where people are controlled by computers and immersed in a virtual world called 'The Matrix'. According to Morpheus one of the characters, the Matrix is, "a computer generated dream-world built to keep us under control." The Matrix is one huge surveillance system, an artificial prison.

These films reflect common fears about technological change. Are any of these fears justified? Is there the possibility that one day we may be spending our time in a system not unlike *The Matrix*? This is a question I explore in the next chapter.

Here I have shown how those involved in VR technology through their comments reveal that they share an urge for mastery. Their constant referral to themselves as Gods and their utopian dreams of a totally artificial world reflect their cravings for control. Horkheimer and Adorno claimed that the "Enlightenment was totalitarian" (1979, p. 6). Today we see the same values and totalitarian tendencies shown in the discourse concerning Virtual Reality.

A POSSIBLE DYSTOPIA.

Whether it be the stump jump plough, or the nuclear bomb throughout history many technologies have been used as tools for control of the environment and for the exercise of power over humanity. Part of the reason for this is because these technologies have been located within the context of modernity, and have been part of the modern ideology of rational control and ordering. In the previous chapter I sketched how the discourse on Virtual Reality is influenced by the ideology of order and control. Yet we have not seen how this discourse will manifest itself in the use of VR technology as Virtual Reality is yet to be implemented on any wide scale. When and exactly how (if at all) the dream of virtual cyberspace is realised is something impossible to predict.

As mentioned in the introduction I am using my own particular conception of Virtual Reality. In this chapter I am using the notion of Virtual Reality as a computer simulated, three dimensional environment that people can access from differing geographical locations and where they can interact with each other. I make the assumption that such a system would require a central computer to generate and maintain the virtual environment. In this chapter I look at the increasing use of surveillance within modern society and argue that it is part of the overall ideology of order and control. The alignment of Virtual Reality with the same ideology, means that it too will reflect the values of order and control. As Fairclough (1992, p. 3) points out, "discourses do not just reflect or represent social entities and relations, they construct or constitute them". I argue that in the future there is the possibility that VR technology may continue the modern use of surveillance.

In the previous chapter we saw how those involved in the creation of Virtual Reality technology often conceive of themselves as Gods. Berkeley's Treatise Concerning the Principles of Human Knowledge (1962) offers a conception of God that in several ways parallels the controller/creator of a virtual environment. Berkeley argued that because all we are aware of is our sensations, we can never verify the existence of a material reality. All we know of are sense data that our brain receives via our five senses. Therefore we cannot jump to the conclusion that there is a material reality beyond these senses, for all we have is sense data and nothing else (Berkeley, 1962, p. 69):

Now, if it be certain that those original qualities (assumed, material reality) are inseparably united with the other sensible qualities, (sense data) and not, even in thought, capable of being abstracted from them, it plainly follows that they exist only in the mind.

If nothing exists externally but only in the mind as Berkeley concludes then something must be creating these perceptions within the mind. He believed that these perceptions must be created by God.

Berkeley's theory of our actual world corresponds with the world of Virtual Reality. In VR all we are aware of is our sense perceptions. These sense perceptions give the impression of an external world, yet in fact they are just illusions created in our mind by someone (not God but a computer programmer). Berkeley's God instead becomes a being that has created VR technology. Virilio draws the same comparison: "the technologies of virtual reality are attempting to make us see from beneath, from inside, from behind... as if we were God" (Virilio, 1997, p. 44). The

comparison of VR with Berkeley's treatise highlights the God-like position that the creator/controller of a virtual world may have. Yet it also displays the tremendous amount of power that they will wield.

If we apply Foucault's work on power relations in Discipline and Punish (1977) we can see just how much power the controller of the VR environment may have. Foucault highlights the link between power and visibility in the modern age. He does this by using Jeremy Bentham's architectural design, the Panopticon as a "diagram of a mechanism of power reduced to its ideal form" (Foucault, 1977, p. 205). Foucault (1977, p. 200) explains the Panopticon:

at the periphery, an annular building; at the centre, a tower; this tower is pierced with wide windows that open onto the inner side of the ring; the peripheric building is divided into cells, each of which extends the whole width of the building, they have two windows, one on the inside, corresponding to the windows of the tower; the other, on the outside, allows light to cross the cell from one end to the other. All that is needed, then, is to place a supervisor in a central tower and to shut up in each cell a madman, a patient, a condemned man, a worker or a schoolboy.

What the Panopticon reveals is the strength that surveillance has as a form of control. All the inmates in the Panopticon can be looked at by a supervisor all the time. Nothing can get past the supervisor, so he has control, at a distance, over what the inmates do: "The major effect of the Panopticon: to induce in the inmate a state of conscious and permanent visibility that assures the automatic functioning of power" (Foucault, 1977, p. 201).

