READING CYBERSPACE

FICTIONS, FIGURES AND (DIS)EMBODIMENT

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ROBIN STOATE

Student No. 069063233

SCHOOL OF ENGLISH LITERATURE, LANGUAGE AND LINGUISTICS

NEWCASTLE UNIVERSITY

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Abstract

My thesis tracks the human body in cyberspace as a popular cultural construct, from its origins in cyberpunk fiction in the 1980s to the pervasion of cyberspatial narratives in contemporary fictions, along with its representations within wider cultural texts, such as film, the mainstream media, and on the Internet. Across the two respective sections of the thesis, I focus upon six recurring literal-metaphorical characters, entities or motifs which serve as points of collision, entanglement and reiteration for a wide variety of discourses. These figures—the avatar, the hacker, the nanotechnological swarm, the fursona, the caring computer, and the decaying digital—have varying cultural functions in their respective representations of the human/technological interface. Informed by theorists such as Donna Haraway (1991, 2008), N. Katherine Hayles (2001) and others, I trace both their origins and their shifting and (often increasingly prolific) representations from the 1980s to the present. This allows me to uncover these figures' registering of contextual discourses, and permits, in turn, an interrogation of the extent of their normative character, along with measuring how and to what extent, if any, these figures may offer alternative visions of human (and other) subjectivity. It also permits a rethinking of "cyberspace" itself.

Section One analyses three figures that depict the human/technological interface as a space for reinscribing and reifying Cartesian dualistic views of human subjectivity, along with the exclusive and marginalising implications of the remapping of that dualism. The figures in Section One—the avatar, the hacker, and the nanotechnological swarm—have their roots in the 1980s, and have stratified over time, commonly deployed in describing the human/technological interface. These figures function in first evoking and then managing the threats to the unified masculine subject posed by the altering human/machine relationship, *policing* rather than collapsing the subjective boundaries between them. They maintain and reiterate their attendant logics of identity, recapitulating an image of technology as the object of human invention, and never a contributor to the substantiation of the human subject. Science fiction–especially cyberpunk—has at least partially set the terms for understanding present-day relationships between humans and technologies, and those terms are relentlessly humanistic and teleological, despite their putatively postmodern and fragmentary aesthetic. The threat of the technological other is almost invariably feminine-coded, and my work in this section is explicated particularly in the light of Haraway's work and feminist theories of embodiment, including the work of Elizabeth Grosz (1994) and Margrit Shildrick (1997, 2002).

Section Two analyses three emerging figures—ones not so clearly and widely defined in fiction and popular culture—that depict the human/technological interface as fundamentally co-substantiating, rather than the latter being the product of the former. Acting as nodes of connection and constitution for various phenomena both depicted in fiction and enacted/performed at the human/technological interface itself, these three figures—the fursona, the caring computer, and the decaying digital—demonstrate potential ways to understand the human/technological interface outside of conventional, dualistic discourses of transcendental disembodiment of a bounded subject-self. Deploying theoretical work on concepts such as Alison Landsberg's notion of prosthetic memory (2004) and Brian Massumi's reading of the "real-material-but-incorporeal" body (2002), as well as Haraway's

later work on companion species (2008), I position these figures as representative visions of technologically-mediated subjectivity that allow us to imagine our relationships with technology as co-operative, open and materially co-substantiating. I argue that they recover the potential to rupture the unified and dualistic mind-subject that is both represented and contained by the figures seen in Section One, while reflecting a more recognisably prosaic, ongoing transformation of subjective participants in human/technological encounters.

In opening up these two respective clusters of human-technological figures, I map two attendant visions of cyberspace. The first is the most common: the smooth, Euclidean grid into which the discrete unified consciousness is projected *away* from the body, which is conflated with (a reductive understanding of) virtuality, and to which access is allowed or denied based on highly conventional lines of gender, race, sexuality and so on. The second vision is emerging: it is possible to view cyberspace as less of a "space" at all, and more of a technologically-mediated field of material implication—one which is not discrete from the putatively offline world, which is implicit in the subject formation of its users and participants, and accounts for, rather than disavowing, the physical, bodily substrate from which it is explicated.

INTRODUCTION

The question of what happens to understandings of the human subject, at a point in time when all categories previously taken for granted are undergoing a fundamental reconfiguration as a result of the global capital-driven permeation of increasingly advanced information technologies, is one that has been asked countless times in the last few decades. Prompted by the need to react politically, theoretically and philosophically to the contested condition of postmodernity in the West, a strategy of scrutinising the fluxing intersections between the putative categories of the 'human' and the 'technological'—and trying to determine what subjective transformations (if any) take place on and across that stage—has proven a recurrent theme throughout scholarly work in a variety of disciplines. The tenor of the response has, of course, varied. For instance, frequently cited in descriptions of the turn to interrogating the putatively postmodern technologically-engaged subject is the work of Jean Baudrillard. His analysis of the dissolution by electronic media of the Platonic real into an endless circulation of simulacra signals the more apocalyptic end of the spectrum of opinions on the matter.[1] On the other end of that spectrum are the radical, occasionally bombastic dreams of a 'cyberpunk' future, its shape demarcated by the science fiction subgenre of the same name that emerged in the 1980s. While it was not in itself, of course, the only reason that such concerns entered the popular imaginary, ever since William Gibson's hugely influential Sprawl Trilogy of novels (1984-1988) generated a dizzyingly complete vocabulary for doing so, a supposedly new (cyber)culture has arisen.[2] This culture is typified by its near-fanatical celebration of the aesthetics and ideas of a human being

[1] Baudrillard's work has been well accounted-for, and it is not my intention to dwell upon it extensively here. The core of Baudrillard's argument about the reality-diminishing effects of the media can be found in *Simulacra and Simulation* (1994).

[2] The Sprawl Trilogy consists of the novels *Neuromancer* (1984), *Count Zero* (1986) and *Mona Lisa Overdrive* (1988). The "Sprawl" in question is the "Boston-Atlanta Metropolitan Axis", a fictional extension and intensification of the Boston-Washington "Megalopolis"—a cluster of densely populated urban/metropolitan areas.

retrofitted and reconfigured by electronic prostheses, implants, biomechanics, xenotransplantation, cloning, genetic engineering and so on, constituting a wide array of liberatory promises for the increasingly *post*human subject.

The explosion of fascination with the posthuman subject represented by the genre of cyberpunk marks the culmination of an ongoing transformation of the human that began, as N. Katherine Hayles argues, with projects of cybernetics research emerging from the Second World War, and the reshaping of interactions with technologies marking a shift from the human use of 'dumb' tools, to the integration of two (or more) agents in a virtual feedback loop of circulating information patterns.[3] Alongside the excitement of the cyberpunks, cultural theorists have moved to produce accounts of this changing relationship, trying to determine whether or not there lies any real potential for subjective reconfiguration at this fluxing interface. While a delineated discipline of 'cybertheory' arguably never emerged fully-expressed, many scholarly fields developed an arm the function of which was to theorise the implications of this changing relationship with technology. Hayles' work is just one example of these kinds of approaches, most of which owe a debt to the work of Donna Haraway, whose "Cyborg Manifesto" (1985) constituted an incredibly powerful—and incredibly seductive—theoretical methodology for seizing upon encounters with increasingly-advanced digital technologies and interrogating them to determine whether they may offer possibilities for breaking down various harmful normative logics of identity, and particularly those boundary logics of the liberal humanist subject, or the "historically specific" construction of the human which is extraordinarily exclusive in nature and scope, but whose parameters are universalised, given to be those against which all viable human subjects must be judged

[3] As Hayles points out this happened even as the same developments marked a steady and problematic conceptual decoupling of information from its material bases (1999: 2).

