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Faculty of Design

Overcoming Technophobia by taking control

by :

Evan Kennedy

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CONTENTS

INTRODUCTION :

'Why do you test for humans?' he asked.
'To set you free.'
'Free?'
'Once men turned their thinking over to machines in the hope that this would set them free. But that only permitted other men with machines to enslave them.'
'Thou shalt not make a machine in the likeness of a man's mind, ' Paul quoted.
'Right out of the Butlerian Jihad and the Orange Catholic Bible,' she said.
'But what the O.C. Bible should've said is :
'Thou shalt not make a machine to counterfeit a *human* mind.'
(Herbert, 1965, p. 17).

The above quotatation is an excerpt from a piece of dialogue between two characters in Frank Herbert's science-fiction epic Dune. It is appropriate in setting the theme that the reader shall encounter throughout the discourse of this work. That theme is to be the core of the problematic issue of Technophobia. The issue in question is whether humanity controls technology, or whether technology controls humanity. This is a key element in understanding the problem of technophobia, and how this notion of control is conveyed through the designed product in question. The relationship between the Apple Newton and the technophobic user shall be addressed in the final chapter.

Before the success of the Apple Newton as a designed product that attempts to overcome the problem of technophobia and control can be evaluated, the issue of technophobia has to be addressed. This issue shall be dealt with in detail so as to establish the reasoning behind the argument for the existence of technophobia.

The primary issue in dealing with technophobia is defining it as both a word or term in itself and analysing its meaning. This will lead to the second issue which is dealing with technophobia as a concept or even a phenomenon. Any concept or phenomenon is endemic to humans of a particular period of time, when viewed in a historical context,

and as such requires an explanation as to why this is so.

The aim of this discourse shall be to establish what technophobia is within readily definable parameters, and how an understanding of the importance of the relationship between control and technology is essential in providing an explanation for its existence. This shall be achieved by discussion, analysis and comparison to systems past, present, future and theoretical. An analogy shall be drawn with Alvin Toffler's argument for the causes of 'future shock', which shall be explained in the text. His findings and explanation for the emergence of 'future shock' have inspired the principle argument of this work. It is hoped that the reader will follow the argument through the work and come to understand what the successes of the Apple Newton are in overcoming technophobia, and why the role of designing control systems for the user is essential to this process.

Chapter 1 will introduce the concept of technophobia and transience. It will illustrate how the rate of technological change in society contributes to generating technophobia, and why this is so important if an understanding of its causes is to be achieved.

Chapter 2 will deal with people and technophobia. It shall attempt to define both technophobia and the technophobe. It shall illustrate the relationship between change and technophobia. It shall also examine how the form of the objects of technological society contribute to generating technophobia. It shall also allude to our future fears regarding our relationship with technology, and introduce the importance of modern myths.

Chapter 3 shall examine the importance of the myth of the cyborg, and what these myths say about the fears technophobic people have about the future of technology. It shall illustrate the importance of the role control of technology has to play in the technophobic perception of technology.

Chapter 4 shall deal with the threat posed to the technophobe by the technological body. It shall address how fear of integrating the body with technology is central to the plight of the technophobe. The concept of

existing beyond the constraints of the body shall be examined and discussed in relation to the concept of control. An analogy shall be drawn between the relationship of modern myths and the perception of technology. It shall illustrate the importance of this connection and also introduce the reader to the perception of technology as conveyed by Apple computers.

Chapter 5 shall comment on the success of the Apple Newton messagepad, as a product designed with the technophobic user in mind. It shall illustrate why the product is successful in its ideal to present the user with an interface that is more natural to the human. It shall also illustrate the importance of designing an interface with the technophobe in mind.

CHAPTER 1 : INTRODUCING TECHNOPHOBIA :

> We are creating a new society. Not a changed society. Not an extended larger than life version of our present society, but a New Society. This simple premise has not yet begun to tincture our consciousness. Yet unless we understand this, we shall destroy ourselves in trying to cope with tomorrow.
>
> (Toffler, 1960, p. 172).

Before the reader attempts to interpret what technophobia is, be advised that everyone has their own particular interpretation and assumptions about what it is. This is not wrong or inaccurate. In researching the area it was found that the literary and academic world are still struggling to define the term, and there are as many similarities as there are differences between established definitions. This is partly because attempts to define technophobia are relatively recent, and it also illustrates the confusion surrounding the term. As with most current technological terms it has quickly become yet another 'buzz-word', that everyone from psychologists to designers are bandying around. This results in the average person on the street who has no idea what a PC is, let alone the internet, becoming mystified as to what technophobia is. The answer that makes most sense, or rather that is most relevant to this work, can be taken as the following.

Technophobia is the term attributed to fear or anxiety regarding technology which takes many forms, but represents itself primarily as fear, (which as with any phobia is usually irrational), about coming into contact with or having to use computers. The most effective way to begin a discussion and analysis of technophobia is to address it as one would phobias of any kind. Phobia concerns one thing and that is FEAR.

The Roots Of Fear :

Technophobia comes about as a result of fear of technology. This usually represents itself in the form of anxiety about using technology. Fear of technology and/or what technology represents is not a relatively new phenomena; However, what is unusual is the scale upon which this fear is being experienced. Not since the time of Galileo's inquisition for stating that the world is round has there been such a strong reaction to technology. The realm of science has since the dark ages been perceived, amongst other

things, as the saving grace of civilisation. It has also been seen to represent progress and change for the better. But at the other end of the spectrum this progress was feared as it marked a departure from a world in which all things were governed by a higher power. What science and technology have done is to open the eyes of humanity to a world that is determined by logic not by magic.

Causes of Technophobia :

Science is to this day still very much in opposition to established religious beliefs the world over. Some of this mistrust of scientific assumptions are perhaps carried through to present day society. This may be due to the fact that science defines itself by observation, which is technical and therefore real. This requirement of substantiation opposes belief or faith in the unreal and metaphysical, i.e. God.

This does not however, explain or justify the reasons for technophobia in the latter half of the twentieth century. The principle cause for technophobia relies on the combination of several factors. It will be shown that 'future shock' and the phenomena of transience are the main causes of technophobia. There is of course another aspect of fundamental importance which must be mentioned at this point. It deals with the issues of control and humanity versus the machine.

The Luddites of the Industrial age were the first people to revolt against the machines that replaced them in the factories. The innumerable horrors of the injuries caused to workers of all ages in the factories has perhaps become part of a racial memory or myth that permeated down the generations to warn humanity of the threat posed by machinery. Of course it would be facetious to disregard the social problems of the time, but the image of man versus machine is a recurring one in modern mythology and popular culture (as will be discussed in a later chapter). Neo-Luddites are growing in number in the U.S.A. where a survey carried out by *Newsweek* suggests that there are as many as 70 million technophobes. This may be in part due to the fact that technology has eliminated 50 million jobs in the U.S. in the last 20 years.

Generating Technophobia :

What is it about society today that results in people suffering from technophobia? A person does not just wake up one morning deciding that there is no way that they could ever go near a computer let alone use one. And what about others who revel in technology and cannot see what the fuss is about? The answer is not forthcoming from any sector in society as blame cannot be attributed to any one factor. It shall be shown that Alvin Toffler's explanation for future shock is perhaps the closest any person will get to finding a parallel line of thought and analysis that effectively explains why technophobia is happening *Now* and *Why* this is so.

The 800th Lifetime :

The 800th Lifetime is how Alvin Toffler (fig: 1) describes the current times. It can be explained thus;

> It has been illustrated for example that if the last 50,000 years of of man's existence were divided into lifetimes of approximately 62 years each then there have been about 800 such lifetimes. Of these fully 650 were spent in caves.
>
> (Toffler, 1960, p. 22).

If this analogy is followed through and an examination is made of the last 62 or so years, several shocking results are found. Results that clarify the magnitude of what is happening to humanity. The current 800th lifetime has been witness to the splitting of the atom, the global spread of telecommunications, space exploration, the prevalent use of computers, etc. Technology is currently at the stage where it has advanced so far ahead of itself that it is becoming invisible, yet its presence is being felt everywhere.

This speed of change and advancement demands a heightened level of awareness from people, and the ability to accept the new over the old. The result is that peoples coping strategies are being stretched beyond their limits. People cannot adapt quickly enough. This rapid change was first brought to the attention of the world of academia by Alvin Toffler, when he defined it in Future Shock, (1970) as transience. (His wife Heidi later owned up to her half of the creative effort).

> Our ideas came together in 1965 in an article called 'The future as a way of life', which argued that change was going to accelerate and that the speed of change could induce disorientation in lots of people.We coined the phrase 'Future Shock' as an analogy to the

> concept of culture shock.With future shock you stay in one place but your own culture changes so rapidly that it has the same disorienting effect as going to another culture.
>
> (New Scientist, pp. 22-25).

Future shock as a concept is a time based phenomenon. It is the product of the greatly accelerated rate of change in society. It arises from the superimposition of a new culture on an existing one. It is culture shock in one's own society, but its impact is far worse.

> "And we wonder how we created a 'Jason' generation,
> That learns to laugh, rather than abhor the horror."
>
> (Franti, M., Tse, R., 1992, Island Records).

Lyrics such as these in popular music encapsulate the type of disorientation felt in society as a result of transience and future shock. Here the musicians in question are talking about how we as a society have become anaesthetised to television violence, where images are portrayed that years previous would not have been accepted as entertainment.

Transience as a concept :

Toffler described transience as:

> the forcible abbreviation of man's relationships which are not merely conditions of the external world. It has its shadows within us as well. New discoveries, new technologies, new social arrangements in the external world erupt into our lives in the form of increased turnover rates and shorter and shorter relational durations. They force a faster and faster pace of live. They demand a new level of adaptability. And they set the stage for that potentially devastating social illness; Future shock. (Toffler, p. 170).

From this it can be seen that transience is the culmination of several factors that result in the devastating effect of total disorientation. People begin to doubt their role in society when nothing remains stable. The following is an excerpt from an interview with popular musician Beck, (fig: 2), that further clarifies the dislocating effect of transience.

