

Paper for the  
2<sup>nd</sup>. Colloquium of the Australasian Caucus of the  
Standing Conference of Organisational Symbolism,  
Auckland, NZ, 2006

**The Machine in the (g)Host: At the Limits of Body and Identity in  
Transhumanism and the Posthuman.**

R.I. Westwood  
University of Queensland Business School  
University of Queensland  
QLD 4072  
Australia  
[b.westwood@business.uq.edu.au](mailto:b.westwood@business.uq.edu.au)

# The Machine in the (g)Host: At the Limits of Body and Identity in Transhumanism and the Posthuman.

R.I. Westwood

*'Homo sapiens, the first truly free species, is about to decommission natural selection, the force that made us. Soon we must look deep within ourselves and decide what we wish to become.'*

**Edward O. Wilson**

*Consilience: The Unity of Knowledge*

*Why be nostalgic? The old body type was always OK, but the wired body with its micro-flesh, multi-media channeled ports, cybernetic fingers, and bubbling neuro-brain finely interfaced to the "standard operating system" of the Internet is infinitely better*  
**Arthur Kroker and Michael Weinstein (1994)**

*Transhumanism "The world's most dangerous idea"*  
**Fukuyama, 2004**

## 1: I AM A CYBORG.

I am, I think, a human being, an animal of the hominid species *Homo sapiens*. But am I also a cyborg? My whole body is encased in technology, ostensibly protecting me from the environment since evolution seems to have left me ill-equipped to cope with the environment unaided. If you look on my head you will see a technological device. These are a technological enhancement or corrective to enable me to see better. If you look in my mouth you will see some metal and some other materials in my teeth – these are also additions/corrections to my ‘human’, ‘organic’ body. If you could see an x-ray of my right foot you would see a small metal rod – implanted to hold a broken bone together. My body has been tampered with technologically in other ways: I have a scar on my right side where my appendix was surgically removed. That, of course, is an interesting one, having advanced technology remove an organic element that is functionless and evolutionarily redundant. I am now doing that most human of things (so they say) communicating, but I am doing that also with technological enhancement. Indeed, our collective presence here is a function of a complex set of human-machine interfaces, or the result of a series of intimately involved processes involving actants of various kinds, both human and non-human. This organisational event is only possible through that network of human and non-human agents coming together in a dynamic process. Still, I might appear to you, and to myself, as mostly human, and most sensible people would doubtless look at me and categorise me as a human being. Is there a point at which technological enhancements might problematise that classification, at which additions and alterations enabled by technology might make the label ‘human’ inappropriate and take ‘me’ into a posthuman condition?

## 2: ON BEING HUMAN

Since early australopithecines accomplished the gestalt that led to the realisation that they could extend their impact on the environment by using rocks, sticks or bones as tools, the mammalian species that became homo sapiens have progressively and dramatically increased their intrusion into their environments beyond the confines of their own bodies. Indeed, Sahlins (1960) has argued that all living creatures seek to increase their 'thermodynamic accomplishment', that being the rate at which they are able to conserve energy and deploy it in sustaining and improving their organic structure. That capacity entails processes of specialisation and differentiation facilitating ever more complex and successful encounters with the environment that have evolutionary implications and account for differences in the capacities and successes of various lifeforms. The 'savannah hypothesis' argues that encounters with a particular set of biospheric and environmental conditions ultimately resulted in bipedalism and facilitated the increasing use of tools among australopiths. As homo sapiens evolved they developed better functions, but also the capacity to capture, harness, and concentrate energy to achieve higher 'levels of integration' (Sahlins and Service, 1960: 21) and in so doing became less and less circumscribed by the immediate constraints of the environment. Of most significance was not merely the use of found objects as tools. But a dissatisfaction with these found objects that led to the presumptuous and what seems to be a uniquely human insight that they could be *improved upon*. The making and using of tools is a (note 'a' not 'the') distinguishing feature of humans. Tools can be thought of as prosthetic devices that enable extension of the human body into space. Human development can be envisaged as a continual process of striving to overcome the limitations of their minds and bodies, individually and collectively.

Just as tools provided an extensionality of the body in space and a means of overcoming its limitations, so the human mind also developed in complexity and in its capacity to differentiate, classify and store knowledge and information. However, it was not until language developed that these mental capacities could also be externalised and hence shared. Language allows transcendence of the body in space, but the emergence of writing allowed the extension of the human not just across space, but also across time. Language and writing provided the means for people to go beyond the limits of memory and mental capacity. Indeed, Chia (2003: 109) argues that organisation (more properly organising) essentially entails "a principle of economy that is directed at overcoming, if somewhat temporarily, time and space and to achieving a desired level of control and predictability in affairs of the world." He then goes on to point to the centrality of language, and particularly the progressive developments of writing and printing, to this. Indeed, language is a mode of externalisation and an organising process that is a fundamental inscription of the human into the material world and into history. Language is, thus far in history, the extension of the human *par excellence*, and indeed, it is language that most fully enables us to organise and to make the world. Language moves humans from being merely *in the world* and passively reactive to it, enabling humans to be 'world-making' (Chia, 2003) and to socially construct the very reality we inhabit.

These are things that are often cited as that which defines the human. Indeed, the Smithsonian Institute's Human Origins Program (Smithsonian Institute), which 'Is in Search of What Makes us Human', lists, *inter alia*, habitual bipedality, language, complex cultural learning dependent on symbolic information, art and other forms of

symbolic expression, and problem solving as distinguishing human features. This, of course, is a much debated issue in philosophy. The conception of the human in the modernist era has perhaps most been characterised, in the West at least, by the notion of *res cogitans*. Humans are defined by their capacity for complex cognitive processes, particularly by their self-consciousness which allows for a picturing of the person in the world and for a sense of continuity both into the past and into the future. A capacity which enables planning, and indeed, organisation. It is notable that *res cogitans* was Descartes formulation that provided not only a delineation of the human from the non-human, but also an ontological dualism that has been enormously influential. The *res cogitans*, which was imagined as that which distinguished human beings ontologically, was held to be in distinction from *res extensa* or extended things – including bodies. The title of my paper playfully reflects one challenge to this notion with Ryle's (1949) assertion that Descartes had simply committed a linguistic category error since in order to talk about and explain human we only need to attend to the operations of a material body, we don't need to imagine a *ghost in the machine*. We shall return to the philosophical conception of 'the human' later, but the notion of what it is to be human has more recently been radically challenged by developments in technology. There are those who now argue that there are technological developments in progress that will more radically facilitate the capacity of humans to extend and improve themselves; to transcend the limitations of mind and body still further. Indeed, some take the view that these developments are so profound as to put in question what it is to be human and to posit a posthuman mode of existence. These possibilities have emerged with developments various areas of in science and technology, such as artificial intelligence and nanotechnology, but the systematic application of imagination to what these developments could mean, along with the articulation of policy implications and certain programmatic suggestions has been the province of some rather loose social networks that can be captured under the rubric of transhumanists.

### **3: TRANSHUMANISM AND POSTHUMANISM.**

#### **3:1: Images of the Transhuman/Posthuman in the Arts and Popular Culture**

Consider these statements:

*It is time to question whether a bipedal, breathing body with binocular vision and a 1400cc brain is an adequate biological form. It cannot cope with the quantity, complexity and quality of information it has accumulated...THE BODY IS OBSOLETE. We are at the end of philosophy and human physiology.*

*With fertilisation now occurring outside the womb and the possibility of nurturing the foetus in an artificial support system, THERE WILL TECHNICALLY BE NO BIRTH. And if the body can be redesigned in a modular fashion to facilitate the replacement of malfunctioning parts, then TECHNICALLY THERE WOULD BE NO REASON FOR DEATH...Death does not authenticate existence. It is an out-moded evolutionary strategy.*

*ELECTRONIC SPACE BECOMES A MEDIUM OF ACTION RATHER THAN INFORMATION. It meshes the body with its machines in ever-increasing complexity and interactiveness. The body's form is enhanced and its functions are extended.*

*The body finds it increasingly difficult to match the expectations of its images. In the realm of multiplying and morphing images, the physical body's impotence is apparent. THE BODY NOW PERFORMS BEST AS ITS IMAGE.*

These statements come from an Australian performance artist who calls himself *Stelarc*. Apart from being evocative aphorisms, are they anything other than fantasies, other than science fiction? Rossini (2003) for one seems to see them as fantasy. She prefers to see Stelarc's comments, and much of the techno-driven posthumanist project, as yet another male fantasy that has tendencies to misrepresent women. Citing both a leading transhumanist, Hans Moravec, and the cyberpunk writer William Gibson, she argues that in devaluing the body and privileging the mind not only is a Cartesian dualism (re-)invoked, but the abjection of the feminine is perpetuated. Despite the well demonstrated gendering of technology in general, I don't think these charges really hold up, nor are they fatal to posthumanism *per se*. Rossini is in some regards following Haraway (1991) in seeing the cyborg as a (perhaps mainly male) fantasy and as mythical. That may be so, but technological advances are bringing the fantasy ever closer to reality. Furthermore, there is nothing preventing a socio-cultural entity or practice from being both mythical and real. What is very apparent is that the type of technological developments and enhancements of the human that the transhumanists say will be transformative has long been a site of imaginative fascination for people, particularly notions of immortality and the creation of non-human living entities.

Bostrom (2005) maintains that one of the earliest recorded stories, that of the Sumerian *Epic of Gilgamesh* (c. 1700 B.C.), deals with the search for immortality. The *golems* of Jewish mythology are created, quasi-human creatures, and the various arts and practices of alchemy sought all manner of transformations, including the creation of artificial humans. Indeed the term *androides* first appeared in English in 1727 in relation to alchemical practice (Bendle, 2002). These are narratives that have appeared repeatedly across time and across cultures. Such ideas have appeared not only in myths but also in expressly fictive work too. I will confine myself here to such fictive representations in relatively recent, Western media. Of note is Mary Shelley's *Frankenstein*, published in 1818, because it signalled the emergence of a trope that has been influential in the popular representations of science ever since and is germane to the reception of transhumanism today. The trope is in the form of a cautionary tale in that, despite having entered the modernist era and the triumph of reason and rational science, it is urged that the limits of science need to be heeded. There are dangers inherent to the scientific enterprise when it presumes to tamper with 'the natural order' of things. The narrative works to sustain the binary science – nature, and points to the risks of playing god and disrupting nature and the natural. Arguments against the transhumanist project are still couched in such terms.

Bostrom (2005) reminds us of the precursors to this with the myth of Prometheus who dared to seek to improve the human condition by stealing fire from the gods and was punished for doing so, and the death of Icarus for seeking to transcend human nature. The notable biochemist J.B.S Haldane (1923) whilst being an early advocate of genetic engineering, ectogenesis and other practices we might now label transhumanist (note the quote at the head of this paper), also recognised the resistance that commonly accompanies new scientific ideas and technological inventions from those who see them as an affront to god and/or as unnatural and a perversion of nature. Haldane sparked a significant discussion about the positive prospects of advanced science, but Bertrand Russell (1924) issued a cautionary note and introduced another motif that has continued to be pervasive, that being that the

transformative capacity of science and technology needs to be guarded against since given human nature and our social structures it is likely that such advances would more likely than not be used divisively and to cause us to inflict harm on each other.

In popular cultural terms notions associated with transhumanism, such as cyborgs, artificial intelligence, virtual reality and people being incorporated into cyberspace, have been and continue to be treated ambiguously. Huxley's (1932) *Brave New World*, with its dystopian view of a society deformed and suppressed by a mixture of biotechnological and pharmacological intervention, has been influential in infusing a negative and dehumanising view of technological transformation into the popular psyche. Technological advance and transformation perceived as a threat to both human nature and human society continues to be a source of resistance and opposition. It is a view reinforced by the perversions of the emergent eugenics movement under Nazism, although it should be noted that a number of countries, including the USA and Australia, had state-sponsored eugenics programs that to varying degrees infringed on human rights. Such intersections of history and popular culture continue to provide resources for opposition to transhumanist/posthumanist type projects.