(Hayles 1999: 2).[4] This liberal humanist subject has been held partly responsible by feminist theorists (amongst many others) for underpinning many—if not all—logics of domination and exclusion along the lines of sex, gender, race, class, sexuality, able-bodiedness, and so on. The human/technological interface has, partly through the work of people like Hayles and Haraway, become an important staging point from which to interrogate that category and undermine it.

Hayles' posthuman and Haraway's cyborg are, in fact, representative of two absolutely key formulations of the human/technological interface in postmodernity. In addition to these well-theorised frameworks, another of the central locations for imagining the multiple meetings between the human subject and the advanced technologies of the late twentieth and early twenty-first centuries is the metaphorical grid of cyberspace. Just one of the many terms that Gibson both coined and popularised (appearing first in the 1982 short story collection *Burning Chrome,* and popularised by the Sprawl Trilogy), and which has since become a highly recognisable everyday word (used mainly nowadays to refer to the Internet), cyberspace has embodied both excitement and disappointment in almost equal measure. Gibson's formulation of cyberspace—the "consensual hallucination" (1984: 12); the "transparent 3D chessboard extending to infinity" (52), accessed by the virtuoso "console cowboys" of his novels by way of a direct neural connection—is the one that has taken hold as the main fictional image of a 'pure' cyberspace. Inspiring countless other writers and filmmakers (versions of Gibson's vision of cyberspace re-emerge in texts like Neal Stephenson's *Snow Crash* [1992], the film *The Lawnmower Man* [dir. Brett Leonard, 1992] and the *Matrix* film trilogy [dir. Andy and Larry Wachowski, 1999-2003]) young real-life hackers who went on to become the coders who would

[4] Haraway's "Cyborg Manifesto" was originally published in a 1985 issue of *Socialist Review*, and was later developed into its final and most-cited version in her 1991 monograph *Simians, Cyborgs and Women: The Reinvention of Nature.* In this thesis, I refer to the latter version.

become the architects of the present-day Internet and other systems of human/technological interface.[5]

Gibson was, though, responding to a wider set of cultural changes when he distilled them into his vision of cyberspace.[6] The appearance of cyberspace in science fiction is bound up with the rapidly changing nature of Western life in the late twentieth century, a change which is inextricably linked to the pervasion of digital technologies, but also to the changing perceptions of the urban (mostly American) landscape. Vivian Sobchack identifies a distinctive shift in American SF cinema, for instance, at the end of the 1970s, which reflects a conception of both space and time altered by "the popularisation and pervasiveness of electronic technology" (2004: 222). Sobchack produces an account of a nascent conception of space that, in opposition to the depth and urgency of conventional understandings of the same, is concerned with reconciling a postmodern emphasis on surface and play—something consolidated by the experience of electronically mediated images:

> [the] traditional perception of 'depth' as a structure of possible bodily movement in a materially habitable space has been challenged by our current and very real kinetic responses to – but immaterial habitation of – various forms of 'simulated' space (from flight training to video games) [...] Fragmented into discrete and contained units by both microchips and strobe lights, space has lost much of its contextual function as the ground for the continuities of time, movement and event. Space is now more often a 'text' than a context. (223)

[5] Chapter Two unravels the function of the hacker figure, which has its own implications for the understanding of the interface.

[6] Indeed, apart from its appearance in the Sprawl Trilogy, cyberspace features heavily in some other major (science fiction) texts produced at around the same time: the film *TRON* (dir. Steven Lisberger, 1982) is one such example: the action of the film takes place in a space that is, ambiguously either the literal material "insides" of a computer system or the conceptual electronic space produced by the operations of those components.

For Sobchack, digital technologies (and the globalisation of capital; the two things, amongst many, co-substantiated in the 1980s) helped to fragment this "traditional" understanding of space as three-dimensional. What replaced it, Sobchack argues, was the "superficial electronic 'dimensionality' of movement experienced on – not in – the screens of video games, music videos, and movies like *TRON*" (*ibid.*).

Sobchack goes on to argue that the weightlessness of this new non-dimension helped to make redundant fears of penetration and invasion (most vivid in 1950s culture), and that this new concept of space also simultaneously focused and obscured the distribution of corporate power and capital, placing multinationals themselves into this intangible, "other" plane (224). The ambivalence in this conception of space is productive, and while Sobchack's analysis resists coding either politically liberatory possibility or repression exclusively into the phenomenon, the sense of spatial *reconfiguration* is illustrative of the putative power of human/technological interfaces to mutate and shift that space (and its inhabitants) beyond the clear objectives of conventional rational control. Scott Bukatman's rich account of cyberspace in cyberpunk fiction reads it as a simultaneous celebration of and resistance to the distribution of the subject across electronic interfaces; it is a space that disrupts conventional geometry and any division between text and experience—and yet still embodies a way to comprehend this mind-bending multiplication of information: "cyberspace is a method of conceiving the inconceivable—an imaginary solution to the real contradictions of the Dataist Era. In this sense, *Neuromancer itself* represents a 'consensual hallucination'—an abstraction and reduction of the complexities of cybernetic culture to a kind of reckless, but sensible, cognitive experience" (152, emphasis in original). While both Sobchack and Bukatman resist polemic, producing thorough readings of this electronic space, both show agreement on the fundamentally inexplicable dimensions of cyberspace, and its inherent

resistance to discourses of totalisation. For both, cyberspace—in its most well known fictional formulations, at the very least—is both focusing and intangible, and always inseparable from the 'real world' conditions of its conception.

As well as being a well-known entity in fictional formulations though, cyberspace is, of course, a much more complicated phenomenon, with implications for and material roots embedded in the changing experiences of explicitly technologically-mediated life in the West. As David Bell writes, cyberspace

> has material, symbolic and experiential dimensions. It is machines, wires, electricity, programs, screens, connections, and it is modes of information and communication: email, websites, chat rooms, MUDs. But it is also images and ideas: cyberspace exists on film, in fiction, in our imaginations as much as on our desktops or in the space between our screens. (2001: 2)

For Bell, it is necessary to examine (and indeed define) cyberspace via a three-pronged attack: "material stories", "symbolic stories" and "experiential stories" (6). Attending to the complex implications of this necessity, he starts to build a working definition of cyberspace:

> We can define cyberspace in terms of hardware, for example—as a global network of computers, linked through communications infrastructures, that facilitate forms of interaction between remote actors. Cyberspace is here the sum of all those nodes and networks [...] Alternatively, a definition based partly on the 'symbolic' trope could define cyberspace as an imagined space between computers in which people might build new selves and new worlds [...] In fact, cyberspace is all this and more; it is hardware and software, and it is images and ideas—the two are inseparable. Moreover, the ways we experience cyberspace

> represent a negotiation of material and symbolic elements, each given different weight depending on the kind of experience. (7)

Bell's definition gives a very useful overview of what is at stake in theorising the basic shape and nature of cyberspace. The culmination of material, symbolic and experiential stories embeds cyberspace as a 'real' entity; it is a mediation between the material, symbolic and the experiential that converges and is condensed into a metaphor with considerable currency, even if the 'meaning" of that metaphor is unavoidably multiplicitous and wide-reaching. It is a definition that seeks to ensure that cyberpunk-inflected excitement does not overwhelm the need to keep a sense of perspective. Bell's work, though, also serves as an indication of why I have chosen not to focus upon cyberspace explicitly as the direct object of any single chapter of my study. Firstly, work such as Bell's (and indeed Bukatman's and Sobchack's) demonstrates that the task of *defining* cyberspace is already being done, and furthermore can only be done effectively from a perspective that accounts for its specific instantiation in the context in which it appears (rather than described 'from the outside' as a discrete entity). Secondly, Bell's analysis is characteristic of a kind of work that, very sensibly, seeks to build an open vision of cyberspace that accounts, where possible, for the full complexity of its material instantiation and its constitutive effects on subjects in interaction with it—but this is *not*, unfortunately, the vision of cyberspace that is represented in most cultural texts that depict it. Through analysing six interface encounters, I develop in this thesis a series of perspectives on the cultural functions of cyberspace which do not disagree with the necessity of a subtle, careful analysis of that formation of the interface—but work instead from the assumption that these subtle, careful analyses just do not make it into most conceptions of cyberspace as they are encountered in the popular imaginary.