> ' LA is a huge town. It's as big as some countries. The west side is right near the beach, it's where all the movie stars live, where all the plastic surgery goes on.....where all those deluded people are. I grew up in east LA, near downtown, and we'd have no idea what's going on on the west side. It has many faces. It's not like New York, which has a real distinct character. Everything from my childhood here, all the architecture, more than half of it's torn down and made into mini-malls. The whole landscape doesn't have any history.'

FIG 1 : Alvin Toffler

FIG 2 : Beck

Isn't that exhilarating in a way? Constant change keeps you on your toes. Beck reckons not.

' It displaces you, there's no connection to a past or anything. I don't think it's really exhilarating, it's somewhat hollow. It's like the music,' he continues, evidently getting upset.

' Those old songs, that whole past, you know, these songs are gonna be lost. And I chose to embrace the kind of music I'm doing now because I want to in some way, slip in bits and pieces of that older music, so maybe it carries on and continues the culture. I'm really fascinated by this disposable music, 'cos it's so much a part of what our culture is about right now. For many years I was turned off by it, and shunned it, really, but now, it's almost like,' well this is what we've got', and to try and make something beautiful out of the pieces, the junk.'

(Crumlish, 1996, p. 24).

Change forces people to adapt. If people don't adapt they become anachronistic. In the past this was acceptable as society was used to people being 'stuck in their ways', or even nostalgic. The expression 'you can't teach an old dog new tricks', has become entrenched in society's vocabulary. In the past this made sense as the elderly were the individuals most affected and this was seen as the natural way of things. What is frightening about 'the 800th lifetime' is that the elderly are not the only ones who are affected by the acceleration of change. It has gone from being a natural experience of just not being 'up to speed', to the experience of total apathy and helplessness. Technology is unrelenting in its increased momentum. Every day new discoveries and advances occur at speeds which disregard the human ability to intake, process and analyse the data. The result is similar to the oft proclaimed "No! what have I done", by the mad scientist in many a B-movie of yesteryear. As a race we have unleashed Pandora's box in our unrelenting quest for knowledge, but we have failed to keep the demons in check. The result has been tremendous advances in science for the benefit of "all"; But we are also more than aware of the negative aspects.

The Future...? :

One should not lose sight of the point, that transience is only an attempt to define this 'accelerative thrust' to an unknown future where the role of humans is uncertain beyond the point of participation. The degree of participation held by humans shall be determined by mankind's ability to recognise the function of technology as a tool that enables, rather than a

crutch that disables.

No one can predict the future, and the Toffler's made it quite clear that this was not their intention with the publication of the trilogy of Future shock, The third wave, and Power shift. These three books published respectively in 1970, 1980, and 1990, sought not to predict but to anticipate possible models of historical and social change. That model is seen most clearly in The Third Wave, which maps out three gigantic waves of change. The first wave corresponds to the agricultural revolution which dominated human history for thousands of years. The second wave - industrial civilisation, is now playing itself out after 300 years of dominance. The Third Wave is crashing over us right now having started with the birth of a post industrial, high technology, information economy in the 1950s.

From the conceptual notion of 'the 800th lifetime', and 'the Third wave', one can clearly see that things are moving faster around humanity. If one needs more to quantify the basis of what Toffler proposed, consider the invention of the wheel.

The Wheel Versus The Computer :

The wheel was the most significant step forward for civilisation for obvious reasons. It has been with us for thousands of years and so we have grown to totally accept it in its many mutated forms. The wheel provided a convenient and faster way of physically getting from A to B. This acceptance of technology as a tool that benefits man was obvious from the outset and has had the benefit of generations of people to foster and accept this idea.

If one then regards the development of the computer in the same way, one observes quite a contrast. The computer performs a similar task to the wheel, in that it allows rapid transport of information from A to B. The computer as we know it today can be traced back a mere 165 years to the Victorian inventor Charles Babbage, (fig : 3).

His attempts to design and build an automatic error free calculating machine that would print its answer, while not completely successful is still credited as the "grandfather of computing". In 1832 he designed his first 'difference engine'. This led to the design of the 'analytical engine' in 1833, a massive device with 50,000 wheels on 1,000 vertical axes which although never completed would have been a programmable calculating machine

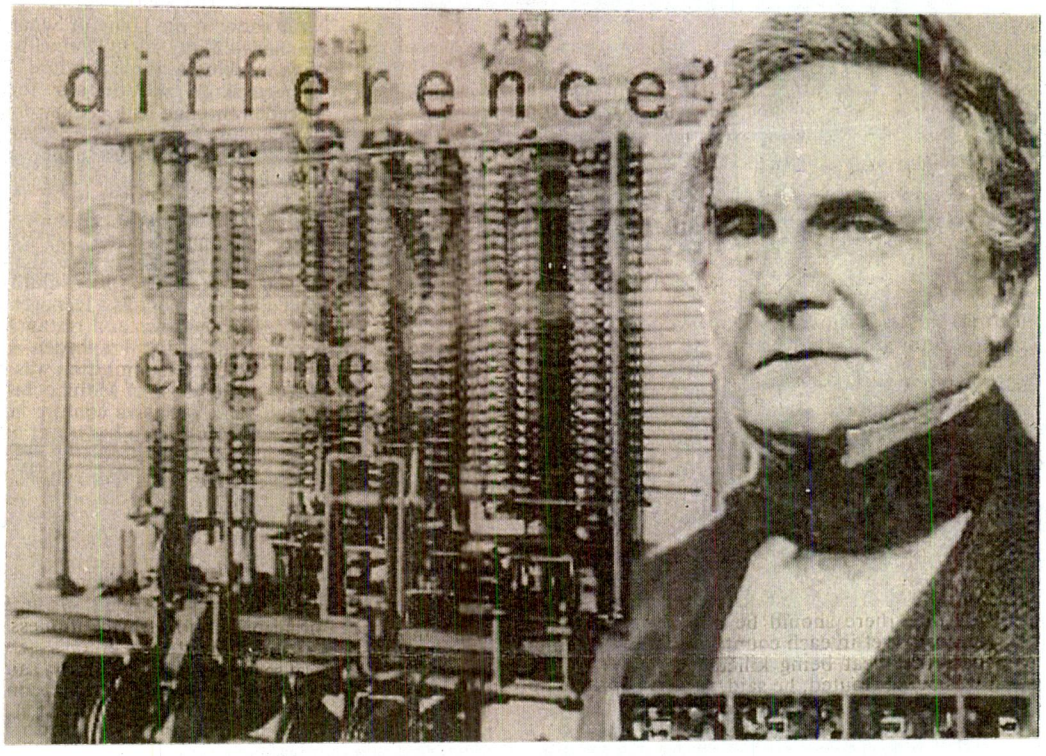

FIG 3 : Charles Babbage

capable of the 'do loops' and 'If.....Then' operations so familiar in computers today.

The evolution of computers since then has been phenomenal with the last decade witnessing the revolution of home and personal computing because of the efforts of IBM and Macintosh. The continuing rise in the number of internet users is evidence enough of how the computer has become an integral feature of life in the post industrial age. In this new Eden of silicon, knowledge is power. The effects of this revolution in technology are profound and far reaching with consequences for people in all walks of life. One of the side effects has been the spread and acknowledgement of technophobia. Why have people rejected and become untrustworthy of the new deity? The reason can be and must be attributed to the rate at which this evolution occurred.

Unlike the situation with the invention of the wheel and the amount of time it took for its evolution right up to the present day, the computer evolved too fast for some people. The rate of change and applications for the wheel as a technological tool that benefited mankind was slow and recognisable. This allowed people time to adapt.

> Throughout the past as successive stages of social evolution unfolded, man's awareness followed rather than preceded the event. Because change was slow, he could adapt..... unconsciously, 'organically'. (Toffler, 1960, p. 438).

People can cope with innovation and change and adapt to new situations only when change occurs over a long passage of time. Such was the case with the wheel, as it existed in various forms for centuries previous. What the invention of 'the horseless carriage' or car did, (fig : 4), was to find a new application for an existing technology. One of the problems people had with the first automobiles and steam powered trains in particular, was the obvious and grotesque presence of the machine as part of its function.

The steam engine (fig : 5) was to be seen hurtling through the countryside, disrupting nature with its noisy presence. It broke the 100 mph speed barrier, thus rendering traditional modes of transport obsolete. This mechanical beast belched out plumes of smoke and steam like a mythological dragon, sending the countryside into a panic. It was wholly

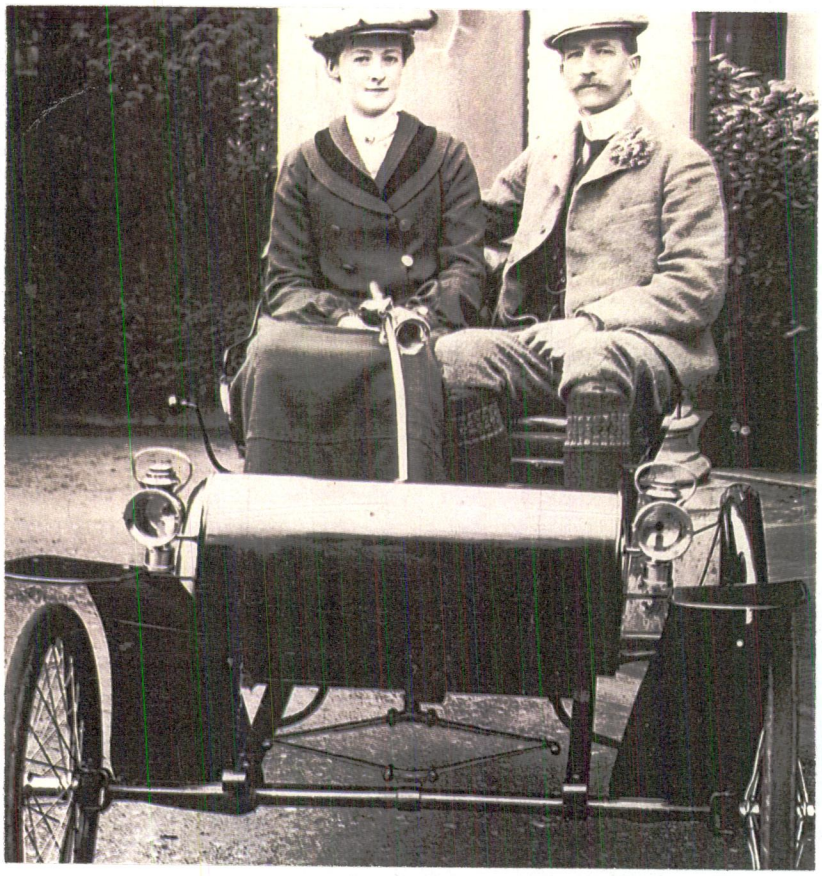

FIG 4 : Horseless Carriage

FIG 5 : Steam Engine Train

unnatural. This was perhaps the first occasion where the aesthetic of the machine infiltrated the natural world, and ushered in a new era where technology would reign supreme.

