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Cultures of Technological Embodiment: An Introduction

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The sociologist Peter Berger (1966) once remarked that history is seldom surprise free. The assumption is that those people who lived a few decades before the Renaissance were unable to see it coming. This belief that something completely new could be just around the corner, that humankind still has an open future, is one which has been challenged by postmodern theory with its attack on the modernist metanarratives of progress and 'the new'. At its most extreme, this postmodern sensibility leads to a *fin de millénium* pessimism, with the assumption that there are no new moves in the game and that we are confronted by a future which 'has already happened'. The recent upsurge of interest in cyberspace, cyberbodies and cyberpunk has introduced complications into this scenario. On the one hand, there are those who wish to recover it into postmodernism yet, on the other hand, there are others who see it as breaking down the boundaries of this framework to revive utopian impulses, coupled with the sense that we are on the edge of moving into a reconfigured world which bears little relation to our previous speculations. In this context, it is also worth recalling that in the predictions about everyday life in the mid-1990s made by experts in a 1960s television programme, there was no mention of computers. Plenty of robots, but no computers. If we were to restart this process today and make predictions about everyday life in the mid-2020s, it is certain that computers, information technology and the electronic media would play a central role – but then is there still the disturbing possibility that we could have missed something which will emerge and have crucial significance?

The writings which have emerged on cyberspace, cyberbodies and cyberpunk over the last decade are replete with utopian, dystopian and heterotopian possibilities. For some, this entails the assumption that we are about to enter a new era. Mark Poster, for example, in his article in this volume, argues that we are now at

an equivalent point in history to the emergence of urban merchant culture in feudalism. He sees the late 20th-century second media age as having an equally profound impact upon the constitution of social life and forms of cultural identity. Yet it is not just the possible reconstitutions of social life and culture which interest us in this journal, it is the impact of these changes on the body, too. It is here that developments in technology point towards the possibilities of post-bodied and post-human forms of existence. If the development of technology has entailed a process of the extension of the body and bodily functions to enable us to control the environment more efficiently, it offers the ultimate possibility of the displacement of the material body from the confines of its immediate lived space. Hence it is not just the range of technological-human fusions which make possible a new range of embodied forms which is an interesting source of speculation, it is the production and control of new information-generated environments and the range of body simulations and other entities which will inhabit them which for many is the most exciting prospect. It is not just the making and remaking of bodies, but the making and remaking of worlds which is crucial here. This is graphically captured by William Gibson's remark in one of his interviews, which Nigel Clark quotes in his article in this issue: 'Watch out for worlds behind you!'

The terms cyberspace, cyborg and cyberpunk came into prominence in the 1980s. They form a cluster of key words which, as Tomas argues in his piece in this volume, are drawn from the term cybernetics. The term cybernetics was coined in 1948 (Weiner, 1948) to describe a new science which united communications theory and control theory. For Weiner, cybernetics encompassed the human mind, the human body and the world of automatic machines and attempted to reduce all three to the common denominator of control and communication. From this perspective, the image of the body becomes less one of an engineered body with the key tasks being the transfer and conservation of energy, but more of a communications network based upon the accurate reproduction and exchange of signals in time and space. Hence information, messages and feedback which facilitate control and communication become seen as the key aspects of both organisms and machines.

The term cyborg refers to cybernetic organism, a self-regulating human-machine system. It is in effect a human-machine hybrid in which the machine parts become replacements, which are integrated or act as supplements to the organism to enhance the body's power potential. As we shall see below, the most graphic images of this type to capture the popular imagination have been drawn from major films such as *Robocop*. The term cyberspace refers to an information space in which data is configured in such a way as to give the operator the illusion of control, movement and access to information, in which he/she can be linked together with a large

number of users via a puppet-like simulation which operates in a feedback loop to the operator. Virtual reality represents the ultimate extension of this process to provide a pure information space populated by a range of cybernetic automatons, or data constructs, which provide the operator with a high degree of vividness and total sensory immersion in the artificial environment. The term cyberpunk refers to the body of fiction built around the work of William Gibson and other writers, who have constructed visions of the future worlds of cyberspaces, with all their vast range of technological developments and power struggles. It sketches out the dark side of the technological-fix visions of the future, with a wide range of post-human forms which have both theoretical and practical implications; theoretically, in influencing those who are trying to reconstruct the social theory of the present and near future, and practically, in terms of those (largely young people) who are keen to devise experimental lifestyles and subcultures which aim to live out and bring about selected aspects of the cyberspace/cyberpunk constellation.