Hayles (1999) has identified three post-WWII stages in the emergence of the posthuman that are mapped in popular culture. The first deals with its implications for homeostasis and control, the second she refers to as 'reflexivity' and part of the representation here deals with the existential conditions of robots and cyborgs themselves – life as seen through a cyborgs eyes. This was exemplified in such texts as Asimov's (1976) *Bicentennial Man*<sup>1</sup> where we are invited to imagine life through the eyes of a robot, albeit a humanising robot that is undergoing a reverse transformation into a human. Interestingly, the robot can only become human by abandoning its immortality. The *Soul of the Robot* by Bayley (1974) and *Robocop* (1987) also reside in this reflexive zone. What these popular culture representations also reflect is a deep anthropomorphic tendency. A cult film that also sought to provide something of a reflexive look at a cyborgian existence, but which had a distinctly more dystopian view of technologically developed society was *Blade Runner* (1982)<sup>2</sup>. Hayles third period, which is the one we now occupy, is one of virtuality. Here we enter virtual states, either individually as in *The Lawnmower Man* (1992), or *en masse* as in *The Matrix* (1999). Indeed, in the *Matrix*, as in Stanislaw Lem's *Solaris*, the transhuman vision of 'uploading' is realised and people exist in a virtual cyberspace. Both the *Matrix* and *The Lawnmower Man* as well as the film *Gattaca* (1997) which deals with the divisions and conflicts created through widespread genetic engineering, continue the dystopian representation of technologically transformed persons and societies, the latter invoking the cultural demons of eugenics. The promises of technological advance and enhancement turn out to be illusory and to actual mask a dark and dystopian consequence. In both of the earlier *Logan's Run* (1977) and *Zardoz* (1974) an apparent technologically enhanced utopia where no one grows old, everything is controlled, and all is pleasure, is revealed as dystopian. This is not to suggest that there have been uniformly dystopian depictions of the possibilities of science and technology in popular culture. For example, a mostly positive interpretation of the cyborg was represented by the TV program *The Six Million Dollar Man*<sup>3</sup> (1973-1979). It is a representation that perhaps has a greater resonance with the salvationist motifs of the quasi- or transhuman

figures in comics such as Batman and Spiderman. Certainly not all of Isaac Asimov's representations of robots and cyborgs are negative.

On the whole, though, these media representations of possible trans/post-human realms are largely negative reflecting fears and anxieties about technological invasion of nature and the natural. Of more importance is the fact that what was once merely fantasy and fiction is rapidly becoming a reality as scientific and technological developments continue at an accelerating rate. The vision of Stelarc, the creation of the cyborg, virtual realities, genetically engineered organisms, super-intelligent machines and other matters that have represented the possibility of the radical transformation of the human life form can no longer be contained in the fictive realm. There are those who believe that science and technological developments will shortly reach such a level when applied to the human sphere as to challenge the very assumptions of that sphere and the notion of what it is to be human. They propose that we are entering a new phase in human development and evolution which they term the transhuman. Others go further and assert that this is merely an intermediary step on the way to the posthuman at which point the technological enhancements of the human will be of such nature as to provide them with capacities vastly superior and different to current humans such that the label human is radically problematised.

### **3:2 Into the Transhuman and Posthuman**

Bostrom (2005) tells us that the term 'transhumanism' was first coined by Julian Huxley as a term to describe the newly realised potential of the human species to transcend itself (Huxley, 1927). Huxley also later reflected on the species transformation that transhumanism might bring about:

*"I believe in transhumanism': once there are enough people who can truly say that, the human species will be on the threshold of a new kind of existence, as different from ours as ours is from that of Peking man. It will at last be consciously fulfilling its real destiny."*  
(Huxley, 1957)

In ways that resonate more fully with its use by contemporary transhumanists, the futurist FM-2030 (formally F.M. Esfandiary)<sup>4</sup> used the term transhuman to signify a 'transitional human'. De Mul (2002) argues that it was FM-2030 who was important in stimulating a transhuman movement with his lectures on futurism at the New School of Social Research in New York City in the 1960s and his trilogy outlining a futurist philosophy in *UpWingers*, *Telespheres* and *Optimism One*. A condensed and influential version of the arguments appeared in the paper *Are You a Transhuman?: Monitoring and Stimulating Your Personal Rate of Growth in a Rapidly Changing World* (FM-2030, 1989). Both de Mul (2002) and Bostrom (2005) also note the influence and support of: Robert Ettinger, a leading figure in developing cryonics; Erik Drexler a founder of nanotechnology; Hans Moravec a robotics expert from Carnegie Mellon University; and Marvin Minsky an MIT artificial intelligence researcher. *Extropy: The Journal of Transhumanist Thought*<sup>5</sup> was launched in 1989 by Max More and Tom Morrow (Bell<sup>6</sup>) as a forum for transhumanist ideas. More had already established the first European cryonics organisation (later to become Alcor UK Ltd.) and in 1992 founded, with Tom Bell, the *Extropy Institute*. The *World Transhumanist Association* was founded in 1998 by the British philosophers Nick Bostrom and David Pearce. In addition to the leading scientists in the new sciences like bioengineering and cryonics, the transhumanists also, unsurprisingly,

acknowledge the links to humanist and modernist thinking citing Bacon's *Novum Organum* as something of a watershed, but philosophically recognising the rational humanism informed by Kant and Condorcet. A number of transhumanists, such as More, also invoke Nietzsche, and especially the doctrine of *der Übermensch*, in philosophical support.

Although today there are different networks or sub-groups of people who refer to themselves as 'transhumanist' and showing some differences in emphasis, especially around the socio-economic and political context for transhumanism, and the types of technological enhancements featured<sup>7</sup>, the World Transhumanist Association<sup>8</sup> (WTA) perhaps represents a key focal point for transhumanism. WTA provides a FAQ that seeks to specify what transhumanism is and what it concerns itself with. That FAQ contains the following responses to the question 'What is transhumanism'

*Transhumanism is a way of thinking about the future that is based on the premise that the human species in its current form does not represent the end of our development but rather a comparatively early phase. We formally define it as follows:*

*(1) The intellectual and cultural movement that affirms the possibility and desirability of fundamentally improving the human condition through applied reason, especially by developing and making widely available technologies to eliminate aging and to greatly enhance human intellectual, physical, and psychological capacities.*

*(2) The study of the ramifications, promises, and potential dangers of technologies that will enable us to overcome fundamental human limitations, and the related study of the ethical matters involved in developing and using such technologies.*

*World Transhumanist Association (WTA, 2003: 4)*

Note some key points here: (1) the current state of the species is not in its final form; (2) the human 'condition' (intellectual, physical and psychological) can be fundamentally enhanced through applied reason and technology, and (3) there are ethical issues involved in such a project. The second and third points link transhumanism to humanism of which it sees itself as a contemporary extension. In that regard transhumanism can be seen as a continuation of the rational, secular, humanist project begun in the Enlightenment. It deals with notions of progress, development and betterment in humans and their systems through the application of reason and the most productive realisation of human reason in the scientific method, scientific knowledge and its practical outcomes in technology. This is an acknowledged legacy and as the FAQ (WTA, 2003:4) suggests "we are not limited to traditional humanistic methods such as education and cultural development. We can also use technological means that will eventually enable us to move beyond what some would think of as 'human.'" Another key figure in the transhumanism movement, Dr. Max More, defines transhumanism in a similar manner, one also reflecting the extension of humanism, as "a class of philosophies that seek to guide us towards a posthuman condition. Transhumanism shares many elements of humanism, including a respect for reason and science, a commitment to progress, and a valuing of human (or transhuman) existence in this life [...]. Transhumanism differs from humanism in recognizing and anticipating the radical alterations in the nature and possibilities of our lives resulting from various sciences and technologies..." More (1990).

A 'transhuman', then, is considered to be a form of life that can be viewed as an intermediary between the human and the posthuman.

*“A transhuman is a human in transition. We are transhuman to the extent that we seek to become posthuman and take action to prepare for a posthuman future. This involves learning about and making use of new technologies that can increase our capacities and life expectancy, questioning common assumptions, and transforming ourselves ready for the future, rising above outmoded human beliefs and behaviours” (Extropy Institute [ExI], 2003)*

The posthuman is a possible form of life “whose basic capacities so radically exceed those of present humans as to be no longer unambiguously human by our current standards” (WTA, 2003: 5). The posthuman has mental and physical capacities that greatly exceed any current human. The term posthuman appears to have been coined first by Ihab Hassan twenty years ago in reflecting on the postmodern challenges to the notion of the human. He speculated that ‘the human form—including human desire and all its external representations—may be changing radically, and thus must be re-visioned. We need to understand that five hundred years of humanism may be coming to an end as humanism transforms itself into something that we must helplessly call post-humanism’ (Hassan, 1977: 212). As expressed in another FAQ, this time from the Extropy Institute initiated by Max More (possibly the other dominant international transhumanist group), posthumans are those who have “overcome the biological, neurological, and psychological constraints built into humans by the evolutionary process.” (Extropy Institute [ExI], 2003). They would be significantly reconfigured in physical and functional form with enhanced physical, cognitive and emotional capacities considerably beyond what is considered to be normal for current humans. It is also suggested that Posthumans “would not be subject to biological aging or degeneration.” The extropian view is accompanied by a libertarian outlook with respect to the socio-political conditions for the technological and social changes to come. Some of this is suggested in its governing principles of ‘Perpetual Progress, Self-Transformation, Practical Optimism, Intelligent Technology, Open Society, Self Direction, Rational Thinking’ (More, 2003). Some see a difference between transhumanism with its practical focus on enhancements to the human body, and the discontinuities proposed by some posthumanists who aspire to the human being transformed by technology into a new form and to become integrated with technology in a virtual world. As Krueger (2005: 79) suggests “While posthumanism is focused on the idea of an artificial “progeny” of humankind, transhumanism remains anthropocentric.” Indeed, the WTA (2003: 44-5) FAQ identifies several different strands of transhumanism including extropianism, democratic transhumanism, singularitarianism, theoretical transhumanism, the hedonistic imperative, and ‘salon’ transhumanism (see also Bostrom, 2005). Others see a distinction between transhumanism as aligned with the traditions of secular humanism and those that appear to align more with religion and spirituality (Graham, 2002: 71-2).

For trans/post-humanists of all persuasions the current human life form, in terms of neurological, biological and psychological capacities, is considered limited, but these are not taken as ‘natural’ limits to be accepted, rather they are a kind of evolutionary glitch and inhibition that can be overcome through the application of reason, science and technology. Importantly, not just overcome, but improved upon and developed. Theirs is not a model of putting science and technology merely in repair mode, which is where they see much of the contemporary medical science paradigm, but providing

positive enhancements of human capacities and life. Moravec (1988), among others, points to the limitations of the current human form: its relatively weak (even when compared to other animals) physical capacities, its fragility and the ease with which it can be damaged by disease and injury; the limits of our cognitive abilities, and of course the restricted life span. He advocates that the technology be developed that enables 'us' to be downloaded (others more often say uploaded) into an artificial 'body' that does not have these limits. For him the person appears to be really nothing more than a particular pattern of neurological signals and that this pattern can be replicated. The notion of uploading/downloading is perhaps at the more extreme end of the transhuman spectrum, but for many others the transition to a posthuman condition is most likely to occur in a fusion of technology and biology such that the human at least partly overcomes their bodily limitations and becomes postbiological or 'post-bodied' (see Featherstone & Burrows, 1995; Halberstam & Livingston, 1995). Ray Kurzweil (1999) predicts the development of super-intelligent, cyborgian life forms that will mean that the notion of the human individual as currently understood will be superseded and an evolutionary turn will have occurred. He even puts a date on this – 2099; it is a date he has redefined downwards saying in his latest work that “By the mid 2040s, the non-biological portion of our intelligence will be billions of times more capable than the biological portion. (Kurzweil, 2005). As Rossini (2003:4), who is something of a critic, puts it “Technology is turning more and more people into "posthuman bodies", eroding the putatively bounded, self-determined and supreme ontological category "Man" and offering humanity a prosthetic existence instead, a cyborgian ontology which is perpetually "under (de)construction". Some facilitate this movement to the posthuman by seeking to define the human not in terms of a prosthesis-body that is increasingly seen as sub-optimal and obsolescent, but in terms of their patterning of information, allowing humans to be considered as a type of machine (e.g. Hayles, 1999).