Hyper Evolution of the Computer :

The computer has since evolved from massive machinery to small boxes and microcircuitry that are continually shrinking in size. All this has been accomplished in the 800th lifetime in a fraction of the time it took for the wheel to develop. The result has been the failure of some people to adapt and accept this new technological device as what it is -- a tool to aid humanity. This is a side effect of the rapid change in society. The increased rate of transience has left people bewildered and unable to cope, and so it is not their fault that reality has been pulled out from under them like a rug. In this sense technophobes recognise computers as a threat to their existence because they are advancing at an unnatural speed that must be wholly mechanical and unrelenting as it thrusts its way over and beyond humanity. This pace of change is unnatural as it is synthetic and artificial. Herein lies the paradox that seems to threaten the natural way of life and perceived values that are held so dear by our civilisation. What technophobic people are really afraid of is control, or rather how this notion of control is conveyed through the objects of technological society.

The Divine/Natural Order of Life :

People recognise that *Homo sapiens* have been the dominant species on this planet for thousands of years, in most cases as their God decreed. Now that position is no longer secure as our own folly begins to supersede us and plot against us through its networks and servers and electrical pulses. If the religious analogy is followed through, it can be seen that the living, pulsing silicon serpent has come back to once again bring about the downfall of humanity, and to drive us out of our garden of Eden.

CHAPTER 2 : PEOPLE AND TECHNOPHOBIA :

There seems to be two extremes on a continuum of difficulty that people have in living with technology. On the one hand are those who exhibit a fear of technical devices, and avoid dealing with technology where possible. On the other extreme are people who overuse technology, such as internet addicts.

> Many people avoid personal issues by escaping into a technology fantasy land. It should come as no surprise that many of the patterns of cyberspace addiction are very similar to the behaviour traits of alcoholic or compulsive gamblers...more concern ought to be paid to people who are addicted to technology...technology addiction is not an exaggeration. (Driggs, LICSW, 1995).

Over users of technology have not been mentioned yet as the focus has been on technophobes, but it is of interest to the technophobic reader who may believe that they are in some way abnormal. As with most things there are always opposing extremes, but one can always learn from the other. In this sense it can be argued that people that overuse technology are simply those who have become adept to change and go with the flow. However, it can also be said that they have gone beyond sanity to a state of being obsessed with newness and change and have become enslaved by technology. They are no longer in control, and have to recognise that simple fact.

The Technophobe and Technology :

The true technophobe is arguably in a better position because they only have to recognise that when engaging with technology, they are the ones who are in control, not some mindless machine. Technophobes simply have to stand back and reassess their attitude to technology and address the problems they have with their perception of technology, as opposed to what technology represents to them. Over users have to be virtually dragged away from their PC's by another person. The advice given by an American licensed social worker, John H. Driggs to over users is to;

> ...realise that unconscious forces are running your life and that you have to get back in control of your life. It's best to get help from a therapy group, or a psychotherapist to identify what these forces are and face your feelings...

This is actually, in a perverse sort of way, consolation of a kind for

technophobes. No one has suggested that technophobes are bordering on insanity, or are in any way unhinged! The technophobic response to technology and the objects of technological society, are far more interesting as it gives one an insight into an area that hasn't been encountered before. One begins to ask the questions of why are people reacting this way? What exactly are they reacting to? What are the causes? Is it the fault of designers and scientists for 'deliberately' making products and systems difficult to use? While all these disparate elements play a part in constructing the technophobic outlook, there is one aspect that tends to be overlooked.

Of most importance is the question of *When* is this reaction to the objects of technological society occurring? The answer is now. This allows for the exploration of issues that effectively help people to recognise their potential and advantages over machines. The most critical aspect of understanding the reasons for the existence of technophobia now, has been mentioned as the problem of change, which Toffler identified as transience.

Change and Technophobia :

> Change is the process by which the future invades our lives, and it is important to look at it closely, not merely from the grand perspectives of history, but also from the vantage point of living, breathing, individuals who experience it.
> (Toffler, 1960, p. 136).

The concept of the 800th lifetime as well as the third wave of civilisation has already been discussed, on a conceptual and theoretical level. The implications of rapid change for people's coping strategies are many and complex. Out of this area however, emerges the key factor in generating technophobia - change. As a race we are continually evolving, although emphasis seems to have shifted from the Darwinian model of changes in physical characteristics to evolution of the intellect.

Again, this can be taken as a product of the rapid changes happening around us. The emergence of virtual reality, and the limitless expansion of cyber space seems to point the way to a new frontier where our corporeal form will be rendered obsolete. The next step in our evolution will be the most intriguing, or indeed the most threatening to life as we know it. That will be our decision which will be one that decides who controls who, in the

man versus technology debate.

It's (His / Hers / Its / Their) fault :

One thing that people have not grown tired of is the scape goat. People always have to blame someone or something for whatever is going wrong. One should at this point decide who to blame for technophobia. It is easy to lay it on the 'powers that be'; the designer, technology, the church, Bill Gates, etc. But this will turn out to be a fruitless excursion. But is it possible for humans to live in harmony with technology?

> Yes, it is. Mechanical devices in themselves are not the problem. It is us humans, with our fallible judgment, who determine whether technology enhances our lives or detracts from it. Technology misuse is a personal recovery issue that will always be with us. It is incumbent upon us all to find sane ways of living in an increasingly complex world.
>
> (Driggs, LICSW)

It has emerged that we must find a way of dealing more effectively with technology, and more attention must be paid to the reason why people are technophobic. At this point there are two ingredients necessary to provide the topping on the technophobia cake. Our primary ingredient is rapid change. Next, one should add some people and a generous dollop of paranoia about control. Voila! Instant explanation? This maybe so, but to further clarify the issue we must look at how the meaning of the word itself is used to explain technophobia.

Technophobia as a Word :

When a name is given to something, its function more often than not serves as a description of what it is. Technophobia does not appear in the dictionary as of yet, but it is obviously a simple combination of two terms, 'techno', being an abbreviation of technology, and 'phobia'. According to Chambers Harrap dictionary, phobia can be explained as a fear, dislike, or hatred; e*sp. without reason* . And 'techno', is a short version of technology, which is defined as:

1. (the study of) science applied to *practical purposes* .
2. the *technical achievement* of a particular *civilisation* .

The italicised words from the definitions are interesting as it shows a

peculiar result for the literal definition of technophobia. If one is to go with the literal meaning, one is presented with a bleak definition of the technophobe as 'one who hates and fears practical science and the technical achievements of their civilisation'! One should also note that this is *'especially without reason'!*

In Defence of the Technophobe :

The literal explanation is bordering on religious fundamentalism in its disregard for the causes of technophobia. It is the classic use of the 'scape goat' syndrome. It is also a definition that is wholly ridiculous and contradictory in itself. If one is to apply the analogy of the wheel again, as one of the most critical scientific developments in human history; How can a person who is technophobic who uses the wheel, in their bicycle or car to travel around, be opposed to the 'technical achievements of their civilisation'?

The answer to the problems of technophobia therefore lie elsewhere. The problem is with association and familiarity. The problem is with the time required to build up these relationships. The problem is with change. Technophobia as a term is therefore a word that attempts to describe a problem that is as much psychological as it is ideological.

> When I say that technophobia is ideological, I mean that the type of behaviour usually identified as technophobic is only a symptom of of a fairly wild but somewhat identifiable pattern of ideas from which an individual operates: a complicated web of values and experiences... it is nearly impossible to ever step outside of one's own ideology even though it is the creation of interaction with others..I mean to focus on the ways in which technophobia is socially constructed...because it so often seems to be a function of cultural position: those most disempowered by technology seem to be the ones most afraid of things like computers.
>
> (Taylor, cccc95, 1995).

From this it can be seen that the question of power is an integral part in understanding the issue of technophobia. More important is the question of who wields the power? Why are technophobic persons unsettled by the very concept of a box that appears more intelligent than them, even though it is known that the human brain is infinitely more superior in function (at present) than a computer. Is it something to do with the physical form of computers?

The Box :

The box has been the standard for the majority of electronic products designed in this century. Of course it has been altered and shaped and made more aesthetically pleasing to the senses by changes in materials, textures, colour, etc. But the basic form of any electronic product has been of an electronic interior encased in a hard plastic shell. The shell itself has changed to accommodate different features, users, etc. In short the products are being 'humanised' in that they are becoming 'soft edge' technology, as opposed to 'hard'.

The success of Biodesign, (fig : 6) has reawakened the curve and flowing almost organic forms that are being employed by designers today. This shows the efforts being made to make products more natural in aesthetic.

The natural aesthetic of the curve has been pushed for several years, most notably by car designers. Other designers such as the Alessi group have become hugely successful by designing everyday objects in an extraordinary way. Alessi have turned simple kitchen utensils and containers into fun objects that seem to possess a character all of their own. Another good example of this naturalisation of form can be seen in the forms used in stereo CD players and Hi-Fi equipment in the last decade. Very few designers could resist 'the battle of the bulge', as could be seen in the form of everything from toasters to computers. The aesthetic of such attempts are in question today, as the focus shifts to modern linear forms that are clean and pure in aesthetic.