Cyborgs

If we turn first to a discussion of cyborgs, it is clear that an overriding theme in the writings of William Gibson (for summaries see Kellner [1995], McHale [1992a, 1992b], Csicsery-Ronay [1991] and a number of the contributions to McCaffrey [1991]) is the assumption that the boundaries between subjects, their bodies and the 'outside world' are being radically reconfigured (Haraway, 1991; Plant, 1993). This means that the key analytical categories we have long used to structure our world, which derive from the fundamental division between technology and nature, are in danger of dissolving; the categories of the biological, the technological, the natural, the artificial *and* the human – are now beginning to blur (Stone, 1991: 101–2; McCarron, this volume; Tomas, this volume).

As Robert Rawdon Wilson indicates in his contribution to this volume, the term cyborg need not only be taken to immediately refer to the new dramatic possibilities which are to be found in the pages of cyberpunk and science fiction novels – the use of a pair of spectacles is a prosthetic device which can be placed near to one end of the human/machine combinations that make up the cyborg. Yet it is the extent and complexity of the changes following from the mainstreaming of cosmetic surgery and the rise of biotechnology, genetic engineering and nanotechnology, which have led some to contemplate that the next generation could very well be the last of 'pure' humans (Deitch, 1992). A programmatic user's guide on new technological developments (Rucker et al., 1993: 100) puts it like this:

We are *already* cyborgs. My mother, for instance, leads a relatively normal life thanks to a pacemaker. Beyond that, genetic engineering and nanotechnology . . . offer us the possibility of

literally being able to change our bodies into new and different forms . . . a form of postbiological humanity can be achieved within the next fifty years.

If the increasing acceptance by consumers of cosmetic surgery and other associated technological interventions to modify the body (Balsamo, this volume; see also Featherstone, 1982; Glassner, 1995) over the last decade are at all indicative of future trends, then the next 50 years will see ever more radical plastic surgery, computer-chip brain implants¹ and gene splicing become routine. It is suggested that the implications of this for self-identity will be profound (see Rawdon Wilson, this volume).

A glimpse of the problems which arise when humans are blended with machines is provided by the contributions from Holland and Landsberg, who draw upon movies such as *Robocop*, *Terminator*, *Total Recall* and *Blade Runner*. The most obvious dilemmas occur in the case of the technologically rebuilt human body, in which the residues of the human self struggle to assert themselves against the 'product violation' programming designed into the cyborg – the theme of the *Robocop* movie. Less obvious are the problems of designing adequate fusions from 'the other end', as is the case with the replicants in the film *Blade Runner*, who are artificial constructs designed to function and pass as human beings. Here the problem is one of inserting duplicated human memories into the replicants to enable them to generate credible 'human' emotional responses. Memories, then, are an important resource for the generation of identity which enable credible actions and responses to be formed. The approach of films such as *Blade Runner* is to introduce doubts and complexities into what is, all too often, a dualistic approach in which the (good) human mind heroically struggles against the invasion of the (bad) technological body.

In addition to continuing to bolster the human/machine dualism, which reinforces the mind/body dualism still influential in everyday life, there is generally a strong gender-coded male/female dualism evident in the films. Males are near invincible soldiers with hyper-male bodies; little attempt is made to explore or cross gender boundaries. There is little sense that the new technology, especially the computer, might ultimately benefit women more than men. The latter case is argued by Sadie Plant in her contribution to the volume, which draws on Donna Haraway's (1991) argument that the new technologies allow an escape from the conceptual dualisms of culture/nature and mind/body to open up a host of post-gendered possibilities. Following Haraway's lead, Plant (1993:13) has suggested that the relationship between women and machinery is beginning to evolve into 'a dangerous alliance', in which '[s]ilicon and women's liberation track each other's developments'. Plant discusses the way in which the new technology offers spaces for disguise, concealment and masquerade. Spaces which, although

constructed by men following the imperatives of increasing their rational control through technological domination, are at the same time female and dangerous. Plant here, then, is exploring the implications of technologies which do not alter the human body per se but allow it to be *transcended* – technologies that promise, literally, a new world in which we can *represent* our bodies with a greater degree of flexibility. Technologies which have collectively become known as *cyberspace*.

Cyberspace

The literature on cyberspace is rapidly becoming a significant element in popular culture.² Following Sterling (1990), cyberspace is best considered as a generic term which refers to a cluster of different technologies, some familiar, some only recently available, some being developed and some still fictional, all of which have in common the ability to simulate environments within which humans can interact. Other writers prefer the term computer-mediated communication (CMC) (Jones, 1994) to refer to much the same set of phenomena. We can now discuss some of the main variants: *Barlovian cyberspace*; *virtual reality* (VR); and *Gibsonian cyberspace*.