The aim of transhumanism is, in the broadest terms “to make humanity grow to its full potential.” (Sandberg, 2000). It seeks to support and promote scientific and technological development that can be used to improve the quality of human life, but also to go beyond that to locate technological enhancements that allow humans to develop to such a level that they come to resemble a posthuman form of life. The aspirations of transhumanists are expressed concretely in the WTA (2000) FAQ

*they yearn to reach intellectual heights as far above any current human genius as humans are above other primates; to be resistant to disease and impervious to aging; to have unlimited youth and vigor; to exercise control over their own desires, moods, and mental states; to be able to avoid feeling tired, hateful, or irritated about petty things; to have an increased capacity for pleasure, love, artistic appreciation, and serenity; to experience novel states of consciousness that current human brains cannot access. It seems likely that the simple fact of living an indefinitely long, healthy, active life would take anyone to posthumanity if they went on accumulating memories, skills, and intelligence.*

Bostrom (2006: 1-2) defines the posthuman in terms of the possession of at least one general central capacity that greatly exceeds the maximum attainable by a current human. The general central capacities are: healthspan (not just longevity, but healthy and meaningful longevity); cognition (general intellectual capacities as well as more focused ones such as humor, music and the erotic); and emotion (a capacity to enjoy life and to respond with appropriate affect). See Bostrom (2006) for further

elaboration of the aspirations of transhumanism and what is envisaged in a transhuman form of life.

#### **4 TECHNOLOGIES OF ENHANCEMENT**

The technologies and their scientific counterparts most at issue in this transhuman transformation are given variable emphasis but they revolve around developments in genetic, biomedical, cybernetic and digital technologies (Graham, 2002). More specifically, they include genetic engineering/modification, cloning, information technology and computer science, artificial intelligence, neural-computer integration, virtual reality machine-phase and bio- nanotechnology, cryonics, and neuropharmacology. Some of these are emergent and their actual application lies in the future, but as Bostrom (2005) points out, transhumanism is not built only on the promises of the future it rests on already available or nearly available science and technology:

*Virtual reality; preimplantation genetic diagnosis; genetic engineering; pharmaceuticals that improve memory, concentration, wakefulness, and mood; performance-enhancing drugs; cosmetic surgery; sex change operations; prosthetics; anti-aging medicine; closer human-computer interfaces: these technologies are already here or can be expected within the next few decades.*

The extent to which we are already in a transhuman (if not posthuman) era has been reflected on by a number of commentators. Graham (2002) (referring to a recent issue of Scientific American) notes how some developments - such as cosmetic and spare-part surgery, smart houses, genetically-attuned pharmaceuticals – signify a kind of consumerist, life-style version of transhumanism. This is an echo of FM-2030's articulation of what he saw as early indications of the march towards a transhuman condition when he noted such things as prostheses, plastic surgery, mediated reproduction (e.g. *in vitro* fertilisation) androgyny, intensive use of telecommunications. He also included such cultural orientations as the rejection of nuclear family values, religious values, world travel and a cosmopolitan lifestyle, a kind of ideological transhumanism for which he has been criticised (Bostrom, 2005). As indicated at the start of this paper, there is a sense in which humans have always been cyborgian, have always sought to enhance their capacities through an intimate relationship with technology. Prosthetic devices have been around for many years although it is only recently that they have become linked to our neurological and cognitive systems so that there is a direct brain-machine interface. Spectacles similarly are old enhancement technology contact lenses a somewhat later development. Pacemakers and other technology that has become implanted in the body also edge us closer towards a cyborgian state. Indeed, Chris Gray (2001) maintains that the move towards a cyborg state does not only include persons like Christopher Reeve and Kevin Warwick, but anyone who has been technologically altered – including vaccinated babies. Various pharmaceutically developed drugs can alter our bodies, and our minds, improving mood, concentration and other functions. Scientific and technological developments are accelerating this marriage of human and technology. Graham (2002) refers to (a) new reproductive technologies, cloning and genetic modification that challenge the boundaries between technology nature and the human; (b) new digital technologies that alter our conceptions of time and space and our interactions within space-time dimensions, and (c) new cybernetic devices that see the body merging with technology radically challenging not only our concept

of the human body, but also of identity and what it is to be human. As she says: “The twenty-first century body no longer ends at the skin” (Graham, 2002: 65). Somewhat more esoteric developments have been noted “Life spans of laboratory mice have been doubled; transgenic animals are commonplace; jellyfish genes have been inserted into the hair follicles of mice to make them glow; a network of snail brain cells has been connected to a silicon chip.” (Dacey, 2004).

It is apparent that whilst some of the claims or aspirations of trans/post-humanists, such as Moravec’s downloaded and enhanced humans that engage with all solarsystem life in a supercivilisation in a kind of inter-galactic matrix (Moravec, 1988:116), still seem to be in the realm of science fiction, other technologies are already to hand, and others in active development. Trans/post-humanists are mostly very conscious that they are dealing with possibilities and potentialities and that things they envision are in the future, but they make two valid points: (1) that these technologies hold such promise that they ought to be actively encouraged, supported and enabled, and (2) that the changes they might bring are so momentous that we need to be thinking about them and preparing for them now. They mostly emphasise the benefits of technological enhancement, but are aware of the potential dangers but argue that this is all the more reason to attend to the technology and think through its implications now (see for example Bostrom, 2003; de Mul, 2002). As Miller and Wilsden (2006: 24) put it “Enhancement technologies are an area where dialogue is urgently required between scientists, policy-makers, bioethicists, healthcare professionals, educationalists, NGOs, disability groups and the wider public. Such discussions should address not only narrowly framed ‘impacts’, but also the wider social and ethical context in which such innovations may occur.”

As de Mul (2002) argues, it would be a mistake to dismiss transhumanism simply because some advocates appear to be anchored into the realm of (science) fiction, and that whilst transhumanism appears to him to be a mixture of science and fiction, many of the technologies that transhumanism invokes are, in fact, already reality. He then cites “genetic engineering, cloning, the implantation of pacemakers and artificial joints, heart valves, insulin pumps and electronic senses)” or are “partially successful (artificial intelligence, e.g. chess programs), or at least successfully tested in a laboratory setting (linking of an information transfer between nerve cells and electronic processors, the nanotechnological rearrangement of atoms, successful cryogenic suspension of baboons).” He also cites the claim of evolutionary biologist G.S. Paul and artificial intelligence expert E.D. Cox in their book *Beyond Humanity, Cyber Evolution and Future* (Paul & Cox, 1996) that, assuming current rates of scientific development “an important part of the transhumanistic program could be realized in the first half of the twenty-first century.” (de Mul, 2002). He also makes the important point, along with Emmeche (1991) and others, that the new ‘modal’ sciences based around information technology, biotechnology and genetics are less concerned, as old science was, with what reality is but with ‘*what it could be*’. As Emmeche (1991: 161) says ‘Science becomes the art of the possible because the interesting questions are no longer how the world is, but how it could be, and how we can most effectively create other universes.’”

It is important to recognise that the trans/post-humanists are not engaging in uninformed scientific speculation. They often are people with a strong science background themselves and rely upon bona fide scientific input. Furthermore, the

types of trends and developments they talk about across a range of disciplines are also discussed by scientists and science-related experts who have no link to transhumanism. There is not the space in this paper to provide any detailed summary of the range of technological and scientific developments at issue. For a transhumanist overview refer to the WTA (2003) FAQ, which in Part 2 briefly discusses: biotechnology, genetic engineering, stem cells, cloning, molecular nanotechnology, artificial intelligence and superintelligence, virtual reality, cryonics, singularity and uploading. For a view from a non-transhumanist perspective, and as a shorthand, I reproduce (Appendix 1) Miller and Wilsden's (2006:16-17) summary of a range of enhancement technologies that indicates their current status. They note that a number of technologies are already available whilst others are in development or being actively researched. Others are more in the future, but even radical life extension is put at possibly only 30 years away and nanotechnological applications as little as ten.

Even more mainstream is a report sponsored by the US National Science Foundation that included a range of senior scientists, policy makers and entrepreneurs and invited them to make submissions on the possibilities of convergence of some key new technologies and their implications for improving human performance. It is a comprehensive document of more than 460 pages and covers the issue of these converged technologies and 'expanding human cognition and communication', 'improving health and physical capabilities', 'enhancing group and societal outcomes', national security implications and 'unifying science and education'. The four areas of science and technology that it considers and for which a highly synergistic convergence is envisaged are: (a) nanoscience and nanotechnology; (b) biotechnology and biomedicine, including genetic engineering; (c) information technology, including advanced computing and communications; and (d) cognitive science, including cognitive neuroscience. In their Overview Roco and Bainbridge (2002:1) declare:

*We stand at the threshold of a new renaissance in science and technology, based on a comprehensive understanding of the structure and behavior of matter from the nanoscale up to the most complex system yet discovered, the human brain. Unification of science based on unity in nature and its holistic investigation will lead to technological convergence and a more efficient societal structure for reaching human goals. In the early decades of the twenty-first century, concentrated effort can bring together nanotechnology, biotechnology, information technology, and new technologies based in cognitive science. With proper attention to ethical issues and societal needs, the result can be a tremendous improvement in human abilities, new industries and products, societal outcomes, and quality of life. Rapid advances in convergent technologies have the potential to enhance both human performance and the nation's productivity.*

The report proposes wide ranging benefits to be derived from these new provinces of science and technology, across all levels of society. It is clear that these scientists and policy makers share with the transhumanists a common conception of a revolution in science and technology, one that will have far-reaching implications not just for individuals, but for organisations, communities, societies, and the species overall.

The report documents potential benefits in areas such as improved work efficiency, enhanced individual capabilities – in areas such as cognition and creativity as well as physically, improved learning, enhanced lifecare and significant amelioration of the declines associated with aging, more effective communication – including direct

brain-to-brain communication, perfecting man-machine interfaces – “including neuromorphic [and] sustainable and “intelligent” environments including neuro-ergonomics” Roco & Bainbridge, 2006: 1). The contributors to the report recognize these potential benefits, but are also aware of and asked to consider the dangers and the ethical, social and political consequences. It concerns itself as much with this societal context for scientific and technological change as it does with those changes themselves. The imperative to address these issues now, in advance of the technological changes and to prepare for them is clearly recognized and this is another area of commonality with the transhumanist project. As Roco and Bainbridge (2006: x) say: “It is essential to prepare key organizations and societal activities for the changes made possible by converging technologies.” It is certainly clear that organizations and business are going to be substantially impacted by these changes, both in direct way through the emergence of a vast array of new products and services and new markets, also through changes in the technologies of production, service delivery, work and organization, but also less directly through overall changes in humans, cultures and societies. It is time that organization studies began to engage with this discourse, to incorporate it into its thinking and theorizing and to make a contribution to the debate and so help shape the nature and direction of the momentous developments taking place.

