

# SYNCHRONICITY

Name: Paul Burt  
Course: European Media Master of Arts  
Unit: Research Methods  
Date: January 2001



## **Research Methods employed**

The research I undertook for the unit 'Linear, Non-Linear Design – Part One' was intended to give a starting direction for the project as well as informing the work produced. The methods I employed for undertaking this research can be categorised into two types, theoretical and practical. Once I had decided to investigate the broad area of 'virtual environments', I first sought to find existing documented information on both the conceptual/theoretical aspects and the technological/physical interpretations of the subject. This area of investigation and research is rich in recent texts that explore the concepts, meanings and theoretical consequences relating to virtual environments but texts that use findings of actual experimentation and physical projects were more difficult to discover, probably due to the limitations of experimentation in this field and through a reluctance by authors to be specific about the technologies they employed because the validity of any of these technologies is so short lived in the context of technological development.

Sources for information ranged from specialist periodicals and library collections to internet searches. The use of articles from specialist periodicals, when compared to published books, had the advantages that the article would usually be focussed on a narrower aspect of the subject and because of the shorter length it was simpler (and quicker) to be able to form a view upon an article's relevancy to the given research subject than it would be with a book. Within a book the author may present a multitude of ideas and discussions and this can sometimes require the reader to forge a substantial commitment on the text only to occupy time on material that had an oblique relevance to the actual subject being researched.

## **'Virtual Environment' defined**

To begin, I attempted to define the term 'virtual environment'.

'Environments' can exist that are natural or ordered by man according to a need or purpose. The ordering and defining of a physical environment by man is usually described as architecture. It is accepted that architecture, beyond the simple planning of structures, has the power through "the arrangement and organisation of the elements of form and space" to "promote endeavour, elicit responses and communicate meaning"<sup>[1]</sup>. Natural environments can also possess these powers in equal measure.

A virtual environment is by necessity a creation of man. Therefore it could be argued that all virtual environments are in fact 'virtual architecture' but in the context of this project I have chosen to use the term 'environment' (as opposed to 'architecture') to avoid the danger of the reader/user (mis)understanding the concepts discussed to be limited to traditional 'architectural' spaces.

One aspect of the technological development of recent years that has enjoyed much exploration and hypothesising by academia and the media is that of 'Virtual Reality' (VR). VR can be defined as;

“an interactive computer system so fast and intuitive that the computer disappears from the mind of the user, leaving the computer generated environment as the reality.”<sup>[2]</sup>

This description of VR presents one potential way of entering and interacting with a virtual environment. VR as a technological term has evolved to be widely understood as the interaction with virtual environments, objects and characters by a person wearing a 'head-mounted display' (HMD) and maybe a 'dataglove' to experience a partial immersion into the environment afforded by the sensory selectivity of what can be seen through the display, heard through the earpieces and felt via the glove. VR in this context relates to a specific technology using specific apparatus and I am not confining the scope of this research and practical experimentation to this limited (and now somewhat dated) aspect of the subject.

Therefore the definition of a virtual environment that I have based this project upon is ‘a space that is either a representational simulation of an actual physical place or a fabricated envisagement of an imagined one that can only be experienced by the use of a computer’.

## **Representations of Virtual Environments**

The first virtual environment that I had experience of came through the use of a computer game. I can remember, after completing the game ‘*Riven*’<sup>[3]</sup> (the sequel to best-selling *Myst*), a conversation with a friend who had played the same game at an earlier point. We could both recount details of the routes around the environments of this non-real world. We both had real recollections of experiences and time spent in this virtual world (although we had each experienced a separate copy of the software and had actually *not* experienced the *same* virtual world) and these memories seemed as ‘real’ as any of those from the physical world. This experience awakened me to the power of computer immersive environments and the creation of a sense of ‘place’ within the computer became an aim of the screen based experimentation.

Cinema has represented virtual environments in many mainstream releases (you could trace a history from *Tron*, through *The Lawnmower Man* to *The Matrix* with many less notable releases in between). Many of these representations have sought to offer something new and different to the physical reality we are used to experiencing. The most typical representation will involve a landscape built of visible digital code and other aspects of the inner workings of computers. This genre of representation is in effect revealing an ‘under-the-bonnet’ vision of the computer. One of the scenes within the experimental environment I have created makes use of this imagery but I had, through the use of photographic images, strived within the rest of the experimentation to create spaces which were visually rich and full of detail.

## **Immersion Technologies**

Although I have not attempted to experiment with immersive technologies with the first part of this unit, my research has informed my knowledge of this area of technology.

The standard expectation of VR to require the use of HMD and various input/output devices excludes some of the more interesting experimentation in the field of recent years. I had read an article<sup>[4]</sup> in the periodical ‘*Digital Creativity*’ which described a technology which promised a greater immersive experience than that which seeks to provide immersion mainly by sensory deprivation (as is the case with the use of HMD’s). In this article the author, Teresa Wennberg, described her personal experimentation and project creations using an immersive technology called CAVE.