It is important to note that Bentham designed the Panopticon in 1787 at the peak of Enlightenment thought (Whitaker, 1999, p. 32). Accordingly the design accurately reflects many of the values and assumptions of the Enlightenment that I highlighted in the first chapter. There is the separation of prisoner into subject to be observed that accurately reflects Descartes' subject/object distinction. Yet primarily the Panopticon is a technology of control that makes the observer the, 'master and possessor' of human nature. As Lyon (1994, p. 62) observes about the Panopticon: "Enlightenment reason, concerned with empirical observation and classification, and related to the rational reproducing of social order, is neatly expressed".

The thing that strikes me about the Panopticon is the similarity between the position of the supervisor within the Panopticon, and the controller of the VR environment. Like the supervisor in the Panopticon the VR controller has the ability to view everything that is occurring within their realm. Yet the VR controller's surveillance capabilities go far beyond those of the Panopticon, as the VR controller can manipulate what the people in the VR environment sense, as well as having the power to view everything they do. This is a tremendous position of power, that when associated with the discourse of mastery and control that VR pundits use does not auger well for any possible future where people spend a significant proportion of time in cyberspace. If the Panopticon is a mechanism of power, so too is the concept of the virtual environment. It is not hard to imagine the possible abuses of this power. Foucault (1977, p. 203) highlights some abuses that the Panopticon may be used for that the VR environment may achieve even more efficiently:

It could be used as a machine to carry out experiments, to alter behaviour, to train or correct individuals. To experiment with medicines and monitor their effects. To try out different punishments on prisoners, according to their crimes and character, and to seek the most effective ones. To teach different techniques simultaneously to the workers, to decide which is the best.

These are extreme examples but it is important to recognise the power relations that may come with the advent of any widespread use of VR technology. Foucault calls the Panopticon a, "cruel, ingenious cage" (Foucault, 1977, p. 205). It is no coincidence that Mark Gibson, one of the first to envisage the application of VR technology, also described cyberspace as "an infinite cage" (Cited in Heim, 1993, p. 80).

It is far from certain that any Virtual Reality technology will be used for the oppressive purposes that the Panopticon was designed to carry out. Yet within Modernity there is a long history of surveillance that is closely tied to the ideology of order and control. Lyon believes that surveillance is a "vital aspect of the growth of modern societies; indeed, it helps to define such societies" (Lyon, 1994, p. 41). Giddens takes the same position arguing that, "surveillance in the workplace is a primary feature of the emergence of industrial capitalism" (Giddens, 1985, p. 147).

The style of production used during the Industrial revolution with its concentration of labour under the one roof created an environment more conducive to the surveillance of workers. Then with the rise of a more advanced form of capitalism there came improved forms of surveillance. As Whitaker (1999, p. 17) points out, "following the

Industrial Revolution, the factory became a primary site for innovation in forms of surveillance and discipline." Dandeker highlights that during the period from 1890 to 1930, the introduction of 'scientific' management resulted in a, "far more detailed surveillance over the whole process of production" (Dandeker, 1990, p. 64). Henry Ford's 'Sociology Department' that sent out spies to pry into the private lives of his employees is a good example of this type of 'scientific management' (Whitaker, 1999, p. 38).

In more recent times there have been new technologies that have increased the intensity of surveillance. The computer is the ultimate tool for compiling large amounts of information. It has often been used as a surveillance tool by gathering information on people. This gathering of information has been called 'dataveillance' because rather than monitoring the actual person as in conventional surveillance, dataveillance works by monitoring information about the person (Clarke, 1994, pp. 122-123). Credit ratings are the most obvious example of dataveillance. Companies constantly gather information on how and when you use your credit cards, and whether you should be trusted. Yet there are less obvious and more worrying examples. The Australian Law Enforcement Access Network (LEAN) contains all of Australia's corporate data and land ownership details which can be accessed by the departments of Social Security, Taxation and Federal Police at any time (Lyon, 1994, p. 40).

This dataveillance also transcends national boundaries and is completely global in some cases. The UKUSA network is an alliance of the governments of America and England, with the inclusion of several

subsidiary countries including Australia. The network was initially set up to monitor the telecommunications of the Soviets during the Cold War. Yet the alliance continues today and it has the ability to monitor nearly all the worlds' tele-communications (Whitaker, 1999, p. 92).

Yet modern surveillance is not always in the form of large scale state run databases. It can also be focused on much smaller areas such as the workplace. A novel example is the 'Nannycam', a video camera marketed for parents to install surreptitiously in their homes to monitor how Nanny's look after their children (Whitaker, 1999, p. 80). In America up to a third of corporations also monitor their employees electronically, with techniques like e-mail spot checks (Whitaker, 1999, p. 105). There are other more complex systems of surveillance like the overview computer system at a timber mill documented by Zuboff. The overview system records information throughout the plant every five seconds. One of the managers of the plant said, "This computer is like X-ray vision." He then goes on: "its like lifting up the rock and letting the roaches scurry out. If the employee blows it, it's clear right away. You can know who didn't do what. If a person stops concentrating you know it from the data" (Zuboff, 1988, pp. 316-317).