Barlovian cyberspace – named after John Barlow,³ a founder of the political action group called Electronic Frontier Foundation (Sterling, 1990:54) – refers to the existing international networks of computers. The seemingly ubiquitous Internet is now a 'ragged . . . world spanning electronic tangle' (Sterling, 1990:54) consisting of some 30 million people. In a sense, such a simple form of cyberspace is little more than an extension of existing telephone systems, simply substituting text and some icons for voice. Indeed, for Barlow cyberspace 'is where you are when you're talking on the telephone' (Rucker et al., 1993:78). Clearly, both telephones and computer network systems rely upon only a limited range of human senses and (although interactions via these mediums can be extremely rich [Stone, 1991; Rheingold, 1994; Wiley, 1995]) they are perhaps no substitute for 'face-to-face' (ftf) interactions where all participants are co-present. This is so because contemporary social life still tends to operate with an implicit physiognomic notion that the face and the body are the only 'true' sources which can reveal the character of a person (Featherstone, 1995a, 1995b). Thus, other, more advanced forms of cyberspace attempt to simulate such interactions more vividly by the use of co-ordinated multi-media systems, such as virtual reality, which stimulate our other senses.

The term 'virtual reality' (VR) was first coined by Jaron Lanier,⁴ the former head of VPL Research Inc. in California, and has recently been defined as 'a real or simulated environment in which the perceiver experiences telepresence' (Steuer, 1992:76–7; see Heim, this volume). It is a system which provides a realistic sense of

being immersed in an environment. VR is a computer-generated visual, audible and tactile multi-media experience. Using stereo headphones, head-mounted stereo television goggles ('eyephones') able to simulate three-dimensions, wired gauntlets ('datagloves') and computerized clothing ('datasuits'), VR aims to surround the human body with an artificial sensorium of sight, sound and touch. VR systems are also truly interactive in the sense that the computer which produces the simulated environment in which a person is immersed, constantly reconfigures that environment in response to body movements. As yet, the technology is relatively crude. There is sometimes a lag between movements of the body and the reconfiguration of the environment, graphics resolution is relatively low and many environments rely upon line-drawings and/or cartoon-like iconic representations. Nevertheless, all the indications are that the level of realism attainable will improve dramatically towards the end of the century (Lanier and Biocca, 1992). VR, then, is a medium which simulates a sense of presence through the use of technology – hence the term telepresence in its definition.

Gibsonian cyberspace, as defined in *Neuromancer* and the inspiration for the generic term, is characterized in an oft-quoted passage as

A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts. . . . A graphic representation of data abstracted from the bank of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights receding. (Gibson, 1984: 51)

In this fictional world, cyberspace is a global computer network of information which Gibson calls 'the matrix', which operators can access ('jack-in') through headsets ('trodes') via a computer terminal ('cyberspace deck'). Once in the matrix, operators can 'fly' to any part of the vast three-dimensional system of data coded into various colourful iconic architectural forms laid out beneath them like a vast metropolis (Bukatman, 1993a: 103–8): a city of data, a Borgesian library of vast databases containing all a culture's deposited wealth, where every document is available, every recording playable and every picture viewable. Once a particular location has been selected, it is possible to zoom in so that one moves inside the three-dimensional representation of the data in order to scan particular areas. Gibsonian cyberspace also allows for highly 'realistic' interactions between iconic representations of operators (what Stephenson [1992] in *Snow Crash* terms 'avatars' or what we might term 'cyberbodies') so that co-presence can be simulated within a myriad of different highly vivid environments. A range of other 'intelligent' entities can also 'exist' in cyberspace which do not have a human referent 'outside' the system. Some are previously downloaded personality constructs of humans, while others are autonomous post-human artificial intelligences (AIs) which live in

cyberspace 'like fish in water' (Sterling, 1990: 54). Essentially, then, Gibsonian cyberspace represents an imagined merger between the internet and VR systems. This imagined merger is given its most detailed rendition in Stephenson's (1992) Gibsonian-inspired *Snow Crash* through his description of the 'Metaverse'.

Cyberpunk

The term cyberpunk was first used in a Bruce Bethke short story called 'Cyberpunk', published in the November 1983 issue of *Amazing Stories* (see the discussion in the article by McCarron in this volume). It has since been used to describe writers such as William Gibson, especially *Neuromancer* (1984), Pat Cadigan, Bruce Sterling, Lewis Shiner and Greg Bear. What is interesting is the way in which cyberpunk has been taken up as a useful resource for social and cultural theory in comprehending the alleged shifts towards a new epoch. For Fred Jameson (1991: 419n), for example, cyberpunk and the work of Gibson in particular, represents 'the supreme literary expression if not of postmodernism, then of late capitalism itself'. Indeed, the work of Gibson has been held up as the prime exemplar of postmodern poetics (McHale, 1992a, 1992b). This might well be so but, for others, cyberpunk represents much more than even this. Perhaps the most extreme claim made for cyberpunk comes from Timothy Leary who declares that Gibson:

has produced nothing less than the underlying myth, the core legend, of the next stage of human evolution. He is performing the philosophic function that Dante did for feudalism and that writers like Mann, Tolstoy [and] Melville . . . did for the industrial age. (Leary, cited in Kellner, 1995: 298)

