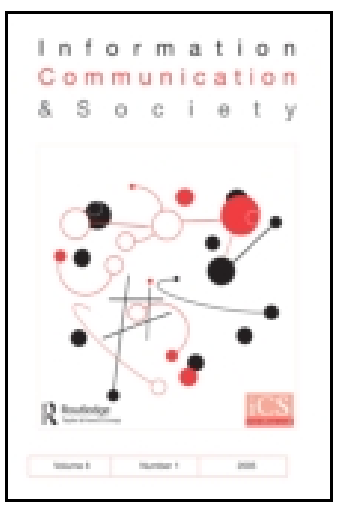

Information, Communication & Society
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/rics20

Visions of excess: Cyberspace, digital technologies and new cultural politics

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Published online: 25 Feb 2009.

VISIONS OF EXCESS

Cyberspace, digital technologies and new cultural politics

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Abstract

This paper critically situates contemporary concerns with cyberspace and digital media within a cultural dimension. In doing this it sets the emerging new communication technologies alongside issues of cultural limits and boundaries. The paper begins by undertaking ground clearing work about the nature of cyberspace and providing an analytical index of its position in relation to its imaginary or real status. It is argued that cyberspace is destined to attract two competing responses; first for being too true to life; and second for not being true enough. It is argued that these tensions are part of the cyberspatial embodiment of certain significant cultural aesthetics which are subsequently interwoven into the fabric of popular technoculture. This embodiment projects a number of competing claims and characterisations for the potential of digital media through slogans of cyberspace. The paper addresses how spatial metaphors, forms of technological enhancement, utopian aesthetics, technoculture and posthuman philosophy are framed as 'frontier discourse'. The materialism of transhumanist and extroprian politics is examined from a phenomenological standpoint. These frontier projects posit a 'disclosing space' for digital media which offer a radical 'crossing over' from the human to nonhuman computer mediated environment. By way of phenomenological analysis these new cultural politics are shown to be intimations of the real and an illusion of radical otherness which is chimerical and exemplary of unreflexive 'modes of becoming'.

Keywords

cyberspace, imaginary-real space, popular technoculture, technologies of disclosure, phenomenology, cultural politics

Technology is dangerous, but less dangerous than the geniuses of the place

Emmanuel Levinas

INTRODUCTION

Daniel Bell (1976) suggests that in contemporary times we are groping for 'a new vocabulary whose keyword seems to be limits' and that with this there is an unceasing search for experience, authenticity and self expression which is

tightly bound to the crisis of limits and cultural limitation. For Bell this provokes two opposing responses: the first of which seeks to set limits on technological advancement; and the second which is the attempt to go beyond these limits in acts of creation and individual enhancement. The current fascination with cyberspace and digital media can be placed at the apex of this cultural concern. Indeed, it can be seen as an embodiment of certain crucial cultural aesthetics which posit radical alternatives through an emerging technoculture which aim to overcome the limits and boundaries of contemporary social life. If we combine Bell's observations with Mary Douglas' (1970) view that a concern with bodily boundaries reflects a deep concern with cultural boundaries and internal structures, we can ask critically whether there are limits to expression when the body is supposedly abandoned? Indeed, with cyberspace and its associated digital technologies we have an exemplary instance of profound changes in apperception and an undifferentiated modern body(politic) which is seen as under threat and vulnerable.

This paper examines the metaphor of cultural limits and boundaries and the associated utopian technological enhancements and frontier discourse of popular technoculture as they are presented in the literature on cyberspace. In doing this it takes issue with a number of commentaries about emerging virtual futures which are depicted as enhanced technological and new community forms. It thus challenges the convergence which has emerged between popular culture and technology and the forms of sociability and personal enhancement suggested in the shift towards the virtual sphere. Throughout the paper the relationship between the imaginary and the real is addressed and shown to provide an analytical index for understanding the various claims and characterisations of cyberspace and digital technologies. The first part of the paper is a ground clearing exercise which situates these new communication technologies within various discussions about spatiality and visual representation. It is only from this starting point that we can speak meaningfully about cyberspace as real or imaginary. The paper goes on to examine some basic presuppositions which underlie the concept of cyberspace itself and argue that it is little more than an intimation of the real. It is suggested that perception is a necessary precondition for cyberspace. Nevertheless a critical examination of the relationship between the imaginary and the real is crucial in determining what mode of analogical spatial existence is being posited in arguments for or against cyberspace. The second part of the paper situates these referents and the way they are modelled in terms of the cultural limitations and utopias they are thought to express. It deals extensively with the emerging cultural politics of cyberspace and the discourse

which surrounds the potential of digital media and new virtual technologies. Here a Heideggerian critique of the discourses of cyberspace is developed and it is suggested that they are best understood as a technology of disclosure and a frontier language 'of becoming' which aims to persuade us to dispose of our bodies and ultimately, our consciousness. The critical focus for this phenomenological engagement is with the emerging transhumanist and extroprian libertarian projects.

CYBERSPACE, THE IMAGINARY AND THE REAL

What is cyberspace? Is it imagined or real, or indeed, is it a novel assimilation of the two? In a way the formulation of this question is problematic in itself since it suggests that we can extract from it fixed and marked terms. When asked whether cyberspace is imaginary or real, the realist will naturally only see 'hard' data and the computational props of new electronic technologies; whilst the metaphysician will see an aesthetic place with unassignable interstices between bodily space and bodies in space. Either way analysis should avoid simply focusing on cyberspace as an expression of scientific culture which combines with various material and virtual technical forms. We should also avoid the temptation to sociologise the technology of cyberspace simply in the reductionist terms of what Lefebvre (1991) calls 'representational spaces' which are seen to embody nothing more than complex symbolism. We should begin further back by turning to the presuppositional implications of this genre and ask whether cyberspace is a 'real' force for cultural and material transformation? Indeed, from here we can ask whether it is made to create enigmas or to elucidate them? The paper does not address applications or the technical aspects of cyberspace since it is my view that if the goals of cyberspace are realised through digital technological advances then the range of applications will be limited only by our social imagination and resources.

Critical analyses of cyberspace and emergent virtual technologies are necessarily coupled around questions of the relationship between the imaginary and the real. Before going on to consider this relationship in terms of a Heideggarian ontology of reception, it is worth setting some parameters around what is meant by 'ordinary images' such as paintings, photographs, televisual displays, maps and diagrams. By concentrating primarily on visual images this will help in establishing how, if at all, cyberspace has formal properties which allow us to designate it as belonging to the spatial dimension of ordinary

images. It will also assist in addressing certain questions with VRML technology about the context of orientation, navigation, enclosure and scale. However, what I have in mind here are some of the more mundane aspects of new electronic media which emphasize spatial representations such as telepresence and video conferencing. It is relevant to acknowledge that writers such as Dennett (1969) and Fodor (1975), amongst others, have carefully analysed the determinacy of certain properties as properties of the image itself as well as the relationship between mental acts and visual representations. In the discussion that follows, however, I shall steer clear of these important analyses since they are beyond the scope of this paper. Instead, I shall focus on the rhetorical devices and propositions about cyberspace which are made in relation to imaginary and real spheres of cultural life.