This increase in the level of surveillance within our society has not stopped. As Lyon (1994, p. 204) states, there is a "constant quest" for new technologies that make surveillance more complete and more efficient. Thermal cameras now make it possible to view things in complete darkness, whilst satellites can distinguish objects on the ground of less than a metre in diameter (Whitaker, 1999, p. 87). In America some prisoners are now sentenced to home detention, whilst being monitored

by electronic tags attached to their body (Mitchell, 1996, p. 77). There seems to be no stopping the degree to which surveillance technology can be applied as researchers in Japan create 'cyberinsects'. They have attached microcomputer backpacks on cockroaches that send impulses to their legs so the cockroaches can be remotely guided. These cockroaches can then be attached to miniature surveillance cameras and microphones (Whitaker, 1999, p. 86).

Bentham's efforts to maintain order through technology with his invention of the Panopticon is part of the same ideology as the new forms of surveillance used today. As Lyon (1994, p, 77) puts it:

Bentham, following the Cartesian logic that regarded human beings as machines whose activities could be measured and controlled, wrote impersonality, abstract classification, and automatic power into the Panopticon. Precisely these features reappear, now digitally inscribed and intensified, in the new, computer-run surveillance.

People are now classified merely as part of an economic machine as good consumers of certain products or credit risks. Alternatively the state will see them only in terms of their probability to commit a crime.

With the increasing use of dataveillance Poster fears the creation of a 'Superpanopticon' (cited in Jordan, 1999 p. 201). Yet perhaps the Superpanopticon will only occur when and if virtual environments become places where people spend a significant amount of their time. As I have demonstrated, the goal of VR advocates is a totally known and controllable world. An advantage and perhaps one of the goals behind the urge to create a cyber-world is that such a world would be open to

complete surveillance. Bogard (1996, p. 37) believes that the essence of Virtual Reality is about surveillance:

the promise of virtual reality – its imaginary – is in fact the pure surveillance machine...This is surveillance taken, in imagination, to its highest level, to the very point of surpassing itself. In virtual systems we are promised essentialized views of unlimited worlds, perfect control, all contingencies, variables, and paths accounted for, a perfect, delusional control – hypercontrol...A self contained, ultra-observable, and graspable world.

This creation of cyberspace as a surveillance machine is currently a long way from being realised. The important point is to appreciate that the phenomenon of surveillance that has existed since the Industrial Revolution is a reflection of the ordering mindset that has reigned throughout the modern period. This mindset has influenced the trajectory of science and technology within the Western world and has, as I have shown, manifested itself in a discourse of Virtual Reality. What is needed to resist the implementation of a superpanopticon, is an alteration of the ways we think.

AN ALTERNATIVE WAY OF THINKING.

The predominant rationalist type of thinking used in the fields of science and technology needs to be tempered by the application of different philosophies. Virtual Reality has been used as an example of how the ideology of control and order can affect the conception of a technology. Virtual Reality needs to be separated from this ideology through the use of different ways of thinking about technology and the world. This may result in a different practice and application of technology.

In this chapter I will use the philosophy of Martin Heidegger as a guide towards developing a new way of thinking. Heidegger's philosophy is dense and complex, and it would be unwise for me to claim that what follows is a direct application of his philosophy. It is more a synthesis of some of his writings and my own ideas that developed from comprehending these writings. Heidegger's philosophy could be seen as the search for the meaning of Being. At the beginning of his major work Being and Time (1962, p. 1) Heidegger writes, "do we in our time have an answer to the question of what we really mean by the word 'being'? Not at all. So it is fitting that we should raise anew *the question of the meaning of Being.*" Heidegger's philosophy is firmly focused upon our existence and the existence of entities within this world.

There have been many criticisms of Heidegger's philosophy. Irigaray (1999) criticizes his work for being masculinist, however, the primary question concerning Martin Heidegger has been his Nazi affiliations (see Young 1997, Wolin, 1993, Rockmore, 1992). Wolin (1993, p.

2) argues that Heidegger's, 'alliance with Nazism, far from being a temporary marriage of convenience, was grandiose and profound". Yet others including Derrida (1989) and Lacoue-Labarthe (1990) have written extended defenses of Heidegger's work by claiming that much of his later philosophy is anti-national socialism. This is a huge debate that raises many questions beyond the scope of this thesis. Yet I think we should not fall prey to an *ad hominem* criticism but rather judge Heidegger's writing on its merits and not just condemn all of it because of his association with Nazism.

Heidegger critiques the rationalist mindset born in the Enlightenment for its narrowness and its casting of a conceptual veil over the world. The scientific order may show us one way of looking at things but there are other valuable ways that have to a large extent been abandoned for a long time within the modern western world. Heidegger advocates a broader and more meditative type of thinking. It is this type of thinking that I will elaborate on and offer as an alternative to the rational/calculative type of thinking.