Only marginally less extreme is the claim by Sandy Stone (1991: 95) that the work of Gibson represents the dividing line between different social epochs based upon different modes of communication. For Stone, the publication of *Neuromancer*

crystallised a new community. . . . [It] reached the hackers . . . and . . . the technologically literate and socially disaffected who were searching for social forms that could transform the fragmented anomie that characterised life in . . . electronic industrial ghettos. . . . Gibson's powerful vision provided for them the imaginal public sphere and refigured discursive community that established the grounding for the possibility of a new kind of social interaction. . . . [It] is a massive textual presence not only in other literary productions . . . but in technical publications, conference topics, hardware design, and scientific and technological discourses in the large. (Stone, 1991: 95)

Other writers, clearly not just influenced by the fictional world of cyberpunk, but by the actuality of technological change itself, have begun to construct a sociological agenda to explore the realities of what some have termed *cybersociety* (Jones, 1994). Even so, and as Stone notes in the above quote, the cyberpunk

literature remains 'a massive textual presence' in even the most atheoretical and empiricist explorations of the internet and virtual reality. However, while cyberpunk has a radical and dystopic edge to it, much of the work on cyberculture more generally has, hitherto, been overly utopian. This utopianism is a theme explored in the present volume in the contribution by Kevin Robins.

There are some striking parallels between the utopianism of much of the current phase of technological development – the construction of the so called 'information superhighway' – and the construction of the interstate highway system in the USA. First, at the level of individuals, it was the father of Vice-President Al Gore – one of the greatest political advocates of the new technologies – who was instrumental in the development of the federal highway system. Second, at the level of motivation, in both cases it was the US military who provided the initial rationale for the construction of both systems (Jones, 1994: 10). And, as in the previous period, the utopian hyperbole surrounding the new technologies may come to be viewed as representing little more than the politically interested discourse of the organic intellectuals of a new class – a 'virtual class'

compulsively fixated on . . . technology as a source of salvation from the reality of a lonely culture and radical disconnection from everyday life . . . [a virtual class of] would-be astronauts who never got the chance to go to the moon [driven by the] will to virtuality. (Kroker and Weinstein, 1994: 4–5)

Much of what has been claimed for cyberculture is overly utopian. Nevertheless, despite the hyperbole and the mythology surrounding it, it is still possible to decipher within its literary concomitant, cyberpunk, a *theoretically* coherent vision of a very near future which is, some argue, about to collapse on the present (Csicsery-Ronay, 1991: 186; Kellner, 1995; Rucker et al., 1993). Whether William Gibson intends it or not (Gibson, 1991), his fiction *can* be systematically read as social and cultural theory, in that it not only paints 'an instantly recognizable portrait of the modern predicament', but also shows 'the hidden bulk of an iceberg of social change' that 'now glides with sinister majesty across the surface of the late twentieth century' (Sterling, 1986). Indeed, for Doug Kellner (1995), cyberpunk fiction is a far more insightful and dynamic analytic resource for coming to terms with the postmodern than is the recent work of cultural critics such as Baudrillard. While for Mike Davis (1992: 3), one of the major analysts of the contemporary urban condition, the work of Gibson provides 'stunning examples of how realist "extrapolative" science fiction can operate as prefigurative social theory, as well as an anticipatory opposition politics to the cyber-fascism lurking over the next horizon'. Although they do much else besides, the chapters included here by Sadie Plant, Nick Land and Anne Balsamo, all, in different ways, provide exemplars of such prefigurative social theory, in terms of both form and content.

Thus not only has the seemingly ubiquitous Gibsonian concept of cyberspace begun to transmute into a tangible *reality* – his technological vision has fed back into both computer and information systems design and theory (Benedikt, 1991b; Biocca, 1992a; McFadden, 1991), financially underwritten by the likes of the Pentagon, Sega, Nintendo and various other global corporations – but many of Gibson's fictional perspectives on cultural, economic and social phenomena have begun to find their way into social and cultural analyses as viable characterizations of our contemporary world.