It is incontestable that cyberspace as matrix or net is at some level composed of geometrically constructed digital images; be they auditory, sensory, tactile or visual. Thus cyberspace is premised on the desirability of spatialised imagery, with virtual reality being its technics of perception. I shall concentrate on unpacking the latter since it is the most obvious and necessary element for elucidation. Indeed, visual technology is emphasized by Paul Virilio (1989) as a 'metabolic vehicle' which boards the body and exteriorises its capacities from speech and memory to eyesight and thereby replicates human perception as a dromoscope of virtual media. Ordinary visual images have something peculiarly to do with the visual system, and, in particular, with the properties to which that system is characteristically sensitive. For cyberspace, as well as other new digital media, which rely on ordinary visual images, the two most important properties are those of light/colour and space. In his discussion of visual images Rey claims that 'the central property here is associated with light (and/or colour). But at least for human beings, other properties that are reliably indicated by light also seem to count importantly as visual properties. These are especially spatial properties' (Rey 1981: 118). For example, visual images are represented by propositions that incorporate various spatial relations (e.g., 'left of', 'above', etc.). He goes on to detail these as including: length, width, depth, proportion, composition and orientation of parts. Much of object-oriented programming is designed around these imperatives.

Castoriadis, from a different standpoint, also recognises the significance of the relationship between spatiality, imagining and visual perception when he notes that:

> I cannot see without spacing or spatialising - and I space or spatialise as soon as I imagine, since every figure, whatever its quasi matter (visible, sonorous etc., or even noematic) is

> immediately (hama) the positing [position] of ordered gaps. It would not suffice to say that perceiving presupposes imagining. To perceive is to imagine, in the literal and active sense of the term. To perceive is a species of imagining, perception a variant of representation.
>
> (Castoriadis 1993: 4)

This Kantian point made by Castoriadis reminds us that (cyber)space is a necessary condition of perception. The visual imagery entailed in simulated computer mediated scenarios are forms or patterns which possess spatial and representational properties. Visual images in cyberspace are ordinary images in the sense that they are images of something. As Rey notes, 'This "of" relation, however, can be quite diverse: an image can be of the thing(s) it resembles, or of thing(s) that played a certain role in its production, or of thing(s) that it is used to represent; and these things may be the same or different in different cases' (1981: 118–19). The point being made here is that visual images depict or orientate the relation between an image and the spatio-temporal particular it purports to represent. Therefore visual images in cyberspace are particular kinds of analogical spatial representation. Leaving aside questions of imagery resolution, processing capacity and clarity, which are technical considerations, cyberspace clearly fulfils a representational role through the exploitation of certain correspondences between its properties of a Y-depicting image and the properties of a Y- it represents. Thus the Web page of a map of Berlin depicts the place of Berlin by virtue of certain visual properties of it (such as the length of the street lines) which correspond to and represent Berlin itself (such as the lengths of the actual streets). As Rey states 'the correspondence is systematic in that it is lawlike, supporting a certain range of inferences and counterfactuals . . . many properties [of Berlin] can be inferred' (1981: 119) and he calls these correspondences forms of 'compositional exploitation' with Y- depicting properties which are different from Y-denoting or Y-describing properties. Essentially Rey is appealing to analogical thinking by which we can both infer from the image to the referent, and also phantasie (*pace* Husserl) with the image to imagine how the referent would look with changed properties whether they be spatial or otherwise. The latter also entails that our imagining/inference is a double movement from image to phantasie upon the image, then back to the referent now over-written by the phantasied-upon image.

Virtual technology allows us to hyper-realise the real in as much as VR versions of real places permit us to see all over the image/place from whatever angle we wish unlike what we can do if we are at the real place. Equally, we can change the representation whereas we cannot make changes to the real places themselves. For instance, I may have a VR image of a gallery in the

Louvre. I can change all aspects of the image but I cannot go to the Louvre and change it around. Now if we argue that a richer grasp of reality – of the object – is made possible by the acts of imagination we bring to bear upon the object, that is to be able to vary 'in our mind's eye' aspects of the object to see how it could look otherwise, then VR enables precisely this to be done. The VR version is not fuzzy and dependent upon the mind's imaginative power, but can hold and fix any variant of the original, where that variant was initially a projection of one's imagination. VR allows us endlessly to contrast the proportions of a VR image of a building, and it is through contrast that we build up an ever more complete grasp of how something is. Our analogical and contrastive imagination provides the means by which we see objects. We do not purely see objects as such, but as relative to other bodies (for whatever reason those other bodies become the element of contrast) VR is in this sense a tool for visualising the meaning of a real object. Its intensification of the properties of the object-referent allows us to speak of virtual reality as hyper-realising the object.

In cyberpunk fiction and in much of the literature on the technology of computer mediated experience, the imaginary demands to be taken as the real. This applies just as much to the speculative theorist of virtual futures as it does to the extrapolative computer scientist. However, it is crucial to recognise that 'to be taken as real' is something that can occur in two very different ways. On the one hand, it means that the imaginary world of cyberspace takes the place of the real entirely, is substituted for it and somehow effaces it; this we know, is the ideal of an atomised model of technological progress that aims to take hold of the cybernaut subject, cast a spell on them, reduce them entirely to a cyberspace condition. The sort of cyberspace it posits is meant to be so enthralling that it renders whoever embarks on the voyage as spellbound. But, secondly, this also means that cyberspace has value to the extent that it passes, albeit in a discontinuous way, for 'the real'; therefore deriving its value from its equivalence or commensurability with things that exist in real spatial forms, and thus in return it has a value in reality. We can detect this process at work in many of the VRML designs of virtual environments which merely simulate existing architectural forms and structures. From this perspective cyberspace as a revelatory experience gives reality its meaning. As Land has argued 'If artificial space substitutes an ideal body-image for a "real" one, it is only because it first invades the real (imageless) body' (1995: 16). Here the two poles of opposition between the imaginary and the real are seen as complementary; together they build a commensurate totality, with each giving the other what it lacks. This of course, is particularly true of certain claims made about cyberspace for

enhancing relations of participative community. Either way in each of these accounts cyberspace is characterised as a self-sustaining representational form which is derived from compositional exploitation which mixes image with reality and relies upon some notion of a reflexive (em)bodied subject forming a critical part of its cleavage. As Tollander (1993) tells us, cyberspace 'has participants' of a human and nonhuman form and not merely users.