In other words, cyberspace has necessarily been theorised from a number of quarters, and found to be an expression of a certain ongoing series of cultural changes; its shape has been determined by scholars to be complex, multiple, and embedded in its material conditions. But, as both a conceptual space expressed in fiction and in conventional popular cultural representations, cyberspace, when analysed in terms of its depictions of subjectivity and embodiment, appears incredibly (and increasingly) normative in character. Rather than giving new ways of conceiving of human embodiment, or altering our notions of space to better reflect the fractured experience of postmodernity, cyberspace itself, as it is generally represented in its most common depictions, is the culmination of much older, post-Enlightenment projects of *dis*embodiment. Rather than a complex and irreducible flow and counterflow of influences and material circumstances that generate qualitatively new modes of embodiment, cyberspace is regularly figured as a means of escaping the body altogether. Indeed, its very representation as a "space" at all, envisioning the interface as a blank plane of Euclidean dimensions, marks it as penetrable, passive, and feminised: this is a space that becomes the *object* to the rational (masculine) *subject*. A cyberspace is a fallaciously-conceived "blank" zone, within which normative values can be reinscribed under the banner of technologically-deterministic electronic neutrality; it is an 'other' which requires instrumental, unidirectional control. It is dislodged and dislocated from the material world, hovering above it, Platonically "artificial" but potentially intellectually and subjectively superior in its distillation of the deterministic frameworks of rational technoscience into a perfect(ed) new space. This space is there to be entered and left at will by a discrete, free-floating mind-self. And, in its capacity as a neutral, controllable space, cyberspace in fact functions as a means of *resisting* the fragmentation of human subjects at the interface. While formulations such as the posthuman and the cyborg have provided an opportunity (or necessity) to rethink the historically-specific construction of the human by reconfiguring it and undermining its

mythical cohesion, a number of cultural figures have arisen at the same interface whose function is literally to reject those reconfigurations.

In order to determine the form of this rejection, my thesis tracks the human body in cyberspace as a popular cultural construct, from its origins in cyberpunk fiction in the 1980s to the pervasion of cyberspatial narratives in contemporary fictions, along with its representations within wider cultural texts, such as film, the mainstream media, and on the Internet. Across the two respective sections of the thesis, I focus upon six recurring literal-metaphorical characters, entities or motifs which serve as points of collision, entanglement and reiteration for a wide variety of discourses. These *figures*—the avatar, the hacker, the nanotechnological swarm, the fursona, the caring computer, and the decaying digital—have varying cultural functions in their respective representations of the human/technological interface. Informed by theorists such as Haraway (1991, 2008), Hayles (1999) and others, I trace both these figures' origins and their shifting and (often increasingly prolific) representations from the 1980s to the present. I do this in two sections of three figures each: the first section deals with more strongly delineated/consolidated figures, mainly in fiction, which have a specific set of normative functions; whereas the second section is made up of examinations of three figures that are still emerging at the interface, and are in the process of being established across several varying texts at the interface.

This approach allows me to uncover these figures' registering of contextual discourses, and permits, in turn, an interrogation of the extent of their normative character, along with measuring how and to what extent, if any, these figures may offer alternative visions of human (and other) subjectivity. It also permits a rethinking of the notion of "cyberspace" itself—even while never focusing explicitly upon cyberspace as an object of

study. One of the major intentions of my project is, as shown necessary by Bell's argument, to abandon as prescriptive the possibility of a singular totalising definition of cyberspace, along with the intention of locking it down to a geographical (or even abstract) location and shape. Accordingly, cyberspace haunts every one: each figure under examination here is embedded in, emerges from, interacts with, or is in some way implicated in the substantiation of some kind of cyberspace. Just what the relationship is between each figure and cyberspace is examined through the unravelling of that figure itself, but broadly speaking there are, in the two respective sections of this thesis, two visions of cyberspace here, and each respective version embodies a considerably different function.

My use of 'figures' has a firm precedent: I take my methodological cues primarily from the work of Haraway. Confounding the drive for (or the possibility of) distance and objectivity from (and thus authority and power over), Haraway writes "from the belly" of figures (2008: 4). Figures—"material-semiotic nodes [...] in which diverse bodies and meanings coshape each other" (*ibid.*)—have, for Haraway, taken the forms of cyborgs, monkeys and apes (1991), the genetically engineered and trademarked cancer research animal OncoMouse™ (1997), and, most recently, dogs and other "companion species" (2008). Focusing upon these figures, Haraway uses them as a means to unravel the complex ways in which they constitute and are constituted by their informing material contexts, along with examining the same in the putative (human) individuals and entities in interaction with them. This inspired the approach that I have taken in my thesis: each chapter focuses upon a different figure, and each figure constitutes a node entangling a set of highly heterogeneous representations of the human/technological interface, and the discursive functions attendant to each set of representations. For instance, when I examine the figure of the avatar in Chapter One, I examine the way it is represented in

fiction—as a means to reverse-engineer both how and why the avatar was established, along with determining the nature of its discursive function.[7] This mapping of figures has, though, a constitutive effect too, especially upon figures that are not as clearly consolidated: for example, when I write about the fursona in Chapter Four, or the caring computer in Chapter Five, I am partly responsible for tying them together into figures by the very act of my writing them.

From Vitamin Pills to Cortical Stacks

Before coming to a full discussion of my methodology and map of my thesis structure, however, it is necessary to outline in full the respective frameworks of the posthuman and the cyborg—arguably the two most widely-cited conceptual formulations for understanding the putative overlap between human subjects and contemporary and future technologies—as well as the reasons why these formulations have struggled to resist rejection in mainstream and technocultural representations of the interface. As I argue, while the posthuman and the cyborg are both rich sources of inspiration for opening up the implications of the interface, both have suffered from having their transgressive potential closed down in advance or simply ignored by contrary, normative assemblies that emerge at the same interfaces—and which emerge specifically to resist any such alterations to the parameters or boundaries of the conventional human subject.

Both the cyborg and the posthuman are complex, careful accounts of the human/technological interface, and both thinkers use their work to problematise the notion of the liberal humanist subject.[8] Both accounts, however, offer versions of

[7] This is, as I show in Chapter One, to provide a means for an offline user to interact in cyberspace without fear of subjective pollution. All of the figures under examination in Section One have, at their base, a number of discursive structures the function of which are to police the boundary between the human subject and the technological other, keeping each category separate by animating their disruption and then recoupment.

[8] By the liberal humanist subject, I mean the post-Enlightenment idea of the human as an essentially rational, thinking subject, inspired by philosophers such as René Descartes,

interface encounters that have been either ignored, resisted or rejected outright by many cultural representations of such encounters—in favour of reductive reiterations of the liberal humanist subject. These more complex former models are *contained* as discursive constructions arise that police the boundaries between the human and the technological. While Haraway's cyborg figure predates (and informs) Hayles' reading of the posthuman, I begin with an account of the posthuman. This may seem counterintuitive, but I do this because of the differing nature of the two frameworks: Hayles' reading of the posthuman both gives a specific historical background to the shifting nature of the human/technological relationship and does so in the context of critiquing the liberal humanist subject. The cyborg, on the other hand, is a manifesto-figure that is developed in order to react to much the same issues, but is better explained with those contexts and critiques already defined.

