Teleportation, Cyborgs and the Posthuman Ideology

MERVYN F. BENDLE

This paper is concerned with a set of phenomena that lies at the intersection of popular culture, genetics, cybertechnology, nanotechnology, biotechnology and other advanced technologies, bio-ethics, science speculation, science fiction, mythology, the New Age Movement, cults, commerce and globalization. At the centre is a radical technophilia that finds representative expression in posthumanism, an Internet-based social movement driven by an extreme scientific utopianism. This set of phenomena constitutes an articulated cultural response to a number of underlying economic, technological and social dynamics that are together transforming the world, and particularly developed societies as they are incorporated into a global system of 'digital capitalism'. This paper first describes posthumanism and transhumanism. It then explores two key notions, teleportation and cyborgs, that receive extensive attention in mainstream media and serve as exemplars of this scientistic ideology, locating them both in cultural history and contemporary popular culture. The paper argues that posthumanism and associated phenomena are best seen as an ideological interpellation of humanity into an increasingly dominant scientific and technological order based on the cultural and scientific ascendancy of the 'Informational Paradigm' identified by Katherine Hayles in her inquiry into 'How we became posthuman'.

This paper is concerned with a set of phenomena that lies at the intersection of popular culture, genetics, cybertechnology, nanotechnology, biotechnology and other advanced technologies, bio-ethics, science speculation, science fiction, mythology, the New Age Movement, cults, commerce and globalization. At the centre is a radical technophilia that finds representative expression in posthumanism, an Internet-based social movement driven by an extreme scientific utopianism. Posthumanism (and its more moderate version, transhumanism) is represented, as we shall see, by leaders such as Max More, and by such prominent figures in science, technology and philosophy as Ray Kurzweil, Kevin Kelly, Peter Sloterdijk and Keith Ansell Pearson; journals like *Wired;* self-styled 'frontier organizations' like the Extropy Institute, the Life Extension Foundation, the World Transhumanist Association, the Electronic Frontier Foundation, the American Cryonics Society; and by international events like 'TransVision MM', the Third European transhumanist conference held in London in July 2000. Transhumanism also has a major Internet

presence and it claims to have discussion groups in every major US city, in Europe and around the world.

This set of phenomena constitute an articulated cultural response to a number of underlying economic, technological and social dynamics that are together transforming the world, and particularly developed societies, as they are incorporated into a global system of 'digital capitalism' (Schiller 1999). This paper first describes posthumanism and transhumanism. It then explores two key notions, teleportation and cyborgs, that receive extensive attention in mainstream media and serve as exemplars of this scientistic ideology, locating them both in cultural history and contemporary popular culture. The paper argues that posthumanism and associated phenomena are best seen as an ideological interpellation of humanity into an increasingly dominant scientific and technological order based on the cultural and scientific ascendancy of the 'Informational Paradigm' identified by Katherine Hayles in her inquiry into 'How we became posthuman' (1999).

The concept of ideological interpellation involves the idea that subjects are constituted through their interpellation into ideology (Althusser 1971: 175); in this case, the technocratic scientism of posthumanism. Ideology, in turn, may be understood as a systematic representation of people's imaginary relationship to the real conditions of their existence. Within the ideology of concern here, human beings misrecognize themselves as technologically augmented beings, and potentially as digitized quanta of information 'living' within cybernetic systems, and not as embodied beings living within history and participating in a highly exploitative economic system. As Althusser (1971: 171–172) initially points out, and as Ricoeur (1994: 64) emphasizes, the notion of interpellation echoes the idea of the religious 'calling': 'The use of the term "interpellation" is an allusion to the theological concept of call, of being called by God. In its ability to interpellate subjects, ideology also constitutes them. To be hailed is to become a subject.' In a post-Christian social formation, where 'God' can no longer operate as the master-signifier its place can readily be taken (Zizek 1989: 101), in this case by the emerging conception of a single, unified global information system, and the benefits previously associated with religious commitment (salvation, eternal life, etc.) are ascribed to this new omnipresent, omnipotent and omniscient supreme system. As in previous periods of ascendant capitalism, this ideology has assumed noticeable Social Darwinist tendencies—'it posits the survival of those with the economic means to finance their continued existence' (Abbas 1999: 1), an existence that the new paradigm projects into an indefinite future of immortality for the wealthy few. It is the 'call' of this globalized system that posthumanism heeds, as we shall see.

Hayles traces the historical and cultural processes through which the traditional notion of the embodied human has been replaced by the new ideal of the cybernetic posthuman, in what Arthur Kroker (1996) has called the 'flesh-eating 90s'. As Hayles (1999: 1) puts it: 'a defining characteristic of the present cultural moment is the belief that information can circulate unchanged among different material substrates', in a state of total independence from the corporeal and material world. Moreover, under 'the erasure of embodiment … "intelligence" becomes a property of the formal manipulation of symbols rather than enaction in the human life-world'

(Hayles 1999: xi). These notions facilitate the re-conception of human beings as essentially information that is only *contingently* embodied and therefore capable of being 'uploaded' into 'super-intelligent' communication and information systems that know no limitations of time or space, as we shall see. Hayles (1999: 16) identifies three post-war stages in the emergence of the posthuman, each dominated by a particular constellation of ideas: homeostasis (1945–1960), reflexivity (1960–1985), and the present period of virtuality. She also identifies key players and representative artefacts from each stage. The people and ideas discussed in the following well represent the current stage, particularly with the notion of teleportation—which constitutes the total reduction of human beings to information, to accomplish 'the central event of the 20th century ... the overthrow of matter', to quote Alvin Toffler in 'A Magna Carta for the Knowledge Age', a manifesto commissioned by Newt Gingrich (Hayles 1999: 18); and the cyborg—which represents the obliteration of the boundary between human and machine, with the machine becoming ascendant in an event conceived as a Promethean leap in evolution from the human to the posthuman.