We find that with some exaggerated claims for 'cyberspace as community,' or what Marchant (1995) calls a 'sociotronics', the aim is to represent the true relations between human beings as an embodiment of their social meaning and spatial positioning. This ambition to mimetically express the meaning of social reality is founded paradoxically on the unreality that constitutes what Heidegger calls 'the way of being of things' within the spatial sphere; being imaginary it is in the nature of these things to remain always at a distance, set aside from what they really are, from what they would be if they truly were. It is this setting aside of reality which simultaneously gives cyberspace its own reality and allows it to make present the process whereby meaning comes to the things in the world, a process which precisely is possible only through a retreat from those 'real' things and in their setting aside. In addition, paradoxically, cybernauts, being always at a distance from themselves, can retain that essential characteristic only by becoming real equivocally, and the role of the imaginary is to make them real, albeit, as we have seen, in a mode of ambiguity and contestation. Indeed, as McHale (1992) points out in his essay 'Towards a Poetics of Cyberpunk', both Gibson's *Neuromancer* and Cadigan's *Mindplayers* attempt to resolve the ontological ambiguity I have detailed between the imaginary and the real by constructing 'a two-tier ontology by juxtaposing a primary reality plane with an inset cyberspace world' which makes possible 'metafictional reflection by the text on its own ontological procedures' (1992: 252–3).

In the 'bad copy' version of cyberspace we may recall the critique of Platonic forms offered by Deleuze. Those who remain faithful to the Platonic ideal of 'good' and 'bad' images would regard cyberspace as being an inadequate resemblance to the real and as an inferior simulacrum. That is, as an unauthorised and inadequate copy of the real. In this theory of images there is a value judgement which relegates cyberspace to the position of a dubious fabricator and inauthentic expression of the human condition. In *Logique du Sens* (1969), Deleuze reverses this perspective by proclaiming the simulacrum and praising the fictionalist for the inadequacies of their forgeries. Here the bad copy version of cyberspace is celebrated precisely because of its limited resemblance to the real. Lecercle illustrates this Deleuzian viewpoint when he says that

> The simulacrum, because it rejects, or is denied, any direct relationship with the Idea, loses that permanence, that capacity to be encompassed by the limits of reality: it is mobile, animated by the irrepressible movement of fiction, and it escapes the control of its creator, because it avoids the action of the Idea
>
> (1985: 97).

Indeed, the cyber belongs to 'the space' of the simulacrum and demands to 'overturn Platonism' in depriving the original of its ontologically privileged status of the copy.

The link between ontological and cultural limits is further tightened by various exponents of cyberculture who transpose it toward an articulation of the limits of physical bodies. Romanos takes up this position and states that 'after the distinction "original-copy" is gone, a corresponding distinction must also go: that of organism-machine' (1995: 2). In this account cyberspace is an antagonistic bio counter-flow which germinates from, but corrupts reality by, investing in bastardised spatial forms with inexact representations, flawed spatial boundaries, uncertain outputs and nonhuman agents (postorganic cyborgs). Here cyberspace comes to resemble a magical realism in its fusion of opposing representations, the splicing together of fantasy and fact and the mixing of solemnity with a kind of comic detachment. According to this view cyberspace stands against 'the real' spatial forms and is indifferent to representational signifiers which constitute it in the real. It develops a life of its own, independent of the reality which it copied in the first place. This closely resembles simulated learning modes in neural network application research which positively rely on error, contradiction and the fuzzy tinkering of micro elements for achieving desired outcomes. With unsupervised learning or what is sometimes called 'self-supervised learning', neural networks use no external influences to adjust their weighted inputs. 'Hidden layers' of processing elements, are immunised from external influence and have no direct contact with the 'real' environment. Their neural architecture often relies on stochastic learning and procedures to achieve pattern recognition and disease symptom diagnosis of external world phenomena. The important thing to take from this is the common relation between neural nets and futuristic technological architectures, both of which rely on an enhanced 'virtual' and aestheticised world picture in which there are no pure representational spaces or 'good copies'. Instead we find totalising (dis)functional systems which resemble what Varela calls 'a patchwork of subnetworks assembled by a complicated history of tinkering, rather than an optimised system resulting from some clean unified design' (1992: 321). The new fast-selling CD-ROM computer game Creatures, which is a much smarter version of the Tamagotchi cyberpet, is a contemporary instance of the popular appeal with the science of artificial life forms. The above

discussion suggests that, taken together, neural bio-technology and electronically mediated computer worlds can revolutionise our identities in their abandonment of linear, reconciliatory and unitary aspects of representation and spatial formats (see Levy 1992).

By way of summary, we can see from the above, that cyberspace is thus destined to attract two contradictory sorts of evaluation: first, for being too true to life; and second, for not being true enough. Or put another way for being an inexact depiction through being fantastical or an unfaithful one through being too faithful. This can be taken to reveal two ethical positions around the imaginary–real axis and its links to claims that are made for cyberspace as an enhanced mode of community. First is the claim that an overly formulaic construction of virtual technical images and nonhuman agents in cyberspace will be so one-dimensional and utility-bound that it is deprived of the living force of individual beings. Hence in the world itself they take on the life which they lack, or which is refused them in cyberspace. The second claim is that cyberspace will give reality to the world of material forms with such imaginary scope and such inspirational power that cyberspace truly appears to be in rivalry with the 'real' world and to be capable of entering into competition with it. This is an anti-ecological perspective which grants the cybernaut who enters therein the illusion of being able to dwell there for the whole of their life. This, of course, resembles the Lacanian notion of the 'symbolic relation' in which cyberspace takes the place of the real; it is not complementary to the real world at all, but instead takes the place of the lack in the other. However, as Žižek (1989: 172) notes, whilst it 'embodies what is lacking in the other' we soon learn that 'the opposites, the poles of the symbolic relation, each in a way returns to the other its own lack; they are united on the basis of their common lack'. The point being made here is that cyberspace is also a symbolic object by which we can experience the very impossibility of the 'real Thing', this permanent failure of representation to reach for 'real' representations.

Whichever claim one prefers, the signifying power, which cyberspace advocates propose, does not exist either as a pure interior or exterior of cyberspace; rather it retains a primary reference back to a dialectic of imaginary and real and a 'real' (re)presentation, that is, to a perception and positing of existence - to the sphere of cultural life in general. In this respect I think we can learn much from the conceptualisation of space offered by Henri Lefebvre and perhaps transfer this across to forge a better understanding of cyberspace. Lefebvre's book, *The Production of Space* (1991), represented a culmination of an engagement with questions of space and everyday life and he was primarily concerned with the

problematic of the city and the urban. First and foremost Lefebvre sought to theorize space not as a Kantian *a priori* but as a 'product of human practice'. From this starting point he developed his 'three moments of social space' which he called 'the perceived, the conceived and the lived'. Burgin summarises these three axes for the analysis of space as (i) spatial practice, (ii) representations of space, and (iii) representational space. He remarks that

> Lefebvre uses the expression 'spatial practice' to refer to the register of 'the perceived'; he uses 'representations of space' to refer to 'the conceived', and 'representational space' to refer to 'the lived'. Summarised in bare outline: *spatial* practice, as already observed, is the material expression of social relations in space, a marketplace, a bedroom, a lecture theatre, a ghetto. *Representations of space*, are those conceptual abstractions that may inform the actual configuration of such spatial practices; for example, Cartesian geometry, linear perspective, Le Corbusier's 'modular' or the quattrocentro painter's *braccio*. *Representational space* is space as appropriated by the imagination; Lefebvre writes that 'it overlays physical space, making symbolic use of its objects' and is predominantly non-verbal in nature
>
> (Burgin, 1996: 27).