Hayles' *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature and Informatics* (1999) is a detailed cultural history of the ongoing interpenetration of human embodied subjectivity and technology, focusing in particular on an interrelated series of conceptual shifts taking place as a result of cybernetics research emerging from the Second World War. For Hayles, the arguable "posthuman" condition signals an opportunity to rethink fundamentally the historically-constructed condition of humanity as it is viewed in the West:

Immanuel Kant and others. Descartes' influential ontological statement *cogito ergo sum*–"I think therefore I am"—is demonstrative of both the privileging of rational thought and the reduction of selfhood to the bounds of an essentialised mind (and not to mention the implicit denigration of the body as unimportant to the fundamental nature of that mind). This vision of a human subject with a stable centre or core, standing in opposition to both its own body and the outside world (both of which can, theoretically, be known, ordered and controlled) is at the basis of most conventional logics of identity in Western societies. I discuss this more fully when looking at feminist critiques of the liberal humanist subject, which judge its dualistic underpinnings to make categorisation as "human" exclusive to a tiny minority of subjects.

> What is the posthuman? Think of it as a point of view characterized by the following assumptions [...] First, the posthuman view privileges informational pattern over material instantiation, so that embodiment in a biological substrate is seen as an accident of history rather than an inevitability of life. Second, the posthuman view considers consciousness, regarded as the seat of human identity in the Western tradition long before Descartes thought he was a mind thinking, as an epiphenomenon, as an evolutionary upstart trying to claim that it is the whole show when in actuality it is only a minor sideshow. Third, the posthuman view thinks of the body as the original prosthesis we all learn to manipulate, so that extending or replacing the body with other prostheses becomes a continuation of a process that began before we were born. Fourth, and most important, by these and other means, the posthuman view configures human being so that it can be seamlessly articulated with intelligent machines. In the posthuman, there are no essential differences or absolute demarcations between bodily existence and computer simulation, cybernetic mechanism, robot teleology and human goals. (2-3)

This overview of the extremely complicated nature of the posthuman (which, she also points out, is "suggestive" rather than prescriptive [2]) is demonstrative of the kinds of reconfigurations made possible by an altered relationship with "intelligent machines". Furthermore, detailing how information "lost its body" as a result of the mathematician Claude Shannon's 1948 "Mathematical Theory of Communication", Hayles identifies both the possibility of conceiving of information as something that can exist *across* human and non-organic (technological) bodies, bringing them into a co-constituting feedback loop that confounds originary will or identity, *and* the problem of this now-disembodied information being treated as a kind of essence, a quasi-spiritual entity given

coherence and credibility by the mathematically-proven nature of its metaphorical function.[9]

In showing how it is undermined, Hayles' work also constitutes a robust articulation of the normative subject that has been reconfigured or retrofitted by technological intervention, and the ways in which it has already come under attack:

> The liberal humanist subject [has] been cogently criticized from a number of perspectives. Feminist theorists have pointed out that it has historically been constructed as a white European male, presuming a universality that has worked to suppress and disenfranchise women's voices; postcolonial theorists have taken issue not only with the universality of the (white male) liberal subject but also with the very idea of a unified, consistent identity, focusing instead on hybridity, and postmodern theorists such as Gilles Deleuze and Felix Guattari have linked it with capitalism, arguing for the liberatory potential of a dispersed subjectivity distributed among diverse desiring machines. (4)

Aligning her work with that of those others who have called for a deconstruction or rethinking of the bounds of the 'I' subject of Western terminology, Hayles positions her analysis as one whose focus is upon ensuring that the plurality of material experience and context is not overlooked in the constitution of posthuman subjectivity. The posthuman here is not as much of a 'figure' as the contextual and many-tendrilled form assigned to a vastly complicated cultural history: Hayles does not sublimate the posthuman into a cohesive (if deliberately transient) shape in a manner reminiscent of Haraway's cyborg metaphor, assigning it some kind of inherent potential as a tool for picking the locks of the dominating logics of identity. Hayles' project, in contrast to Haraway's (self-

[9] For Hayles, Shannon's mathematical theory of communication allowed for an abstraction of the notion of information, occluding its material bases as interchangeable, and the technical applicability of Shannon's work was instrumental in stabilising this dualistic myth (1999: 2).

described) "manifesto", has a cultural prescription that only goes as far as a warning against the threat of a reductive, essentialist, hyper-Cartesian view of posthumanism as some kind of deterministic 'next stage' of human evolution. For Hayles, 'posthumanism' describes a means of reviewing understandings of subjectivity vis-à-vis shifting human relationships with information, rather than a generational, inevitable, grand narrative roll towards a teleological endpoint of scientifically-mediated subjective perfection.

Indeed, if anything, her book constitutes a passionate defence against the latter conception of posthumanism, which she sees as nothing less than a "nightmare":

> If my nightmare is a culture inhabited by posthumans who regard their bodies as fashion accessories rather than the ground of being, my dream is a version of the posthuman that embraces the possibilities of information technologies without being seduced by fantasies of unlimited power and disembodied immortality, that recognizes and celebrates finitude as a condition of human being, and that understands human life is embedded in a material world of great complexity, one on which we depend for our continued survival. (5)

Hayles' primary concern is that the metaphorical power of the posthuman does not simply get grasped and deployed as a way to extend the myth of the unitary, bounded liberal humanist subject, which denigrates the importance of the body, and tries to forget that it is even embodied in the first place. She describes how she had read Hans Moravec's speculative science text *Mind Children* (1988), which, amidst a collection of careful, well-thought-out speculations about the future of artificial intelligence and cybernetics, contained a fantasy whereby in the future, the human "consciousness" could be transferred from the meat of the human brain to a new computer body (1). "How," she asks herself, "was it possible for someone of Moravec's obvious intelligence to believe that mind could be separated from body? Even assuming such a separation was

possible, how could anyone think that consciousness in an entirely different medium would remain unchanged, as if it had no connection with embodiment?" (*ibid.*) These kinds of "fantasies of unlimited power and disembodied immortality" that she describes are the logical conclusion of a linear teleology of generational "improvement" that so often goes hand-in-hand with reductive understandings of an essentialised human subject that (deliberately) forgets its historical and material contingency—and not to mention of history and scientific development (and the interactions between the two).

Hayles' simultaneously delicate and robust formulation of the historically-situated posthuman does not seem to register in the thoughts of those whose voices are loudest in the debates about our possible posthuman futures. Rather than our interpenetrating relationships with information technologies giving us the tools and the impetus to perceive the human body as "the original prosthesis we all learn to manipulate", popular perceptions of posthumanism seem instead to celebrate overwhelmingly the idea of moving radically beyond the putative constraints of the physical human body, fulfilling final mastery of technology and our bodies, and achieving omnipotent immortality with the aid of those technological developments and augmentations in order to eventually escape the flawed finitude of material embodiment altogether. One example of this can be found in the writings and activities of Raymond Kurzweil, a widely-noted and respected inventor, pioneer of optical character recognition, amongst other technologies, and a high-profile member of the Scientific Advisory Board of the Lifeboat Foundation—an organisation dedicated to "helping humanity survive existential risks" from technologies that threaten to reshape or undermine the conventional image of

humanity (Lifeboat Foundation 2010).[10] An extensive interview by the *Boston Globe* with the wealthy American inventor, who is possibly one of the most vocal proponents of the posthuman "movement", describes his daily routine:

> Every day, Kurzweil takes hundreds of nutritional supplement pills, and once a week he takes several others intravenously. He is, as he puts it, "reprogramming my biochemistry" and claims in so doing to have conquered his Type 2 diabetes. More importantly, he insists, he is stretching his natural lifespan until either genetic therapies, microscopic "nanobots" (hypothetical robots on the scale of single atoms and molecules that Kurzweil believes will be able, among many other things, to take over some of the vital functions of the human body), or simply the ability to download one's mind onto a computer make immortality a reality. (Bennett 2005: par. 13-4)

Kurzweil's approach is one example of what Hayles might term posthumanism gone wrong. Downloading one's mind as if it were a little ghost living inside an empty skull betrays once again that age-old Cartesian assumption that the mind can even be so neatly located, and that the consciousness can exist as a free-floating entity that can be passed around from body to body and remain intact as a singular presence.