Both the transhumanists and the scientists and policy makers actively engaged in these emergent sciences and technologies tend to view them positively and to give emphasis to the benefits of human enhancement. However, few are naïve enough to not also see hazards and difficulties. As noted both groups have paid attention to the political, social and ethical implications of these developments. The advancements considered are certainly not without their critics. Certainly transhumanism has attracted its critics, perhaps in part because of its express agenda of bringing the discussion into the public and popular domain, but also because of the way it presents some of the issues and the vision of the future it proselytizes. However, the mainstream sciences in which this science and technology is developed have also been subject to attack and critique and the advances are significantly contested. Cloning, genetic modification, stem cell research are just some of the areas in which heated debate has received considerable media attention. Again, there is not the space here to reprise all those areas of critique and debate. I will, instead, signal briefly some of the areas of concern that have arisen with respect to the trans/post-humanist project in particular some philosophical/ethical issues that have some relevance to areas within organization studies as well as some practical concerns that have wider social and political implications.

## **5. A CONTESTED SPACE: PHILOSOPHICAL, ETHICAL, POLITICAL.**

Trans/Post-humanism has attracted significant negative attention, some of it vitriolic. Indeed, Fukuyama (2004) was moved to nominate it as the world’s most dangerous idea. I have already noted how the types of transformations – cyborgs, artificial intelligence, cloning, ‘uploading’ – with which it concerns itself has most typically been negatively portrayed within popular culture. The same types of scientific developments, even when presented via mainstream science and its supporters, have also attracted a lot of criticism, negative reaction and even hostility among commentators, in the media, among certain interest groups and sections of the

population at large. I will not concern myself here with criticisms levelled at particular technological developments and their consequences, for example, cloning, I will instead consider some philosophical and ethical issues raised in relation to transhumanism and then to some broad concerns raised about its possible impact in general.

### **5:1 Transhumanism and the Unfinished Modernist Project**

As we have seen, transhumanism has aligned itself explicitly with humanism. It sees itself as at least resonant with Post-Enlightenment, rational and secular humanism and on some versions as a contemporary extension of it. In a telling statement the WTA (2003), as noted, suggests that the humanist project is also enhanced by transhumanism since “we are not limited to traditional humanistic methods such as education and cultural development. We can also use technological means that will eventually enable us to move beyond what some would think of as ‘human.’” More (1990) and the extropians also reaffirm some core humanist values such as respect for reason and science, a commitment to progress, and the value placed upon individual human (or transhuman) existence in this life, but also see transhumanism as an extension of humanism through the dramatic progressive potential of new technology. Transhumanism perpetuates the fundamental belief in the value and efficacy of reason and science and that these can deliver the developments that not only provided the progress that has characterised the industrial, modernist era, but will facilitate the radical enhancement of the human condition and take us into a posthuman era. Transhumanism shares the values of reason, rationality and the scientific method, but they are also usually explicit in their rejection of religion and any form of transcendental view of reality. Another value they share is that humans are responsible for their own development and that they can and should do so guided by their own rationality. Along with this goes a belief in the freedom of individuals to pursue these actions of self development (or not): there are then also values of respect for the individual and for freedom of choice. However, it is also noted (de Mul, 2002) that transhumanism can be seen as challenging humanism since, through the notion of the posthuman it suggests the end of the human – and that this occurs through those very values that humanism valorises: reason, rationality and science. Nonetheless, most of the core values and principles of humanism are more or less explicitly expressed by transhumanists (e.g. see Bostrom, 2005a; More, 2003; WTA 2003). The additional orientation of the transhumanists is on the basis for human development as these three statements from different transhumanist associations suggest:

*"Transhumanists distinguish themselves from 'ordinary' humanists because they do not gratuitously accept limitations such as the biological life span... as 'natural' and therefore 'good'. They see many possibilities of improving the length and quality of the life of everybody if we utilize our intellectual and technical opportunities to the full. (Transcendo: the Dutch Transhumanists Association, cited in de Mul, 2002).*

*Transhumanism shares many elements of humanism, including a respect for reason and science, a commitment to progress, and a valuing of human (or transhuman) existence in this life [...]. Transhumanism differs from humanism in recognizing and anticipating the radical alterations in the nature and possibilities of our lives resulting from various sciences and technologies..." More (1990).*

Transhumanism gets some support in this techno-humanism from Sloterdijk (see Bendle, 2002). He argues that classical humanism’s project of improving people

through the 'soft' technologies of learning, education and 'social engineering' has failed and that the task now passes to the 'hard sciences' – like genetic engineering and biotechnology - and advocates a new field of 'anthropotechnics' to facilitate this (Piper, 2000; Peacock, 2000). So for Sloterdijk the modernist project can be revitalised through the same types of science and technology developments that transhumanism champions. His views have been very controversial especially when he says "if biotechnology means accepting the division of human beings into the genetic engineers and the genetically engineered, the zookeepers and the animals in the "human zoo", well so be it' (Piper , 2000: 74). Shades of Zardoz there!

There is in transhumanism a valorisation of reason and the scientific method in a way that is anathema to the postmodern assessment of the failures of modernism and of those metanarratives. However, whilst the postmodern critique has made a telling impact in the humanities and parts of the social sciences, including organisation studies, it has not made inroads into the paradigmatic structure of the natural and physical sciences. Postmodernism is also, for the most part, antithetical to humanism. There is then, a contested ground between transhumanism, as a neo-humanist philosophy and postmodernism, one acknowledged by some transhumanists, but there appears to have been little engagement up to this point. The situation is complicated slightly by both invoking, at least the spirit of, Nietzsche in their provenance. In the case of postmodernism that is a well established and justifiable association. For the transhumanist it sometimes appears to be little more than a selective deployment of some Nietzschean aphorisms to philosophically bolster their position.

As Graham (2002: 75) suggests "Nietzsche may seem the perfect prophet of a libertarian, apocalyptic transhumanism. His thought seems ostensibly to issue an open invitation for Extropians, transhumanists and technocrats everywhere to cast aside the outmoded constraints of ethics, altruism and humanism in favour of a technologically-realised super-humanism." For example, More quotes Nietzsche (1961:41-2) "I teach you the overman. Man is something that is to be overcome. What have you done to overcome him? All beings so far have created something beyond themselves; and do you want to be the ebb of this great flood and even go back to the beasts rather than overcome man?" which, like the Nietzschean statement that man is the 'great experimenter with himself', clearly is a good fit with the transhumanists' position. More also invokes Nietzsche to support the notion that humans' seeking their own transcendence is not unnatural, arguing that "Nature embodies within itself a tendency to seek new complex structures, to overcome itself to take on new, more effective forms. Nietzsche recognized this in his view of the universal will to power. Overcoming limits comes naturally to humans. The drive to transform ourselves and our environment is at our core." (More, 1994). He, unsurprisingly, pursues Nietzsche's notion that all things necessarily overcome themselves, including humans. Nietzsche's (1961) famous dictum that the human is "a rope fastened between animal and superman – a rope over an abyss" is jumped on to make, as de Mul (2002) suggests, "The transhumanistic project is directed at the technological realization of the *Übermensch*..." De Mul disputes that the kind of transformation that More advocates is actually something intended by Nietzsche, indeed it might lead to the kind nihilistic 'last man' conception or the Endless Recurrence of the Same, against which Nietzsche in fact actually railed. Bostrom (2005: 4) recognises the superficial appeal of Nietzsche for transhumanism, but also suggests that Nietzsche did not intend the type of technological transformation that transhumanism seeks "but

rather a kind of soaring personal growth and cultural refinement in exceptional individuals (who he thought would have to overcome the life-sapping ‘slave-morality’ of Christianity)”. He goes on to suggest that transhumanism has more in common J.S. Mill than Nietzsche. Interestingly, the postmodernist Arthur Croker (Croker & Weinstein, 1994) pursues a technotopian line and in support of a form of ‘uploading’ also invokes Nietzsche declaring in typical provocative style that “Nietzsche’s got a modem, and he is already writing the last pages of *The Will to Power* as *The Will to Virtuality*.” It is a phrase picked up upon by Graham (2002: 66; see also Graham, 2001) who argues that transhumanism would be regarded by a true Nietzschean sensibility as “fatally flawed by its inability to shed the vestiges of a Comptean ‘religion of humanity’” and that it actually is better regarded as a narrative of ‘science as salvation’ (Midgley, 1992). She argues that the ‘excessive and uncritical transcendentalism’ of transhumanism would have been anathema to Nietzsche. Nietzsche’s vision of a collapsed religion, the death of god, does not envisage redemption through the endeavours of human reason; rather it heralds the final and irredeemable collapse of morality meaning and purpose. Nor does he see redemption through any form of transcendence, and Graham (2002:76) reads a ‘vestigial craving for a perfect transcendent world’ in the transhumanist project. It needs to be noted that Graham directs her critique particularly at the extropian vision of Max More and the criticism of transcendence in this sense is not one that is easy to sustain in relation to other transhumanist formulations. This reading of transhumanism as ultimately a theological, or gnostic, narrative is repeated by other critics. Before I turn to that critical reading there is a further aspect of the modernist humanist project that transhumanism appears to participate in.

### ***5:1:a Telos Rejuvenated***

Part of the modernist, humanist project was a notion of improvement and progress in ways that were teleological. In other words, the notions of progress and development implied a state towards which things were moving or evolving and that this would be an increasingly better place approaching a final perfection. The transhumanist project has also been interpreted in this light as rejuvenating the *telos* inherent to the modernist project. Again it is an argument that postmodernism has sought to dismantle. The evolutionary theories of Darwin provided much impetus to the modernist, humanist project, and it is notable that transhumanists acknowledge that this lies within their provenance (e.g. Bostrom, 2005; de Mul, 2002). Transhumanists certainly seem to position the technological developments they are concerned with in an evolutionary context and they seem to imply that there is an inevitability about the processes of development they champion (see Extropy Institute, 2003). As Graham (2002:69) more colourfully translates it: “Technology does more than undergird humanist principles; it promises to create nothing less than a successor species. Machinic evolution will complete the task of natural selection...” The transhumanists, especially when invoking the posthuman, often bring in evolutionary language. In this sense the current human life form is finite and even the transhuman is an interregnum on the way to posthuman life forms. There is a necessary and inevitable trajectory mooted here, or as Bendle (2002: 48) puts it: “posthumanism locates the logic of technological inevitability not only in history, nor only in evolution, but also in ‘life’ itself. A more absolute statement of universalistic determinism is difficult to imagine.”

## 5:2 Gnosis and Salvation

For some, transhumanism not only resonates with humanism, but is also a utopian project (Bergsma, 2000). There are undeniable elements of utopianism in some of the expressions of transhumanism, particular those that talk not only about individual enhancements in the short to medium term, but the longer term transformation and betterment of the human condition. Most transhumanists, however, do not have a societal program as such. They concern themselves with society in terms of encouraging appropriate conditions for the development of enhancement technologies and the free choice of people to take advantage of those conditions, and also in terms of addressing the socio-economic and cultural impact of them so as to inform appropriate choices now.

There are those who do see transhumanism as a salvationist project with theological vestiges. Graham (2002: 66-7), for example, sees in transhumanism a “Religion of technology’ (Noble, 1997) with the technoscience it embraces exemplifying a new metaphysics manifest in its “longings for invulnerability, incorporeality and omniscience.” She claims that transhumanists adhere to a philosophy in which the will to transcend the body and to seek a more perfect state is ‘innate and universal’ and then uses that to suggest that it contains a metaphysics of transcendence and pursues the technological sublime. However, although More sometimes seems to suggest an innate drive to seek improvement and transcendence, in others this is not necessarily present. Alternatively the drive to overcome the limitations placed on the human is not linked to a metaphysical or spiritual drive, nor to a Nietzschean will, but to biological and evolutionary mechanisms that have no necessary metaphysical or religious connotations. Graham (2002: 71) also notes that the separation of science and religion is a relatively recent phenomena and that the current drive for ‘techno-enchancement’ (Bennett, 1997) shows an affinity with “ancient and enduring modes of spirituality, such as altered states, transports of ecstasy and avenues of re-enchancement” This is then presumed to enable ‘digital and biogenetic technologies’ to be seen as not “mere tools of humanist ambition, but as instruments of deliverance” and cyberspace as a “new kind of sacred space.” (Graham, 2002: 71). More dramatically Robins (1995: 147) wants to depict cyberspace as “a place of salvation and transcendence”, a vision of a ‘new Jerusalem’ that “very clearly expresses the utopian aspirations in the virtual reality project.” Graham also wants to see transhumanism, particularly in those areas where it advocates transcendence of the human body and the escape into a virtual world in cyberspace as resonating with Gnosticism and Hermetism.