One of Heidegger's key criticisms is that "science does not think." (Heidegger, 1968, p. 8). This seems a strange statement but what Heidegger means is that science is a specialised area that can only deal with issues concerning its own field. Scientific thinking takes place within a conceptual framework and it cannot 'think' outside that area. Science and technology is successful at breaking things down into separate parts, putting those parts into a system and then being able to control those things. The physicist can successfully tell us how atoms interact with each other and the engineer can build a combustion engine. such

wonders of modern science are important to us, but the scientist should not control our world view. Science tells us very little about morals, ethics, politics, art and many other areas of life.

Scientific thinking always views things at the same level. Heidegger calls it "one track thinking " in a direct reference to the train track, a product of modernity. (Heidegger, 1968, p. 26). This attitude tends to block out other ways of viewing things, ways that may be very, valuable to us, but that have been pushed aside by the dominance of the scientific explanation of our world. Heidegger (1968, p. 43) uses the example of a tree:

for we shall forfeit everything before we know it, once the sciences...display the panoply of their documents and proofs, to explain to us that what we see and accept is properly not a tree but in reality a void, thinly sprinkled with electric charges here and there that race hither and yon at enormous speeds.

The tree has been reduced to the mere stuff of the standing reserve, outlined in the first chapter. We have gained a great deal from using a scientific outlook, but we should not see it as the only way to view things.

What is needed is a freeing from the constant categorisation and evaluation of things that occurs with scientific thinking. For in "marking something a 'value' we rob the thing evaluated of its dignity. This means: in esteeming something as a value, the evaluated is admitted only as an object for the estimation of man" (Heidegger cited in Harries, 1967, p. 182). The tree should not only be seen as a collection of atoms, nor as an asset of the timber company. The tree should be also seen on the merits of its

appearance to us:

When we think through what this is, that a tree in bloom presents itself to us so that we can come and stand face-to-face with it, the thing that matters first and foremost, and finally, is not to drop the tree in bloom, but for once let it stand where it stands...to this day, thought has never let the tree stand where it stands (Heidegger, 1968, p. 44).

In the first chapter I displayed the evidence of the 'one track thinking' that has dominated throughout modernity. What is needed is an alternative way of thinking that does not exhibit the same narrowness. A broader, less rigid way of thinking that will provide us with the ability to solve some of the problems of modernity in ways different to those offered by 'scientific thinking'. Heidegger's discussion of such a thinking is deliberately elusive because the introduction of any specific guidelines will result in the thought being ordered and controlled. Yet despite this limitation I think we can provide an idea of what this alternative thinking would be like.

One of the key elements of this thinking is a sense of surrender. Instead of trying to dominate the environment, we need to sit back, stop acting, and reflect on what is before us. Within modernity there has been great change, and there continues to be great change. Scientists delve into areas like cloning without enough reflection on the implications of these massive alterations to our world:

we do not yet have reflection when we have only consciousness. Reflection is more. It is calm, self-possessed surrender to that which is worthy of questioning...

Reflection is of a different essence from the making conscious and the knowing that belong to science (Heidegger, 1977, p. 180).

In conjunction with the notion of reflection there needs to be a sense of openness to what is being reflected upon: "It is necessary for thinking to become explicitly aware of the matter here called opening" (Heidegger, 1978, p. 385). What is this opening? Heidegger uses the metaphor of an opening in a forest. Within the forest it is difficult to grasp anything except what is in front of you. Yet the opening is a place where we can stand back and see things more clearly. (Heidegger, 1978, p. 384). Heidegger also quotes Goethe to explain it: "look for nothing behind phenomena: they themselves are what is to be learned" (Goethe in Heidegger, 1978, p. 385). If we let something exist as it appears, then we may gain a greater understanding of it.

This openness carries with it a sense of broadness—a non-specific, wide ranging attitude towards things. Too often sciences' narrow fields of special knowledge fail to take into account the bigger social implications of what they are doing. As Barrett (1964, p. 4) points out:

doctors and engineers tend to see things from the viewpoint of their own specialty, and usually show a very marked blind spot to whatever falls outside this particular province. The more sharper a vision, the sharper its focus; but also the more nearly total the blind spot toward all things that lie on the periphery of this focus.

This problem has been displayed throughout the history of technology, most notably by the scientist's urge to split the atom, despite its

destructive consequences.

Lastly this alternative thinking needs to be less ego-centred and have more of a holistic attitude towards humanity and the natural world. As mentioned in the first chapter one of Heidegger's chief criticisms of western thought is its separation of humanity into subject and the world into object. This separation has caused western societies perception of the environment as the 'standing reserve.' What is needed is an adoption of the philosophy that humans and the world are intimately tied together; that they are two parts of the one thing.

This is a belief that is part of many Native American and Indigenous Australian cultures. Many Native Americans groups believe that if you desecrate the land it will have repercussions for you: "the Iroquois consider, that there is a reciprocal relationship between nature and man: if you take something from nature, you must give something else back" (Hultkrantz, 1981, p. 130). Chief Seattle expresses the same idea: "For whatever happens to the beasts soon happens to man. All things are connected" (Chief Seattle, 1994, p. 16). Anne Pattel-Gray (cited in Stockton, 1995, p. 81) explains a similar understanding within Indigenous Australian culture.