Kurzweil apparently awaits the day when "he will be billions of times more intelligent than he is today, able to read minds, assume different forms, and reshape his physical environment at will" (Bennett, par. 4). For Kurzweil, technologies mobilised supposedly for the benefit of humanity have the effect of closing down discussion on politically important issues: He finds it "surreal" when people talk of "the social security shortfall of 2042" because he believes that by then "advances in nanotechnology will allow us to

[10] The Lifeboat Foundation's mission statement is indicative in itself of an organised and systemic resistance to the idea that any relationship with technology involves a fundamental reconfiguration of the human subject in interaction with it.

ward off disease and senescence and to manufacture all the goods we want for a pittance" (Bennett, par. 17). The same discourse—that future technological advances will inevitably eventually allow for the unproblematic disembodiment, storage, transfer and re-homing of some kind of essentialised version of the mind-self—occur in science fiction just as commonly now as it did in the era of the Moravecs text that gives Hayles such cause for concern. Richard Morgan's novel *Altered Carbon* (2002) is one such example: it dramatises a distant future universe where human consciousnesses are stored on a memory chip called a "cortical stack", installed directly in the brain stem. When a body dies, the consciousness can be uploaded either into storage, or into a new body—irreverently known as a "sleeve". "Real death" ("RD" in the novel) is only possible if the cortical stack is destroyed.[11] Here is the Cartesian dualism writ large: the true essence of the self resides in a body, but that body is an arbitrary shell, with only marginal implications for the subject formation of the individual possessing it. Killing the body is not "real" death; real death only comes when the mind-self is lost or destroyed (or deleted). Indeed, the language of bodily commodification in the novel marks the body as a *possession* rather than a fundamental component of being or becoming.

The approaches of Kurzweil and of fiction like *Altered Carbon* represent a mode of co-existence with technology based rather selfishly in an idea of subjectivity that is limited by very particular notions of what constitutes a politically viable agent—notions that absolutely must not be disrupted, or even revealed to be materially contingent, but are reproduced flawlessly by digital (re-)instantiation in a technological material base. Again, what is unsettling is that this kind of narrative is still arguably the dominant discourse on posthumanism and human interactions with technology. People like Kurzweil, an influential thinker with exceptional scientific credentials, continue to propagate the

[11] *Altered Carbon* is discussed more fully in Chapter Two, on the figure of the avatar.

singular, teleological myth of disembodied omnipotence when it comes to the relationship between human beings and machines. This reliance upon the narrative of a kind of progressing, disembodied relationship with technology that will eventually just solve all of our problems 'somehow' is just the kind of feverish re-appropriation of the far more complex notion of posthumanism that Hayles argues against.[12]

As mentioned, instrumental in motivating and informing Hayles' project of theorising the posthuman is work by Donna Haraway. Haraway's cyborg metaphor is an attempt to break a perceived limiting identity politics of socialist feminism, but has had wider scope for theorising subjectivity in terms of affinity instead of essence; terms that do not only elevate artifice to the status of nature but break down the distinction between the two completely. And Hayles's work with the posthuman shows it to be a much more complicated term than just an intensification of 'human'—or 'humanist'—approaches to selfing. The figure of the cyborg—a compounding of "cybernetic organism"—has, by now, a very firm place in the (science-) fictional imaginary. Cyborgs are syntheses of organic and technological ('natural' and 'artificial') components. They range from the fusions of meat and metal embodied by the iconic android killing machines of the *Terminator* film franchise (1984-2009), to the "razorgirl" Molly Millions in Gibson's Sprawl Trilogy who has mirrored sunglasses embedded into her skull and razorblades under her fingernails, to the port-augmented bodies of the "freed" humans of the *Matrix* film trilogy (1999-2003). The cyborg, however, has also taken on a powerful and

[12] This is also a fundamentally technologically deterministic view of the way in which technologies develop: i.e., "technology" is seen here as a independent agent that develops in a kind of a vacuum rather than as the result of complex social and economic changes, and its relationship to "the human" is a kind of power struggle: either we "keep up" with technology and control it, imposing the will of our discrete selves upon it, or we are left behind (or even destroyed). Bell sums it up neatly, remarking that this viewpoint constitutes "a mode of understanding that prescribes a one-way relationship between machines (technology) and people (society), in which technologies change, and that change impacts on people. In this formulation, technology and society are kept separate, even held in opposition to one another: technology *causes* social change" (66).

provocative character as a theoretical figure, developed by Haraway. The "Cyborg Manifesto"'s titular figure has been deployed frequently in considerations of human/technological interaction. Its function, for Haraway, is to take socialist feminist thinking beyond dualistic logics of identity, and reconfigure human agency in terms of changing relationships with machines, in a world where technological developments (taking care not to see these developments as deterministic) lead to more and more discoveries that destabilise the distinction between nature and culture. The cyborg functions as a persuasive attempt to discover a means of accounting for a postmodern kind of partial selfhood without recourse to universalising (and thus exclusive) binary frameworks, and to account for the growing influence of technology on Western culture without rejecting it out of hand as inherently androcentric and misogynistic.

The basic premise of the manifesto is that the way we are co-evolving with machines makes us subjectively equal to them; the conventional humanist conception of the subject-to-object relationship of "human" to "invention" is overturned: we are found to be in an encounter with technology that is fundamentally and continuously co-substantiating. The "cyborg" is the metaphorical half-human, half-machine figure; it confounds the possibility of originary authenticity, disrupts a false delineation between the natural and the artificial, and exists for Haraway as a method for destabilising the strict boundaries between several other such problematic binary subject categories:

> [The cyborg is] an argument for pleasure in the confusion of boundaries and for responsibility in their construction… Nature and culture are reworked; the one can no longer be the resource for appropriation or incorporation by the other. The relationships for forming wholes from parts, including those of polarity and hierarchical domination, are at issue in the cyborg world. (1991: 151)

In the manifesto, written in the context of a society swamped with new technological modes of altering the body and interacting with machines and other agents, Haraway identifies "crucial breakdowns" between humans, animals and machines that constitute and contribute to cyborgic bodies, brought about or exposed by the changing face(s) of technology and our relationships with the same (151-3). She asserts that these boundary "breakdowns" allow for the possibility of a "cyborg world" that, rather than being "about the final imposition of a grid of control on the planet", as many might assume given the Western capitalist-orientated bias of conditions of technological production, can be about "lived social and bodily realities in which people are not afraid of permanently partial identities and contradictory standpoints" (154). This "blasphemous" figure of the "monstrous and illegitimate" cyborg in effect challenges what Haraway sees as inadequate, essentialist strategies in existing socialist feminisms—it renders certain things discussable that were previously seen as prohibitively male-orientated and controlled, such as technoscience—and in this capacity is a rich basis for many theoretical and interdisciplinary narratives (*ibid.*).