Reading cyberpunk as social theory tends not to be a unidirectional activity. The relationship between cyberpunk literature and social theory is, if anything, recursive. Cyberpunk and sociological analyses which draw upon it have a 'habit' of 'folding into' each other in a recursive relation between the fictional and the analytic which might be described as an instance of a hyperreal positive feedback loop. For example, issues of public space and urban surveillance are themes taken up by Gibson throughout his work, but most fully in *Virtual Light* (1993). It is a book profoundly and explicitly influenced by Davis's (1990) influential analysis of Los Angeles, *City of Quartz*, which is itself adorned by a quote from Gibson which suggests that, as a work of contemporary analysis, it may well be more 'cyberpunk' than Gibson's fiction (Bukatman, 1993a: 144). This recursivity continues in Davis's (1992) *Beyond Blade Runner: Urban Control – the Ecology of Fear*, where an explicitly 'Gibsonian' map of the contemporary urban condition is presented. A map instantly recognizable in *Virtual Light* and, in a much more extreme form in Stephenson's *Snow Crash* (1992). Kellner (1995) also recognizes a recursivity between cyberpunk and postmodern social theory:

cyberpunk science fiction can be read as a sort of social theory, while Baudrillard's futuristic postmodern social theory can be read in turn as science fiction. This optic also suggests a deconstruction of sharp oppositions between literature and social theory, showing that much social theory contains a narrative and vision of the present and future, and that certain types of literature provide cogent mappings of the contemporary environment and, in the case of cyberpunk, of future trends. (Kellner, 1995: 299)

He goes on to add that

at the very moment when Baudrillard dropped the theoretical ball, losing his initiative, Gibson and cyberpunk picked it up, beginning their explorations of the new future world which Baudrillard had been exploring. (Kellner, 1995: 327)

The relationship between postmodernism and cyberculture is the central theme of the chapter by Mark Poster, while issues of recursivity, although explored throughout the volume, receive their most explicit treatment in the chapter by Nigel Clark.

Gareth Branwyn (Rucker et al., 1993: 64–6), writing in *Mondo 2000*, provides a

useful description of cyberpunk as both a literary perspective and as an actual worldview which gives a clear indication of its major concerns:

The future has imploded onto the present. There was no nuclear Armageddon. There's too much real estate to lose. The new battle-field is people's minds. . . . The megacorps are the new governments. . . . The U.S. is a big bully with lackluster economic power. . . . The world is splintering into a trillion subcultures and designer cults with their own language, codes and lifestyles. . . . Computer-generated info-domains are the next frontiers. . . . There is better living through chemistry. . . . Small groups or individual 'console cowboys' can wield tremendous power over governments, corporations etc. . . . The coalescence of a computer 'culture' is expressed in self-aware computer music, art, virtual communities, and a hacker/street tech subculture. . . . the computer nerd image is passé, and people are not ashamed anymore about the role the computer has in this subculture. The computer is a cool tool, a friend, important human augmentation. . . . We're becoming cyborgs. Our tech is getting smaller, closer to us, and it will soon merge with us.

These themes were first given expression in Gibson's novels which derive from a wide range of cultural antecedents (McHale, 1992a, 1992b). Kadrey and McCaffery (1991) suggest the following influences: classic novels such as *Frankenstein* and *The Big Sleep*; the literary avant-garde represented by William S. Burroughs (see also the influence of this style on the paper by Land in this volume), Thomas Pynchon and Kathy Acker; the science fiction of Philip K. Dick (see the discussion by McCarron in this volume), Michael Moorcock and J.G. Ballard (see Sobchack's discussion in this volume); the cultural analyses of Marshall McLuhan, grandly described as being 'to the 1960s what Baudrillard, Kroker and Cook, and Deleuze and Guattari are to the postcyberpunk era' (Kadrey and McCaffery, 1991: 18); the Situationist International's analysis of contemporary society (Plant, 1992); the music of the Velvet Underground, Patti Smith, the Talking Heads, mid-1970s David Bowie, Brian Eno, Laurie Anderson and, crucially, the Sex Pistols and The Clash (see McCaffery, 1991: 382-3, for a fuller listing); films such as Cronenberg's *Videodrome*, Roeg's *The Man Who Fell to Earth* and, especially, Ridley Scott's *Blade Runner* – itself based upon a novel by Dick (see the discussion by Landsberg and Holland, this volume; Bukatman, 1993a: 373-4, for a full filmography); MTV and its 'youth TV' emulators; and, finally, one might also add the IBM PC and the Macintosh computer, the cultural and representational impact of which was at least as great as its economic and technological importance (see Lupton, this volume).⁵

Cyberbodies

Cyberpunk takes the twin themes of technological body modification and the notion of cyberspace and allows them to intersect in various urban settings. The world of cyberspace is itself an urban environment – 'a simulation of the city's

information order', in which the 'city redoubles itself through the complex architecture of its information and media networks' (Davis, 1992: 16) – a digitized parallel world which from 'above' might appear as a rationally planned city (Le Corbusier's metropolis) but from 'below' reveals itself as a Benjaminesque labyrinthine city, in which no one can get the bird's eye view of the plan, but everyone effectively has to operate at street level, with limited knowledge based on different amounts of information about, and practical understanding of, how to move around in a world which is rapidly being restructured and reconfigured. This digitized urban hyperreality connects in various ways with the technological 'reality' of the street, not least in the way in which the socio-geography of the digitized city mirrors that of the built city. Davis (1992: 16) notes, for example, how the imploding 'communities' of Los Angeles are 'a data and media black hole'; an 'electronic ghetto within the emerging information city'.