***

We turn now to look more closely at the notion of the posthuman. Hassan (1977: 212) observed some time ago 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 identified this shift with a resurgent Prometheanism, and this has turned out to be the case, although, as we shall see, there has been a paucity of philosophical sophistication in posthumanism to match that of the humanism that has been cast aside, or of the anti-humanism that has offered a parallel critique. Instead, posthumanism has assumed the dominant characteristics of a naive brutalism, embracing scientific speculation, mythic aspiration and capitalist triumphalism in a resolutely non-critical fashion.

The posthuman project has been described as a 'dubious' cousin of 'transhumanism', which is a slightly more moderate notion that has nevertheless 'assumed a viral life, becoming a cultural meme' (Ansell Pearson 1997: 1–2). It is closely aligned with the Extropian movement, which sees its (rather daunting) mission as combating the entropic (i.e. disorderly) tendencies of the universe, especially where these impact on human well-being and potential. Possibly the most accessible representative statements in the field are: 'The Transhumanist FAQ', available from the Transhumanist Web Alliance (no date; hereafter 'FAQ'); and the article 'On Becoming Posthuman' by Max More (1994), the leader of the Extropians and a person whose very name seems an incitement to excess. In its comprehensive FAQ document, transhumanism is defined as an extension of humanism that does not limit itself to traditional humanist methods, such as education, in order to improve the condition of the human species, a view recently given very controversial ex-

pression by the German philosopher Peter Sloterdijk, as we shall see (Peacock 2000; Piper 2000). Instead, posthumanism embraces all scientific and technological means available (e.g. artificial intelligence (AI), molecular nanotechnology, pharmacology) to move beyond the present stage of human development. This strategy is not in itself eccentric, as a special edition of *Scientific American* on 'The Bionic Future' (Fall 1999) makes clear, providing articles on such matters as cloning, growing new organs, head transplants, the design of new sensory and tactile experiences, the use of pheromones in stimulating and manipulating sexual desire, the application of genetic engineering to design babies to order, and the widespread use of artificial wombs.

Transhumans are 'transitional humans' who are on this path to transcendence, people who play a 'bridging role in evolution' (FAQ: 2). 'Signs' of transhumanity include body augmentation with implants, androgyny, asexual reproduction, and distributed identity. These people are 'actively preparing for becoming posthuman'. A posthuman is a being that has completed this transition. As the FAQ document explains, a posthuman is 'a human descendent who has been [technologically] augmented to such a degree as to be no longer a human' (FAQ: 2). Posthuman mental and physical abilities, including intelligence, memory, strength, health and longevity, would all vastly exceed those of current humans. Posthumans could be totally synthetic, and AI systems are seen by some as potentially the first posthuman beings. The prospect of living without a body 'as information patterns on large super-fast computer networks' excites great enthusiasm amongst transhumans and posthumans (FAQ: 4).

More (1994) believes that the posthuman can be achieved via two paths: physically, through science as we have indicated; and memetically, through the manipulation of cultural memes to effect the radical modification of our motivational structures, involving the transformation and enhanced control of emotions, sexual orientation, intensity, and frequency. Also prominent is the desire to use genetics, physiology, neurophysiology, neurochemistry and other sciences to enhance intelligence, to optimize motivational structures, to reduce the effects of illness and aging, and to radically extend longevity—perhaps even achieving immortality (an area of considerable commercial potential as the baby-boom generation ages).

The grandeur of this posthuman mission is emphasized when Max More addresses the question of why 'we' would want to posthuman. He cites Nietzsche's notion of the *Ubermensch*, quoting Zarathustra, who reveals that 'Life' itself confided its secret to him: 'I am that which must always overcome itself …'. Life, for More, is negentropic and driven to the creation of ever-higher levels of order. It is also a grand adventure—the march of the Will-to-Power through history. Humanity is merely a temporary stage along the evolutionary pathway. Unlimited progression lies before us and there is no getting off the ride. The future, More concludes, 'belongs to posthumanity'. In this fashion, 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.

More's invocation of Nietzsche leads to another highly prominent example of posthuman thinking, that provided by the German philosopher Peter Sloterdijk, and

his recent provocation: 'Rules for the Human Zoo: An Answer to the Letter on Humanism', of Martin Heidegger. First given as a talk in July 1999 to a conference on the 'Exodus from Being: Philosophy after Heidegger', Sloterdijk's argument was given prominence in both *Die Zeit* and *Der Spiegel*. Within months it had generated intense controversy, featuring in eight German broadsheets or newsmagazines (twice as a front-page story) and in numerous television and radio broadcasts (Peacock 2000: 8).

Sloterdijk takes issue with Martin Heidegger's influential rejection of humanism and fear of technology, capitalizing both in an attempt to negate them. Sloterdijk sees classical humanism as an attempt to 'improve' people through the transforming power of humanist learning—as being, in effect, a central component of the 'civilizing process' identified by Norbert Elias. This classical humanist project is now bankrupt, and Sloterdijk puts the question: 'What can tame humanity when humanism fails to fulfil this role?' (Peacock 2000: 7). In response, he argues that the 'improvement' of the human species can no longer be restricted to the soft technologies of education and social engineering. Indeed, the potential of 'hard sciences' like genetic engineering and other forms of biology suggests that the these have inherited the task of pursuing human perfection, and that the humanist project has therefore passed to them: 'Seen in this light, humanist education and genetic engineering … are closely related: Both are deliberate efforts to improve the nature of the human species' (Piper 2000: 74). Sloterdijk argues that we are witnessing the 'coming era of species-political decisions', in which the fact must be faced that the traditional modes of overcoming barbarism, civilizing humanity, and achieving social change have failed. Given the question as to 'what will domesticate man when humanism fails?', genetic engineering appears not only possible, it becomes necessary! (Piper 2000: 74). Sloterdijk advocates a new field of 'anthropotechnics', and '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).