Indeed, Krueger (2005: 77) argues that some see the posthuman aim, exemplified perhaps mostly strongly by people like Moravec (1988; 1993; 1998) and Kurzweil (1999; 2005), of transcending the body and achieving a kind of immortality in a cybernetic form or in a networked condition in cyberspace appears as a “continuation of revivification of the ancient Gnostic philosophy.” He argues that some European ‘media’ philosophers as well as some postmodernist thinkers see this as a type of virtual utopianism and as an expression of Gnostic philosophy; some coining the phrase cybergnosis. He includes the Slovenian philosopher Slavoj Žižek and the American Erik Davis among those who make this Gnostic attribution to the aspiration for transcendence of the body and existence in virtuality. Indeed, Davis (1998) coins the term ‘techgnosis’ to capture this. Some, Like Davis, also see a kind of

cyberplatonism wherein a virtual existence based on electronic code and mathematics is a new version of the platonic assumption that behind the world of matter there is a higher reality of mathematics and abstract form. This is a claim repeated in Graham (2001, 2002) even suggesting that the idea of DNA (as if it was merely an idea) as pure code that bears the information of life and that contains a self-directing *telos*, resonates with the Gnostic notion of “a cosmos driven by inner, eternal wisdom”. She notes that Noble (1999) argues that much of modern science is actually motivated by such ‘religious myths and ancient imaginings’ that impel a search for an other-worldly and enduring transcendence and salvation. Wertheim (1999) has argued that the idea of everyone uploading a virtual world in cyberspace and all linked into one giant network is akin to the Christian goal of Atonement; explained then as ‘at-one-ment’. This is sophistry, one might as well say that politics is Atonement. With regard to Noble, Graham admits that he relies on the notion that these motives and impulses are unconscious in the scientist, thus problematising their epistemological status and leading us to wonder how he would know of their existence and form. Bendle (2002) also draws these religious parallels, again seeing the uploading into cyberspace as the idea of superintelligence as pursuing a metaphysical dream of perfectibility and an approach to the omnipotence and omnipresence, as aspiring to a god like condition. She likens transhumanism, without much reasoned argument, to quasi-scientific movements such as Christian Science and Scientology. This is condemnation by association. Others see transhumanism as more akin to millenarian movements that promises to bring a new, perfected order, but can only really pursue its goals by sustaining the asymmetries and inequalities of the existing order (Bozeman, 1997)

However, transhumanists have been usually expressly anti-theological, anti-deist and anti-religion, as have a number of their supporters in the key science and technology areas. Minsky (1988), for example, has been overt in his anti-religious views, as has Moravec. More (1994) has been unequivocal: “‘Playing God’, I will propose here not that we seek to play God or become gods, but that we strive to become posthuman. Talk of “God” or “gods” raises the spectre of traditional, outdated, primitive conceptions of superior beings ... No matter if we become immortal and incredibly powerful, we will not be supernatural ghosts unbound by physics, nor will we be jealous, vengeful enforcers of Judeo-Christian morals.” Again later “God was a primitive notion invented by superstitious people, people only just beginning to step out of ignorance and unconsciousness. The concept of God has been oppressive.” There do not appear to be any overt expressions of a Gnostic nature or of support for a religious interpretation in transhumanist texts, indeed, quite the opposite. Krueger (2005: 82) suggests that the mention of virtual reality as the Holy Grail of computer sciences by MIT professor David Zeltzer was picked up by the philosopher Heim (1993) and amplified into a full-blown Gnostic interpretation of transhumanism. Despite the apparent disavowal of religion and gnosis by transhumanists, the notion of Gnosis considered as a ‘distain of the world’ (Krueger, 2005:82) does have some resonance with the language deployed by some transhumanists in their most rhetorically expository moments – by Max More for example.

The dualistic world of the Gnostic with a hidden, perfect, metaphysical world and a degraded material world is paralleled in notions of the body wherein the human soul or mind (part of the divine metaphysical realm) is entrapped in a debased material body. The Gnostic aspiration, at least in some quarters, is the escape or transcendence of the body by the human essence/soul/mind so as to reunite in a higher ontological

plane. The body and all its functions, including sex, are seen as a debasement and an impediment to this transcendence. However, again, there is little in what transhumanists say to suggest support for this type of metaphysics, apart, that is in the occasional use of language and metaphors which could be read as in a similar semiotic space. The use of a phrase such as ‘the liberation of our physical ties’ does not necessarily imply a Gnostic aspiration or viewpoint. Nor, indeed does the idea of transcending the body through technology necessarily imply the invocation of transcendence to an alternative metaphysical ontology. It is possible to retain a material, realist ontology and still maintain the idea of technological virtuality. As Krueger argues there are substantive differences between Gnosticism and trans/post-humanism and he concludes:

*Neither the idea of man, nor the motives for overcoming the human body, nor the physical utopias of virtual existence can be named Gnostic. Deconstructing the posthumanist sources, we can recognize very clearly that the Platonic dualism of body and mind is not accepted by the materialistic philosophy of posthumanism. (Krueger, 2005: 86)*

The logic and motive for seeking to transcend the human body is completely different. The transhumanist is not seeing to do so because the body is seen as an evil encasement or to attain a new metaphysical, higher ontological state. The transhumanist sees the body as technically inefficient and ineffective and the new technological capacities now available as a means to improve or by-pass those inefficiencies, the “arguments are not Gnostic but utilitarian” (Krueger, 2005:86). Besides, not all transhumanists see a virtual existence in cyberspace as the goal of the enhancement project.

### **5:3 On Being Human II**

As I intimated briefly at the start of this paper, perhaps the most significant challenge – philosophically, ethically, socially and practically – that trans/post-humanism raises concerns its problematising of the very notion of what it is to be human. It raises challenges about the boundaries of what it is to be human and in doing so raises adjacent questions about the significance of the body and the location of identity. These are significant and weighty issues and I will only be able to provide an outline and raise some questions here.

Both Bostrom (2004) and de Mul (2002a) confront the predicament when they pose the question of whether the mode of being of a posthuman can be so significantly different from that of a human being to raise doubts as to whether it can still be considered as human at all? More personally and in terms of identity, if a person is technologically enhanced to a posthuman level, is the person any longer the same person with the same identity? Bostrom does make it very clear that not all transhuman enhancements would raise this problem. Some enhancements, for example, to cognitive ability, health or even expanded life span may not cause a loss of human status or personal identity necessarily. What might be altered, lost or gained before such questions kick in is not easy to determine in advance, and indeed may vary according to context. It also needs to be said that this is more like a continuum than and either/or binary. Am I a different person because I wear spectacles, or because I have had part of my body surgically removed? Am I different person if I have a face transplant, my physical and mental performance enhanced by drugs, acquire a significant bio-neural prosthesis, have my cognitive

capacities genetically enhanced by a magnitude of five? Is someone uploaded into a cyberspace existence with no physical body still a human? Is a clone a person?

Some of the strongest criticisms of transhumanism have been mounted in relation to these challenges. Fukuyama (2002), for example, envisages a dystopian outcome from the potential biotechnological interventions that are on the horizon and calls for strong government control and intervention. He primarily sees these interventions as a threat to human nature, and to human dignity and human rights. He sees further, threats to religion, morality and a presumed 'natural order' through the limited utilitarian ethics that to him surrounds and informs the emergent technologies. The notion of 'natural order' is central. He seems to argue that human nature has its own inherent, objective reality and that this anchors our values and provides the basis for the proper management of our societies. Here he invokes Aristotle and the arguments for an ethics based on the presumed qualities of a determined human nature. We tamper with that nature at our moral, social and political peril. However, it is not clear exactly what this essence of human nature is, especially as Fukuyama is an avowed agnostic and hence has no firm religious foundation. He is better at specifying what human nature is not than saying what it is and is forced to provide the rather unsatisfactory idea that the essence of what it is to be human is some undefinable 'Factor X' which cannot be captured by a reductionist materialist science, reduced to mere electro-chemical processes, nor reproduced in some information patterning in a computer. He assumes some 'natural' unity and continuity in human nature that should not be interfered with. His concern is in the end historical and political: "The political equality enshrined in the Declaration of Independence rests on the empirical fact of natural human equality" (Fukuyama, 2002: 9) and that equality rests on the sheer commonality of human nature. Fukuyama is in direct confrontation with someone like G. Stock the director of the UCLA School of Medicine's Program of Medicine, Technology and Society who strongly argues that we will soon be able to genetically manipulate embryos to develop desired traits and produce enhanced humans (see Stock, 2002). Stock also addresses another argument levelled at the transhuman project, namely that it is unnatural to intervene in human nature in ways that echo the introduction to this paper:

*We add or remove hair, straighten our teeth, fix our noses, enhance or reduce our breasts, get rid of fat. We use drugs to reduce pain, lose weight, change moods, stay awake. The idea that we will long forgo better and more powerful ways of modifying ourselves is a denial of what the past tells us about who we are.*

Significant opposition has also come from 'bioconservatives' (Bostrom, 2005a) - including Fukuyama as well as Leon Kass, George Annas, Jeremy Rifkin and Bill McKibben - who argue, among other things that transhumanist-type interventions and are dehumanising and an erosion of human dignity. The fear is that something might be lost that degrades the state and condition of the human. The argument, as with Fukuyama often seems to stem from the idea that there is some inherent, determined nature that makes us essentially human and should not be altered. Thus Kass talks of the 'special gift' that is 'given by our own nature' and that all creatures have their distinctive natures 'bestowed' upon them. He argues that "Cockroaches and humans are equally bestowed but differently natured. To turn a man into a cockroach - as we don't need Kafka to show us - would be dehumanizing. To try to turn a man into more than a man might be so as well." There are two attendant questions: 1. does enhancing a person to a certain level entail that they become non-human? 2. is it a problem if they do?

Bostrom (2005a) counters by pointing to all the negative things that ‘nature’ has given to humans and questions the validity of referring to notions of ‘the natural’ to provide guidance on what is desirable or normatively right. He colourfully suggests that “Had Mother Nature been a real parent, she would have been in jail for child abuse and murder.” (Bostrom: 2005a: 211). It is argued that humans need not defer to some supposed natural order and that it is legitimate to intervene and try and improve things. Which is what humans have done throughout their existence, it is simply now that the interventions are increasingly more to our own minds, bodies and forms of life. As the WTA (2003:35) FAQ puts it: “One could say that manipulating nature is an important part of what civilization and human intelligence is all about; we have been doing it since the invention of the wheel.” It was suggested at the start of this paper, rather playfully, that we are all already cyborgian, but there is a more serious philosophical argument that supports not only this but the idea that humans always have been and so interventions and enhancements are not a breach of human nature and the natural order. As de Mul (2002) argues ever since *Homo habilis* first fashioned tools out of bone and stone, we have been cyborgs, *Homo sapiens sapiens* have always sought to overcome their limitations in time and space through the use of physical and cultural enhancements (see also Donald, 1991). He draws on the German philosopher of Helmuth Plessner to argue for this (see de Mul, 2003) philosophical anthropology that better enables us to understand and think through the implications of transhuman conditions such as telepresence and virtual reality, particularly Plessner’s notion of ‘excentric positionality.’ In considering transhuman interventions then, is perhaps only a matter of degree. If humans have always intervened and tried to manipulate nature to suit their interests, needs and desires, are the transhuman interventions a radical departure or just a more intense continuation?