The intersecting of the digital domain with the technology of the street produces a complex continuum of human-machine fusions (Tomas, 1989, 1991; Balsamo, this volume). At one end we have 'pure' human beings and at the other fully simulated disembodied post-humans which can only exist in cyberspace ('AIs' in Gibson and the less spectacular [UNIX-inspired] 'Daemons' in Stephenson). If we move out from the all-human pole, the first category of interest is one concerned with the aesthetic manipulation of the body's surface through cosmetic surgery, muscle grafts and animal or human transplants, which blur the visual cues for distinctions between humans and non-humans as well as gender differences (Rawdon Wilson, this volume). The second category is concerned with more fundamental alterations and enhancements of the functioning of the inner body. Here we have a range of alternatives to replace organic functions, such as biochip implants, upgraded senses and prosthetic additions. Both categories enable the body to be disassembled and reassembled with a high degree of functional specialization. In both cases, these bodily modifications find collective expression in social groupings which have some striking similarities with Michel Maffesoli's (1995) description of 'postmodern tribes' – groups which form and reform on the basis of temporary modes of identification. Moving along the continuum, the next category is what Tomas (1991: 41) refers to as 'classical hardware interfaced cyborgs', which exist in cyberspace. These are the operators who move around in cyberspace whose bodies are wired up to computers for input and output flows of information.

This final category again gets its clearest expression not in Gibson but in the form of the avatars, the iconic representation of the bodies of people logged into the Metaverse, in *Snow Crash* by Stephenson. They represent examples of what has been seen as the 'decoupling the body and the subject' (Stone, 1991: 99; Lupton,

this volume; McCarron, this volume). Although contemporary reflexive self-identity increasingly relies upon an ability to transform the body, with the potential development of the parallel world of cyberspace, the range of ways in which one can represent one's embodied subjectivity becomes much more varied and flexible, surpassing the 'horizons of the flesh' and constraints of the 'physical' body (even with radical medical enhancements). Despite the persistence of embodied physiognomic notions of the 'true self' in contemporary social life, there is some evidence to suggest that the new technology is opening up the possibility of radically new disembodied subjectivities (see the chapters by David Tomas, Michael Heim, Deborah Lupton, Samantha Holland, Nick Land, Anne Balsamo and Kevin McCarron). In Gibson (1984: 12) there exists 'a certain relaxed contempt for the flesh', which is regarded as 'the meat' by those addicted to 'life' in the 'matrix'. Although some regard such claims as unfounded and the new identities being created as banal (Robins, this volume), the cyberpunk vision is one in which we are approaching an epoch within which a self-identity derived from 'real', 'authentic', 'embodied' experiences is unable to compete with ones derived from the 'erotic ontology' (Heim, 1991) of 'hyperreal' 'simulated' 'disembodied' cyberspace (but for a critique see Sobchack, this volume).

Technology and Public Space

The cyberpunk view of the world is also one which recognizes the shrinking of public space and the increasing privatization of many aspects of social life. Close face-to-face social relationships, save those with kin and significant others within highly bounded *locales*, are becoming increasingly difficult to form. As patterns of both social and geographical mobility increase the fluidity of social life they undermine the formation of strong social bonds. The spectacle of consumer culture, especially as manifest in the commodified 'simulation' of the shopping mall as authentic public space, although providing a forum for the display of self-identity and the outcomes of associated body projects, in the end only results in the construction of a 'lonely crowd'. The headlong retreat of the *seduced* into their increasingly fortified, technologized, privatized worlds away from the increasingly remote and ungovernable spaces occupied by the *repressed*, to use the distinction made by Bauman (1988), only serves to further close off the more proximate 'social' sources of self-identity. For many all that is left is technology. As Elwes (1993: 65) views it:

computer technology was developed to promote and speed up global communication and yet somehow the effect is one of disconnection and distance. Individuals are increasingly locked into the isolation of their homes (it isn't safe to go out) and they only make contact with the outside

world through telecommunications and networked computer-information systems. Not so much distance learning as living at a distance.