So, for example, the front end use of computers and its various user applications are aspects of spatial practice, whilst the programming representation of word processing packages as formatted pages which follow a sequential order are representations of space, and finally, the animated cartoon-like characters we meet on-line in simulated virtual environments, such as *Alpha World,* are figurations of representational space. If we follow Lefebvre's formulation of space, cyberspace can thus be understood as a simultaneous imbrication of the physical, cognitive and abstract, whereby no one axes is prioritised at the expense of the others in the conceptualisation of this digital space. Certainly this kind of thinking stands us in good stead when it comes to clear methodological and analytical work and can deter us from making excessive claims about cyberspace. In theory the concept of cyberspace is made up of facts, representations and images borrowed from pre-cyberspatial phenomena, but in a process of transformation and new elaboration as we feel more strongly the impact of new digital and communication technologies. In practice cyberspace splits open and is subject to intervention from heterogeneous discursive sources which include popular magazines, such as *Wired*, whose remit is the proselytisation of Internet culture, the theorists of the cyberspatial imaginary, the hard nosed computer programmers who develop soft and hardware, as well as the popular mass users of personal computers.

What is clear at both levels discussed above is that the impact of digital technologies and the increasing sloganisation of cyberspace on mass media and consumption has considerably expanded the cultural and political importance

of spatiality and images. As Burgin notes in relation to the link between telecommunications and digitised formats 'the global proliferation of media networks brought about by the space-contracting technology of satellite television now gives images an unprecedented power to affect national and international opinion' (1996: 22). In the sections which follow I examine the way in which this field of spatial representations and images is coextensive with an emerging cultural politics of cyberspace, which relies upon a valorisation of technoculture and a radical aesthetics as a 'technology of disclosure' which attempts to cross over the limits of physical space and time.

THE CULTURAL POLITICS OF DIGITAL FUTURES

For some time social theory has struggled to articulate strong foundations for a cultural aesthetics which can legitimate new political movements. Indeed, many start from the opposite end by arguing for a politics which can justifying cultural and aesthetic ends. Habermas, for instance, in recognising the cultural cynicism of thinkers who fall within his own critical heritage, such as Marcuse and Adorno, refuses to advocate a programmatic framework of aesthetic experience in modern societies. Indeed, we can read the retreat from his idea of the public sphere to the private as an instance of the potential take-off for highly individualised computer mediated relations. As McCumber has suggested 'cultural tendencies to bring [visual] art and politics together lead, in general, either to authoritarianism (as in fascism), or to anti-authoritarian forms (such as anarchism)' (1989: 363). It seems appropriate then to ask how those who advocate the emancipatory potential for cyberspace can convincingly square the historical circle of uncertainty expressed in political aesthetics with the virtual futures which they wish to persuade us can replace the outmoded forms of carnal expression and non-electronic governance?

The cybernaut is thought to undergo an advanced technological and reflexive enhancement. In cyberpunk literature this is no less active in those novels of William Gibson, such as *Neuromancer*, where Case undergoes a reconciliation with himself as a result of his titanic struggle with the artificial intelligence 3Jane, as it is in those such as Jeff Noon's *Vurt*, in which the hero, Scribble, in searching for his sister Desdemona, gets lost in cyberspace never to return. Cyberspace claims to be an instrument of knowledge, in the sense that its visual and spatial properties may contain information from which other knowledge can be derived. But it is also crucially being used as a slogan of liberation, as the embodiment of the possibility of cultural change

through technological enhancement. In short, it expresses a search for authenticity and an alternative mode of becoming. I have argued elsewhere that inducements to rid ourselves of physical boundaries and overcome cultural limits through digitised life forms must be conceived primarily as a form of absorbed fascination with the spectacle of cyberspace (McBeath and Webb 1997). Indeed, the concept of absorption is crucial in understanding how boundaries are displaced. 'Absorption is the collapse of indifference and the emergence of a gradually lost difference between self and cyberspace. To be absorbed is to *become oneself inside a frame where boundaries do not matter. The more one becomes on the inside the less one is aware of an outside* . . . becoming absorbed is the move into virtual space' (McBeath and Webb 1997: 258). This is, perhaps, a dissolution in which the crisis of boundaries indicated by Bell are overcome by the belief in the potential new technologies. As Bernice Martin's (1981) analysis has shown of the romantic counter-culture in the 1960s or what she calls the 'expressive revolution' there is a fascination with the abyss and the infinity of projected alternative realities. Similarly, we can detect that cyberculture in its pure rhetorical forms takes as its starting point the void of fascination, an absorbing discovery or exploration that presupposes the authority of a far reaching ignorance, or what Blanchot (1947: 72) calls 'a way of apprehending being whose condition is the reign of absence of being, an absence that seeks to be everything and become real in the dual and paradoxical form of absence and absence of everything'. Here Blanchot is positing the idea that the experience of the absent, for instance, an ideal God or loved one, is paradoxical, in that, as a structure of anticipation it can be so compelling in its far reaching possibilities and yet at the same time produce an uncritical acceptance of the obscure or something other and beyond the way things are. He goes on to critically ask 'In this universe of enchantment and fascination, what becomes of the contribution of individual beings, their ways of understanding themselves and each other, and of living?' The phenomenological reading of the imaginary and the real thus far pursued can be complimented by a compelling cultural narrative which seeks to consolidate a future for digitalised technologies in terms of an emancipated and libertarian politics. A further link is apparent; recently, in cultural theory and particularly electronic on-line journals such as *Ctheory*, there has been a veritable celebration of urban rituals and their concomitant existential passengers which are grafted onto the pleasure principle of the postmodern landscape. A postmodern preoccupation with play, desire and festival has emerged around new electronic media. Kroker's intense polemics illustrate this strain of thought in the following:

> In this wonderful world as we drift aimlessly across the mediascape, floating among the debris of all the seductive objects of desire, voyeurs in the cultural boutiques of which our bodies are only random and transitory terminal points, like Barthes' voyeurs, Benjamin's flaneurs, or Deleuze and Guattari's nomads in the magic kingdom of signs.
>
> (Kroker 1992: 133)