In our view the earth is sacred. It is a living entity in which other living entities have origin and destiny...We are bound to the earth in our spirit. By means of our involvement in the natural world we can ensure our well-being.

This is a type of thinking that has in recent times gained currency among some groups, particularly many modern environmental groups.

This is one of the key points to Heidegger's philosophy concerning science and technology. Heidegger (1968, p. 35) states that "since Copernicus, science no longer recognises sunrises and sunsets". What is meant by this is that modern man with all his knowledge has lost touch with his surroundings and in doing so has lost touch with himself. Barrett when explaining Heidegger's philosophy expresses this view well:

the businessman who flies to the country for a week-end, is whisked off to golf, tennis, sailing, entertains his guests successfully, all on a split-second schedule, and at the end of the week-end flies back to the city, but without once having had the occasion or the desire to lose himself walking down a country lane. Such a man, we say, is marvelously organised and really knows how to manage things. And, to be sure, he does show an admirable mastery over things; over beings but not Being, with which he never comes in contact. To lose oneself walking down a country lane is, literally, to lose the self that is split off from nature: to enter the region of Being where subject and object no longer confront each other in murderous division...The man of today, technological man, is the final descendent of Cartesian man, but without Descartes' passion for clear and distinct ideas. As Descartes, locked up in his own luminous ego, confronted a world of material objects as thoroughly alien and perhaps unknowable, so technological man faces objects in his world with no need or capacity for intimacy with them beyond the knowledge of what button has to be pressed in order to control their working (Barret, 1964, p. 207).

If we can regain this reflective, meditative thinking and reduce the divide

between humanity and the natural world, then perhaps we will also be in a better position to reduce the divisions between people.

The rationalist mindset has not only imposed a separation between humans and their environment, but as outlined in the first chapter it has instituted a division between people. Other people are also seen as object, and as part of the standing reserve. A less ego-centred attitude that can reduce the divide between subject and object, may result in more empathy for our fellow human beings. Rather than using science and technology for the exercise of power and control, it can be used as an aid for people in their everyday lives. I think we should focus upon human existence and use technology for the basic life needs of all people.

The project of Virtual Reality has been to create an artificial environment that is tantamount to our actual physical world. The goal has been to transcend the world, to become a god. Such a project only manages to increase the separation between man and his environment. Within the virtual world everything becomes artifice, with no meaning or significance at all. As Cynthia Cockburn (cited in Noble, 1999, p. 208) points out this emphasis upon creating a new heavenly realm is misguided:

transcendence is a wrong-headed concept...It means escape from the earth-bound and the repetitive, climbing above the everyday. It means putting men on the moon before feeding and housing the world's poor...The revolutionary step would be to bring men down to earth.

There is almost a reluctance to accept the uncanny nature of our existence in the 'virtualist's' goals. As Robins and Webster (1999, p. 245) point out, "virtual culture is a culture of retreat from the world". It is a culture that is trying to circumvent the circumstances of our existence. The discourse of Virtual Reality draws upon Christian mythology of a utopian, infinite realm because there is an urge to escape the harsh realities of our finite lives. This avoidance of our ultimate fate upon earth is something that Heidegger writes about. He believes that escapist notions are 'inauthentic' and we need to accept our situation:

Being-towards-death, does not evade the fact that death is not to be outstripped; instead, anticipation frees itself for accepting this. When, by anticipation, one becomes free for ones own death, one is liberated from ones lostness in those possibilities which may accidentally thrust themselves upon one; and one is liberated in such a way that for the first time one can authentically understand and choose among the factual possibilities lying ahead of that possibility which is not to be outstripped. Anticipation discloses to existence that its uttermost possibility lies in giving itself up, and thus it shatters all ones tenaciousness to whatever existence one has reached. (Heidegger, 1962, p. 308).

This is a difficult quote, but what I understand Heidegger to be saying is that if we accept our bleak existence we are freed from 'those possibilities' like the 'virtualist's' delusion of a utopian realm so that we can focus upon our actual circumstances in life.

The question has to be asked whether Virtual Reality is worth developing at all. There is no obvious use for the technology that is going

to aid humanity greatly. Talking about creating an artificial utopia for people to dwell in is ignoring the reality of many peoples' situation in the world. Poverty and starvation are evident throughout the world. Many people do not have access to sufficient food, let alone the technology needed to immerse themselves in a virtual environment. These are the issues that technologists should attend to first. Unfortunately the narrow technological ideology has tended to guide the application of science and technology into mastering and possessing nature, much more than aiding people in their basic needs. This is because of the separation between people that occurs with the modern rationalist mindset. Like Heidegger's example of the tree, people, are seen as a collection of atoms, rather than solely as people. Robert Macnamara, (cited in Dickson, 1974, p. 59) the former president of the World Bank displayed such a view when he said that the cost of raising a child in a third world country was six hundred dollars whilst the cost of avoiding its birth through birth control was merely six dollars. Perhaps with the application of the alternative way of thinking that I have sketched here, more appropriate uses of technology may occur.