Not surprisingly, Sloterdijk's posthuman vision of the future has activated a deep dis-ease in German culture that reflects its own Faustian encounter with technology. His arguments have been attacked as a resurgence of the 'fascistoid' (Peacock 2000: 8) desire to achieve a 'super race' that produced a murderous contempt for so-called 'inferior peoples', involuntary euthanasia and the Holocaust under the Nazis. He has drawn fire from various quarters including Jurgen Habermas, who was instrumental early in forcing Martin Heidegger and his followers to face the implications of Heidegger's support for Nazism. Indeed, the potential and dangers of such thinking were foreshadowed by Heidegger's agonizing about the global reach of technology, and his turn to Ernst Junger and Nietzsche for insights into this monstrous and dynamic force that had been unleashed into the modern world. It is clear that Heidegger made an appalling error in making the political commitment and drawing the conclusion he did—that Nazism had an 'inner truth and greatness' and that it lay (he later claimed) in 'the encounter between global technology and modern man' (Ott 1993: 294). However, the question arises as to whether this error was merely contingent and one into which Heidegger alone fell? Or does the appearance of

Sloterdijk's essay suggest that there is an inherent compulsion to a certain sort of ideological thinking about technology and its possibilities that projects a totalitarian realm where phantasies of human perfection, super-races, supreme order, and perhaps Fuhrers and omnipotent *Ubermenschen*, can come to reign supreme?

Such a tendency would be consistent with the phenomenon of 'reactionary modernism' identified by Herf (1984) as a characteristic response by fascist-inclined intellectuals to the threat to the present order represented by dynamic new technologies. As Ansell Pearson remarks of this desire to embrace new technologies while holding firm to the orderliness and predictability of the familiar world: 'The human fantasy is to devise a technological system so omniscient that it nullifies the power of the future, transforming the universe into a perfectly administered megamachine of predictable outputs and calculable energies' (1997: 152). And as Bozeman points out in his study of science-based millenarian groups like Christian Science, Cryogenicists and posthumanism: 'Each [have] a curious blend of radical and conservative elements; while each promised to completely overturn the social order and bring about a new, more perfect era, this greater perfection was actually the preservation and magnification of the existing … present order … the future will be like the present, only better—with greater personal wealth, longer lives, and better sex' (1997: 153), for those privileged to enjoy it.

<div align="center">★★★</div>

The mission statement that Max More offers in his manifesto raises a characteristic of posthumanism and transhumanism that can be easily overlooked but that must be recognized and emphasized. This concerns the apparently naive nature of their utopianism, despite their continual citation in their publications and their FAQ document of supporting references, many to scientific or quasi-scientific publications. This naivety is not accidental, but rather reflects a desire to portray tentative or unlikely claims as unproblematic scientific probabilities or even certainties (Alexander 2000: 179). Also, like all ideologies, posthumanism tends to allow little or no room for doubt, and does so by putting forward propositions as if they are no more than common sense or common knowledge. Dissent then appears as mere ignorance. Disbelief is suspended and centuries of hard-won experience and intense critical thinking about science, technology and the social formation within which they flourish are swept aside by an uncritical 'will-to-believe' propositions about the possibilities of science and technology that are often preposterous, and even undesirable.

This credulity is made all the more ironic by the prominent parts played in the posthuman project by people who ridicule religious faith in gods, messiahs and miracles—an irony that is illuminated, however, by the comments offered earlier about the religious precedent for interpellation in ideological systems. For example, More's article on the posthuman appeared in 1994 in *Free Inquiry*, a journal of the Council for Democratic and Secular Humanism Inc., in a special issue on the theme of 'Playing God'. More dismisses the idea of playing god because he claims he sees

no way of transcending the laws of physics and has no time for what he sees as the jealous, vengeful, moralistic god of the Judeo-Christian tradition. However, his belief in the coming of the posthuman is clearly millenarian. Indeed, More's article is analysed in John Bozeman's (1997) study of 'Technological Millenarianism in the United States', which locates it within the traditional apocalyptic tradition. Bozeman points out that Extropians even have their own eschatology, centred on the idea that the world will soon witness an 'information singularity', where the trend-line produced by the exponential growth of information production goes vertical in the near future, and information presumably floods the world, causing 'a fundamental reordering of both the consciousness of individuals and of the greater society' (1997: 155). Similarly, the emphasis on technology as the source of salvation also has religious characteristics. As David F. Noble points out in his study of *The Religion of Technology*, even though movements like the Extropians and posthumanism valorize high standards of rationality, 'they are driven by distant dreams, spiritual yearnings for supernatural redemption. However dazzling and daunting their display of worldly wisdom, their true inspiration lies elsewhere, in a enduring, other-worldly quest for transcendence and salvation' (1999: 3). Posthumanism/transhumanism can therefore be seen as lying in the same American tradition of quasi-scientific religious movements as Christian Science and Scientology. Its cultish embrace of science locates it in the same cultural space as the New Age Movement (Melton 1990) with posthumanism's individualistic and scientistic appropriation of science serving as a counterpoint to the earlier collectivist and mystical appropriation of science carried out by writers like the physicist Fritjof Capra in *The Tao of Physics* (1976) and *The Turning Point* (1983).

One characteristic of posthumanist discourse that is notable for its political naivety and ideological implications is its frequent use of the indefinite 'we' to signify a 'universal humanity' that is going to participate in the technological millennium. This conceit is found in More's article, which is written in the first-person plural, speaking apparently for humanity in general, but really only for a small minority of the affluent, technologically-empowered classes of the US or possibly other 'First World' countries. The millions in Africa and elsewhere who are dying from AIDS in the face of the scientific failure to develop a cure or even affordable treatment, or who stagger along legless and maimed from landmine explosions and high-tech civil wars, might have different views about the power of technology. Far from delivering a posthuman utopia, science and technology have either failed them in a vital area or violently stripped them of human powers and potential. More might think this is an accidental outcome of humanity's encounter with technology: a more sophisticated analysis of the economic and cultural role of technology suggests that there is nothing at all accidental about it, as Heidegger feared.

Despite these failings, the speculative use of science and technology to bring immortality entrances posthumans. Major discussions were held on the topic at 'Extro 4', the Fourth Annual Conference of the Extropy Institute at the University of California, Berkeley in 1999. The discussion was militant and talk was of the battle that lies ahead with reactionary 'human naturalists … who think it is nonhuman to live 200 years' (Alexander 2000: 179). Death, More (1994: 39)

declares, is now an unacceptable imposition on human beings and the indefinite 'we' are not going to take it anymore! As Ray Kurzweil (1999: x) predicts, at the end of the century, 'Life expectancy [will be] no longer a viable term in relation to intelligent beings'. On the contrary, the relationship of such awesome technological capabilities to the appalling quality of life lived by billions in the here and now of the contemporary world is left aside as uninteresting or irrelevant.