The recent highly successful Bang and Olufsen CD player, (fig : 7), is an example of the new modern minimal aesthetic. Perhaps designers are starting to question why everything has to be bulbous and organic in appearance so as to be perceived as being 'modern' or 'futuristic'. The success and failures of the various modern styles used in products are not as important as what this style says about what designers are trying to achieve. The real reasoning behind such forms has to be that these were the first steps taken to make products visually more appealing to consumers. People would therefore be more sympathetic to accepting products such as video players and computers as friendly little boxes designed to make their lives easier. So why has this not been successful for the technophobic user?

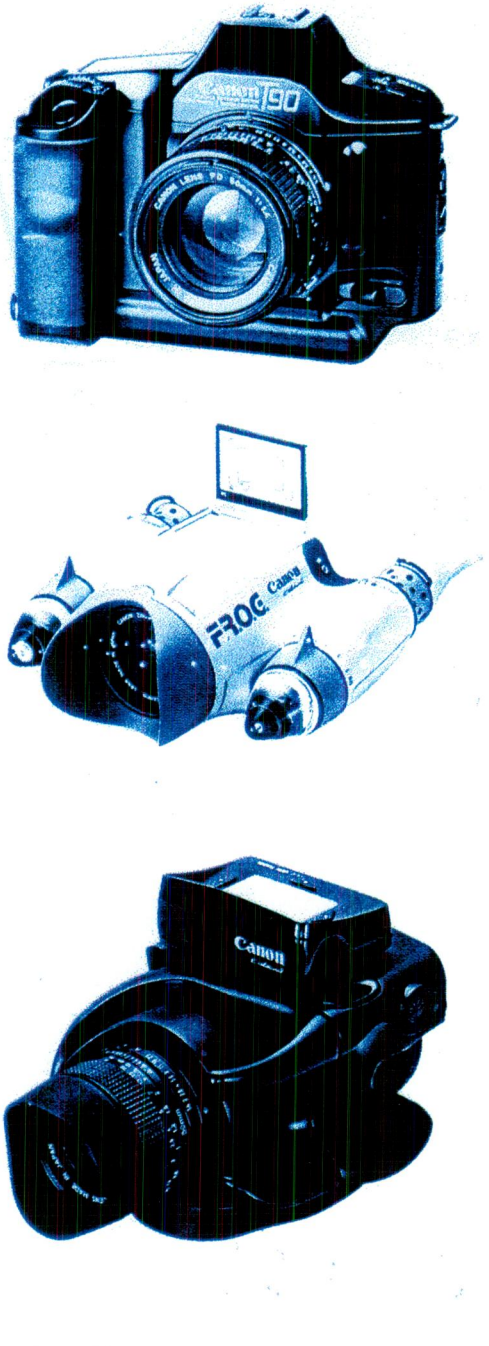

FIG 6 : Examples of Biodesign - Cameras

FIG 7 : Bang and Olufsen CD player

Enhancing Phobia through form :

Maybe the natural aesthetic doesn't work in the way it was intended to. Unlike Biodesign, which derives its forms from scientific analysis of the human anatomy, other products that do not interface directly with the body abused the organic aesthetic purely as a means to sell an ideal to the consumer. People may have gotten the wrong impression, that if a microwave was bubbly and curved, that it somehow was better designed. And what of the technophobic consumer? What if this natural aesthetic has succeeded in achieving nothing more than *enhancing* whatever fear they have of technology? Suddenly the washing machine has become really threatening, and it looks like it was grown, rather than built. The elimination of the natural aesthetic is even more threatening to the technophobe. By making a machine look like a machine it becomes even more alien. This reflects on the earlier example of how when the first horseless carriages were put into use, that the reaction of people to the grotesque presence of the machine as part of its function was well grounded.

What is meant by this is, that even in the term itself, i.e.,'horseless carriage'. people identified not with what was technologically gained, (an engine) but with what was naturally absent, (the horse). The natural part of transportation was literally amputated. The flesh was weak and therefore expendable. The engine was strong and superior. A process of 'unnatural' selection occurred where nature (God) was made redundant, and technology (man) became superior.

Evolution of the Machine :

What started then has now turned full circle. The presence of the machine while once exalted in the steam age has begun to evolve and adapt to human needs. On one hand miniaturisation has allowed humans to develop technology to service their needs and increase the value of life. The technophobic response may be that technology is a new species that is adapting itself in order to assume the position of man. The emergence of artificial intelligence and nanotechnology in the millennium to come will prove that technology will have the capability to disguise itself on the molecular level. It will enter our cells and like a cancer will infect and grow until we are consumed into the technological hive mind. This is the

(hypothetical) end projection of the natural evolution of artificial prostheses being incorporated into the body.

Future Cyborgs :

A recent 'Fear of the Future' survey carried out by Focus magazine, asked people what they thought society would be like in the year 2020. Of those questioned on the possibility of their having artificial body parts, (fig : 8), at least 53% believed that that by 2020 they would have one artificial body part. 55% believed that they would have more than three, (November, 1996, pp. 50-51). These figures convey the willingness of over half the UK population to take the first steps in abandoning their primitive flesh in favour of the new technological deity. In the present times people may regard an argument such as this as sheer lunacy, or fictional flights of fantasy, but why else would technology assume the forms of nature if only to lull humanity into a false sense of security?

Once again the issue of control has emerged as the deciding factor in understanding the technophobic response to technology. If humanity is to prevail over technology, then we have to understand that we are responsible for its existence and that it is merely a reflection of us - an extension of our abilities. However, most people are not sure of our ability to coexist and function in our capacity as humans with technology. The roots of fear in any society can be understood by looking at its folklore, its myths.

> The difference between humans and other animals is that we spend so much time compelling inanimate objects to obey us. Other animals build homes and a few useful artifacts such as spider webs, and accept the rest of the world as it is. But our brains torment us into perpetual tampering with the vital elements of the Cosmos, and into trying to understand why they obey us.
>
> (Page, 1985, p. 319)

In the past no sane individual would have wanted to venture forth on the unexplored oceans of the world as this resulted in disaster. Firstly it was general knowledge that leviathan sea monsters abounded, and there was the added danger of actually falling off the edge of the then flat world.

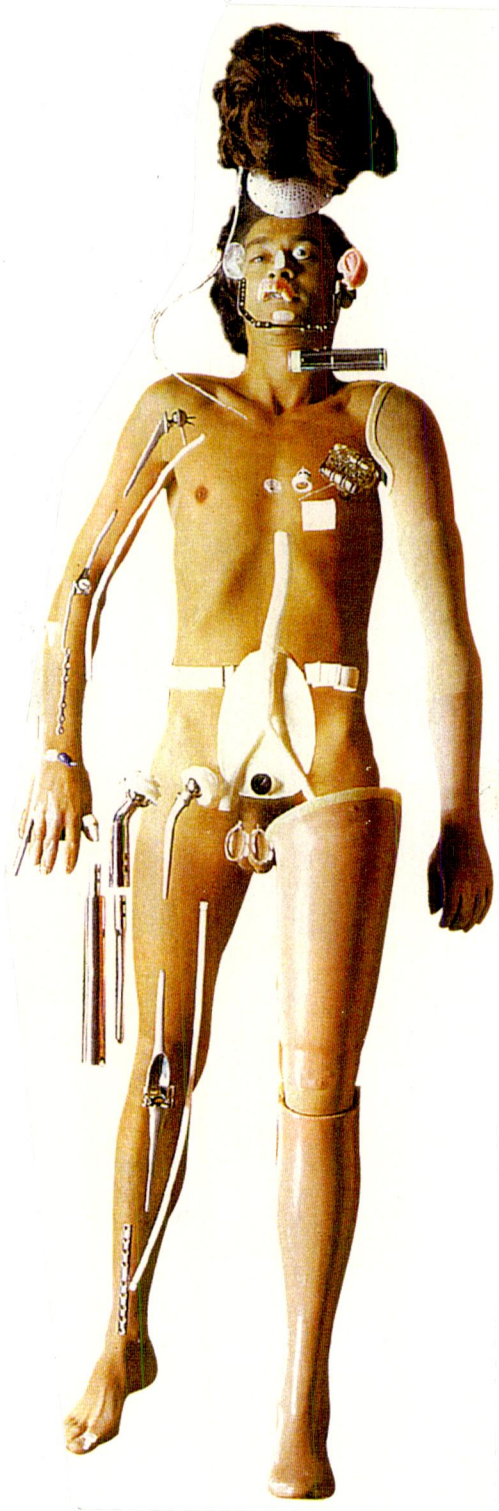

FIG 8 : Artificial Body Parts

Today such ideas are laughed at by children who know better. This fear which was taken as gospel in its truth, tells the modern day person a lot about the function of myths. People are afraid of change, of the shock of the new. Knowledge is power, as we know that that the earth is round, and we know that gravity holds us in place. We know all this because we have used technology to prove it. But we are still afraid of that which we cannot quantify or understand. We fear the future and what it holds for us. This in itself is ridiculous as we shape and are responsible for our own future. However, by looking at how modern myths are used to express those fears, we can better understand and shape our own destiny.

CHAPTER 3 : THE CYBORG MYTH AND TECHNOPHOBIA :

> We are the Borg. Lower your shields and prepare to be boarded. We will add your biological and technological distinctiveness to our own. Your culture will adapt to serve us. Resistance is futile.
> (Star Trek: First Contact, Paramount Pictures, 1996.)

Futility is an extremely difficult concept for humans to accept. Despite the worst ravages, humanity has always sought to transcend its particular state, no matter how hopeless the situation. People are quick to defend themselves and what they believe in, but this defence is usually against an identifiable institution or group. It is almost impossible to fight off or even resist something that is everywhere, yet at the same time is intangible. We are not very good at fighting concepts, as we need something physical to focus on. How can one fight an idea? It is even harder to resist something that is an integral part of our existence. So how do we stave off our fear?

We label it and clothe it in a tangible form. Our way of working out fears and hopes in reality is similar to the way we dream. If we do not dream when we sleep, we do not sleep well. Similarly, if we do not entertain ourselves with stories and if we do not create things, we do not live well. 'All work and no play', adds up to a mundane and uninteresting existence. One of the reasons we have myths is the need to explain the world around us through the use of stories and things we can relate to in order to quantify what would otherwise be beyond our understanding. They also serve as a means to explore what we fear about the world around us and what we fear about ourselves.