CAVE stands for ‘Complete Audio Visual Environment’ and is specifically a technical facility that exists at various military and research establishments around the world. The technology consists of a three metre cube of which “all sides, including the ceiling and floor are projection screens. Large video canons project the images from all sides through back projections and with the help of mirrors”<sup>[5]</sup>. The viewer enters the cube wearing special LCD shutter glasses. These glasses, unlike HMD’s, do not deprive the user’s vision of what is physically in front of them or incumber the user with computer cables. The purpose of the glasses is to alternate the wearer’s vision between their two eyes in synchronisation with an alternation of the projected image to give the wearer a 3D view of the projected scene. Wennberg has used the technology to enable visitors to explore a virtual interpretation of the inside of a human body. She makes a number of comments on how the user experienced being within the CAVE including;

“When we enter the VR Cube and are confronted with a virtual experience, we can establish that, from a physical point of view, we are still attached to earth. Our brain subconsciously registers that our feet are placed on solid ground...

...At the same time other parts of the body — eyes, ears and subsequently nerves and

muscles in the head, neck and back — are bombarded with information about a different situation, for example ‘I am flying at high speed, at high altitude, over an unknown territory’. This message is stronger than the message telling us that we are standing on the floor. The eyes win out over the extremities. We believe more in the information that our eyes are sending us than in the information from the nerve endings in our feet.”[6]

Another proponent of the possibilities presented by the CAVE technology was Simon Penny. On his website[7] he described his work on the project ‘Traces’ which uses the technology. ‘Traces’ attempted to address one issue with the concept of immersion within the CAVE;

“... clearly only half the problem was solved, the user could experience virtual object in a more bodily way, but the user was still reduced to a point from the perspective of the machine. Thus it became necessary to build an input system which described the entirety of the user’s body.

After substantial research, we built a multi-camera vision system which constructs a real-time body model of the user. This body model is currently of a low spatial resolution, but of a high temporal resolution, the user experiences no ‘latency’, or lag, between their movements and the virtual structures created.”[8]

Penny addressed the students on my course and spoke of an aim with all his projects that they should possess an ‘auto-pedagogic interface’. This aim, that the user or visitor to the space should discover how to work with the piece without requiring guidance, is one that I hoped to integrate into my project work for the unit.

### **‘City of Bits’ – a vision of the future?**

William Mitchell’s *‘City of Bits’*[9] explores in-depth the developments into ‘cyberspace’ that had taken place at the time of his writing (1994). His book offered what has proved to be an accurate prediction of the development of some technologies (he speaks of “handheld remote control devices will be used to interact with digital televisions and other information devices”[10] ) and he eloquently opens the debate on the planning of the habitation of ‘cyberspace’. An interesting counterpoint to Mitchell’s idealistic imaginations of the ‘city of bits’ was provided by Kevin Robins and Frank Webster in *‘Times of the Technoculture’*[11]. Robins and Webster use Mitchell’s book as the basis for their critique of the utopian rhetoric that is promoting the new information technologies as a cure for all social ills:

“The technoculture tells us that the new virtual technologies will provide a solution for the social problems of contemporary society. In doing so it dutifully repeats the technocratic promises that have always been attached to new communications technologies. Of course, in one respect, we accept that they do provide a solution. We might say that virtual spaces provide an anaesthetic solution, through the technological neutralisation of social relations and the pacification of social space.”[12]

It was interesting to read Robins and Webster’s discussion around *‘City of Bits’* as it provided substance to a view that I had formed about the narrow and clinical nature of any communication or contribution to a ‘virtual society’ I have had experience of, they sum this feeling up well by:

“The disorder of the urban scene may be regarded... .. as a primary resource in urban life: it is out of the countless challenges of everyday encounter with its diverse others, as we weave our way through the city’s dense and ever-changing spaces, that we construct, over time, our urban experiences and identities. Virtual culture is a culture of denial or disavowal in the face of these disorderly possibilities of contemporary urban reality.”[13]

## **Project Direction**

Throughout this first stage of the project I found difficulty in relating the issues and concepts I was discovering in my theoretical research to the actual development of the screen based experimentation. I also found the concept of visual research surprisingly difficult to achieve (for someone who has a design background) but now appreciate the value of this as a stage the development process. My direction for the second stage of the project will be to try to experiment with 'beyond the computer' interfaces, using video triggering and projection technologies. This stage the of project promises significant technical challenges but I hope to relate the technical experimentation to a greater extent to some of the reading I had undertaken for the first stage of the project.

## Notes

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- 1 Francis D.K. Ching, *Architecture. Form, Space and Order* (New York: Van Nostrand Reinhold, 1979), p.10.
- 2 L. Casey Larijani, *The Virtual Reality Primer* (New York: McGraw-Hill, 1993), p.9.
- 3 Rand and Robyn Miller, *Riven* (Computer Adventure Game, California: Broderbund Software, 1996).
- 4 Teresa Wennberg, *Virtual life: self and identity refined in the new media age* (Periodical: Digital Creativity, 2000, vol. 11, no. 2), pp.65–74.
- 5 Ibid., p.65.
- 6 Ibid., p.68.
- 7 Simon Penny, <http://www.art.cfa.cmu.edu/Penny> (website as viewed January 2001)
- 8 Ibid.
- 9 William Mitchell, *City of Bits* (Massachusetts: The MIT Press, 1995).
- 10 Ibid., p.172.
- 11 Kevin Robins and Frank Webster, *Times of the Technoculture* (London: Routledge, 1999).
- 12 Ibid., p. 259.
- 13 Ibid., p.260.

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Joan Broadhurst Dixon and Eric J. Cassidy, *Virtual Futures: Cyberotics, Technology and Post Human Pragmatism* (London: Routledge, 1998).

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