More (1994) cites the myriad different ways in which chemistry and technology have already taken us down the posthuman path. He also predicted that the dawn of the new millennium would see a powerful new Prometheanism. By using engineered viruses to alter genetic structures and nanotechnology to alter the structure of matter, we will be able to program the (re)construction of physical objects, including our bodies. More does not share the recently expressed concern of leading technologists like Bill Joy, the Chief Scientist at Sun Microsystems. Joy warns that 'nanotechnology has clear military and terrorist uses', and that its use involves 'a grave risk—the risk that we might destroy the biosphere on which all life depends' (2000: 246). The idea that a nanotechnological plague could be unleashed seems not to have concerned More. He seems to assume that humanity will always be able to control this type of technology, and writes as if the ecological crisis and the rise of environmentalism had never occurred.

More also believes that we will be able to 'upload' ourselves from our biological brains into synthetic brains running on 'advanced' hardware. ('Upload' is, of course, a revealing spatial metaphor that places the human brain in a subordinate position to its 'superior' technological creations.) The objective of this 'upload' is to attain superintelligence, which is defined as an 'intellect that greatly outperforms the best human brains in practically every field, including scientific creativity, general wisdom and social skills [!]' (FAQ: 5). Such 'uploading' is one of the two ways in which posthuman/transhumans hope to achieve superintelligence. The other is through 'gradual augmentation of their biological brains, perhaps using nootropics ("smart drugs"), cognitive techniques, IT tools (e.g. wearable computers, smart agents, information filtering systems, visualization software, etc.) Neurological interfaces and bionic brain implants' (FAQ: 6).

Computer-aided superintelligence means, More claims, that our mental processes will run up to a million times faster than at present. Such predictions are common in the posthuman and transhuman literature, as we shall see in a moment in discussing the work of Ray Kurzweil. It is astonishing not only that More and others think such an acceleration of human thought processes is possible, but that they also think it necessary or desirable! One is required to ask what vital area of truly *human* embodied life—love, desire, caring, empathy, creativity, etc.—could conceivably be enhanced simply by enabling the brain to *process information* faster, and why and how the relevant areas of the brain would require or cope with an acceleration by a factor of *one million*? In fact, such an enhancement is not really related to these affective areas at all, and the enhancement would only make sense if 'humans' were conceived in entirely rationalistic terms, as disembodied, information-processing network 'nodes', linked together in some massive distributed computer system—

which is of course precisely the posthuman vision of the 'hive-mind' (Kelly 1994: Chapter 2).

The *point* of such a massive, all-encompassing system is difficult to discern. Is it really humanity's destiny to technologically unify itself into One Big System dedicated to processing gargantuan amounts of information—to be totally disembodied and indeed to *become* information? We have already noted how the prospect of living without a body, 'as information patterns on large super-fast computer networks', excites great enthusiasm amongst posthumanists (FAQ: 4). In a manner that indicates the religious elements of this ideology, it seems just assumed by posthumanism that such an ethereal destiny is clearly a 'good thing'. In fact, it is possible to recognize the process identified by Wertheim (1999) whereby cyberspace is assuming the same cultural role previously enjoyed by Heaven—in such a scenario, the posthuman desire to shed the corporeal and material realm and 'be at one' with everything and everyone via a gigantic information system is a contemporary version of the Christian goal of Atonement (at-one-ment).

The posthuman faith in computer-enhanced intelligence can also be read politically as an ideological re-assertion of reactionary models of technocratic rule. Whereas early nineteenth-century theorists of industrial society like Henri Saint-Simon or Auguste Comte believed that industrial complexities over-ruled democracy and demanded rule by technical experts and industrialists, the new cybernetic technocracy demands that political power be stripped from people altogether and invested in computer systems. Indeed, 'creating superintelligence is the last invention that humans will ever need to make, since superintelligences could themselves take care of further scientific and technological development' (FAQ: 6). An excellent example of this cyber-technocratic tendency is provided by Ray Kurzweil (1999) with his insistence that we are about to enter 'the Age of Spiritual Machines', characterized by the complete 'cyborgization' of humanity, a notion we will further discuss in the following.

★★★

We turn now to look in more depth at two examples of posthuman utopianism that are not only prominent in scientific research, mainstream media and within popular culture, but also exemplify the aspirations of the posthuman project—teleportation and cyborgs.

Posthuman utopianism often seems to occupy a fantasy realm where the world becomes 'Legoland' and the tinkering child becomes a world-creating Prometheus. In such a realm, the same 'name it, claim it' mentality of the 'Prosperity Gospel' of some Christian sects comes into play—anything an aspiring transhuman can think may be projected into the near future where it is postulated as a looming reality to be possessed, brought into being by an heroic and virtually omnipotent science. An excellent example of this wish fulfilment—and of its penetration into mainstream culture—is the cover story of a recent issue of *Scientific American* (Zeilinger 2000) concerning 'quantum teleportation', a story echoed in the 20 May 2000 issue of *New*

Scientist (Mullins 2000)—a publishing coincidence that perhaps demonstrates the influence of scientific publicists and well-placed press releases.

Teleportation, the standard *Star Trek* form of transportation from the Starship Enterprise to a planet's surface, has become a staple of science fiction and popular culture: 'Beam me up Scotty' is now a ubiquitous tag or cliche, or indeed 'a cultural icon for the global informational society' (Hayles 1999: 2). In terms of real science, the physics of teleportation involve probably insurmountable problems, being effectively limited to the teleportation of the quantum states of photons (Mullins 2000; Zeilinger 2000). Indeed, the idea was only introduced into the *Star Trek* series to eliminate production costs associated with the continual depiction of space ships landing and taking-off from strange planets (Zeilinger 2000: 32).