> Regardless of whether or not myths are grounded closely in the actual lived experiences of the members of a particular culture, they are important because they reflect the values, beliefs, anxieties, and epistemologies of a particular group. What makes myths so significant is not their degree of plausibility, but the degree to which people identify with the myth and act out of response to it.
> (Driggs,LICSW,1995.)

The Cyborg :

If one therefore examines the myths that surround modern culture, one can gain an insight into the fears and hopes of modern civilisation. The Cyborg is the most significant mythical creature to emerge in this century. It is the

descendant of artificial intelligence and the robot. However, it is unlike the robot in several ways. A cyborg can be defined in the loosest terms, as an entity that is part organic and part inorganic. It is significant to the technophobe in that its appearance is of a being that is part human, part machine. The international recognition of the Cyborg, in whatever context it is seen, offers one an invaluable insight into the fears of humanity, concerning our future with technology on this planet. More importantly, they provide a strong visual commentary on the underlying concerns of the technophobe, and their future with technology.

Options for the (possible) future :

The Cyborg is most frequently encountered in film, as it is a media that allows it to take on the full spectrum of existence. On the silver screen, objects and mythical beings can be made to appear real in every way. It is also the media that is used most often to express the fears we humans have about technology, by offering us a means to explore various choices for these alternate realities yet to come. For the most part however, there appears one of two choices for humans to take. These two choices rely heavily on the assumed role that technology will have. It can either be used by us to serve our needs, or it can backfire on us and control us. Both decisions are explored in various films and these decisions offer the audience an opportunity to view their reactions to these choices, and the roles of technology that they fear. Most important however, is that these myths provide the technophobic audience with an easily accessible way to explore and examine the issues of control, either directly through analysis, or indirectly by allowing the themes to play out in their subconscious.

Perceived Role of the Cyborg :

The first role of technology as portrayed by the Cyborg feeds off our primal instinct, reaction or fear. The cyborg is here to eradicate us, as can be seen in James Cameron's Terminator, (1984). In this film the viewer is presented with the story of a soldier who is sent back in time from an apocalyptic future where machines have evolved and replaced humans.

Machines have achieved this as a result of the man-made computer defence system *Skynet* evolving to sentience. Using its new logic, it has

decided to assume its position as the dominant species on the planet and has developed cyborg *Terminators* to eradicate humans. One of these, known as the *T-800* cyborg, is sent back in time to prevent the birth of the future leader of the human resistance against *Skynet*.

What is significant about the *T-800* cyborg is the fact that it is capable of infiltrating our culture, by using its deceptive appearance. It is a machine clothed in organic matter. Its human flesh is a clever disguise that conceals the cyborg's 'otherness' from us. We are deceived by the appearance of soft flesh, which is organic and natural. The viewer knows that the cyborg is a machine underneath its flesh, but it is the hidden threat of the machine revealing itself that is so frightening. When the *T-800* reveals its true form after it becomes damaged by gunfire, the viewer is presented with the cyborg's real self and alien nature when it tears off its flesh as it has no functional or emotional value to the cyborg.

This is what makes the viewer realise that the machine is a threat to human value systems and has to be stopped. The portrayal of technology as hard edged unstoppable mechanical entity in human form, encapsulates our worst fears about our future with technology. We fear merging with technology into a new synthetic 'unnatural' life form. The *T-800* therefore serves as a nightmare vision of the threat of a possible future where we have allowed technology to overpower us, and evolve beyond our comprehension.

Cyborg as Remote Control Messiah :

The second reaction to the role of the cyborg is where it acts as saviour to the human. In this context there is still the element of 'otherness', or the threat of difference as with the first reaction. But, the cyborg fulfils a role that is for the good of other people. An example of this kind can be seen in Paul Verhoeven's Robocop. Here, the cyborg is presented as hero and its actions are humanised. A Detroit police officer is killed on duty, and recycled into the experimental law enforcement cyborg *Robocop*. The cyborg therefore acts as an aid to mankind, and is under the direct control of humans. This is the human face to the cyborg myth that we can accept, as the viewer is assured that its actions are just and for the benefit of humans. The cyborg acts as we want it to, and it says what we like to hear. This is

because we control it and have programmed it to tailor our needs. The issue of control is explored in the film, as the humans who control Robocop are not entirely motivated by good intentions. This in itself adds credence to the presence of the humanised cyborg as benefactor and protector.

There is another cyborg in *Robocop* named *ED-209* , whose actions are wholly psychotic. It is very much a machine, in the sense that it bears a resemblance to a mechanical beast, and has gun cannons in place of hands, unlike the *Robocop* cyborg which has a human face and a cybernetic humanoid body. *Robocop* also has to hold its gun which makes it more vulnerable than the *ED-209* , and makes it appear to be more 'human' and therefore more natural. The viewer can therefore relate more to the natural form of the *Robocop* cyborg, and recognises how important human control over technology is.

The Duality of Control :

A similar theme is used in Terminator 2: Judgment Day, (fig : 9), where we once again encounter the*T-800* . This time however its intentions are benevolent, as it has been reprogrammed by humans in the future to go back in time and protect *Sarah Connor* and her young son, the future leader of the human resistance, from the new threat of the*T-1000* cyborg. Again the same scenario occurs with our perception of the cyborg as with Robocop and The Terminator. In Terminator 2 however we are presented with the two faces of the cyborg menace.

Perception and the Cyborg :

Our perception of the *T-800* has been altered because we know that it has returned to safeguard humanity. We are still aware that it is a machine devoid of emotion or sentience and that it acts only out of response to its programming; Regardless of its external appearance of being human. This deception is explored in the film in an almost whimsical manner.

The*T-800* nearly succeeded in its mission to terminate *Sarah Connor* in The Terminator. In Terminator 2 we see the same reprogrammed cyborg playing with her son. She does not accept the cyborg at first, and is horrified to watch its mindless attempt at forming friendship with her son.

FIG 9 : T-800 Cyborg

It is only accepted by her after they encounter the new threat of the*T-1000* . This cyborg is unlike the former in that it is composed of a living 'poly-alloy', a techno organic material that is capable of assuming the form of any organic creature it comes into contact with. This adds a new level of fear as it is not recognisable as a machine. It can take on the form of any person it encounters by calculating and generating the appropriate three dimensional characteristics.

Appearance can be Deceptive :

The hidden threat of what the Cyborg represents as a modern day mythological entity is the most important aspect of its existence. The creation of the Cyborg on cinema screens allows us to explore our relationship with technology that will eventually allow us to make our dreams a reality. They serve as a way for us to examine and look at possible systems of co-existence, and in the case of films such as Terminator provide us with a means of hypothesising about how far we should allow artificial intelligence to evolve.

The most fundamental question that should be posed is how technology should appear physically. The answer to this is presented to us without our having asked. In this way the myth makers can operate on the visceral response evoked by the creatures they display to us. This allows for consideration of issues such as; Should we hide technology? Should we conceal the machine in flesh / plastic / the body? Should we expose the machine? Should we embrace the machine completely on the molecular level? Are we destined to become like the *T-1000* ? Should humanity turn over its form in favour of function, we would surely evolve into a new life form. Humanity may also decide to retain its human flesh as mere clothing for its internal skeleton of composite materials and machinery.

The Cyborg, Technophobe, Choice and Control :

Either choice is hardly one that is encouraging for the technophobe. As human beings, it is partly our organic and biological form that defines us, and to have this compromised we become less than human. This is the real fear that technophobic people have of the future. If we become engrossed with technology and eventually merge with it on a physical level, we will be

rejecting our humanity. We will submit our control over it to become passive ingredients in a technological assimilation of nature. To put it more succinctly, the choice is ours, but very soon it may no longer be.

CHAPTER 4: THE THREAT OF THE TECHNOLOGICAL BODY :

> The monster opens the curtains of Victor Frankenstein's bed. Arnold Schwarzenegger tears back the skin of his forearm to display a gleaming skeleton of chrome and steel. Tetsuo's skin bubbles as wire and cable burst to the surface. These science fiction fever dreams stem from our deepest concerns about science, technology and society. With advances in medicine, robotics and AI, they're moving inexorably closer to reality. When technology works on the body, our horror always mingles with intense fascination. (Kunzru, 1996, p. 84).

The technophobe has much to fear in modern mythology. The body is under constant attack from technology, as is depicted in the form of cyborgs. This generates feelings of anxiety in the technophobe, and enhances fear of interaction with technology. In films where we see the cyborg as machine, the effect is more visceral, and potentially more damaging to people's preconception of what technology should be. In reality, the effect of technology getting under our skin, is a lot more subtle, and in some ways this is altogether more sinister. This becomes even more apparent when one considers what Donna Haraway, a prominent cyber feminist has to say on the issue.

> Being a cyborg isn't about how many bits of silicon you have under your skin, or how many prosthetics your body contains.
> It's about trainers. (Kunzru, 1996, p. 86).

Departing 'Flesh - Space' :

Canadian William Gibson, the author of Neuromancer, which is generally understood to be *the Cyber-punk* bible, was inspired by the intensity of the existing human / machine relationship to imagine a future where people positively look forward to becoming cyborgs.

> Gibson's neon-lit future world is a place where you're only as good as your last cybernetic implant. Computerised prostheses provide you with strength and speed, artificial eyes which see far beyond the visible spectrum, and neural implants that enable you to mind-link directly with computer networks and instantly download data into your brain. Gibson's heroes aspire ultimately to merge with their computers and to leave 'flesh-space' behind.....
> 'In my books, people really hate being reminded that they have bodies', says Gibson. 'They find it slow and tedious'.
> (Blair, January 1997, p. 56)

The idea of leaving 'flesh-space' behind to embrace life on the virtual plane is one that is very threatening to the technophobe. Already in today's world it is becoming possible to operate on a virtual level. In this context the role of the body becomes questionable.