Others take issue with the notion of human essence or essential human nature. It is argued that the idea that there is an unchanging or immutable ‘nature’ fixed within humans or any creature is ‘antiquated’ (Dacey, 2004:1). It does not even make sense to suggest that the human essence consists only of a genetic code. There is, of course, a species specific germ line that is inherited inter-generationally by humans. But even that is subject to change. In addition it is not only genes that are ‘inherited’ and as Dacey (2004:1-2) says “To imagine that the clear, bright line around our nature must be drawn at the boundaries of the chromosomes is to be in the grip of an outmoded gene-centered ideology.” Bostrom (WTA, 2003; 2005a) argues that what makes us human is not merely our ‘nature’ but the way we think and behave, what we do with the attributes and qualities invested in us. He also points out that we are more than a DNA structure that being human involves interacting and functioning within a technological and social context. There is a sense in which what is human is a social construction: “human nature in this broader sense is dynamic, partially human-made, and improvable.” (Bostrom, 2005a: 213) and human nature has been improved upon throughout our history – without the loss of human status and (not necessarily) with a loss of human dignity.

Kass (2002: 48) oddly invokes the nightmares of Huxley’s *Brave New World* and C.S. Lewis’s *Abolition of Man* to add weight to his argument that the technological alteration of human nature would be dehumanizing and would ‘inevitably’ lead to “Homogenization, mediocrity, pacification, drug-induced contentment, debasement of taste, souls without loves and longings” As Bostrom (2005a:206) rightly points out,

whilst the Brave New World of Huxley is certainly not desirable, it does not feature an attempt to ‘enhance’ humans, but rather to use technology and social engineering to limit and contain human capacities and potential. This then becomes a matter of politics, not of science and technology. The transhumanist argument is to ensure the political and social conditions are in place to prevent those types of manipulations, not to issue a blanket ban research on the technologies of enhancement as Kass and other bioconservatives advocate. Kass (1997) also argues that certain traditional ‘meanings’ may be lost, such as the meaning of the life-cycle, the meaning of sex, the meaning of work. He invokes the rather odd notion of the ‘wisdom of repugnance’ and argues that when we feel ‘repugnance’ at notions such as human cloning, we should heed that feeling since it represents ‘the emotional expression of deep wisdom, beyond reason’s power to fully articulate’. It is proposed that we sense a violation and a perversion of the natural order and we should resist on that basis.

Bostrom (2005a) argues that the threat to human dignity takes two forms. Firstly, there is the idea of human dignity as a ‘moral status’ which involves the notion of some inherent right to be treated with a degree of respect. The second sees dignity as the quality of being ‘worthy’ or ‘honorable’. Again, Fukuyama (2002: 149) argues from the position of an inherent human nature “Denial of the concept of human dignity – that is, of the idea that there is something unique about the human race that entitles every member of the species to a higher moral status than the rest of the natural world – leads us down a very perilous path.” There is an anthropocentrism in the argument that Bostrom does not address, but he does agree that there is no logical or necessary reason why posthumans need be considered deficient in human dignity on either count, nor that unenhanced human’s will necessarily have their human dignity compromised by the presence of posthumans. Transhumanism faces a related critique here and that is that the technologies of enhancement will create new divisions within society, new inequalities, which will be a source of conflict. I will deal with that issue under 5:4 below.

There has been a tendency within recent philosophy to bring the body back and to argue that notions of the human and particularly identity are only meaningful and sensible if they include the notion of embodiment (e.g. Bordo, 1993; Gallaher, 2005; Weiss & Haber, 1999). It is argued that the human and human identity are deeply interconnected with embodied experience and that philosophies of reason have caused us to neglect that. Transhumanists do not necessarily disavow the body, but they clearly do not see it as vital to the sense of the human and human identity. They hold a materialist view of the body and tend to view it as a kind of complex machine (e.g. Minsky, 1988; Moravec, 1998). The identity of a person then is not based on the material body, but on the information patterns in the brain. This enables them to then say that a person can be ‘uploaded’ without a loss of identity or personality. However, the embodied nature of persons and the identity formation that accompanies that cannot be so easily dismissed. It should be noted that most enhancement technologies retain the material body, or at least most of it. They also claim that even in a virtual world, or uploaded, posthumans need not be considered as disembodied. Both Moravec and Kurzweil discuss corporeal existence and experience in cyberspace and argue that the posthuman state actually opens up more and a wider range of experiences. Moravec (Moravec and Pohl, 1993) even sees the experience of sex as greatly enhanced in cyberspace, particularly through the expansion of options and varying one’s sex. Again, Plessner’s conceptions are useful here according to de Mul

(2003). The uniqueness of the human condition rests in particular relation to its body, to an excentric positionality. Radically bypassing a complex philosophical position, from the point of view of the body “A living person *is* and is *in* his body (as inner experience or soul) and at the same time outside his body as the perspective, from which he is both’ (Plessner 1975: 365). Because of this tripartite determination of human existence human beings live in three worlds: an outer world (Aussenwelt), an inner world (Innenwelt), and the shared world of culture (Mitwelt)” (in de Mul, 2003:252) We experience all three aspects from both an internal and an external perspective – for example our body is both a body among other things and a lived body that functions as the locus of our perceptions and actions – this constitutes the unique excentric positionality of human life forms. De Mul argues that the transhuman transformations, in particular virtual reality and telepresence, introduce a new type of positionality, one not adequately covered by Plessner’s excentric account, but that his view of the human condition certainly provides a better access to consider this new form than, say, a Cartesian dualism which he sees as inherent to some transhumanists such as Moravec. De Mul (2003) cites the experiences of Howard Rheingold who experimented with telepresence technology in the laboratory of a Dr Tachi in Japan:

*The strangest moment was when Dr. Tachi told me to look to my right. There was a guy in a dark blue suit and light blue painted shoes reclining in a dentist’s chair. He was looking to his right so I could see the bald spot on the back of his head. He looked like me, and abstractedly I understood that he was me, but I know who is me, and me is here. He, on the other hand, was there. It doesn’t take a high degree of sensory verisimilitude to create a sense of remote presence. . . It was an out of the body experience, no doubt about it.*

(Rheingold 1991: 264)

As de Mul (2003: 258) argues, such an experience is only possible because of the excentric positionality of humans wherein we are always at the same time both inside and outside our bodies. Rheingold at that point both had a body and was *outside* his body and it is not fanciful to say that *he was inside* a robot or cyberspace. Thus, we can become embodied in these unique ways within a posthuman world. In telepresence and virtual reality the artificial body becomes part of the humans own body scheme, it is not a displacement or dissociation, but a doubling or even, theoretically, a multiplication. We might become distributed and ‘embodied’ across a range of locations in a poly-centric experience. Thus posthumans are characterised no longer by excentric positionality, but by poly-centric positionality.

In the more specific case of personal identity the question is raised by transhumanism as to whether a person’s identity can remain intact through a radical enhancement? Bostrom (2006) argues that much of what makes up a unique person, their memories, skills, and abilities, and personality would remain through an enhancement, even a radical one. The person and their identity would not be necessarily identical, but then they are in a dynamic state in any case and always subject to change. He reminds us that we all already go through a radical transformation – it’s called maturation, and we don’t typically and practically consider that we lose our sense of self and identity in the process. The strongest case for the preservation of ‘personal’ and ‘narrative’ identity through a radical enhancement is made when:

*(a) the changes are in the form of addition of new capacities or enhancement of old ones, without sacrifice of preexisting capacities; and (b) the changes are implemented gradually over an extended period of time; (c) each step of the transformation process is freely and competently chosen by the subject; and (d) the new capacities do not prevent the pre-existing*

*capacities from being periodically exercised; (e) the subject retains her old memories and many of her basic desires and dispositions; (f) the subject retains many of her old personal relationships and social connections; and (g) the transformation fits into the life narrative and self-conception of the subject. (Bostrom, 2006: 19)*

For Bostrom a person can retain their identity through a posthuman transformation, but it has to be accepted that there are certain modes of transformation where this might not be the case, where the conditions above are not met. But as he says (Bostrom, 2004) the preservation of personal identity is not everything – there are other aspects of ourselves that are valuable. To be able to choose seems likely, how to make such a decision is not yet clear and perhaps won't be until we have a clearer understanding of the options and their implications. Again, from Bostrom's perspective, no reason to stop the development of enhancement technologies

#### **5:4 The Threat to Society**

Transhumanism has also been challenged by those who see it as a threat to society. Again bioethicists have been at the vanguard of this assault. Hans Jonas (cited in de Mul, 2002), for example argues that the existence of possible future horrors is sufficient to call a halt (albeit perhaps temporarily) to certain technological developments, and we have already heard that Fukuyama is so alarmed as to call transhumanism the most dangerous idea in the world. For Fukuyama (2002, 2004) tampering with the essence of human nature puts at risk our moral and political order, as such it needs to be put under full political control<sup>9</sup>. However, not all bioethicists share these view points. Glover (1984) expressly addresses the ethics of some of the enhancement technologies and concluded that:

*Not just any aspect of present human nature... is worth preserving. Rather it is especially those features which contribute to self-development and self-expression, to certain kinds of relationships, and to the development of our consciousness and understanding. And some of these features may be extended rather than threatened by technology.*

Others, such as Peter Singer, John Harris and Gregory Spence have presented the ethics of genetic engineering that the transhumanists find to be balanced and workable.

One aspect of this argument is that the creation of enhanced or posthumans would be divisive and would lead to conflict between those so enhanced and those who are not. The fear is the construction of hierarchised, asymmetrical and unequal society that will be conflict ridden. At the extreme the concern is with the construction of two sub-species who will have different interests and will inevitably be in conflict. This view has been expressed by certain influential bioethicists

*"The new species, or "posthuman," will likely view the old "normal" humans as inferior, even savages, and fit for slavery or slaughter. The normals, on the other hand, may see the posthumans as a threat and if they can, may engage in a preemptive strike by killing the posthumans before they themselves are killed or enslaved by them. It is ultimately this predictable potential for genocide that makes species-altering experiments potential weapons of mass destruction, and makes the unaccountable genetic engineer a potential bioterrorist."* (Annas, Andrews & Isasi, 2002)

Once again Fukuyama makes similar points, pointing to the risks of a 'genetic overclass'. It is also a risk that even Stock (2002) acknowledges, noting that it might

also contribute to unequal distribution of resources and so worsening a wealth gap. As Graham (2002:69) argues, it is a matter of debate as to whether “the biotechnological and digital age will simply enrich the privileged few at the expense of impoverished nations.” This also applies at a more individual level. Those unable to participate will become more disadvantaged and excluded. The world might divide in terms of a techno-elite and a cyber underclass (70). Bostrom (2005a:207), as do other transhumanists, acknowledges the risks, but still argues that they do not constitute grounds for stopping scientific development. It is possible to be against the development of weapons of mass destruction but to favour the development of prosthetics that can enhance someone’s well-being. These are different issues and it is a matter of making the right choices. The WTA (2003) FAQ is quite explicit in acknowledging these risks and in leading a debate and analysis of the so that informed choices can be made. They accept that differential development of technologies is a viable way of moving forward. Bostrom (2002) discusses in some detail the existential risks associated with various technological developments including nanotechnology, artificial intelligence and biological warfare.