However, despite its implausibility, there is a deeply embedded cultural fascination with the notion that explains its popularity and influence in propagating the Informational Paradigm. If we look into the cultural history of teleportation, we find some notable precursors, like the Christian notion of the 'rapture', according to which believers will be instantaneously transported to Heaven as the Day of Judgement arrives. Another precursor is the traditional occult notion of astral travel, which is based on the idea that humans possess an 'astral body' (meaning literally 'starry body' or 'body of light') that is separate from the familiar soul and body. This is an exact copy of the corporeal body but is immortal and is made of finer material that is capable of separating itself from the body and travelling at will upon the astral plane, through any physical obstacle and across vast distances. This is an idea that found tragic expression in the recent mass suicide of the 'Heaven's Gate' cult, the members of which were devoted *Star Trek* fans and believed they were to be teleported out of their corrupt physical bodies to a space ship lurking behind the approaching Hale-Bopp comet (Goh 2000: 36).

The notion of astral travel has its roots in ancient Indian and classical Greek philosophy, and appears continuously afterwards in the West, finding expression in neoplatonism and in Dante's *Purgatorio* (Canto 25) where he explains how, after death, the soul 'around it beams its own creative power, like to its living form in shape and size'. In the sixteenth century, Agrippa von Nettesheim wrote of the spirit's 'vacation' of the body, when it is 'enabled to transcend its bounds, and as a light escaped from a lantern to spread over space' (Stewart 1970: 147).

The Scientific Revolution quickly made such spiritualist notions of 'teleportation' untenable. In her cultural history of Heaven and its transformation into cyberspace, Wertheim points out that in the medieval cosmology, space was conceived as non-homogeneous, possessing room for both physical *and* spiritual realities. However, the scientific conception of space maintains that space is homogeneous and accommodates just one form of reality—the physical reality of space-time—through which alone travel can take place. No space for the spiritual remains, there is no 'soul-space': 'by *unbounding* the physical realm, the Christian spiritual realm was thereby squeezed out of the cosmic system. That excision precipitated in the Western world a psychological crisis whose effects we are still wrestling with today' (Wertheim 1999: 152). The re-appearance of teleportation in science fiction and elsewhere therefore represents an attempt within culture to re-assert the freedom

from time and space that humans have traditionally aspired to before this epochal change in human consciousness. It is this yearning that helps promote articles on teleportation to the status of cover stories in the world's leading scientific publications.

But such status also reflects another deeply embedded cultural tendency to which the posthuman/transhuman aspiration to teleportation also gives expression—the worship of speed. This aspect of contemporary society has been highlighted by Paul Virilio, who links it closely with the imperatives of war. Virilio (1998) has made a study of the histories of major social and political institutions like the military, and of key cultural movements that have addressed the implications of technology, such as Futurism. This reveals that it is the imperatives of modern war and military technologies, and particularly the need for the maximum mobilization of forces and maximum speed in all activities, that are the foundational principles of contemporary economics and society. This drive for speed and mobilization permeates culture and every aspect of life. Indeed, Virilio detects an 'undeclared war of militarized technoscience on the civilian population,' particularly in the present 'third age of military weaponry' based on cybernetics and information technologies (Armitage 1999: 5). The dynamic driving this lies within science itself: 'science itself has become pure war, and it no longer needs enemies. It has invented its own goal' (Virilio & Lotringer 1997: 184). The relentless quest for ever-increasing speed derived from the logic of war penetrates every aspect of society, including not only the economy and communications systems, but also culture and the experience of the self. It is this imperative that also finds expression in the cultural longing for the ultimate velocity that is promised through teleportation.

The aforementioned articles in *Scientific American* and *New Scientist* cater for this longing by their visual and editorial presentation portraying teleportation in terms of humans being teleported through space in the precise fashion used in *Star Trek*. Although they indicate at certain points that the teleportation of humans or even of simple material objects is effectively impossible (being limited for the foreseeable future to the teleportation of the quantum state of a photon!), the bulk of the discussion in the articles, together with the accompanying illustrations (especially the *Scientific American* cover), portrays the issue in terms of human teleportation. In this fashion, the pretensions and projections of science come to reflect and exploit deeply embedded cultural myths and longings.

It must be observed in conclusion that this particular notion of 'teleportation', especially when it is applied to human beings, is an excellent example of the tendency, explored by Hayles, of how contemporary society has become posthuman by de-corporealizing humanity and presenting the essence of life as disembodied information.

★★★

We turn now to cyborgs, as possibly *the* exemplar of the posthuman project, in both its individualistic and collectivist modes. The cyborg possesses a rich

cultural heritage, which must be reviewed. So many versions of 'cybernetic organisms' have appeared in film, television and text that it has spawned an extensive literature of critical analysis and even its own genre of study—'cyborgology' (Gray 1995). This study is able to distinguish between various types, including not only the more familiar machine cyborgs found in films like *The Terminator* (1984) or *Robocop* (1987), but also organic cyborgs, with the later being trans-genetic creatures or deeply ambiguous monsters—as, for example, in the film *Alien Resurrection* (1997), which explores the transgression of fundamental boundaries including life/death, human/alien, and mother/child. Even in this short period of a decade or so, it is possible to detect a shift in the ontology of the cyborg from the physical and mechanical to the biological and organic—from an entity that is fabricated to an entity that is grown.

The underlying concept of the cyborg as a synthetic cybernetic–organic creature appeared in science fiction in the key period shortly after Norbert Weiner invented the term 'cybernetic' to describe the types of self-correcting weapons systems he had been developing and analyzing during and after World War II. A critical moment occurred in 1960 when the scientists Manfred Clynes and Nathan Kline published a paper proposing the term 'cyborg' be used to describe self-regulating human-machine systems for use in space travel. These would automatically maintain and modify the life-support systems so that astronauts could focus on higher-level activities during their travels. The focus was on 'the exogenously extended organizational complex, functioning as an integrated homeostatic system', without the need of continuous conscious control (Clynes & Kline 1995: 30–31). Clynes was later appalled at the use to which the concept was put in films like *The Terminator*, rejecting it as 'a *travesty* of the real scientific concept that we had … a monsterification of something that is a human enlargement of function' (Gray 1995: 47). What Clynes misunderstood, it seems, is that it was precisely *this* notion of monsterification that people wanted to think about and explore, not 'exogenously extended organizational complexes'—although, as we shall see in the following, such complex systems might be the dominant form that actual cyborgs will take.