With a new thinking Virtual Reality may be used for more relevant purposes. Virtual Reality may also help us to gain back a sense of oneness with the world. The current proponents of VR want to create a new world. Yet if we anchor the technology to representations relating to our actual physical world we may gain some benefits. The sense of immersion and the ability to manipulate the virtual environment mean that we can wear the virtual world like a garment. If this virtual world is related to the actual world then we may gain a greater sense of our interconnection with the actual world. Char Davies OSMOSE exhibit created in 1995 uses

Virtual Reality for just this purpose. The gallery description describes OSMOSE as “an art work that seeks to heal the rational Cartesian mind/body, subject/object split which has shaped so many of our cultural values especially towards nature” (cited in Heim, 1998, p. 163). The OSMOSE environment consists of natural settings where the VR participant can merge with natural objects. A participant describes the experience:

I am out of the dense forest and into a cozy clearing. Some leaves lie on the ground, a pond, a stream, and a huge oak tree generously giving its shade. I drink it in. I cruise around this area. I want to touch the tree but because I have no physical form, I cannot. I glide up through the tree and surround myself with their damp, exquisite beauty (Cited in Heim 1998, p. 164).

Davies realises the importance of not trying to create a new world, but that VR should be used to complement the real world:

OSMOSE is not a replacement for walking in the woods. It is rather a filtering of nature through an artist’s vision using technology to distill or amplify certain interpretative aspects, so that those who enter it can see freshly, can become re-sensitized, and can remember what it’s like to feel wonder (Cited in Heim 1998, p. 166).

Virtual Reality should also be used in a way that can help people in their everyday lives. The Virtual Environments Group at the Georgia Institute of Technology in the United States is applying Virtual Reality technology to help people overcome phobias. They use ‘exposure therapy’ which involves “exposing the patient to a virtual environment containing

the feared stimulus in place of taking the patient to a real environment” (no author, online, 2000). The use of an artificial situation lessens the impact for the patient of confronting the stimulus, whilst still working them towards dealing with their fears. The group has used this type of therapy successfully with people who have a fear of heights, a fear of flying and people with post-traumatic stress disorder caused by the Vietnam war. Such a application of Virtual Reality technology shows a urge to help fellow humans that fits in well with the alternative attitude toward technology that I have outlined here.

The advantage with Virtual Reality is that it is a technology that has not yet been fully realized. Therefore we have an opportunity to create something without having to alter and change what has occurred in the past. Virtual Reality is an opportunity. There are many ways into the future, perhaps the dream of Virtual Reality will never eventuate, it may remain the object of fiction. Yet as with all technologies, we must resist the discourse of control and order, and realise that there are alternative ways of thinking about technology and the world.

CONCLUSION.

Within this thesis I have argued that a discourse of Virtual Reality centres upon the valuing of order and control. The primary way that this is achieved is through the proponents of VR drawing upon Judeo/Christian religious mythology. They draw a parallel between their creation of a virtual world and God's creation of the actual world. The advocates of VR also compare their belief that the experience of Virtual Reality is empowering with the experience of being a god. They also use the Christian belief in transcendence by likening the creation of an artificial, controllable world to a heavenly, non-physical utopian realm. I contend that these comments of the VR experts reveal a desire for control and order. Their drawing upon the conception of God as an all powerful creator, and their urge to transcend their limited physical reality, to a totally controllable artificial reality demonstrate their implicit valuing of order and control.

The reason that Virtual Reality is conceived in this way is because it is influenced by the larger valuing of control and order that is a part of modernity. This has been particularly pronounced in the fields of science and technology. Due to VR's conception and application largely occurring within the fields of science and technology, it has consequently been affected by their regard for order and control.

Modernity is littered with examples of the ideology of order and control manifesting itself within society. The rise of surveillance techniques within modern society is a prime example. Technology has often been deployed to make surveillance more efficient. I suggest that

Virtual Reality technology as it is conceived within the ideology of order and control may be used as a surveillance technology.

For Virtual Reality technology to be used for other purposes it must first of all be separated from the prevailing modern attitude that values order and control. To do this alternative ways of thinking about technology are needed. I offer the philosophy of Martin Heidegger as one such alternative. Heidegger was critical of scientific thinking for its narrowness, its marking of everything as a value to be ordered, and its inability to accommodate differing philosophies. He advocated a broader, more open style of thinking that did not see objects within a scientific framework but saw them on their merits. With the use of different attitudes towards technology, new uses may be forwarded. In the last chapter I provided a couple of examples of uses for Virtual Reality. Instead of advocating a new heavenly realm to dwell in, these uses relate back to the actual world, and the real problems people face.