While Haraway's vision of the cyborg has been one of the most widely-deployed theoretical tools for interrogating the human/technological interface since she published the essay, it has come under no small amount of scrutiny.[13] Criticisms of the manifesto vary from the ways it has been (mis-)used, to its putatively limited scope, to the very logical underpinnings of its theoretical project of hybridity. Vicki Kirby, for instance, takes on those logical underpinnings. The larger project of Kirby's work is to revisit some of the major postmodern, putatively non-dualistic approaches to corporeal

[13] I account for some of the more substantial criticisms of Haraway's work here, but do not perform the equivalent for that of Hayles' work on the posthuman. This is because of a difference in format between the two models: the "manifesto" nature of Haraway's figure invites its application as a problem-solving model. Hayles' project is more of an extended cultural history—with conceptual implications for the understanding of the human and posthuman subjects, certainly—but not a manifesto that encourages as direct a "use" as the cyborg.

subjectivity, and uncover what she believes to be an unwitting reiteration of the very boundary logic they are designed to overcome. Addressing Haraway's cyborg, she judges it "utterly dependent on the calculus of one plus one": for Kirby, the constitution of the cyborg is a linear but reversible operation that conjoins discrete entities, whose seams remain visible even after the moment of hybridity (1997: 147). The vaunted collapse of the nature/culture divide here is made impossible by the cyborg's retrospective reiteration of the categories it has supposedly made obsolete. Sceptical of some of the cyborg's possibly overenthusiastic supporters, Judith Squires produces a critical account of some of the "fabulous feminist futures" that have been propounded as a result of Haraway's metaphor-model (2000: 360). "While there *may* be potential for an alliance between cyborg imagery and materialist-feminism," she writes, "this potential has been largely submerged beneath a sea of technophoric cyberdrool" (*ibid.*, emphasis in original). Squires demonstrates the form that this "technophoric cyberdrool" has taken by examining the writing of self-professed "cyberfeminists" such as Sadie Plant, whom she judges to have stripped the cyborg metaphor of its politicised character, as well as to have used it as a means to re-establish a reductive and essentialist vision of femininity that runs counter to the cyborg's logic of deliberate, unabashed postmodern partiality (358).

Squires also takes issue with the excitement surrounding the cyborg's liberatory possibilities given both the prevailing discourses in which it was first articulated as a figure outside of Haraway's work (those of cyberpunk and cyberculture) and the very limited number of people worldwide who have real access to the kinds of transformative technologies being celebrated: the "dreary dreams of Texan boys" both set the terms for discussion of cyborgic embodiment and constitute the majority of those who have access to and control over it (363-4). Finally, and more recently, Joanna Zylinska has outlined

that while the cyborg's (and cyberfeminism's) importance cannot be underestimated "in the world in which information sciences remain one of the dominant scientific paradigms", yet another series of shifts in the specificities of scientific research make the meat-and-metal cyborg seem rather obsolete (139). Identifying the turn to the smaller, "biotechnological, transgenic, soft hybrids [such as] OncoMouse™, Dolly the sheep, inhabitants of the *SimLife* computer game designed as a 'genetic playground'", Zylinska suggests that the predominant vision of the cyborg "has become an 'old model', slightly gauche in its military origin and machinic pathos" (140).[14] She remarks that more "soft cyborgs", represented by OncoMouse™ and the like, are both more representative of the current state of scientific intervention into the nature of the human body-subject and a way of figuring the wider need to account for bioethics in the practices of technoscience (*ibid.*). Haraway's cyborg needs, for all of the above critics, to be very carefully rethought in order to deploy it to any useful effect.

My concern with the cyborg figure's potential for theorising interface encounters in the twenty-first century is less with any kind of fundamental contradictions in its logic, or even that a kind of overuse (or indeed misappropriation) weakens the scope of its attack on conventional, normative logics of identity: even despite the provisos identified by the theorists above, I believe that the cyborg remains a tremendously powerful and subversive figure. Squires, for instance, is more cautious than outright critical, (rightly) denoting the need to ensure the cyborg is used rigorously and not feverishly: as she points out, overenthusiastic deployment of the cyborg does not necessarily preclude the possibility of useful application (369). Similarly, Zylinska's deconstruction-inspired "softening" of Haraway's metaphor-model underscores, rather than undermines, the

[14] Haraway has written extensively on OncoMouse™, in *Modest_Witness@Second_Millennium* (1997). Zylinska acknowledges and refers to Haraway's work on this figure in her own formulation of "soft" cyborgs (142).

ongoing relevance of such rupturing conceptual hybrids, and the attendant power represented by the potential of mobility *beyond* the meat-and-metal fusion that typified the character of 1980s and early 1990s representations of the cyborg. Kirby's concerns are, perhaps, more troubling given their intervention in a perceived fundamental logical fallacy—but they recede somewhat given the very mutability and adaptability of the cyborg figure that are demonstrated by Zylinska's alterations, as well as those of others who have made similar reconfigurations (including reconfigurations that address those very logical concerns and yet leave the cyborg's overall shape and project intact).[15] I do not share the view of the cyborg having some kind of basic deficit in viability as a metaphor-model for understanding the human/technological interface. While patterns and figures perhaps more resistant to normalising forces are outlined presently in Section Two of this thesis (incorporating, amongst other things, more recent work by Haraway), the cyborg figure itself, either in its 'original' instantiation or rebuilt/renegotiated by ensuing theorists, remains striking and potent as a means of overturning instrumental, subject-object relationships between humans and technologies that reinscribe those fatal, Cartesian, binary logics of domination.

The focus of this thesis, though, is less about showing any kind of fundamental failure in cyborgic (or posthuman) metaphorical models of the relationships between humans and technologies. Rather, my argument here is that the subjective disruptions equivalent to the cyborg's politically optimistic visions of the blasphemous concatenations of the

[15] An example of this is Dianne Currier's work, which addresses directly Kirby's interrogation of the cyborg. Like Zylinska, she retrofits the cyborg, but produces a Deleuzean rather than Derridean adaptation of Haraway's figure, maintaining its productively blasphemous aims while seizing Gilles Deleuze and Felix Guattari's notion of *assemblage*. She does this in order to produce a "Deleuzean feminism" that supposedly does not fall foul of the logical short-circuit identified by Kirby (2003: 334). The approach I develop in Section Two of this thesis—particularly in the chapters examining the figures of the Decaying Digital and the Fursona—has some resonance with this Deleuzean trajectory: assembling (cyber)bodies at the interface that do not reiterate instrumental dichotomies of subject and object can benefit to some degree from this trajectory.

conventionally human and the technological are *rejected explicitly* by the most common cultural representations of human/technological intersections. In other words, revisiting some of the key texts—particularly the fictional texts—that animate the perceived shift in the human/technological interface towards the end of the twentieth century and into the twenty-first, and even (or especially) some of those which are cited by Haraway, Hayles and others as exemplars of the possibilities of that interface, it is possible to locate the origins of a normative project that raises the subversive nature of the interface—but does so, at least partly, in order to animate its being brought under control. The cyborg and the posthuman have suffered from their mainstream cultural counterparts spawning their own antibodies against those figures' disruptive infections.[16] These antibodies emerge as robust, strongly-delineated figures in themselves, appearing in texts depicting the human/technological interface, apparently complementing the cyborg even as they embody a normative function that *contains* the hybridising potential of that figure.[17] Figures representing the major and apparently disruptive encounters between the human and the technological—such as the avatar or the hacker—have not proved more and more disruptive to the liberal humanist subject over time: if there is a chronological shift in their potential to disrupt, it has got *less and less* since they first appeared. As these figures have consolidated and stabilised, they can be seen to have become more acute in

[16] Of course, the fact that certain rigorous theoretical models have not become the *de facto* basis for all popular cultural representations of a certain phenomenon is not cause to claim its failure or some kind of inherent inadequacy. The politics of the interface are not a zero-sum game: that such interface representations still largely adhere to dualistic frameworks is no more a failure of Hayles' or Haraway's observations than the continued proliferation of systemic misogyny and sexism is a failure of feminist theory. The specificity here, though, is that even some of the very examples Hayles and Haraway deploy are also used to resist their ideas of overcoming dualism: as the cyborg and the posthuman become clearly defined, a number of *other* figures rise up from the same textual/cultural milieu to defend the normative logic under threat. Three of those figures—the avatar, the hacker, and the nanotechnological swarm—are the subjects of the first section of my thesis.