Carnivalesque, the flaneur, panic bodies, unruly spaces, nomadic parasites, bodies without organs, terminal identities, transgression and spectral hybridisation are all avant-garde terms which spring to mind in defining the postmodern terrain of the new cultural politics (for an example of this genre, see Hetherington 1995). These are complimented by their cyberspace equivalents of space-cadets, software cowboys, hackers, sundogs, shapers and technogeeks. Within the contemporary London club culture and party scene, for example, the link between these celebrations of play and desire, urban rituals and cyberpunk find a popular youth culture appeal in the ambient, trance, and garage music scene, with its emphasis on New Age awareness, digitalised experience and psychedelic smart drugs. Just as it was with the 1960s hippie and flower power counter-culture, 'finding oneself' and 'chilling out' are seen as cool, but cooler still if you also 'surf the Net' and go to cyberpunk gigs. What each of these loosely connected movements have in common with their emphasis on the adventurer-hero (human and nonhuman), a radical enhancement and the romantic quest for self authenticity, is the contingent relationship between techno-youth culture, digital multimedia art and the political libertarian left. It is hardly surprising that a leftish intelligentsia [university academics, computer scientists and media professionals] are at the centre of these developments, given the destabilising appeal of cyberspace and hypertext as a method of deconstruction as well as the unlimited access they have to computer mediated technology. But whereas, in the 1960s, it was Herbert Marcuse, in the 1990s, it is Gilles Delueze and Jean Baudrillard who are the favourite gurus and intellectual influences. As Don Slater has noted 'cyberspace has come to be widely understood as a practical deconstruction of essentialism' (1997: 1). Cyberspace and digital media are given a radical coloration, partly because many of the intellectual innovators and proselytisers had reached perhaps an impasse in relation to the influence of New Right thinking on institutional frameworks (particularly public and professional sector services) and began to increasingly associate themselves with the values of youth, ecology movements and community artists, and partly because wider society, and particularly younger generations, who are less 'freaked out' by the computers, believe that a 'technological revolution' is occurring and regard it as being 'where its at'. Cyberspace

is a potent device of anti-structure; with e-mail, Internet and virtual communities, all channels of communication can be penetrated. New digital media facilitates easy ways to attack cultural boundaries and established hierarchies. Similarly, multimedia and electronic publishing redraw the boundaries between art and pornography, with the explicit portrayal of images and text often banned by English Law. In ways reminiscent of those analysed by Martin in the 1960s, a cultural elite is crystallising around new digital media, using cyberspace as the expression of self-enhancement and radical alternative forms of what I refer to further on as 'technological disclosure'.

The frontier language as exemplifying new and radical possibilities is examined more closely below, but for now to further paraphrase Blanchot we can ask whether the enthusiasts of cyberspace, who cast a spell on us in order to become our partners in the cyber game, are obliged in their turn 'to fall prey to this fascination, to be fascinating because they are themselves fascinated, incapable of controlling themselves even when displaying the greatest mastery and lucidity' (Blanchot 1947: 72). Put polemically, cyberspace might turn out to be terribly good for cybernauts and 'C theorists' thereof even though they never get to go to cyberspace. Marx, in his analysis of the commodity, understood only too well the character of fetishistic fascination. He pointed to the need to avoid merely concentrating on the properly fetishistic fascination of the 'content' supposedly lying hidden behind the form, and to concentrate on the 'secret' of the form itself. The task here would be to analyse how cyberspace has recently assumed the form of the value of a commodity in the writings of Kroker, Baudrillard and Virilio and how its popular technoculture is produced and combined with associated virtual technologies in the commodity-form?

At the heart of discussions about the reflexive and imaginary potential of cyberspace, and particularly of full-blown absorption in virtual environments, is the idea that these have a transformative capacity to disclose or reveal new political possibilities. Perhaps this is the latest version of what David Chaney calls a 'search for authenticity'? (1993: 35–47). For example, the Critical Art Ensemble celebrate the emerging electronic media and virtual technology. They affirm the power of this medium as nomadic and libertarian in their claim 'that the electronic voice is potentially the most powerful in the exercise of free speech' and that 'electronic work addresses questions of identity, environmental catastrophe, war and peace and other issues associated with activist representation' (1994: 121). This political manifesto of sedentary power tells us that 'Technology is the foundation for the nomadic elite's ability to maintain absence, acquire speed, and consolidate power in a global system' but rather more optimistically that 'New tactics and strategies of civil disobedience are

now possible ones that disturb the virtual order' (1994: 142). Clearly the sentiments expressed by the Critical Art Ensemble, with its grouping of anarchist multimedia artists, libertarian activists and Deleuzian philosophically minded thinkers, foresees the formation of a new cultural elite being contingent on the cyberspatial potential for political change. However, Simpson regards this technological leap of faith, like all others, as a response to our finitude, that is, 'to the realisation that we are vulnerable and immortal and that our time is limited' (1995: 14).

One might argue that new virtual technologies are implicated in the production of speculative truths and that their relation to the negativity of our responses to finitude are part and parcel of an unbearable discord, which coincides with subjectivity itself. Cyberspace, as virtual technological imagery and spatiality, becomes a way to make present the utmost negativity which characterises the finitude and limits of modern subjectivity, by signalling the posthuman. The paradox being that if virtual technologies are positively affirmed as succeeding in transmitting the new dimension of subjectivity or reflexive forms, then it does so by means of the failure of subjectivity itself. The final result of this account is that new virtual technologies are bound to fail, since every signifying representation 'betrays' the subject; it perverts its leftovers and deforms what it is supposed to reveal or disclose. But as we have seen above in the 'bad copy' version of cyberspace this object indeterminacy is seen as positive and necessarily as a first step towards a new politics of the posthuman cyborg and a Deleuzian deterritorialisation of spatial representations and codings.

CYBERSPACE AS A TECHNOLOGY OF DISCLOSURE

In Heideggerian terms, those who hold out the promise of cyberspace and digital technologies as culturally transformative adopt a position of radical overcoming and 'a way of being towards' the technological world which can reconstruct identities and forms of (nonhuman) difference (see Heidegger 1977). They are accorded the status of self-enhancement and creative difference of potential. This is hardly surprising given the Deleuzian derivatives of recent cyberspace literature, which regards force as a creative ontological opening which moves from 'virtuality' to actuality. Indeed, as Gillian Rose has noted in her essay on the New Bergsonism, '"Virtuality" is an alternative translation of the Greek dynamis to the conventional Latinized "possibility" or "potential"' (1992: 101). Thus virtuality and its associated digital technologies, as creative singularities or potential spaces of intensity, are thought to overcome what Deleuze calls negative consciousness and disorder, through its revelatory prop-

erties and forms. Much of the new neo-materialist thought which proselytises virtual technologies draws heavily on the new Bergsonism and the reification of potential space. Massumi captures what I have in mind here in his discussion of the Bergsonian doctrine of possibility:

> Bergson denies possibility in order to bulldoze the bedrock; for the sprouts of invention. In his view, the possible arises from the real, from its emergence, always new and unforeseeable. It is this self-organising emergence that creates its own possibility; retroactively, in a kind of temporal backwash (what Bergson calls the 'retrograde movement of truth'). The emergence of the new, of which possibility is a retrospective reflection, is an openness more radical than choice. Bergson calls that inventive indetermination the 'virtual'.
>
> (Massumi 1995: 2)

It seems that it is not merely a matter of ascertaining how little or how much these new virtual technologies can offer in the way of enhanced possibilities – such as, greater authenticity in social relations built on trust and exchange, or whether these can be regarded as deeper expressions of political democracy (i.e. the slogan that greater public access to information will significantly empower people as citizens and thereby extend their rights). Clearly whilst these are important considerations for evaluating the likely impact of new electronic media, I would argue that a more important and prior set of ontological questions should first be addressed which focus on the sense of the disclosing potential of cyberspace itself. That is, what theoretical assumptions are made for the acts and the project(ion) of cyberspace disclosure as a mediating phenomenon for new political and social arrangements? In other words, what is meant by or seized hold of through the concept of spatial disclosedness as providing the ground and the foundation for the possibility of the discovery of new imaginary life forms? These questions rest on a common-sense understanding of knowing-how and not on a prepositional knowing-that of the things that cyberspace can disclose to us. The question of how cyberspace can disclose new human possibilities is an ontological one of making sense of how things are possible, experienced and revealed and not just explaining how they work. I have noted in a previous paper, using the writings of Gaston Bachelard, that an engagement with cyberspace is often given by both cultural theorists and technophiles alike as an exaggerated poetics of space or a creation without a prior grounding. I went on to argue that this is in effect a reduction which is projected through and on to new digital technologies in terms of what Husserl calls 'wonderment in the face of the world' (see McBeath and Webb 1995). Here it will be argued that we can learn more about this phenomenon of the in-potentia of cyberspace as a cultural politics through a close reading of Heidegger's concept of disclosure.

Much of the literature on cyberspace which gives the new technology a positive and revelatory charge reads its potential value in terms of a capacity for change and transformation, not just as an activity of disclosing in itself. The introduction to Virtual Futures 1995 conference, for instance, told participants that; 'We have gathered you here this weekend to bury the twentieth century and begin work on the twenty-first . . . we will not know the results of the tumultuous global changes we are undergoing and creating for a hundred years or more, if we can survive them, but we are less interested in knowledge than in experiencing these changes'. There is more to this rhetoric than end of the millennium paranoia. These affirmative accounts of cyberspace amount to a form of cognitivism which posits the relationship between cultural and technological dimensions in terms of what Heidegger refers to as 'occurrent elements' (see Heidegger 1993: 366–9). That is, as a capacity for basing all forms of transformation upon the supposedly self-evident and directly intelligible ways of being of occurrent technology plus occurrent cultural predicates. There is, however, a deeper sense of articulating the in-potentia of cyberspace, which comes very close to Heidegger's own understanding of ontological disclosure and discoveredness. Cyberspace as a territory of spatiality generated by technological advancement is often set out as a shared clearing, a local situation and a 'there' in which objects of potential can be encountered in their immediacy. This is particularly true of the wild claims made for cybersex and enhanced community life (see Rheingold 1991). Here discovery through cyberspace can be read as being entirely consistent with the way in which things are discovered by Dasien, which, for Heidegger, is fundamentally the activity of disclosing. The problem for cyberspace enthusiasts, however, lies in the kinds of claims that are made for the potential space of new technologies of disclosure and it is here that they depart from Heidegger's conception of Dasien as a derivation of truth. In his discussion of existential untruth as the opposite of disclosedness, Heidegger tells us that the former is based on some kind of concealment. As Dreyfus notes, this existential untruth is linked to Heidegger's notions of primordial evidence and falling: 'Primordial evidence is for Heidegger experiencing something present just as it is. If, however, we try to stabilise such evidence and preserve it in language beyond the time and place in which it occurs, we lose this primordial relation' (1994: 274).

But the disclosedness of space in affirmative accounts of cyberspace is also suggestive of movement; of a more radical 'crossing over' and a process of reflexive transition. These are not just transitions from one state to another, or from the quality of one experience as it is turned into or replaced by another, but something of a quasi-ontological 'cross-over' which entails the related but

seemingly contradictory notions of withdrawal and openness. The juxtaposition of the French 'repli' as 'withdrawal', as in the French expression 'replie sur soi-meme', with 'depli' as 'opening up' or 'unfolding', best captures what we have in mind with this reflexive or identitarian movement. Implicit in cyberspace language is the idea that cyberspace both 'opens up' new frontiers and possibilities in the act of disclosure and that we must simultaneously 'withdraw' from the real and into cyberspace as a way of deterritorialising, re-presenting or recoding. We temporarily or permanently hide in the enclosed womb of cyberspace. Withdrawal can also imply disappearance from the social world. In *The Electronic Disturbance* (1994), for instance, the manifesto for enhanced electronic realities, Heidegger's definition of disclosure is paraphrased to promote the idea of active retreat in the face of cyborgian technology:

> Anxiety in the face of cyborgs must not be confused with fear in the face of virtual demise. This anxiety is not an accidental or random mood of 'weakness' in some interface; but, as a basic state-of-media of Cysein, it amounts to the disclosedness of the fact that Cysein [Dasein] exists as sliding Being towards its disappearance.
>
> (Critical Art Ensemble 1994: 146)

We can also discern an associated process of 'becoming' in this frontier language of technological disclosure. Drawing on the work of Ilya Prigogine, Rosenberg notes in his discussion of the theoretical aesthetics of hypertext this 'becoming' is premised on 'statistical formulations of contingent events irreducible to certainty, irreversible with respect to duration, and associated with the field of thermodynamics' (1994: 276). The position of positive disclosure entailed in the new digital technologies might be regarded by some as a retreat from old political solutions or sterile remedies of cultural hegemony and as a way of letting things be seen in their uncoveredness. To be closed off and covered up 'in the real' belongs to what Heidegger has called Dasein's facticity. Cyberspace becomes a 'potential (em)bodied space' for letting something be other than it already is. Again the Critical Art Ensemble illustrate this point of letting things be other than they are and assert the potential for virtual technologies as lifting the dominant ideological veil of modern times:

> Reality engines came to screenal man naturally and as a matter of course . . . . We are thus prepared to find that screenal man transposed the structural conditions of his own data nets into the virtual world, and we may attempt to reverse the feedback and put back into the human mind what reality engines teach as to the nature of things.
>
> (Critical Art Ensemble 1994: 145)