Human societies have always had to cope with difference and asymmetries – sometimes it does it badly, sometimes very well. Again this is a matter of political and cultural values. The fact that it has often been done badly is recognized, but for Bostrom that is not a reason to ban technological research and diminish the possible benefits of enhancement. The risk of a divisive two-cultures is a possibility, but Bostrom (2005a: 207-8) argues that a more likely outcome is a “continuum of differently modified or enhanced individuals, which would overlap with the continuum of as-yet unenhanced humans.” It is disingenuous to pretend that there are not already divisions within society on all manner of dimensions and that these also constitute power asymmetries in which some sections are disadvantaged. As Bostrom (2004:502) says: “we also accept a wide range of inequalities because we think that they are deserved, have social benefits, or are unavoidable concomitants to free individuals making their own and sometimes foolish choices about how to live their lives.” There also exist differences along a range of dimensions, e.g. people’s height, which to a large extent do not generate conflict. Where divisions and inequalities exist or are likely to form calls for political and social solutions, not a technological ban. Transhumanists like Bostrom have indeed been responsible for opening up the debate on the social consequences and ethics of the ethics of enhancement: that is indeed part of the remit of the WTA.

For others that fact that human society has often dealt with difference badly is a cause for alarm. It has been a particular concern for some people with disabilities and their advocates. For example Gregor Wolbring (2006) argues that transhuman enhancements entail a model in which being merely healthy is not enough and that a normal healthy human is still somehow limited or defective. His fear is that transhumanism will lead to an ‘ability’ divide that will entail disadvantage, on a number of dimensions, for certain types of people. He argues that we are currently unable to properly integrate people with disabilities and that they represent a disadvantaged group in society, this will, he maintains, be amplified and extended under transhuman or posthuman conditions. This is of concern *now*, since funds and resources that are already scarce for the disabled community are being channeled into the research and development associated with the technologies of enhancement. These are genuine concerns, but reflect current problems of a cultural, political and

economic nature, they do not represent *in principle* grounds for putting a halt to scientific and technological development. Indeed, such work often has direct benefits to the disabled. It is vital that such issues are incorporated into the debate about these technologies and that better policy and resource decisions made.

Even more challenging for transhumanism is the charge that they engage in a valorization and reification of technology that is an ideological interpellation that causes people to misrecognise as engaged in the excitement and development of modern technology and makes them unable to fully recognize the true conditions of their existence (Bendle, 2002). Science and technology are more than ever being incorporated into the machinations of late capitalism, and indeed to become increasingly commoditized. What transhumanism offers is the commercialisation of technologies that purport to offer them a better life and a better death (or no death at all). For most this is will remain mythical and indeed, the effect will be further divisions and inequalities. As an ideological interpellation though, it prevents people from recognition that they are in fact “embodied beings living within history ad participating in a highly exploitative economic system” (Bendle, 2002:1) Some have pointed to a very specific threat to society that especially emanates from life extension enhancements; that is the problem of over-population. Again the WTA acknowledges this danger and try to play it down or to recast it in terms of a wealth and resource issue. It remains an issue that needs to be thoroughly considered and the answers offered by the WTA are not fully convincing.

## **5:5 Political and Social**

There are quite clearly issues that are profoundly political within the practices and consequences associated with the technologies of enhancement. There is a politics that revolves around how the decisions are made about which technologies get developed and which don't. This is a politics of resourcing, but also one of the knowledge-power discourses that legitimise certain scientific and technological projects and their outcomes but excludes or marginalises others. Also of great significance though are the power and politics attendant on the discursive struggle that accompanies different conceptions, for example, of what it is to be human, what, if anything is meant by the notion of human nature, concepts of self and identity, and the significance of embodiment. These issues are getting discussed, but often in fragmented ways and in secluded parts of the social arena.

Transhumanists typically recognise the social implications of the developments they sponsor and are aware of the political dimension. They do not, however, strongly pursue the politics of the technologies of enhancement. The WTA (2003) FAQ, for example, declares that the Association is politically unaligned. However, this does not mean that it, nor any trans/post-humanist movement, can or should disengage politically. The issues at stake in the technologies of enhancement are intensely political. The WTA recognises that and is in part a forum expressly designed to surface and discuss the issues, ethical, social, cultural *and* political, associated with them. However, the level of political engagement is actually low leaving some to accuse it of sidestepping “collective or structural solutions to political and economic ills.” (Graham, 2002: 70). There is perhaps to an absence of a consideration of the power relations inherent to science and technology that have been made so abundantly apparent in other discourses (e.g. Fuller & Collier 2003; Law, 1991). Assessments

about the global benefits of scientific and technological development by organisations such as the United Nations Human Development Program, for example, paint a gloomier picture of continued inequality and further asymmetry than the glittering prizes seemingly on offer on a transhuman world. Neither do not offer much analysis or reflection on the knowledge-power implications of what they and others engage in within the discursive terrain around the technologies of enhancement.

There are a range of political positions associated with transhumanism. It tends towards a libertarianism among its extropian advocates, but the WTA and other groups are more inclined to welcome degrees of political intervention and even control in relation to technology development. Part of the politico-ethical stance of, at least the WTA, is the belief that people should be free to pursue these technologies and free to choose the enhancements to the human condition that they can bring. The Association is committed to “defend the right of individuals in free and democratic societies to adopt technologies that expand human capacities.” It claims to be politically unaligned, but is very conscious of the ethical, social and political issues attendant on their project. In the Transhumanist Declaration (WTA, 2003) it is declared that “Transhumanism does not support any particular party, politician or political platform.” It also asserts its humanist commitments, but its very aspirations causes something of an extension, thus: “Transhumanism advocates the well-being of all sentience (whether in artificial intellects, humans, posthumans, or non-human animals)...”, it thereby avoids some of the anthropocentrism apparent in and critiqued in some forms of traditional humanism.

James Hughes, a key figure in the WTA, is something of an exception in that he has recently tried to address the political dimension head on, and is one of only a very few who have. In his latest book *Citizen Cyborg*, perhaps conscious of the politicized concerns with the US and the strength of the bioconservative lobby, has argued that the technologies of enhancement need to be developed within the context of a radically strengthened democracy to ensure that the issues are widely debated and good decisions made. He says: “We can embrace the transhuman technologies while proposing democratic ways to manage them and reduce their risks. . . .We need a democratic transhumanist movement fighting both for our right to control our bodies with technology, and for the democratic control, regulation and equitable distribution of those technologies.”

## **6: Conclusion.**

Transhumanism and Posthumanism are positions in a contested space. Within that space they are advocates of rapidly moving ahead with some lines of scientific and technological developments that will, if successful bring about radical changes to individuals, groups, communities, organisations, societies, the globe and the species. It is a location in a contested space in which they argue for the freedom of the individual to be able to choose the enhancements to their healthspan and their cognitive and emotional capabilities. For some a strong libertarian position is adopted, for others there is clear recognition of the important social, economic and political ramifications and the need for some social and/or political monitoring and control. What they are clearly against are those forces that seek a strong government intervention and those who advocate a premature cessation of the research and development in the enhancement technologies because of unjustified fears, unreasonable calculations of risk, or adherence to outmoded religious, philosophical or moral positions.

It is also a contested space that the transhumanists have in part been instrumental forging in the first place, or certainly at least in broadening out. The things at stake concern all sections of society. The changes under consideration are arriving rapidly and although some remain some way off into the future it is vital, given their dramatic and revolutionary potential, that their development, adoption, utilisation and consequences be addressed **now**, not later once they have merged. If the discussion waits too long we will not be able to contain the changes and will not be in a good position to make good decisions. Transhumanism has been instrumental in forcing a recognition of that and of opening up a space for such a discussion.

The space in which they are discussed, and decided upon, ought not to be confined or sealed off. There is a risk that, for various reasons, aspects of the developments remain confined within scientific discourse. That would be unfortunate: these are not technical matters to be decided upon according to a purely scientific logic or motive. There is certainly a risk that the space will be partially sealed off politically. That would also be unfortunate. There are clearly political alignments already apparent within the space and political processes that are shaping the space, the discourse and the resource and material consequences. Again the issues involved are so far reaching and so all-embracing that they would benefit from the widest possible airing and consideration. There is a risk that parts of the space will be colonised by certain ethical interpretations offered by a particular bioethicist with a narrow interpretation of the issues. There is, of course the added complexity that these various positions are intersecting. There are alignments between certain scientific, political and commercial interests for example that already occupy large parts of the space.

There are implications of great significance for business, for work, for the way people work, and for the way things get organised. From massive areas of new business through explosions of new products and services, through to radical changes in production technologies, to the interface between humans and technology, and on to the capacities of people, what they are, and what they mean for productive and creative activity. Quite apart from these practical issues there is much of a philosophical and sociological nature inherent to the transhumanist project that has been the legitimate province of organisation studies for quite some time – for example issues of identity and of materiality. Quite simply this is a space and a discursive arena that organisation studies needs to be in. As yet it has done little to engage.

## References:

- Annas, G., L. Andrews, and R. Isasi (2002) Protecting the endangered human: Toward an international treaty prohibiting cloning and inheritable alterations. *American Journal of Law and Medicine* 28 (2&3):151-178.
- Bendle, M.F. (2002) Teleportation, cyborgs and the posthuman ideology. *Social Semiotics*, 12(1): 45-62.
- Bennett, J. (1997) The enchanted world of modernity: Paracelsus, Kant, and Deleuze', *Cultural Studies* 1.
- Bergsma, A. (2000) Transhumanism and the Wisdom of Old Genes: Is Neurotechnology a Source of Future Happiness? *Journal of Happiness Studies* 1: 401-417.
- Bordo, Susan. (1993) *Unbearable Weight: Feminism, Western Culture, and the Body*. Berkeley: University of California Press.

- Bostrom, N. (2002) Existential risks: Analyzing human extinction scenarios and related hazards. *Journal of Evolution and Technology*. 9  
<http://www.nickbostrom.com/existential/risks.html>
- Bostrom, N. (2003) Human genetic enhancements: A Transhumanist perspective. *The Journal of Value Inquiry*, 37(4): 493-506.
- Bostrom, N. (2005) A history of transhumanist thought. Faculty of Philosophy, Oxford University, [www.nickbostrom.com](http://www.nickbostrom.com)
- Bostrom, N. (2005a) In defense of posthuman dignity. *Bioethics*, 19(3): 202-214.
- Bostrom, N. (2006) Why I want to be Posthuman when I grow up. Version 1.3 draft, [www.nickbostrom.com](http://www.nickbostrom.com)
- Bozeman, J. (1997) 'Technological millenarianism in the United States' in T. Robbins & S. Palmer (eds) *Millennium, Messiahs, and Mayhem: Contemporary Apocalyptic Movements* New. York: Routledge.
- Chia, R. (2003) Ontology: Organization as 'World-making'. In R. Westwood & S. Clegg (eds.) *Debating Organisation: Point – Counterpoint in Organisation Studies*. Pp. 98-113. Oxford: Blackwell.
- Dacey, A. (2004) The New Perfectionism. *Free Inquiry Magazine* 24(4): 1-4.  
[http://www.secularhumanism.org/index.php?section=library&page=dacey\\_24\\_4](http://www.secularhumanism.org/index.php?section=library&page=dacey_24_4)
- Davis, Erik (1998): *Technosis: Myth, Magic, Mysticism in the Age of Information*. New York, Three Rivers.
- De Mul, J. (2002) Transhumanism: The convergence of evolution, humanism and information technology. <http://www.transhumanism.org/index.php/th/more/288/>
- De Mul, J. (2002a) *Cyberspace Odyssey: The Internet revolution Re-Interpreted*. Kampen, NZ: Klement
- De Mul, J. (2003) Digitally mediated (dis)embodiment: Plessner's concept of exentric positionality explained for cyborgs. *Information, Communication & Society*, 6(2): 247-266.
- Donald, M. (1991) *Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition*. Cambridge: Harvard University Press.
- Emmeche, C. (1991) *The Garden in the Machine: The Emerging Science of Artificial Life*. Princeton: Princeton University Press.
- Extropy Institute (2003) Transhumanist FAQ, <http://www.extropy.org/faq.htm#1.2>, accessed, 10/10/2006.
- Featherstone, M. & Burrows, R. (1995) Cultures of technological embodiment. *Body and Society*, 3-4(2)
- FM-2030 (1989) *Are You a Transhuman?: Monitoring and Stimulating Your Personal Rate of Growth in a Rapidly Changing World*. New York: Warner Books.
- Fukuyama, F. (2002) *Our Posthuman Future: Consequences of the Biotechnology Revolution*. New York: Farrar, Straus & Giroux,
- Fukuyama, F. (2004) 'Transhumanism', *Foreign Policy*, Sep/Oct.
- Fuller, S. & Collier, J.H. (2003) *Philosophy, Rhetoric, and the End of Knowledge*. Mahwah: NJ: Lawrence Erlbaum Associates.
- Gallagher, S. (2005) *How the Body Shapes the Mind*. Oxford: Oxford University Press
- Glover, J. (1984) *What Sort of People Should There Be?* London: Pelican.
- Graham, E. (2001) *Representations of the Post/Human: Monsters, Aliens and Others in Popular Culture*. Manchester: Manchester UP and New Jersey: Rutgers UP.
- Graham, E. (2002) Nietzsche Gets a Modem?: Transhumanism and the Technological Sublime. *Literature & Theology*, 16(1):65-80.
- Gray, Chris Hables, (2001) *Cyborg Citizen: Politics in the Posthuman Age*. London: Routledge.
- Halberstam, J.M. & Livingston, I. (eds) (1995) *Posthuman Bodies*. Indianapolis: Indiana University Press.
- Haldane, J.B.S. (1923) *Daedalus of Science and the Future*. New York: E. P. Dutton & Company. <http://home.att.net/~p.caimi/Daedalus.doc>