[17] As Squires argues, the dualistic, hard-bodied cyborgs of the military-industrial complex are "winning out in the cultural battle against the semi-permeable hybrid cyborgs of Haraway's lexicon" (369).

their normative function, performing first a narrative of the threat to the stable liberal humanist subject-self, and then the neutralisation of that threat.[18]

Fictions, Figures, (dis)Embodiment

This thesis interrogates the cultural functions of six figurative representations of the human/technological interface. By the "human/technological interface" (or, as I refer to it often throughout the thesis, "the interface") I mean the literal or metaphorical point at which an embodied, human(ist) subject—as it is conventionally understood in Western culture—encounters, affects, and is affected by a putative technological object or agent. More specifically, I examine encounters with digital (often information) technologies. The shift to digital technologies is both one of the most significant technological paradigm shifts in recent history and one which has significant conceptual implications: digital code represents the absolute distillation of the abstraction of information from its material bases and, as a technoscientific product of late capitalism, also often stands in for the flow of global capital in the form of an interchangeable, transmissible essence.[19]As there is so much potential ground to cover in a consideration of the relationships between humans and digital technologies, I pause here to delineate the circumference of my project's remit. While it would be impossible to try to account for everything that my thesis does within the limited space of this Introduction, it is at least pertinent to outline what I am *not* trying to do. Firstly, I am not intervening specifically in the many long-standing philosophical questions surrounding the definition of

[18] The 'threat' as it is articulated by these figures also, as I argue, tends to take on a 'feminine' encoding: the character of the threat is reminiscent of threats posed to the rational masculine subject by putatively unstable or unruly female bodies. I examine this tendency through theory emerging from the relatively recent feminist turn to the body.

[19] I come to an explanation of this 'conventional' subject presently, when I raise Hayles' work on the liberal humanist subject and how the posthuman may disrupt this. Hayles also focuses in great detail upon the "disembodiment" of information, as I also outline presently (1999: 5). The conflation of the digital with capital-as-code (and the implications this has for the subject) are examined in Chapter Three on the nanotechnological swarm.

'technology'.[20] I hold 'technology' here to be an always-contested term, with its highly unstable meaning nevertheless held in tension by the complex discursive formations under examination in each chapter. In each case, the term's meaning can only be articulated in the context of that argument. Secondly, my thesis does not comprise a comprehensive analysis of any particular branch of 'cybercultures' as such (that is, the wave of cultural formations that emerged alongside, as part of, and in response to the changing relationships with technology in the late twentieth century). Cybercultures do loom in the histories and contexts of many of the figures I analyse, but, broadly speaking, the interface encounters under scrutiny in this thesis overflow containment in these categories.[21] Thirdly, while my targets for examination range from books, to films, to video games, to web sites and online forum posts, I treat each item as a cultural text: I read them as components of cultural discourses that converge upon and aid the constitution of the shape of each figure under interrogation. This is not, then, an attempt to make impossibly discrete field-specific readings of very different media. While I am clearly informed by literary and cultural theory, rather than taking an approach informed by one specific theoretical framework, I assemble theoretical, critical, philosophical and other approaches in order to examine and unpick the seams of figures that serve as the collision points for discourses that enact and reflect a range of cultural functions. While the methodology is informed solidly by Haraway's strategy, there is a slight difference in focus in my own approach. Haraway's concern is very much with the political/social/economic/otherwise material histories of each figure, whereas my own aim is based around decoding the implicit cultural functions of each figure as a text: how the figure is constituted, what historical moments, social concerns/anxieties or discourses register in and converge upon those figures, and how these are expressed in the texts.

[20] See Samuel Weber (1996) for an engagement with this question that goes through the work of Martin Heidegger and others.

[21] A useful resource on cybercultures can be found in David Bell's *An Introduction to Cybercultures* (2001).

Section One analyses three figures that depict the human/technological interface as a space for reinscribing and reifying Cartesian dualistic views of human subjectivity, along with the exclusive and marginalising implications of the remapping of that dualism. The figures in Section One—the avatar, the hacker, and the nanotechnological swarm—have their roots in the 1980s, and have stratified over time, commonly deployed in describing the human/technological interface. These figures function in first evoking and then managing the threats to the unified masculine subject posed by the altering human/machine relationship, policing rather than collapsing the subjective boundaries between them. They maintain and reiterate their attendant logics of identity, recapitulating an image of technology as the object of human invention, and never a contributor to the substantiation of the human subject. Science fiction–especially cyberpunk—has at least partially set the terms for understanding present-day relationships between humans and technologies, and those terms are relentlessly humanistic and teleological, despite their putatively postmodern and fragmentary aesthetic. Here is also where I make my strongest appeal to the outstanding theoretical work represented by the feminist turn to the body: the threat of the technological other is almost invariably feminine-coded, and my work in this section is explicated particularly in the light of Haraway's work and feminist theories of embodiment, with a particular focus upon the work of Elizabeth Grosz (1994) and Margrit Shildrick (1997, 2002). Section Two analyses three *emerging* figures that depict the human/technological interface as fundamentally co-substantiating, rather than the latter being the product of the former. Acting as nodes of connection and constitution for various phenomena both depicted in fiction and enacted/performed at the human/technological interface itself, these three figures—the fursona, the caring computer, and the decaying digital—demonstrate potential ways to understand the human/technological interface outside of conventional,

dualistic discourses of transcendental disembodiment of a bounded subject-self. Deploying theoretical work on concepts such as Alison Landsberg's notion of prosthetic memory (2004) and Brian Massumi's reading of the "real-material-but-incorporeal" body (2002), as well as Haraway's later work on companion species (2008), I position these figures as representative visions of technologically-mediated subjectivity that allow us to imagine our relationships with technology as co-operative, open and materially co-substantiating. I argue that they recover the potential to rupture the unified and dualistic mind-subject that is both represented and contained by the figures seen in Section One, while reflecting a more recognisably prosaic, ongoing transformation of subjective participants in human/technological encounters.

Between the two sections is an 'intersection', which acts as a vestibule for moving from one section to the other, and manages the relationship between the two respective groups of figures. In opening up these two clusters of human/technological figures, I map two attendant visions of cyberspace. The first is the most common: the smooth, Euclidean grid into which the discrete unified consciousness is projected *away* from the body, which is conflated with (a reductive understanding of) virtuality, and to which access is allowed or denied based on highly conventional lines of gender, race, sexuality and so on. The second vision is emerging: it is possible to view cyberspace as less of a 'space' at all, and more of a technologically-mediated field of material implication—one which is not discrete from the putatively offline world, which is implicit in the subject formation of its users and participants, and accounts for, rather than disavowing, the physical, bodily substrate from which it is explicated. Moving beyond the vision of cyberspace as a kind of a plane into which a disembodied consciousness can be projected, it is possible—perhaps necessary—to understand it as a context, an enabling field of material connections that form *part of* the subjects in interaction rather than an

empty space in which they can interact. Cyberspace, here, then, is more a framing metanarrative than a figure to be uncovered in itself: it is almost never the focus, but always implicated, lurking at the periphery and inflecting and infecting the argument, in a manner similar to how music producers use high-shelfing frequency equalisers to produce tones beyond the range of human hearing to psychoacoustically influence the mix of a song. Some figures have obvious cyberspatial implications (such as the avatar), whereas others may seem less implicated (the nanotechnological awarm). In Section Two of the thesis, the figures being mapped explode the possibility of cyberspace as a "space" at all. But in all cases, cyberspace is *there*, either as the repository/vessel/staging ground for the continuous discursive reconstruction of the discrete subject, or as a material milieu of potential from which subjective experience can be explicated.