It is with these two related propositions which attempt to join theoretical thinking to a popularist technoecology of audio-visual experience in which the promises

held out for cyberspace can be situated. By joining frontier computerised language with Stoical ascetic metaphors we have with cyberspace a heady mixture of suggestibility and enigma for the restructuring of 'new' cultural experience based on pure computerised intelligence (see McBeath and Webb 1995). Irrespective of the problems I've pointed to about the complex relation between the imaginary and the real, this kind of cultural politics demands that we retreat from material reality. The premise which underpins this thesis is that the material world of bodily flesh is an obstacle to the potential of pure intelligible thought afforded by virtual worlds. The basic claim is derived from the theory of Platonic forms discussed above, which distinguishes the thing (intelligible unity) from its copy (sensible diversity). Thereby the body is regarded as inadequate because it continues to entangle us in sensible rather than intelligible phenomena. This is particularly the case in cyberpunk and cybertheory literature which rather dismissively refers to carnal flesh and human bodies as 'meat'. Indeed human 'meat' is poeticised as one of the last frontiers for the new digital technologies to overcome. It was the MIT research project leader on robotic engineering, Marvin Minsky, who ingenuously coined the term 'meat machines' to refer to human beings or 'wet life' (see Dreyfus 1993: 252).

Scientific advances in A-Life research have questioned the necessity of the physical bodily form, with claims being made for the possibility of bodily augmentation and 'downloading' one's consciousness into another nonhuman life form within the next century. To get a flavour of this libertarian technospeak one only has to browse the Extroprian and Transhumanist Web pages for offerings such as the *Brain Back-up Report* known as 'downloading or uploading, this is regarded as a means to immortality similar to cryonic suspension, permafrost burial, morphostasis . . . adherents believe they can achieve personal immortality by scanning and recording their brains' (see Web page http://www.access.digex.net/~kfl/les/cryonet/3212.1.html). Clearly heady stuff – and if we couple this to the New Millennium rhetoric of *Mondo 2000* and the softer version technoculture magazines of *Wired* and the New Age *Kindred Spirit* we have a discourse half way between science and mysticism. In the 1992 special edition of *Mondo 2000*, Randy Rucker's introduction to the 'new edge' popularises computer mediation when he tells us that 'computers are TAKING OVER many human functions . . . . There is a massive human/computer symbiosis developing faster than we can even think about it realistically' (1992:9). This posthuman speculation is further captured by Hans Moravec in *Mind Children* (1988). He summarises this evolutionary anachronism of the human form: 'In the present condition, we are uncomfortable half-breeds, part biology, part culture, with many biological traits out of step with inventions of our mind'

(1988: 4). Contrary to the recent BUPA advertisements on UK television which extol the virtues of the human body as a 'machine for life', Land (1995) tells us that cyberpunks 'compulsive migrations in computer systems register a desperate scrambling to escape from the clumsily underdesigned . . . shredded zombie meat' (1995: 2). Here, through the alliance of postmodern cultural libertarianism and popularist technoculture, cyberspace is thought to express a counter-computer culture which can overcome material bodily flesh. This radical dissembling of the Cartesian mind–body couplet is an attempt to assemble new cultural technologies as a means of providing the software (the brain) with a hardware (nonphysical) that is independent of the terrestrial and material conditions of life. Here one can juxtapose Lyotard's essay 'Can Thought Go on Without a Body?' (1993) which identifies the software problems of such Extroprian projects by drawing on the phenomenological insights of Hubert Dreyfus and Edmund Husserl to demonstrate that human thought does not think in binary terms. Unlike the computer mediated reality advocated by Land and Moravec, human thought does not depend on a temporal relationship existing between individual acts, even the necessity that acts succeed each other without interruption. Consciousness does not work with bits of information but with intuitive and hypothetical configurations. As Lyotard points out, it becomes aware of a noematic 'horizon' that provides it with intuitive configurations and heuristics within a field of orientation (1993: 13–15). The noematic horizon entailed in acts of consciousness refers to the referents or intentional objects of cognitions in their capacity of being referred to: for instance the perceived page as being perceived, the imagined author as being imagined. The significance of this concept for Lyotard is that human thought proceeds by aiming at a 'noema' and that this opens up a set of possibilities and 'make use of a pre-established criteria in advance . . . . This picture inevitably recalls the description Kant gave of a thought process he called reflective judgement: a mode of thought not guided by rules for determining data, but showing itself as capable of developing such rules afterwards on the basis of obtained "reflexivity"' (1993: 15). Thought thus proceeds analogically.

Lyotard's conclusion that bodies and thought are inseparable is damning for would-be cybernauts and techno-libertarians alike and is worthy of discussion.

> It is obvious from this objection that what makes thought and the body inseparable isn't just that the latter is the indispensable hardware for the former, a material prerequisite of its existence. It's that each of them is analogous to the other in its relationship with its respective (sensible, symbolic) environment: the relationship being analogical in both cases. In this description there are convincing grounds for not supporting the hypothesis (once suggested

> by Hilary Putnam) of a principle of the 'separability' of intelligence, a principle through which he believed he could legitimate an attempt to create artificial intelligence.
>
> (Lyotard 1993: 16)

Clearly then, any cultured perception has its limits in Bell's terms, but these limits are not derived from the separation of intelligible computerised thought from bodily perception. Indeed, Merleau-Ponty's entire project was based on a denunciation of this kind of antinomy. For Merleau-Ponty to think intelligibly does not mean to turn away from bodily perception but rather it means to grant it the status of a first ground and to dwell within its boundaries (see Merleau-Ponty, 1964; and Taminiaux, 1996). Far from the sensible being (perceptive 'wet life') set over and against the intelligible (computerised thought) both are mixed up in the same tissue. Against the chimeric new cultural politics the point we want to insist on here is the fundamental one that there cannot be pure thought or for that matter pure computerised intelligence. Cyberspace and the associated extroprian project thus turns out to be a convenient abstracting fiction. The feign they indulge in is a straightforward one; after cuttting off its head, metaphorically speaking, they simply reassemble the interiority of the sovereign subject within the abstract machine of cyberspace, leaving the material body to wilt and die. To make a finer point and to paraphrase Lyotard further, whenever a visual object presents itself to one side of the eye, there are always other sides which remain unseen. This leaves us then, perhaps, with a Trojan horse analogy – an awkward and clumsy (hardware) structure but having multi-perspectival vision – as providing the best imaginary model for entering the gates of Virtual Futures Inc. Flesh and meat will remain intact because of the necessity of physical experience as the embodiment of meaningful human action. Lyotard's critique of those who posit a nonphysical, beyond material reality, embodied in cyberspace, suggests they have not properly understood the complex role of the body in intelligent behaviour, nor have they taken into account more specifically that vision because it is intentional and anticipates what will shortly be seen. He concludes by challenging those who suggest that the body can be dispensed with to consider that 'It isn't enough for these machines to simulate the results of vision or writing fairly well. It's a matter (to use the attractively appropriate locution) of "giving body" to the artificial thought of which they are capable' (1993: 17).