Many novels, stories, films and television programmes using the theme of the cyborg have appeared, contributing greatly to the cultural momentum the notion quickly gathered. A noticeable cultural shift was from the individual cyborg in the television series *The Six-Million Dollar Man* (1973–1978), based on the novel *Cyborg* by Martin Caidin (1972), to the malevolent collectivist 'Borg' of *Star Trek: The Next Generation* (1987–1994) whose goal was the absorption of technologically modified humans into an all-encompassing 'hive-mind'—a popular idea among posthumans. The popularity of the Borg concept helped the series achieve high ratings

The cyborg is akin to the robot, a concept introduced by the Czech Karel Capek in his play *R.U.R.* (1920) and derived from the Czech 'robota' or 'serf labour'. It refers to mass-produced slaves grown in vats (an idea echoed in *Alien Resurrection*), although the term 'robot' subsequently became predominantly applied to human-like machines. Capek's play was 'a nightmare vision of the proletariat seen through middle-class eyes' in the shadow of the Bolshevik Revolution (Disch 1998: 8). After the play premiered in the US, the robot quickly came to assume an ideological role,

representing the ever-present but feared Other (Disch 1998: 10)—the oppressed workers, the exploited immigrant servants, the alien masses waiting to invade America, and eventually the neglected housewife—an idea eventually finding expression in the novel (Levin 1972) and film *The Stepford Wives* (1974).

Another parallel conception to the cyborg, and one that is closer to Capek's original idea of the robot, is that of the android, which began commonly to appear in science fiction in the 1940s, although the term 'androides' first appeared in English in 1727 in connection with alchemical attempts to create an artificial human, itself an ancient idea associated with the 'golems' of Jewish mythology. Mary Shelley's *Frankenstein* (1818) gave this idea its first and most spectacular expression by combining it with the myth of Prometheus, and it has been widespread ever since.

Unlike the popular conception of machine robots, androids and cyborgs are seen within popular culture as specifically combining biological and technological origins and characteristics, thereby transgressing previously hermetically maintained boundaries between, for example, culture and nature, living and dead, organism and machine, real and synthetic. Like all such transgressions, considerable misgivings and emotions were generated by these conceptions, especially around questions relating to their danger to human beings, their possession or not of souls, and their consequent rights to life, freedom and self-determination. Many of these questions echoed the debates that had surrounded slavery in previous centuries, reflecting the original conception of the 'robota' as slave labour, but they also reflected powerful and pervasive cultural concerns at the implications for humanity of the technological revolution. The debate somewhat reflected Hayles analysis of the three stages of the emergence of the posthuman. In the first period, the emphasis was on homeostasis and control. Isaac Asimov's Three Laws of Robotics, stated in 'Reason' (1941), defined the limits of robotic behaviour in terms of protecting human beings, a principle that fell victim to Cold War paranoia, as stories appeared portraying robots as beyond human control and as capable of great harm. Later, in the period of reflexivity, attitudes began to ease and writers explored the implications for robots themselves of their possessing life-like characteristics, producing works on 'robot existentialism' such as Barrington J. Bayley's (1974) *The Soul of the Robot* and Asimov's (1976) 'The Bicentennial Man'. Films like *Blade Runner* (1982) and *Robocop* (1987) explored the meaning, *for cyborgs themselves*, of their situation as creatures living on the boundary between the human and the machine. More recently, as we enter into the period of virtuality, the cyborg has assumed virtual form in films such as *The Lawnmower Man* (1992) and *The Matrix* (1999).

Cyborgs, androids and robots are parallel cultural conceptions that typify the 'Fourth Discontinuity' identified by Bruce Mazlish (1993) in his history of the co-evolution of humans and machines. The Fourth Discontinuity follows the Copernican, Darwinian and Freudian revolutions that progressively and violently decentred humanity from the special position it was presumed to hold in the cosmic scheme of things. Mazlish feels that it is now quite clear that humans and machines have co-evolved and that humans have never enjoyed a relationship of mastery over

their technological tools, but rather exist in a complex symbiotic relationship with them. The concept of the cyborg makes it possible to explore imaginatively important issues about the nature of life, freedom, self-determination, the relationship of humanity to technology, and the transgression of fixed boundaries that previously had been regarded as vital to civilization.

<div align="center">★★★</div>

With this background, I shall now discuss an example of the cultural conception of the cyborg as an *individual* 'cybernetic-organism' as it is found in posthumanism. As we have seen, a primary attraction of posthumanism is its capacity to support quasi-religious fantasies of omnipotence and self-transcendence. Such longings are exemplified by a recent issue of *Wired* (Warwick 2000) that features a cover article, 'Cyborg 1.0', on Kevin Warwick, a Professor of Cybernetics at the University of Reading, who is using various cybernetic implants to 'upgrade' his body and to transcended human limitations. Warwick's body is featured prominently on the cover and pages of the magazine, an editorial decision that itself should be briefly analysed. What the reader is visually presented with in such images emphasizes the frailty and weakness of the human body, but also how its flesh and blood must be penetrated surgically if it is to be transcended, in keeping with *Wired*'s cover slogan: 'augment or bust'. Attached to the cover picture is a holograph that reveals, from certain angles, the subcutaneous cybernetic device whose implantation is meant to transform Professor Warwick. Simultaneously evoking and brushing aside fears of infection or nerve damage from such invasive surgery, Warwick (2000: 150) declares his Prometheanism: 'I want to know. I believe this desire—this urge to explore—is intrinsically human. My entire team is venturing into the unknown with me in order to bring humans and technology together in a way that has never been attempted'.