Virtual Life :

One can work from home, if one has the suitable equipment. Assume that a person is a graphic designer for a company that is in another country. One can produce a piece of work on their computer, and as it is merely information it can be sent through the ISDN (Integrated Services Digital Network) phone line to the company. The person can be paid by the company simply crediting the appropriate account. Contact can be maintained via E-mail, telephone conversations, and very soon by video phone. In this sense, the person is operating on a virtual level. The person has no physical contact with the company, does not have a work place, and does not have to travel. If society decides to evolve in this direction, and there is every indication that it will, then the question remains; Do we need our bodies? Should we become cyborgs and plug into the wall whenever we need to make contact with anyone? If people start to question their role as mere operators of the tools at their disposal, they may find that the only way to maintain control is to merge with them. By doing this, they will lose their humanity.

Body as Machine :

> In 1543 Vesalius created modern anatomy. Before Vesalius the non-living body was a dead body. Dead bodies are buried with rituals of remembrance. After Vesalius the dead body became a corpse. Corpses are designed to be opened for inspection.
> (Romanyshyn, p. 16).

Since Vesalius' startling discovery, the way in which the body has been treated has changed dramatically. The body is now treated in respect of its technical functions. This new attitude towards the body forms the basis for the existence of the cyborg. Italian physician Luigi Baglivi (1668-1707) was the first to conclude that the human body is a collection of mechanical devices:

> The lungs are bellows, the teeth are scissors, the bones act as levers,

> rods plates and joints, while our cells are miniature fuel burning engines. (Blair, December 1996, p. 57).

Blair goes on to talk about how correct Baglivi was in his observations. He says how discoveries in biochemistry and engineering have led to the new science of biomemetics, which studies how natural materials, such as bone can be used in other contexts. What is of interest about this approach to the body, is the way that the human relationship with the body has changed.

Altering the Body :

As our knowledge about biology and science expands, the way in which we regard ourselves becomes drastically altered as it becomes possible to augment, develop and enhance our flesh into new forms as if it were mere clay in the artist's hands. In short we become God. This becomes more apparent when geneticists start talking about manipulating our DNA to change our physical characteristics, our sex, our skin colouring. The dilemma of geneticists is, if they were allowed to develop the technology that exists, albeit in an infant state, where would it all stop? In 1994 when cinemas were full to capacity with people waiting to see ' Jurrassic Park ', the majority of those watching the fictional story on screen did not realise how feasibly real it is. If live or preserved dinosaur DNA was to be obtained or discovered it would be quite possible to clone a sixty million year old extinct life-form, and bring it to life. The moral implications of such an action are profound and far reaching. But of most importance is how this realisation affects the technophobe. When the technophobe stops to consider this information it becomes horrifyingly real as it threatens the most sacrosanct of temples - the human body. It also effectively shatters our concept of existence in linear time, as it becomes possible to exist at whatever point in time we desire. This could be achieved by storing our DNA, as a form of insurance, and having our selves cloned. In effect, we would become immortal if our duplicate could be cloned into existence if we happen to die.

Abandoning the body :

Science has allowed the development of objects and things that can effectively replace or complement the various functions of the body. Artificial limbs and prostheses, donor organs and pacemakers are a fact of life. Synthetic systems can increase the longevity of human existence; But at

what cost? Are we on the way to becoming cyborgs? Another aspect of replacing human body parts to sustain life, is the provision of life sustaining artificial environments. This has stemmed from the design and development of environment suits such as those developed by NASA for space exploration in the 1960s, (fig : 10). The idea of supplementing the natural environment of a human being with an artificial one that sustains life, have been in continuous development since the invention of diving suits. With the advent of Virtual Reality, and 'cyber-space', it has become necessary to provide new environment suits that allow the user to exist in and manipulate their virtual surroundings, (fig : 11). Cyber life however, does not require the biological necessities of organic life such as eating, sleep, etc. In this new world the body has embraced the machine on a psychic level. Corporeal form is therefore rendered obsolete.

> All the natural activities - of hearing, breathing, speaking, and making gestures are replaced by technical functions. The body has no contact with the surrounding atmosphere; it is protected by impenetrable suits...an almost inhuman abstraction, further removed from nature than at any other point in history.
>
> (Weintinck, 1971, p. 157)

If the body is treated in this way, its meaning as a housing for the human soul is lost as it becomes defined by its activities. In short it becomes a mechanical shell. It serves as a machine, programmed to carry out various tasks, with no reason to think or question its *purpose* .

Embracing the Machine :

> Activity has become function: inspiration and expiration as respiration; communion as ingestion, digestion and elimination. The body is a technical matter, a problem to be solved...An invented body! A created body!... A manufactured body! And above all else a body without context, isolated from its surrounding atmosphere, a visible body, a spectacle.....all bodily activities have been rendered visible as technical functions... the astronautic body is more a new twist in the spiral of evolution. It is the body turned inside out, redressed in terms of terms of its technical functions on *the way to being discarded* . It is a first step, perhaps, on a path toward' exosomatic evolution ', a temporary bridge which initially joins us and machine, and wires us to (as) a computer.
>
> (Romanyshyn, p. 18).

By connecting our bodies to computer networks and machines, we would gain the advantage of being able to immediately access information of any

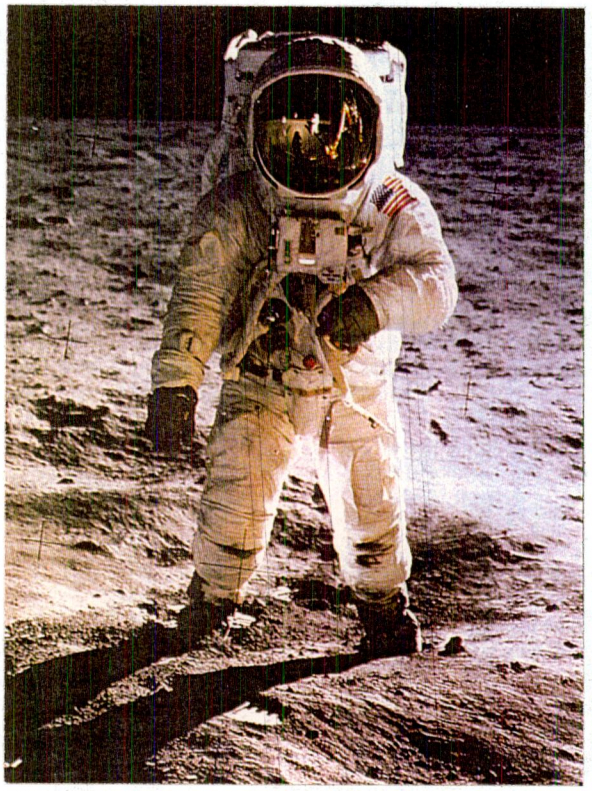

FIG 10 : NASA Spacesuit

FIG 11 : VR Suit

kind. This would seem to offer a myriad of possibilities and advantages to the human race. Australian Performance artist Stelarc, (fig : 12), who has been attempting to raise cyber consciousness for the past decade is a self professed champion of the new world technological order; He is living his future now. Over the past two decades he has continually upgraded his body by the addition of a third cybernetic arm; medical devices which display his vital signs and show his brain wave activity, as well as muscle impulses, have been added to his body. As part of his performance he has a muscle stimulator system that effectively allows his audience to take over his body. This is achieved by overruling his brain with electrical signals generated by remote computers. Stelarc's philosophy can be summed up in the following statement made by him, about what issues his work is trying to raise:

> It's time to question whether a bipedal, breathing body with binocular vision and a 1,400 cc brain is an adequate human form.
>
> (Leonardo, 1991, p. 591).

Romanyshyn would seem to offer the most plausible explanation as to what exactly the type of technological evolution that Stelarc proposes will achieve, or rather what Stelarc's attempts say about technological society today. He basically outlines what our attempts to become more embroiled with technology say about us; What is it that we are trying to do?

> The technological world is in a very radical way a cultural dream of reincarnation. The body is central in technology and the shared cultural dream which guides our creation of a technological world is in many respects a record of our continuing debate with the fact of our incarnation and the limits it imposes, not the least of which, of course, is the fact of death.....in the midst of our daily living, we find evidence of the omnipresence of the body in technological culture. From sports to spas, from advertising to medicine, our age seems obsessed with the flesh. It might even be said that the technological world is the discovery of the body, and perhaps even more significantly, a playing with the possibilities of its transformations. Moreover, that such play is not without anxiety is attested to by recent films like *The Thing*, *Alien*, and *The Fly*. Films are cultural daydreams and in each of these films our culture is inventing and dreaming new ways of remaking the body and expressing its underlining concerns about this power of creation.
>
> (Romanyshyn, p. 11).

The Technological Utopia / Dystopia of Control :

From modern myths it can be seen that we are obsessed with the interaction of biology and technology, the natural and the unnatural, the organic and the inorganic. Are these merely the teething pains of something that we are

FIG 12 : Performance artist STELARC

trying to justify in our subconscious, before we can tackle the issues head on? If this is so, then what are the implications for the technophobe? More importantly is what aspect of the cyborg myth that the technophobe identifies with. This has to be the concept of control over technology. This has been explored extensively in Star Trek: The Next Generation, (fig : 13).

The future of humanity portrayed in Star trek is one where humans live in harmony with technology and other alien races. Here in this bright clean future where political correctness and equality reign supreme, we are presented with the ultimate technological utopia. The only concern of people in Star Trek is to better themselves as individuals, while respecting the needs of others. Technology is everywhere on Star Trek, yet at the same time is invisible. Humans have complete control over the technology at their disposal, and it is used as a mere tool to aid them. It is treated in every respect as something that is there to develop and enhance the human experience, not to detract from it. The potential of the human over technology is recognised and reiterated time after time.

Control Freaks :

Into this utopian view however, emerges a blight on everything the Star Trek universe stands for. They are known as the *Borg* , (fig : 14). They represent the dark side of technology and the future. They are an advanced race of beings who have merged with their technology to become cyborgs. They are a threat to the spirit of individualism, that is exalted in Star Trek. The *Borg* consist of a hive mind referred to as 'the collective'. In essence, they think and act as one. They are unlike previous alien threats in Star Trek, in that they do not wish to conquer the universe, they just want to assimilate it.

> We seek only to improve the quality of life for all species in the Galaxy. We seek a state of perfection.
> (Star Trek : First Contact, 1996).