For Lanier

California is the worst example. . . . Individuals don't even meet on sidewalks anymore. . . . we live in this constant sort of fetal position where we are seated in a soft chair looking at the world through a glass square, be it the windshield of the car or the screen of a television or computer. It's sort of constant, and we're in a little bubble. (Lanier and Biocca, 1992: 157)

The privatized retreat into television and video – essentially passive, non-interactive mediums – has been followed by engagements with increasingly interactive technologies: camcorders, multi-media interactive CDs, computer games and so on. Technology is beginning to mediate our social relationships, our self-identities and our wider sense of social life to an extent we are only just beginning to grasp. The portable telephone, the portable fax, the notepad computer and various other forms of electronic human augmentation have become 'essential' for social life in the 'densely networked centres of the global cities' (Lash and Urry, 1994: 319) and, increasingly, beyond. The seemingly ubiquitous camcorder endlessly records not just the 'spectacle' but also the 'mundane' to such an extent that 'lived experience' in and of itself becomes secondary to gaining a taped 'representation' of it for later 'consumption' à la *Sex, Lies and Videotape*.⁶

The contemporary decline of our sense of 'publicness' has been coupled with the spread of electronically mediated communication from primarily workplace settings to the private sphere. Those who proffer cyberpunk as social theory, would see the social preconditions for the creation of a new cyberculture as being firmly established as we increasingly use mediated forms of communication such as the telephone, the fax, the modem, the video, BBSs and the forthcoming VR systems. Some would claim that by using these new media of communication we are beginning to create new 'on-line' or 'virtual communities', new forms of social relationships, new disembodied modes of interacting and, for some, as we have seen, embryonic Gibsonian cyberspace itself (Rheingold, 1994; for a critique see Robins in this volume).

Theorizing Beyond Stable Systems

It should, perhaps, come as no surprise to us that, in an increasingly hyper-aestheticized everyday life (Featherstone, 1991), it is through various fictions that we endeavour to come to know ourselves. While we have argued that various strands of contemporary social and cultural theory have been parasitic upon the cyberpunk tradition, it may well be the case that, in the longer run, greater importance will be accorded to the impact of writers such as De Landa (1991, 1992,

1993; see discussion in Land, 1995), who take up the methodological implications of the cyberpunk vision and attempt to think through systematically some of the consequences for the human sciences.

De Landa not only draws upon many of the themes inherent to cyberpunk (robots, cyborgs, Artificial Intelligence, non-human agency, and so on) in his work, but also utilizes many elements of the aesthetics of cyberpunk in his everyday practice. He is a computer graphics designer working outside of the academic mainstream, who draws upon an eclectic range of the human and physical sciences in order to construct a radical and compelling vision of what he terms 'the emergence of synthetic reason' (De Landa, 1993). He cogently argues that the human sciences are so fettered by many of their domain assumptions that they are simply unable to provide any useful analytic handle on the contemporary condition. By drawing upon a materialist non-metaphorical reading of Deleuze and Guattari (1982), he has outlined a theory of 'stratification' in which the complementary operations of 'sorting out' and 'consolidation' are shown to be behind many (physical and social) structural forms. De Landa concludes that the future of social theory will be in the construction of new 'epistemological reservoirs', based upon complex computer simulations of cultural, social and economic processes in cyberspace. Those of us familiar with the analytic insights afforded by popular simulations such as *Sim City 2000* (Friedman, 1994) will have had a glimpse of the sort of thing De Landa has in mind, even if the social science operationalization of such approaches is still far from convincing.⁷

The methodological 'purging' involved in the project is profound. First, De Landa suggests that we must once and for all do away with ideal typical analytic thinking and begin to take seriously 'population' thinking. Rather than conceptualizing phenomena as more or less imperfect incarnations of some ideal essence, we must recognize that it is only *variation* which is real – a complete inversion of the classical paradigm. There is, then, for De Landa, no such thing as a pre-existent collection of traits which define some phenomena (biological, physical, social or cultural), rather, each trait develops along different ancestral lineages and accumulates in a population under different selection pressures; selection pressures which are themselves dependent upon *specific* and *contingent* histories. Traits accumulate through the operation of a 'searching device' (which results from the coupling of any kind of spontaneous variation to any kind of selection pressure), and are the product of a more or less stable solution in relation to the various contingent affordances found within a given environment. Drawing upon developments in artificial life (AL) research, especially work on genetic algorithms, De Landa suggests that such points of stability are likely to be multiple rather than unique. But if there is no Darwinian survival of the fittest (the unique solution),

what is the source of stability (however brief) in systems? The answer to this question leads De Landa to call for a second 'purge' – this time against notions of equilibrium thinking in the human sciences.

The importation into the human sciences of notions of stability from equilibrium thermodynamics premised upon the idea of 'heat death' – that stability was some function or other of all useful energy being transformed into heat – has had a profound effect upon modern social thought. It has underpinned our conceptualization of closed systems within which some static socio-economic solution can be derived. Most obviously, our conceptualization of markets, within which the operation of the laws of supply and demand generate a unique and stable solution in terms of prices and outputs, has reverberated throughout the social sciences via game theory, exchange theory, functionalism and systems thinking more generally.