Professor Warwick's cybernetic augmentation is intended to allow him better to control his environment (opening doors, activating equipment, etc.) while also manipulating his emotions, his senses, his pain threshold and level of sexual arousal. In *Wired*, he and his wife are pictured together in bed, with her displaying the site of the implant surgery on her arm. Together, they will experiment with 'his-and-hers implants' that will test whether feelings of fear or sexual desire can be transmitted between people. Representing the mind or body as some sort of recording device, while also foreclosing on novelty and difference, Warwick asks: 'Could we record signals at the height of our arousal, then play these back and relive the experience?' (2000: 150). Dreaming of effortless omnipotence, he foresees a world where people can control 'airplanes, locomotives, tractors, machinery, cash registers, bank accounts, spreadsheets, word processing, and intelligent homes … merely by moving a finger'. Valorizing ignorance, the episodic attention spans of modern people, and their increasing dependence on technology, Warwick proposes that people will no longer have to learn mathematics because they can be directly linked to the Internet and be able to 'call up a computer merely by your thought' to do the calculations (2000: 150). Evoking thoughts of Kevin Kelly's (1994: Chapter 2) vision of a

'hive-mind', where individual thinking will be subsumed into distributed systems of artificial intelligence, Warwick believes that the next step will be telepathic 'thought-to-thought' communication, which will give humans 'a chance to hang in there a bit longer' before they eventually succumb 'to a future in which intelligent machines rule and humans become second-class citizens' (2000: 151).

Warwick's error is to literalize a concept—the cyborg—that is essentially mythical and derives its greatest significance from its cultural role, as we have seen. This mythical status is clearly pointed out in Donna Haraway's influential 'Cyborg Manifesto', which she describes as 'an ironic political myth'. Haraway (1991: 149) differs from many commentators on the human/machine encounter by recognizing from the outset that while the cyborg is a hybrid of machine and organism, it is above all 'a creature of fiction,' a mythical figure in which essential cultural concerns are explored. For Haraway, 'by the late twentieth century, our time, a mythic time, we are all chimeras, theorized and fabricated hybrids of machine and organism … the cyborg is a condensed image of both imagination and material reality … the cyborg is our ontology; it gives us our politics' (1991: 150). As Mazlish points out, the machine and the human are the axes that define contemporary cultural space, and it is within that space that the ideology of posthumanism has emerged. Unfortunately, Warwick appears oblivious to the centrality of the complex cultural and ideological role played by the figure of the cyborg, and assumes instead that it is merely a technical objective that can be achieved through the surgical insertion of computer chips under the skin.

<center>★★★</center>

Warwick gives expression to the posthuman ideology of a cyborg future at the level of the *individual*. As I noted earlier, the cyborg was originally conceived scientifically as a complex self-regulating human-machine *system*, as Ray Kurzweil now also projects it on a macro-scale in his grandiose exercise in futurology, *The Age of Spiritual Machines*. In this near future, computers will not only be able to think, they will actually become smarter than humans and establish a hybrid, cyborg species as the next evolutionary step, leaving humanity and the notion of individual as we presently know them behind. As Kurzweil says of his projected world of 2099:

> There is no longer any clear distinction between humans and computers. Most conscious entities do not have a permanent physical presence … The number of software-based humans vastly exceeds those still using native neuron-cell-based computation … There is ubiquitous use of neural-implant technology that provides enormous augmentation of human perceptual and cognitive abilities. *Humans who do not utilize such implants are unable to meaningfully participate in dialogues with those who do.* (1999: x; emphasis added)

Kurzweil believes that there is even a law—the Law of Accelerating Returns—that guarantees this posthuman outcome. He predicts that:

> The next inevitable step is a merger of the technology-inventing species

> with the computational technology it initiated the creation of ... All kinds
> of practical and ethical issues delay the process, but they cannot stop it.
> The Law of Accelerating Returns predicts a complete merger of the species
> with the technology it originally created. (Kurzweil 1999: 317)

These 'practical and ethical issues' that would be swept aside by this technological 'law' would include determining how a democracy—or indeed any political system—would operate under circumstances where machines are more intelligent than people (assuming for the purposes of argument that this is possible, a point disputed by many, including a leading philosopher in this area, John Searle (1999)) and the two 'species' have merged. What would constitute 'citizenship' in a cyborg democracy/ technocracy? Apparently 'non-augmented' humans would be left out, but is super-intelligence and machine-like strength enough? Or must a 'citizen' also have 'traditional' human characteristics such as feelings, emotions, empathy, sociability, the desire to love and be loved, etc.? (Shades of *Blade Runner* and *Terminator*, where it is the machines themselves that must deal reflexively with these questions.) Would it be necessary to build these 'humanizing' qualities into cyborgs in order to make them 'fit' citizens? Or would it be decided that 'efficiency' demands that such characteristics be deleted from 'citizens' of the new technocracy? And who—or what—would decide such an issue? Humans might think that such qualities are required for citizenship, but perhaps this is just an expression of the limitations of human intelligence? Perhaps the super-intelligent machines that Kurzweil foresees will view these 'human' qualities as anachronistic limitations on the new cyborg species and declare them redundant? Who would or could resist the dictates of such machines in a world where super-intelligence reigns as the supreme value?

<p align="center">★★★</p>

It is with such misgivings that I must bring this paper to a conclusion. In my discussion, I have explored various dimensions of the posthuman, identifying it as an ideological misrecognition of humanity's relationship to technology. In a manner that fundamentally inverts this relationship, posthumanism cedes to technology a determinism over human affairs that it does not, cannot, and should not enjoy. This reification of technology in turn reflects a range of religious and mythological aspirations and fantasies, and it is the mobilization of these deeply embedded cultural themes that gives posthumanism its power. It is vital, however, to challenge such an inversion and reification, and to analyse and reveal the real economic and cultural dynamics that underlie the emergence of posthumanism.