This flagrant disregard for anything other than its desires, defines the *Borg* collective. The *Borg* collective represents the fears we have of being under the control of technology. It is our worst fear encapsulated into one species. This makes it easy for the audience to be both captivated and repulsed by them all at once. In short, the *Borg* become convenient to hate. Actor James Cromwell has this to say about the *Borg* :

> The Borg are the ultimate in the darkness that the universe will

FIG 13 : Star Trek : The Next Generation

FIG 14 : The Borg

> create for us: a half organic, half machine, totally other inimical society bent on the assimilation of all other life forms for no other purpose but to have it all, totally consumed by selfishness and suspicion and power. Sounds a lot like us actually.
> (Anders, p. 89).

In the true spirit of Star Trek, however, it is biased to hate another species which is seen as xenophobic and unethical. Fear of the *Borg* is therefore used to rationalise resistance to an idea. The ideology of the *Borg* collective is entirely alien, and disregards the needs of the individual in favour of the necessities of the collective. The superiority of the many over the few is stressed time and again in First Contact by the *Borg Queen* , (fig : 15). Her disregard for the lesser human species is stressed when she says;

> We used to be just like you.
> Flawed. Weak. Organic.

The Borg represent the ultimate projection of the superiority of the machine and technology over the human body. However, this comes with a price, and that price is the loss of individuality and free will, which are fundamental necessities *to life as we know it* . This is what the technophobic viewer identifies with; The abuse and overuse of technology, results in the human relinquishing control of their being.

The Technophobic Reaction :

So what is the technophobic reaction to the myth of the cyborg? Do the ideas contained in films actually permeate society? Judging from the content of film review columns in newspapers and magazines it would appear to be so. Analogies are drawn from films that seem to form a discussion of the ideas contained in films, rather than the actual quality of the film itself. The idea of films being concept driven is evident as plots seem to be formulated on the basis of whatever happens to be in vogue in the media world at present. The influence of popular culture on the genre of film that is going to succeed at the box office can be attested to by the effects the success of recent popular television programmes has had. The most obvious example at present would be The X-Files, which in a short space of time has evolved from cult television viewing to an international syndication, nearly rivalling the other visual lexicon of popular culture, Star Trek. Popular media of the late 1990's has already spawned the most financially successful

FIG 15 : The Borg Queen

film produced in this decade, Independence Day, (fig : 16).

This observation is relevant when it is observed that the new interest in science fiction seems to show no sign of abating, with more films on the way. The popular climate is so obsessed with science fiction that film companies can now release classic science fiction films. The Star Wars trilogy, now 20 years old, has been digitally enhanced and remastered, and has already smashed box office records in the U.S., (fig : 17).

If the themes and ideas contained in these films did not strike a chord with millions of people the world over, then they would not be successful. Ironically for the technophobe, these films would not exist without the benefits of modern computing technology. This however, is not as important as the degree to which the themes contained in these films are identified with by people.

Is there a connection? :

There must be a connection between technophobia and science fiction, however how apparent this is is not quantifiable. This may be due to the fact that imagery in film is used to convey ideas and themes on the visceral level, and not so much on the intellectual level. What is meant by this is that synthesis of imagery used in film is as direct as it is indirect. The reaction to this relies on the individual. One may come away from viewing a film like Independence Day thinking that it was entertaining, or that the special effects were exceptional. One is more likely to comment on the lack of a believable storyline. However it is only afterwards through critical analysis that themes such as Xenophobia, the promotion of America as the saviours of mankind, etc., are looked at in detail by critics and academics.

The concept behind the plot is basically how would humanity react if an aggressive alien race arrived on Earth. This simple idea plays on the human fear of 'otherness', and provides a scenario for us to explore our hypothetical reaction. With this in mind, one can assume that popular media does provide a forum for expression and absorption of ideas. How successful this synthesis is depends on the particular individual.

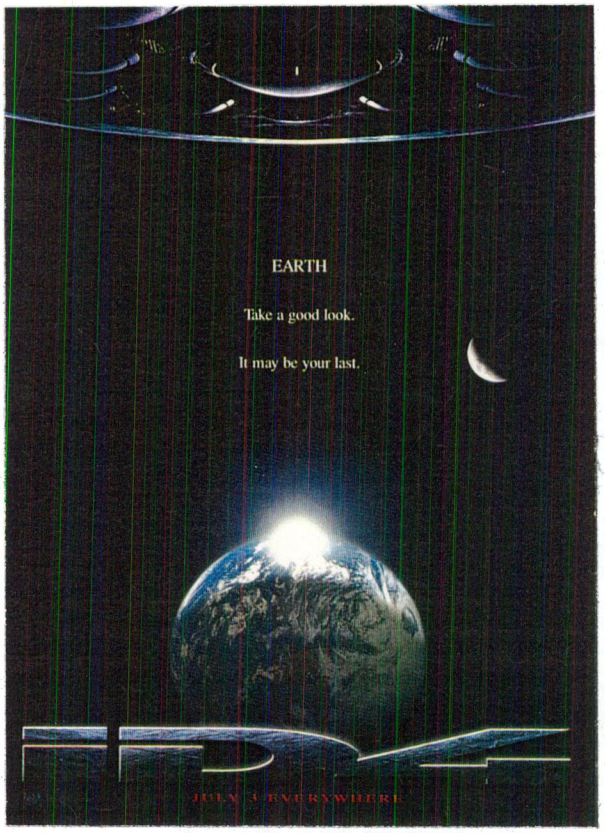

FIG 16 : ID4 : Independence Day

FIG 17 : Star Wars

Technology saves the day :

The importance of technology in Independence Day should not go unnoticed to the technophobic viewer. A pivotal role is played by computers in the film. This is important and of interest to how technology is portrayed in film. On one hand we see the computer guided ground to air nuclear missiles of the military, which are ineffective against the alien ships. These are the impersonal computers of the military that ordinary people have no control over. The other computer, the most important one featured in the film is an *Apple Macintosh Powerbook*.

> Apple's affiliation with 20th Century Fox on Independence Day demonstrates that Apple is an action oriented company that continues to set new standards for innovation in technology and marketing. Apple's product placement team worked with 20th Century Fox ...to help establish the Apple Powerbook as the computer used by actor Jeff Goldblum's character to save the world. The compelling images and themes from the film are being used by Apple in support of a marketing campaign, summarised in the campaign tagline "The Power to Save the World".
>
> (Press Release, Apple, June 1996).

The *Macintosh Powerbook* is presented as the computer of the people. By being blatantly portrayed and marketed in this way, *Apple* hoped first of all to boost sales, and inspire consumer confidence in their products. A more important aspect is how this portrayal affects the technophobic perception of control of technology; And, how the perception of control contributes to the causes of technophobia.

CHAPTER 5 : CASE STUDY OF THE APPLE NEWTON :

> To discover either virtues or evils in aggregates of steel, plastic, transistors, integrated circuits, and chemicals seems just plain wrong, a way of mystifying human artifice and of avoiding the true sources, the human sources of freedom and oppression, justice and injustice. Blaming the hardware appears even more foolish than blaming the victims. (MacKenzie, Wajcman, 1985, p. 26).

When one considers how important the concept of having control over technology is to the technophobe, the success of the Apple Newton Message pad becomes apparent, (fig : 17). The Newton 130 personal digital assistant, or PDA as they have come to be known, has revolutionised the way in which we perceive technology. As a personal computing product it is not perfect, yet its consideration in its design for the human element, the man machine interface, far outweighs its technical shortcomings. The Newton presents the user with a natural way of interfacing and communicating with what is essentially a technological machine. By allowing the user to write onto its screen with its supplied pen, it turns the keyboard interface on its head, dismissing the machine in favour of what is natural to the human.

> The Newton provides a surprisingly familiar way of working that encapsulates all you do now in a simpler, more concise form. Instead of loading you with complex commands, Newton works the way you do. It even reads your handwriting. (Apple advertisement, 1996).

This is the most fundamentally important aspect of its design. The Newton's success as a product that seeks to overcome the problem of technophobia can be gauged by the degree to which it effectively transfers control over it to the user. This occurs seamlessly, automatically, instinctively, but most important is that this happens naturally. The first time user of a Newton does not require keyboard skills in order to interface with it. The user simply uses the pen to select functions by pointing at the displayed menu on screen. Each point of contact between the pen and screen results in the Newton generating a chirp like sound by way of response. This simple device is its way of acknowledging the user's contact with it. This has the effect of relieving any anxiety the user may have, as the user is ensured of the fact that they are in control. By accepting the users scrawl on its screen and converting this into text, the Newton is recognising that the human is more important than the machine, and also that people have hands first

FIG 18 : The Apple Newton Messagepad 130

and keyboards second. In this way the Newton is disregarding the cyborg myth by recognising that technology is only a tool used by humans in their day to day activities. It is saying that we just need to interface with the machine, we do not have to wire ourselves up to one. Just because technology allows us to do many things, it does not mean that we should be a slave to its shortcomings, its interface of static keyboard and screen that is fast becoming anachronistic and obsolete to our needs.

> Perhaps we need to get technology in perspective before it enslaves us, to see it not as the techno fanatics do as some kind of new religion - as implied by a recent IBM advertisement which showed a Buddhist monk kneeling in front of an altar on which was placed an IBM PC - but as a tool which empowers us and is controlled by us, not vice versa. (Foster, 1996, p.36).

Origin of the new control :

So where did this new idea about recognising the human element of control over technology as paramount to overcoming technophobia originate? The issue of who controls technology is the central reason as to why personal computing has become such a boom market in the last decade.

> The birth of the microcomputer was not simply a result of the miniaturisation of electronic components; It also marked a cultural revolution. (Noblet, 1993, p. 289).

But these attempts did not occur overnight, the evolution of the PC has taken years of development to attain the status it enjoys at present. This also could not have happened if a major shift in the ideology of people had not taken place. A major change in the perception of technology had to happen in order for the acceptance of computers at work and home to occur.