De Landa suggests that this closed and static notion of (physical and socio-economic) stability has been superseded by the new science of 'dissipative' systems, based upon an understanding of the continual flow of energy and matter. The importation of ideas derived from the science of such systems – nonlinear dynamics – into the human sciences, fundamentally alters how we must conceptualize the world. Most important is the idea of 'deterministic chaos', in which 'stability' within the processual flux of dynamic systems is conceptualized as an 'attractor', and the transitions which transform one attractor into another are conceptualized as 'bifurcations'. The most striking feature of this attractor/bifurcations framework is the manner in which the notion of an 'emergent property' is revealed not as a metaphysical device, but as a real material process. It is quite possible, indeed very common, to find systems 'stabilized' in such a way that the properties of the population system as a whole are not manifest by the individual members of the population in isolation. Examples of such *synergistic interactions* include long waves of capitalist economic development (Kondratieff cycles), neural networks, the emergence of organizational cultures and so on.

De Landa suggests that, by combining the insights of both nonlinear dynamics and anti-ideal typical population thinking, 'we get the following picture: the evolutionary "searching device" constituted by variation coupled with selection ... [which explores] a space "preorganized" by attractors and bifurcations' (De Landa, 1993: 798–9). Such insights can only be explored by constructing cyberspatial virtual environments within which such processes can be examined. It is only through the simulation of such processes that the complexity of systems can be examined. Clearly, if we are to take the study of emergent processes seriously, an analytic approach that categorizes a population into its components will lose sight of those properties generated by the configuration of the individual elements

within the system. Computer simulations thus provide us with a tool within which we can synthesize rather than analyse systems.

This entails a radical shift in the constitution of social theory. Many academics would balk at the prospect of understanding social processes by staring at simulacra on a computer screen. They would not be seduced by the prospect of the generation of new forms of *post-symbolic communication*, where the presentation of information in new configurations, using the visual dimension which gives a strong sense of immediacy, transparency and vividness (i.e. show me, don't tell me), will allegedly supersede the interpretive looseness of written language. The attraction of such speculations is that the modelling is constructed in closer proximity to the data and everyday life. The danger is that it merely continues the dream of reason, with its quest for total control, order and pure unsullied communication. At the same time, these new theoretical tendencies resonate with the more general shift over the last decade which has been associated with postmodernism, globalization and the body. This is the move away from systematic large-scale theory-building towards taking into account a greater range of difference, complexity and disorder. We are rediscovering again that the boundary between the social and human sciences is a fluid one. It is, therefore, fitting that a journal such as *Body & Society*, which has been designed to traverse and explore this border space, into which the investigation of the human body inevitably takes us, should devote its first special issue to the study of cyberspace/cyberbodies/cyberpunk.

Notes

1. For discussions of the social and cultural possibilities of both plastic surgery and biochip implants in the cyberpunk literature see Tomas (1989, 1991) and Featherstone (1995b).
2. The concept now even has its very own 'for beginners' volume (Buick and Jevtic, 1995) published in the same month as *Postmodernism for Beginners* (Appignanesi and Garratt, 1995), a good indication of its growing significance.
3. Barlow is an interesting figure in the history of contemporary technological developments. He is a Republican rock lyricist for the 1960s rock group the Grateful Dead.
4. Sterling (1990:54) claims that 'Lanier is aware of the term "cyberspace" but considers it too "limiting" and "computery"'. As will be apparent, following Sterling (1990), Benedikt (1991a) and Rheingold (1994), we prefer to treat 'cyberspace' as a generic term and 'virtual reality' as one important example of it.
5. As is well known, Gibson wrote *Neuromancer* without much knowledge of the contemporary reality of computing technology. In conversation with McCaffery (1991:270) he remarks: 'It wasn't until I could finally afford a computer of my own that I found out there's a drive mechanism inside - this little thing that spins around. I'd been expecting an exotic crystalline thing, a cyberspace deck or something, and what I got was a little piece of a Victorian engine that made noises like a scratchy old record player. That noise took away some of the mystique for me. . . . My ignorance had allowed me to romanticize

them.' For a discussion of this relationship between the technology which produces fiction and fictional representations of technology see Bukatman (1993b).

6. The analysis offered by the Situationist International in the late 1960s, on the emergence of 'the society of the spectacle' has recently been recognized as the crucial antecedent to Baudrillard's discussion of hyperreality, simulacra and related concepts (Plant, 1992; Rojek and Turner, 1993).

7. See in particular Gilbert and Doran (1994) and Gilbert and Conte (1995).

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