The case of Ray Kurzweil is exemplary here. Despite the extremism of his views, Kurzweil is not at all on the margins of culture and politics. He is mainstream. His ideas are given critical consideration by leading philosophers like Searle, and he was given space for his views in the special edition of *Scientific American* on 'The Bionic Future' (Fall 1999). He was also awarded the 1999 National Medal of Technology by President Clinton for making a 'lasting contribution to the enhancement of America's economic competitiveness and standard of living' (*Scientific American*,

282 (4) April 2000: 28). Indeed, it is possible to see Kurzweil's futurism as a parable—or indeed as an expression of displaced yearnings or repressed fears— about the dynamics of globalization, because, to a significant extent, humanity is already in a type of posthuman situation. It is posthuman because it has already conceded control of vital areas of human life to the machines and the systems, albeit not (yet) to the forms of cyborg super-intelligence linked in a distributed computer network that Kurzweil envisages, but rather to the supreme super-intelligence of the computer-empowered global market, the great catalaxy, as the high-priest of neo-classical economics, Friedrich von Hayek would call it. As the editor of *Wired* and leading posthumanist ideologue Kevin Kelly approvingly observes, the preferred model of interactive artificial intelligence is a distributed computer system that is 'an exact description of a market economy' (1994: 47).

James Cook University

References

Abbas N 1999 'The posthuman view of virtual bodies' *CTHEORY* 22 (1–2) Review 49 1–8.

Alexander B 2000 'Stay pretty: introducing the ultrahuman makeover' *Wired* 8.01 January 179–187.

Althusser L 1971 'Ideology and state ideological apparatuses' *Lenin and Philosophy* New York Monthly Review.

Ansell Pearson K 1997 *Viroid Life: Perspectives on Nietzsche and the Transhuman Condition* London Routledge.

Armitage J 1999 'Paul Virilio: an introduction' *Theory, Culture and Society* 16 (5–6) 1–23.

Asimov I 1941 'Reason' *Astounding Science Fiction* April 13–31.

Asimov I 1976 'The Bicentennial Man' *Stellar* #2.

Bayley B J 1974 *The Soul of the Robot* New York Bantam.

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.

Caidin M 1972 *Cyborg* London Sphere.

Capek K 1920 *R.U.R.* Prague Vaclav.

Clynes M & Kline N 1995 'Cyborgs and space' in C Gray (ed) *The Cyborg Handbook* New York Routledge 17–28.

Disch T 1998 *The Dreams Our Stuff is Made Of* New York Free Press.

Goh RBH 2000 'Consuming spaces: Clive Barker, William Gibson and the cultural poetics of postmodern fantasy' *Social Semiotics* 10 (1) 21–39.

Gray C (ed) 1995 *The Cyborg Handbook* New York Routledge.

Haraway D 1991 'Cyborg manifesto: science, technology, and socialist-feminism in the late twentieth century' *Simians, Cyborgs, and Women* New York Routledge.

Hassan I 1977 'Prometheus as performer: towards a posthumanist culture?' in M Benamou & C Caramella (eds) *Performance in Postmodern Culture* Madison Coda.

Hayles NK 1999 *How We Became Posthuman* Chicago IL Chicago University Press.

Herf J 1984 *Reactionary Modernism: Technology, Culture, and Politics in Weimar* Cambridge Cambridge University Press.

Joy B 2000 'Why the future doesn't need us', *Wired* 8.04 April 238–262.

Kelly K 1994 *Out of Control* Reading MA Perseus.

Kroker A 1996 *Hacking the Future: Stories for the Flesh-Eating 90s* New York St Martins.

Kurzweil R 1999 *The Age of Spiritual Machines* London Phoenix.

Levin I 1972 *The Stepford Wives* New York Bantam.

Mazlish B 1993 *The Fourth Discontinuity: the Co-evolution of Humans and Machines* London Yale University Press.

Melton JG (ed) 1990 'Introduction' *New Age Encyclopaedia* New York Gale.

More M 1994 'On becoming posthuman' *Free Inquiry* 14 (4) 38–41.

Mullins J 2000 'Entangled web' *New Scientist* 2239 26–29.

Noble D 1999 *The Religion of Technology: The Divinity of Man and the Spirit of Invention* New York Penguin.

Ott H 1993 *Martin Heidegger: A Political Life* New York Harper Collins.

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.

Ricoeur P 1994 'Althusser's theory of ideology' in G Elliot (ed) *Althusser: A Critical Reader* Oxford Blackwell.

Schiller D 1999 *Digital Capitalism: Networking the Global Market System* Cambridge MA MIT Press.

Searle J 1999 'Can computers make us immortal?' *The New York Review of Books* XLVI (6) 34–38.

Shelley M 1818 *Frankenstein: or The Modern Prometheus* London Lackington Hughes Harding Mayor & Jones.

Stewart C 1970 'Astral body', in R Cavendish (ed) *Man, Myth and Magic: An Illustrated Encyclopedia of the Supernatural* vol 1 New York Marshall Cavendish.

Transhumanist Web Alliance no date *Transhuman FAQ* ⟨http://www.transhumanist.org/⟩

Virilio P 1998 *The Virilio Reader* Oxford Blackwell.

Virilio P & Lotringer S 1997 *Pure War* New York Semiotext(e).

Warwick K 2000 'Cyborg 1.0' *Wired* 8.02 February 144–151.

Wertheim M 1999 *The Pearly Gates of Cyberspace* New York Doubleday.

Zeilinger A 2000 'Quantum teleportation' *Scientific American* 282 (4) 32–41.

Zizek S 1989 *The Sublime Object of Ideology* London Verso

Screenography

Films

Alien Resurrection 1997 J-P Jeunet Brandywine (Dir) Productions/20th Century Fox.

Blade Runner 1982 R Scott (dir) Ladd Company Run Run Shaw.

The Lawnmower Man B Leonard (dir) Allied Vision Pringle/Fuji Eight Co.

The Matrix 1999 A Wachowski & L Wachowski (dirs) Village Roadshow.

Robocop 1987 P Verhoeven (dir) Orion.

The Stepford Wives 1974 B Forbes (dir) Fadsin Cinema Associates/Columbia.

The Terminator 1984 J Cameron (dir) Cinema '84/Pacific Western/Orion.

Television Shows

The Six-Million Dollar Man 1973–1978 GA Larson & H Bennett (prods) Silverton and Universal Production for ABC Network.

Star Trek: The Next Generation 1987–1994 G Roddenberry, R Berman & M Piller (prods) Paramount.