LIST OF REFERENCES

- Adorno, T. & Horkheimer, M. (1979). Dialectic of Enlightenment. London: Verso.
- Alcorn, G. (2000, June 28). A first Step in the Realm of God. The Age, p. 10.
- Aukstakalnis, S. & Blatner, D. (1992). Silicon Mirage: The Art and Science of Virtual Reality. Berkeley, CA: Peachpit Press.
- Barrett, W. (1964). Irrational Man: A study in Existential Philosophy. London: Mercury.
- Benedikt, M (1991). Introduction. In Benedikt, M. (ed). Cyberspace: First Steps. Cambridge: MIT Press.
- Benedikt, M. (1991). Cyberspace: Some Proposals. In Benedikt, M. (ed). Cyberspace: First Steps. Cambridge: MIT Press.
- Benjamin, A. (1991). A Treasury of Baby Names. New York: Signet.
- Berkeley, G. (1962). A Treatise concerning the Principles of Human Knowledge. La Salle: Open Court.
- Beniger, J. (1986). The Control Revolution: Technological Origins of the Information Society. Cambridge: Harvard Uni Press.
- Berman, M. (1983). All That is Solid Melts into Air: The Experience of Modernity. London: Verso.
- Bigelow, K. (Director) & Rauch, M. (Producer). (1993). Wild Palms. [film]. Distributor: Greengrass Productions, USA.
- Bogard, W. (1996). The Simulation of Surveillance: Hypercontrol in Telematic Societies. Cambridge: Cambridge Uni Press.
- Chief Seattle, (1994). This Precious Earth. Axiom: Australia.
- Cameron, R.E (1993). A Concise Economic History of the World: From Paleolithic Times to the Present. New York: Oxford Uni Press.
- Clarke, R. (1994). Dataveillance: Delivering 1984. In Green, L. & Guinery, R. (eds). Framing Technology. St Leonards, NSW: Allen & Unwin.
- Crandall, R & Levich, M. (1998). A Network Orange: Logic and Responsibility in the Computer Age. New York: Copernicus.
- Cronenberg, D. (Director) & Adams, B. (Producer). (1999). Existenz. [film].

Distributor: Miramax Films, USA.

- Dandeker, C. (1990). Surveillance, Power and Modernity: Bureaucracy and Discipline From 1700 To The Present Day. New York: St Martin's Press.
- Derrida, J. (1989). Of Spirit: Heidegger and the Question. Chicago: Uni of Chicago Press.
- Descartes, R. (1997). Descartes: Key Philosophical Writings. London: Wordsworth.
- Dickson, D. (1974). Alternative Technology and the Politics of Technical Change. London: Fontana.
- Ditlea, S. (2000). Meeting the Future. Technology Review, 103, 28-29.
- Dovey, J. (1996). Introduction. In Dovey, J. (ed). Fractal Dreams: New Media in Social Context. London: Lawrence and Wishart.
- Fairclough, N. (1992). Discourse and Social Change. Cambridge: Polity Press.
- Flynn, J. (Director) & Roy, M. (Producer). (1994). Brainscan. [film]. Distributor: Columbia TriStar, USA.
- Foucault, M. (1977). Discipline and Punish: The Birth of the Prison. London: Penguin.
- Foucault, M. (1991). The Foucault Reader: An Introduction to Foucault's Thought. London: Penguin.
- Gibson, W. (1986). Neuromancer. London: Grafton.
- Giddens, A. (1985). The Nation-State and Violence: Volume Two of a Contemporary Critique of Historical Materialism. Cambridge: Polity Press.
- Giddens, A. (1991). The Consequences of Modernity. Cambridge: Polity Press.
- Hall, S. (1992). Introduction. In Hall, S. & Gieben, B. (eds). Formations of Modernity. Cambridge: Polity.
- Hampson, N. (1968). The Enlightenment: An evaluation of its assumptions, attitudes and values. London: Penguin.
- Harries, K. (1967). Martin Heidegger: The Search for Meaning. In Schrader, G.A. (ed). Existential Philosophers: Kierkegaard to