- Hassan, Ihab. (1977) Prometheus as Performer: Toward a Posthumanist Culture? A University Masque in Five Scenes. *Georgia Review* 31(4): 830-850.
- Haraway, D. (1991) Cyborg manifesto: science, technology, and socialist-feminism in the late twentieth century. in D. Haraway, *Simians, Cyborgs, and Women*. New York: Routledge.
- Hayles, N. Katherine (1997) The Posthuman Body: Inscription and Incorporation in Galatea 2.2 and Snow Crash. *Configurations*, 5(2): 241-266
- Hayles, Katherine N. (1999) *How We Became Posthuman. Virtual Bodies in Cybernetics, Literature, and Informatics*. Chicago: The University of Chicago Press.
- Heim, Michael (1993) *The Metaphysics of Virtual Reality*. New York, Oxford University Press.
- Hughes, J. (2004) *Citizen Cyborg*. Cambridge, MA: Westview Press.
- Huxley, J. (1927) *Religion without Revelation*. London: E. Benn.
- Huxley, J. (1957) 'Transhumanism'. In Julian Huxley *New Bottles for New Wine*, pp 13-17. London: Chatto & Windus.
- Kass, L. (1997) The wisdom of repugnance, *The New Republic* 2 June 1997:22.
- Kass, L. (2002) *Life, Liberty, and Defense of Dignity: The Challenge for Bioethics*. San Francisco. Encounter Books.
- Kass, L. (2003) Ageless Bodies, Happy Souls: Biotechnology and the Pursuit of Perfection. *The New Atlantis*, 1.
- Kroker, A. & Weinstein, M. (1994) The hyper-texted body, or Nietzsche gets a modem. In Kroker, A. & Weinstein, M. (1994) *Data Trash: The Theory of the Virtual Class*. New York: St Martin's Press. Accessed 11/10/2006  
<http://www.ctheory.net/articles.aspx?id=144>
- Krueger, O. (2005) Gnosis in Cyberspace? Body, Mind and Progress in Posthumanism. *Journal of Evolution and Technology* 14(2): 77-89.
- Kurzweil, R. (1999) *The Age of Spiritual Machines: When Computers Exceed Human Intelligence*. London: Orion.
- Kurzweil, R. (2005) *Singularity is Near: When Humans Transcend Biology*. New York: Viking.
- Law, J. (1991) *A Sociology of Monsters: Essays on Power, Technology and Domination*. London: Routledge.
- Midgley, A. (1992) *Science as Salvation: A Modern Myth and its Meaning*. London: Routledge.
- Miller, P. & Wilsdon, J. (eds.) (2006) *Better Humans? The Politics of Human Enhancement and Life Extension*. London: Demos.
- Miller, P. & Wilsdon, J. (2006) Stronger, longer, smarter, faster. In P. Miller & J. Wilsdon (eds.) pp. 13-28. *Better Humans? The Politics of Human Enhancement and Life Extension*. London: Demos.
- Minsky, Marvin L. (1988): *Society of Mind*. New York, Simon & Schuster.
- Moravec, H. (1988), *Mind Children: The Future of Robot and Human Intelligence*. Cambridge: Cambridge University Press.
- Moravec, H. (1998) *Robot: Mere Machine to Transcendent Mind*. New York, Oxford University Press.
- Moravec, Hans & Pohl, F. (1993) Souls in Silicon. *Omni* 16 (11): 66-76.
- More, M. (1990) *Extropy: The Journal of Transhumanist Thought* No. 6.
- More, M. (1994) On becoming posthuman. *Free Inquiry* 14 (4): 38-41.
- More, M (2003) Principles of Extropy: Version 3.11, <http://www.extropy.org/principles.htm>
- Nietzsche, F. (1961) *Thus Spoke Zarathustra: A Book for Everyone and No One*. translated K.J. Hollingdale, Harmondsworth, Middlesex: Penguin.
- Noble, D. (1997) *The Religion of Technology: The Divinity of Man and the Spirit of Invention*. New York: Knopf.
- Paul, G.S., and Cox, E.D. (1996) *Beyond Humanity: Cyber Evolution and Future Minds*. Rockland, Massachusetts: Charles River Media.
- Peacock, M. (2000) Philosophical rumblings in the German Republic *Philosophy Now*, 26 April/May 7-8.

- Piper, A. (2000) Project Ubermensch: German intellectuals confront genetic engineering *Lingua Franca*, 9(9): 73–77.
- Rheingold, H. (1991) *Virtual Reality*. New York: Simon & Schuster.
- Robins, K. (1995) Cyberspace and the world we live in, *Body & Society* 3:139-152.
- Roco, M.C. & Bainbridge, W.S. (eds) (2002) *Converging Technologies for Improving Human Performance: Nanotechnology, Biotechnology, Information Technology and Cognitive Science*. Arlington, Virginia: National Science Foundation
- Rossini, M. (2003) Science/fiction: imagineering posthuman bodies. Paper presented at Gender and Power in the New Europe, the 5th European Feminist Research Conference, Lund University, Sweden.
- Russell, B. (1924) *Icarus; or the Future of Science*. London: K. Paul, Trench, Trubner & Co. Ltd.
- Ryle, G. (1949) *The Concept of the Mind*. London: Hutchinson.
- Sahlins, M. D. (1960), 'Evolution: Specific and General', in M.D. Sahlins and E.R. Service (eds.) *Evolution and Culture*. Ann Arbor: University of Michigan Press.
- Sahlins, M.D. & Service, E.R. *Evolution and Culture* Ann Arbor: University of Michigan Press.
- Sandberg, A. (2000) The Transhuman Vision. <http://www.aleph.se/Trans/Intro/vision.html>. accessed, 23/10/06
- Stock, G. (2002) *Redesigning Humans: Our Inevitable Genetic Future*. New York: Houghton Mifflin.
- Weiss, G. and H. F. Haber (eds). (1999). *Perspectives on Embodiment*. London: Routledge
- Wertheim, M. (1999) *The Pearly Gates of Cyberspace*. New York: Doubleday.
- Wolbring, G. (2006) The Unenhanced Underclass. In P. Miller & J. Wilsdon (eds.) pp. 122-128. *Better Humans? The Politics of Human Enhancement and Life Extension*. London: Demos.
- World Transhumanist Association (2003) The Transhumanist FAQ: A General Introduction. Version 2.1. <http://www.transhumanism.org>. Accessed, 16/8/2006.

**Table 1. Current status of the main types of enhancement technology**

Name	Function	Examples	Availability
Psychopharmacology	Alteration of brain state or mood	Prozac (enhanced mood), Ritalin (enhances concentration), Provigil (prolongs alert wakefulness)	Now available; other research in progress, eg appetite suppressants
Other pharmacological agents	Alteration of bodily form or function	Growth hormone, Viagra (male sexual function), erythropoietin (athletic performance), steroids (muscle mass)	All now available
Cosmetic surgery	Changes to facial or physical appearance		Now widely available
Preimplantation genetic diagnosis	Enables embryos to be selected for particular genetic traits	Huntingdon's disease, cystic fibrosis <sup>4</sup>	Available for several dozen illnesses; more genetic tests being developed
Gene therapy	Alters genetic make-up of selected cells in the body	Somatic therapy – various experimental treatments	Germline therapy – GM plants; mouse embryo engineering Somatic gene therapy is being used in a number of experimental treatments. Human germline gene therapy is currently illegal in the UK, although the House of Commons Science and Technology Committee has recommended it should be permitted for research purposes <sup>5</sup>

Name	Function	Examples	Availability
Cybernetics	Alteration of mental or physical function by embedding engineering or electronic systems within the body	Kevin Warwick's research at Reading University on human-computer interactions <sup>6</sup>	Research actively being pursued
Nanotechnologies	Similar to cybernetics, but using far higher levels of miniaturisation	Nanodevices to destroy tumours or rebuild cell walls	According to the UK's Royal Society, at least 10 years away <sup>7</sup>
Radical life extension	Combination of techniques enabling human lifespans to reach 150 years or more	Theoretical possibilities hotly debated by scientists such as Aubrey de Grey and S Jay Olshansky	Even the most optimistic predictions (de Grey) suggest we are 25–30 years away from the necessary scientific breakthroughs

<sup>1</sup> Later (1999) made into a film of the same name and starring Robin Williams.

<sup>2</sup> To some degree based on Philip K. Dick's novel *Do Androids Dream of Electric Sheep*. The first release of the film was somewhat sanitised, the full dystopian and noiresque nature of Ridley's intended film was realised with the release of the Director's Cut

<sup>3</sup> Based on Martin Caidin's 1972 novel *Cyborg*.

<sup>4</sup> F.M. Estfandiary formally changed his name to FM-2030. It is a practice not uncommon in transhumanism. Max More used to be called Max T. O'Connor and Natasha Vita-More (partner to Max More), a transhumanist artist, used to be Nancie Clark. FM-2030 died in 2000 and his body is now in cryonic suspension at the Alcor Life Extension Foundation in Arizona.

<sup>5</sup> "Extropy is a metaphor referring to attitudes and values shared by those who want to overcome human limits through technology. Extropy is defined as "the extent of a system's intelligence, information, energy, life, experience, diversity, opportunity, and growth. It is the collection of forces which oppose entropy" (Extropy Institute, 2003)

<sup>6</sup> Morrow also changed his name from Tom Bell

<sup>7</sup> A range of organisations with varying levels of association with transhumanism have developed in recent years and include: The Extropy Institute, Alcor Life Extension Foundation, Foresight Institute, Transhumanist Arts & Culture, Aleph in Sweden, TransVision in Europe, The World Transhumanist Association, and The Singularity Institute.

<sup>8</sup> The Association was founded in 1998 by the British philosophers Nick Bostrom and David Pearce.

<sup>9</sup> Fukuyama is a member of the influential President's Council on Bioethics, which George W Bush set up in 2001. In a series of reports, the Council has advocated a conservative position on enhancement, stem cell research and human cloning.