It seems to me that the limits and boundaries to be overcome, to return to Daniel Bell's proposition, are not about the interface between human and machine, as suggested in the extroprian and transhumanist project. Indeed the human body is indispensable to intelligent behaviour and the body cannot be

simulated by a heuristically programmed digital computer; instead the limits turn around the situational character of embodied reason. As Dreyfus notes, this kind of work with limits will be achieved by those who prefer patience to adventure (1993: 304).

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REFERENCES

Baudrillard, J. (1990) *Seduction*, London: Macmillan.
Bell, D. (1976) *The Cultural Contradictions of Capitalism*, New York: Basic Books.
Blanchot, M. (1947) 'The Novel is a Work of Bad Faith', in M. Holland (ed.) *The Blanchot Reader*, Oxford: Blackwell.
Burgin, V. (1996) *In/Different Space: Place and Memory in Visual Culture*, Berkeley, CA: University of California Press.
Castoriadis, C. (1993) 'Merleau-Ponty and the Weight of Ontological Tradition', *Thesis Eleven,* 36: 1–36.
Chaney, D. (1993) *Fictions of Collective Life: Public Drama in Late Modern Culture*, London: Routledge.
Critical Art Ensemble (1994) *The Electronic Disturbance*, New York: Semiotexte.
Deleuze, G. (1969) *The Logic of Sense*, New York: Columbia University Press.
Dennett, D. (1969) *Content and Consciousness*, London: Routledge and Kegan Paul.
Douglas, M. (1970) *Natural Symbols: Explorations in Cosmology*, London: The Cresset Press.
Dreyfus, H.L. (1993) *What Computers Still Can't Do*, Cambridge, MA: MIT Press.
——— (1994) *Being-in-the-World*, Cambridge, MA: MIT Press.
Fodor, J.A. (1975) *The Language of Thought*, New York: Harper and Row.
Gibson, W. (1986) *Neuromancer*, London: Grafton Books.
Grosz, E. (1993) 'Merleau-Ponty and Irigaray in the Flesh', *Thesis Eleven,* 36: 37–59.
Heidegger, M. (1977) *The Question Concerning Technology*, New York: Harper Torchbooks.
——— (1993) *Basic Writings*, ed. D. Farrell Krell, London: Routledge.
Hetherington, K. (1995) 'Travelling Bodies: Cyborgism Travellers and the Carnivalesque', paper presented to Theory, Culture and Society conference, Berlin, Germany.
Husserl, E. (1907) *Ideas Pertaining to a Phenomenology and Phenomenological Philosophy*, Dordrecht: Kluwer Academic Press.
Kroker, A. (1992) *The Possessed Individual: Technology and Postmodernity*, London: Macmillan.

Land, N. (1992) 'Circutries', in J. Broadhurst (ed.) *Deleuze and the Trascendental Unconscious*, Warwick Journal of Philosophy, Warwick.

—— (1995) 'MEAT: (Or: How to Kill Oedipus in Cyberspace)', unpublished paper, Department of Philosophy, University of Warwick.

Lecercle, J.J. (1985) *Philosophy Through the Looking Glass*, London: Hutchinson.

Lefebvre, H. (1991) *The Production of Space*, Oxford: Blackwell.

Levy, S. (1992) *Artificial Life: The Quest for a New Creation*, Harmondsworth: Penguin Books.

Lyotard, J.F. (1993) *The Inhuman*, Cambridge: Polity Press.

McBeath, G. and Webb, S.A. (1995) 'Manufacturing Internet Culture through the Other', paper presented to Theory, Culture and Society conference, Berlin, Germany.

—— (1997) 'Cities, Subjectivity and Cyberspace', in S. Westwood and J. Williams (eds) *Imagined Cities*, Volume 1, London: Routledge.

McCumber, (1989) *Poetic Interaction: Language, Freedom, Reason*, Chicago, IL: Chicago University Press.

McHale (1992) 'Towards a Poetics of Cyberpunk' in *Constructing Postmodernism*, London: Routledge.

Marchant, O. (1995) 'From Sociotronics to Technopolitics: the Making of Electronic Identities', paper presented to the Virtual Futures conference, University of Warwick, UK, (March 1996).

Martin, B. (1981) *A Sociology of Contemporary Cultural Change*, Oxford: Basil Blackwell.

Massumi, B. (1995) 'Politics without Possibility (History without Limits)', paper presented to the Virtual Futures conference, University of Warwick, UK, (March 1996).

Merleau-Ponty, M. (1964) *The Primacy of Perception*, Chicago, IL: Northwestern University Press.

Moravec, H. (1988) *Mind Children*, Cambridge, MA: Harvard University Press.

Rey, G. (1981) 'What are Mental Images?' in N. Block (ed.) *Readings in Philosophy of Psychology*, London: Methuen.

Rheingold, H. (1991) *Virtual Reality*, New York: Summit Books.

Romanos, C. (1995) 'The Resilience of the Real: A User's Guide to Cyberspace for Human Beings', paper presented to Virtual Futures conference, University of Warwick, UK (March 1996).

Rose, G. (1992) *The Broken Middle*, Oxford: Blackwell.

Rosenberg, M.E. (1994) 'Physics and Hypertext: Liberation and Complicity in Art and Pedagogy', in G. Landow (ed.) *Hypertext Theory*, Baltimore, MD: Johns Hopkins University Press.

Rucker, R., Sirius, R. U. and Mu, Z (eds) (1992) *Mondo 2000: A User's Guide to the New Edge*, New York: Harper Perennial.

Simpson, L.C. (1995) *Technology, Time and the Conversations of Modernity*, London: Routledge.

Slater, D. (1997) 'Trading Sexpics on IRC: Embodiment and Authenticity on the Internet', Body Modification special edition of *Body and Society*, forthcoming.

Stone, R.A. (1992) 'Virtual Systems', in J. Crary and S. Kwinter (eds) *Incoporations*, New York: Zone Press.

Taminiaux, J. (1993) 'The Thinker and the Painter' in G.A. Johnson (ed.) *The Merleau-Ponty Aesthetics Reader*, Chicago, IL: Northwestern University Press.

Tollander, C. (1993) 'Collaborative Engines for Multiparticipant Cyberspaces', in M. Benedikt (ed.) *Cyberspace: The First Steps*, Cambridge, MA: MIT Press.

Varela, F (1992) 'The Re-enchantment of the Concrete', in J. Crary and S. Kwinter (eds) *Incorporations*, New York: Zone Press.

Virilio, P. (1989) *War and Cinema: The Logistics of Perception*, New York: Verso.

Žižek, S. (1989) *The Sublime Object of Ideology*, London: Verso Press.