- Merleau-Ponty. New York: McGraw-Hill Book Company.
- Heidegger, M. (1962). Being and Time. New York: Harper & Row.
- Heidegger, M. (1968). What is Called Thinking. New York: Harper Colophon Books.
- Heidegger, M. (1977). The Question Concerning Technology and Other Essays. New York: Harper & Row.
- Heidegger, M. (1978). Basic Writings: Heidegger. London: Routledge & Kegan Paul.
- Heilbroner, R.L. (1993). The Making of Economic Society. Englewood Cliff, NJ : Prentice Hall.
- Heim, M. (1993). The Metaphysics of Virtual Reality. Oxford: Oxford Uni Press.
- Heim, M. (1998). Virtual Realism. Oxford: Oxford Uni Press.
- Hill, S. (1988). The Tragedy of Technology. London: Pluto Press.
- Hultkrantz, A (1981). Belief and Worship in Native North America. Syracuse Uni Press: New York.
- Irigaray, L. (1999). The Forgetting of Air in Martin Heidegger. Austin, Texas: University of Texas Press.
- Jordan, T. (1999). Cyberpower: The Culture and Politics of Cyberspace and the Internet. London & New York: Routledge.
- Kelly, K. (1994). Out of Control: The New Biology of Machines, Social Systems, and the Economic World. Massachusetts: Perseus.
- Kurzweil, R. (2000). Merging Human and Machine. Computer Graphics World, 23, 23-26.
- Lacoue-Labarthe, P. (1990). Heidegger, Art and Politics. Oxford: Blackwell.
- Laurel, B. (1991). Virtual Reality Design: A Personal View. In Helsel, S.K. & Roth, J.P (eds). Virtual Reality: Theory, Practice, Promise. London: Meckler.
- Leiss, W. (1972). The Domination of Nature. New York: George Braziller.
- Leonard, B. (Director) & Everett, G. (Producer). (1992). The Lawnmower Man. [film]. Distributors: Filmayer Video, Spain.

- Longo, R. (Director) & Carmody, D. (Producer). (1995). Johnny Mnemonic. [film]. Distributor: Village Roadshow, Australia.
- Lyon, D. (1994). The Electronic Eye: The Rise of Surveillance Society. Cambridge: Polity Press.
- Mitchell, W.J. (1996). City of Bits: Space, Place and the Infobahn. Cambridge: MIT Press.
- Noble, D.F. (1999). The Religion of Technology: The Divinity of Man and the Spirit of Invention. New York: Penguin.
- Outram, D. (1995). The Enlightenment. Cambridge: Cambridge Uni Press.
- Penny, S. (1994). Virtual Reality as the Completion of the Enlightenment Project. In Bender, G & Druckrey, T. (eds). Culture on the Brink, Ideologies of Technology. Seattle: Bay Press.
- Pimental, K. & Teixeira. (1993). Virtual Reality: Through the new Looking Glass. New York: Windcrest/McGraw Hill.
- Postman, N. (1993). Technopoly. New York: Vintage Books.
- Rheingold, H. (1993). The Virtual Community: Homesteading on the Electronic Frontier. Reading, Massachusetts: Addison-Wesley.
- Rider, C. (1995). An Introduction to Economic History. Cincinnati, CH: South Western College Publications.
- Robins, K. (1996). Cyberspace and the World We Live in. In Dovey, J. (ed). Fractal Dreams: New Media in Social Context. London: Lawrence and Wishart.
- Robins, K. & Levidow, L. (1995). Soldier, Cyborg, Citizen. In Brook, J & Boal, I.A. (eds). Resisting the Virtual Life: The Culture and Politics of Information. San Francisco: City Lights.
- Robins, K. & Webster, F. (1999). Times of the Technoculture: From the Information Society to the Virtual Life. New York: Routledge.
- Rockmore, T. (1992). On Heidegger's Nazism and Philosophy. Berkeley and Los Angeles: Uni of California Press.
- Sherman, B. & Judkins, P. (1992). Glimpses of Heaven, Visions of Hell. London: Hodder & Stoughton.
- Slouka, M. (1995). War of the Worlds: Cyberspace and the High-Tech assault on Reality. New York: Basic Books.

- Stockton, E. (1995). The Aboriginal Gift: Spirituality for a Nation. Alexandria, NSW: Millenium Books.
- Thompson, J.B. (1995). The Media and Modernity: A Social Theory of the Media. Cambridge: Polity.
- Turney, J. (1998). Frankenstein's Footsteps: Science, Genetics and Popular Culture. New Haven & London: Yale University Press.
- Virilio, P. (1997). Cyberwar, God and Television. In Kroker, A. & Kroker, M. (eds) (1997). Digital Delirium. New York: St Martin's Press.
- Virtual Environments Group, at the Georgia Institute of Technology. (2000). [online]. Available at: <http://www.cc.gatech.edu/gvu/virtual/>
- Wachowski, A & Wachowski, L (Directors) & Silver, J. (Producer). (1999). The Matrix. [film]. Distributor: Warner Bros, USA.
- Whitaker, R. (1999). The End of Privacy: How Total Surveillance Is Becoming A Reality. New York: The New Press.
- Wertheim, M. (1995). Pythagoras' Trousers: God, Physics and the Gender Wars. New York: Times Books.
- Wolin, R. (1993). French Heidegger Wars. In Wolin, R. (ed). The Heidegger Controversy: A Critical Reader. Massachusetts: The MIT Press.
- Woolley, B. (1992). Virtual Worlds: A journey in hype and hyperreality. Oxford, Blackwell.
- Young, J. (1997). Heidegger, Philosophy, Nazism. Cambridge: Cambridge Uni Press.
- Zuboff, S. (1988). In The Age Of The Smart Machine. New York: Basic Books.