> Amongst such themes are control, energy, transport and information. Of these, the theme of control is perhaps of most pervasive significance. An important argument to be found perhaps most centrally in the 'Frankfurt School' of writers such as Marcuse and Habernas, is that Western science and technology form a project of control or domination over nature and over people. In the writings of the Frankfurt School this argument is pursued at a highly abstract level, but nevertheless it is of concrete significance. Indeed many of the readings in this book bear directly on ways in which the design of technology is about controlling people. (MacKenzie, Wajcman, 1985, p. 298).

The old Control :

Before the birth of Apple computers, the computer field was dominated by

IBM. This was during the *Cold War* era, where computers had more to do with *Big Brother* type control scenarios and suspicion, than with people.

> IBM had opted for the development of large systems intended to place centralised data banks at the disposal of corporate directors. In the military sphere - this was the era of the Cold War - centralised computer networks permitted the accumulation and manipulation of data about the private lives of millions of individuals in a completely undemocratic way. IBM's internal organisational structure acted as a kind of cultural block, slowing down the irreversible tendency for information to be easily accessible and open to manipulation by all.
> (Noblet, 1993, p. 289).

The Human response in corporate form :

Into this world of suspicion and control, emerged the Apple corporation. It was founded in March 1976 in Palo Alto, California, by two computer whiz kids, named Steve Wozniak and Steve Jobs. They introduced the Apple micro computer six months later, announcing that sales would reach 500 million within ten years. Such was its success that this was achieved within five years. (Noblet, 1993, p. 289). The reason for this new technological product succeeding as it did, is in part due to the reasons why it came into existence.

> The microcomputer was born of a movement launched in the early 1970's, at the University of California, Berkeley, by young American radicals whose aim wasn't technical innovation but the democratisation of information access. In 1972, the radical magazine People's Computer Company announced that computers were being used primarily to control individuals, and the article concluded: 'It's time to change this; we need a computer company for the people'.
> (Noblet, 1993, p.289)

These words seem to echo those found in the writings of Karl Marx, when he said in *The machine versus the worker* , that the instrument of labour strikes down the labourer, (MacKenzie, Wajcman, 1985, p. 79).

The emergence of Apple could not have happened at a more appropriate time. It grew from strength to strength, as people began to buy computers for personal use. Its respect for what people want from machines, and how they interact with them, is illustrated in the *Macintosh* mouse. Since 1985, all of Apple's computers have been known as *Macintoshes* . Its publicity focused on a slogan affirming the universal vocation of microcomputers.

> The democratic principle as applied to technology is:
> One person, one computer. (Noblet, 1993, p. 298).

The technophobic problem :

The technophobe was still a problem, in the eyes of computer designers, who would have to come up with a computer that could be sold to someone who hates them. How was this achieved? How does one market a computer to a technophobe? The answer is Apple Macintosh. Its design included as part of its hardware, a mouse, which is omnipresent in all computer operating systems today. By accounting for the human element in the man machine interface, it responded to the previously unexpressed needs of the consumer, to make computers easier to use.

> The Apple Macintosh mouse totally altered the relationship between man and machine, bringing it closer to an interactive model as opposed to the binary one that had previously held sway.
> (Noblet, 1993, p. 27).

By introducing the consumer, the human interface of the computer, as the most critical element in the design of what is still a machine, a shift in attitude towards computers has occurred. The computer is recognised as a tool that enables, and benefits the human experience. It is the responsibility of the designer to ensure that the user still retains total control over the technology at their disposal. The machine is not sentient. The human is fundamental to its operation, without whom the machine has no purpose. It then becomes vital that the design of the computer interface express the concerns of the human user, either through its form or ease of use.

> As the technology modern products contain becomes more anonymous and less understandable to the ordinary person, so it becomes less feasible that the form of those products should express their function. In any case, many people have little idea how their ordinary household products work. They may never have grasped fully how a television, a telephone or a camera works - what are their chances of understanding a videophone, a computer or a microwave? And anyway, how does a designer express the essence of the microchip? (Noblet, 1993, p. 27).

The interface is therefore paramount to the user needs. These needs are defined by physical and psychological constraints, in order to ensure the user of their control over the technology at their disposal.

> Where once companies sold products that were ends in themselves, now they sell systems, concepts, 'lifestyle choices'. Apple sells flexible working methods rather than computers. (Noblet, 1993, p. 27).

One such lifestyle choice, is presented in the form of the Apple Newton.

Apple Newton as a personal computing lifestyle :

'Go through life with less baggage', reads the blurb on an advertisement for the Newton messagepad 130. This simple statement encapsulates all that the Newton stands for. The advertisement encourages the user to engage in computing while on the move. People are not static entities, so why should their computers be?

> The Apple Newton messagepad 130 was designed to lighten your load by making it easier than ever to schedule work, take notes, send and receive e-mails and faxes - or hop on the Internet - from wherever you happen to be. Even in the dark, thanks to its back lit screen.... See how little you have to carry, to have it all.
>
> (Apple Advertisement, 1996).

What Apple have done by marketing such a lifestyle, and designing a computer to facilitate this lifestyle, is to shatter the user perception of what computing is about. By presenting computers in the form of a conventional note pad and biro, they are first of all engaging in what is known as retrograde design, applying new forms of technology to old ones such as books, etc. Secondly, they are appealing to the lowest possible denominator in providing what is essentially an electronic sketchpad. But, the Newton is more than this. It allows the adept techno fanatic to engage in a myriad of activities, from surfing the world wide web, to zapping files over to another user's Newton, via its infra red file transfer beam. For the first time user of a computer, and more importantly, the technophobic user, the Newton represents technology in a form that is natural and sympathetic to their needs.

CONCLUSION :

The aim of this work has been to establish a conceptual framework to facilitate understanding of why people are technophobic. As has been stated earlier on in the text, the area of technophobia is still one that is shrouded in inconsistencies, is undefined as being any one thing, and is as confusing as it is straightforward. Areas that were not developed in the text such as the issue of gender and race, and their relationship with technophobia, were not explored for various reasons. Firstly, it was found that the technophobe is not gender or ethnic specific. In certain cases, people are technophobic as a result of their cultural or economic background. It was decided that this work would not facilitate the scope required in order to account for all variations of the technophobic user profile. It was also felt that to embark on a pseudo feminist rant about technology would achieve nothing new. These issues are drained, obsolete, and the result of a far wider range of causes than could ever hope to be quantified, let alone addressed within the 12,000 or so words permitted. It was felt that to attempt a new diatribe on academically jaded areas, would accomplish nothing new other than to add to a self perpetuating spiral of book bashing, with no end result.

With this in mind, it was decided to attempt to find a reason behind the causes of technophobia. As there are many contributing factors to technophobia, no single cause could be justified as being solely responsible. It was upon reading of Alvin Toffler's Future Shock that the concept of technophobia became clear.

Although technophobia is not mentioned in Toffler's text at any point, the ideas contained in his work became distinctly linked to the various concepts surrounding the thorny subject of technophobia. Toffler's reasoning behind the causes of future shock, seemed to form a natural correlation with technophobia. To begin with, Toffler was referring to a time based phenomena that had far reaching effects on ordinary people the world over. The notion of the 800th lifetime contributed immensely to the establishment of the argument contained in this thesis.

Technophobia is something that is happening now, all around us. Everyone knows someone who is technophobic. Technophobic should not be confused with techno ignorant, which is a completely different subject matter. When writing this work, this author encountered a person in the

college that perfectly illustrated the fears the uninitiated user has about computers. The person in question was trying out the Internet for the first time. This was not unusual, and displayed a sense of curiosity on the particular person's part, a willingness to try out something new. What was unusual was the following observation.

The person was trying to click on one of the scroll down windows on the computer screen, but had encountered a problem. Another person close by decided to help and picked up the mouse from the table in order to inspect the roller ball in the base of the mouse. This simplest of actions was met with the most inflammatory ejaculation of surprise and shock. The aghast person in question had assumed that the mouse was *wired* to the mouse pad, and that it could not be removed from it's base without a computer meltdown occurring.

This very simple misconception is not a display of ignorance on the person's part. Rather it proves a point about the aim of this thesis. The interface is the most important consideration in the design of computer's, because if the user cannot communicate and interact effectively with a machine, without feeling undermined by it, then its design is at fault. If the person was presented with an Apple Newton, it is believed that they would have had no problem in interacting. This is because the interface is a pen. We are so familiar with the use of pen's, that we would quickly forget that the Newton is a computer. In this sense, it becomes personalised. It adapts to the user requirements, given that the more frequent you use it, the faster and more accurate it becomes at interpreting your handwriting.

This also demonstrates the importance of the role control of technology has to play in the technophobic mix. If technophobia is to be surmounted, then effective systems that put control in the hands of the user must be implemented. By doing this, we would we enabling the human to operate in harmony with the technology at our disposal. The answer is not to do as Stelarc proposes, to condemn the weak flesh and replace it with machinery, this is giving in to an easy option. This option would enslave us, and turn us into mindless drones no better than the Borg. The human experience is one of continual advancement to a higher state. There are no short cuts in our natural evolution. The decision to merge with machines will be one that marks the end of life as we know it. Even if this was undertaken under

an illusion of adding to the human experience, it would ultimately detract from all that humanity has stood for. For even in the most melancholy of conditions, there is still wonder to be found in the most mundane things. We should endeavour to control our technology, and use it as a means to enhance the beauty of existence, not to destroy it.

> I have of late, but wherefore I know not, lost all mirth, forgone all custom of exercises: and indeed it goes so heavily with my disposition, that this goodly frame the earth, seems to me a sterile promontory, this most excellent canopy the air, look you, this brave o'erhanging firmament, this majestical roof fretted with golden fire, why it appeareth nothing to me but a foul and pestilent congregation of vapours....What a piece of work is a man, how noble in reason, how infinite in faculties, in form and moving, how express and admirable in action, how like an angel in apprehension, how like a God: the beauty of the world; the paragon of animals; and yet to me, what is this quintessence of dust? man delights not me, no, nor woman neither, though by your smiling you seem to say so.
>
> (Shakespeare, Hamlet, act 2, scene 2.)

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DRIGGS, John H., LICSW, (Licensed Clinical Social Worker), Minneapolis, U.S.A. *and*

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