The Avatar, The Hacker and the Nanotechnological Swarm

The figures under examination in Section One—and especially the avatar and the hacker—have their origins as interface-policing figures rooted within the science fiction (sub)genre of cyberpunk. Those chapters spend some time re-opening some of the key cyberpunk texts to discover the origins of those figures. My argument would not benefit from offering an exhaustive account of cyberpunk literature as a genre, nor a comprehensive rendering of its overall remit, reach or influence—cyberpunk literature has been written upon and theorised extensively.[22] I do, though, make a broad delineation of two "waves" of cyberpunk literature, straddling the early 1980s to the present, to help chart the (non-)alteration of each figure over time. The first wave I cluster together is that beginning and maturing in the decade where the term was coined. While Gibson's Sprawl Trilogy is perhaps the most important cluster of texts for the popularisation of the movement, along with the *Mirrorshades* short story collection edited

[22] See p49 n30 for a short overview of some of the key work of this nature.

by Bruce Sterling (1988), the term cyberpunk was coined by Bruce Bethke in the title of a short story published in a November 1983 issue of the magazine *AMAZING Science Fiction Stories.*[23] This first wave of cyberpunk generated a slew of writers fascinated by the putatively cyborgic interfaces that may be offered in the future (John Shirley, Rudy Rucker, Pat Cadigan, James Tiptree Jr. and others), continued up until around the end of the decade. After the turn of the 1990s, though, a number of distinct shifts or reconfigurations of cyberpunk took place: the genre moved more explicitly into film (as evidenced by films like *Lawnmower Man*, *Johnny Mnemonic* [dir. Robert Longo, 1995] *Hackers* [dir. Iain Softley, 1995], *Virtuosity* [dir. Brett Leonard, 1995] *Strange Days* [dir. Kathryn Bigelow, 1995], and *The Matrix* [1999]), and started to converge and co-evolve with growing awareness and use of the Internet. Stephenson's *Snow Crash,* for instance, popularised many terms and concepts that would go on to inspire several real-world Internet media technologies. In the chapters dealing with cyberpunk texts explicitly, I chart some of the (very) broad differences between these two waves—which do, of course, overlap in many ways too—in order to establish that formal changes were taking place over time, but also that, as I show, the conceptual shape and function of the figures deployed and consolidated across that period do *not* change.

While the three novels of Gibson's Sprawl Trilogy (named after "The Sprawl", the massive decaying urban space against the backdrop of which much of the novels' action takes place) are key correspondents in the constitution of the figures I explore here—as are some of the second wave cyberpunk texts I outline above, interface representations are not limited only to cyberpunk. For instance, in Chapter Three, I examine Wil McCarthy's *Bloom* (1998) and Michael Crichton's *Prey* (2002) for their depictions of the

[23] The term's compounding of "cyber" and "punk" demonstrated both the genre's arguably postmodern tendency to mash together previously disparate categories (indeed, including other genres) into new wholes, and the fascination with advanced human/machine interface technologies, along with a generalised distrust for authority and the norm.

"grey goo" scenario: the idea that microscopic, artificial machines could run amok and dissolve everything in their path, turning it, literally, into grey goo. These latter texts reveal a putative relationship between human subjects and technologies which animates fears of an 'overspill' from the latter into the former, and the character of this overspill is the subject of examination in that chapter. Almost all the primary texts in Section One, then, are fairly conventional novels and films. My approach to them, though, is informed by a number of theoretical frameworks. Because one of the primary objects under consideration here is the *body* of the human subject, I am concerned with the ways in which that body is represented, recrafted and reconsidered in light of interface encounters. To this end, informing my examination of the figures under scrutiny in Section One is work produced by feminist scholars whose primary concern is with theorising the body. The liberal humanist subject that Hayles critiques in her account of the posthuman, and which Haraway tears to pieces and reassembles as a gloriously monstrous hybrid, has come under heavy and sustained attack by these theorists, for a number of reasons.

Elizabeth Grosz's *Volatile Bodies: Towards a Corporeal Feminism* (1994) is instrumental in informing the embodiment-aware approach that I take towards unravelling the figures in Section One, as well as in informing my understanding of the normative subject that these figures work so hard to recoup in the face of dissolution by the interface. Grosz describes her project as being intended

> to displace the centrality of the mind, the psyche, the interior, or consciousness (and even the unconscious) in conceptions of the subject through a reconfiguration of the body. If subjectivity is no longer conceived in binarized or dualist terms [...] then perhaps other ways of understanding corporeality, sexuality, and the differences between the sexes may be developed and explored

> which enable us to conceive of subjectivity in different terms than those provided by traditional philosophical and feminist understandings. (vii)

This attempt to overturn "the centrality of the mind" and theorise the body (a call that has resonance with both Hayles' and Haraway's desire to re-ground posthuman/cyborgic subjectivity in its material contexts) is rooted in a number of limitations with focusing too heavily on the mind. For Grosz, feminists have often been guilty of demoting the body to being merely a *supplement* to the mind or the psyche, not informing subjectivity so much as being its life support system, an irksome but necessary burden (*ibid.*). Moreover, she writes, these approaches treat the body as a given, stable object instead of something literally inscribed or constructed by the (largely patriarchal) medical and biological discourses of its definition, which obscure their discursive processes under the auspices of their "discovery" of the body as a precultural object (x). Contrary to this, she writes, bodies are active; they "are not inert; they function interactively and productively. They act and react [...] it is this ability of bodies to always extend the frameworks which attempt to contain them, to seep beyond their domains of control" which constitutes their value as the bases of a theoretical framework for re-understanding subjectivity (xi).

Grosz also produces an account of the "dichotomous thinking" of mind and body, which "bifurcates thought" and ranks aspects of the dyad hierarchically. In this structure, the mind is privileged as the seat of subjective selfhood, and the body denigrated as a necessary supplement to that mind (and not much else) (3). As she points out, the problematic truth is that dichotomous thinking remaps onto other binaries:

> The mind/body relation is frequently correlated with the distinctions between reason and passion, sense and sensibility, outside and inside, self and other, depth and surface, reality and appearance, mechanism and vitalism, transcendence and immanence, temporality and spatiality, psychology and physiology, form and

> matter, and so on. These lateral associations provide whatever "positive" characteristics the body may be accorded in systems where it is the subordinated counterpart of the mind. These terms function implicitly to define the body in nonhistorical, naturalistic, organicist, passive, inert terms, seeing it as an intrusion on or interference with the operation of the mind, a brute givenness which requires overcoming, a connection with animality and nature that needs transcendence. (3-4)

This makes evident the need to overcome this kind of dualistic thinking, the reliance on the mind as a marker of selfhood, and the specific need for this to happen in order to aid feminist projects; the "coupling of mind with maleness and the body with femaleness" means that these discourses reproduce a patriarchal connection of women to the body (4). The overall advantage of thinking through the body, for Grosz, is an increased potency in corporeal specificity that confounds the overt inscriptions of discourses of otherness and inferiority, reclaiming that body from those dualistic attacks:

> The subject, recognized as a corporeal being, can no longer readily succumb to the neutralization and neutering of its specificity which has occurred to women as a consequence of women's submersion under male definition [...] it helps to problematize the universalist and universalizing assumptions of humanism, through which women's—and all other groups'—specificities, positions, and histories are rendered irrelevant or redundant; it resists the tendency to attribute a human nature to the subject's interior; and it resists tendencies to dualism, which splits subjectivity into two mutually exclusive domains (ix-x).

This need to account for the embodied "specificities" of individuals and groups which are traditionally elided pushes Grosz's project beyond the limits of a dualistic, Descartes-informed approach.[24]

In a framework that builds upon Grosz's work (and others'), the body is rethought again in Shildrick's *Leaky Bodies and Boundaries: Feminism, Postmodernism and (Bio)ethics* (1997). In her project to construct a "postmodern feminist ethic", she uncovers, like Grosz, what she believes to be an inherent inability for women to achieve agency in Western discourses because of the way that those discourses privilege the subject most "distant" from the body: the male subject (3). This is because women, she writes, are denied full objective agency due to the way that certain ontological investments place them closer to 'nature'; specifically because of certain bodily processes, such as menstruation and the much larger female role in reproduction—both being seen as somehow polluting to the rationality of the humanist self:

> In being somehow more fully embodied than men, women have been characterised simply as less able to rise above uncontrollable natural processes and passions and therefore disqualified from mature personhood. It is as though bodies could somehow interfere with moral thought, instructing the mind, rather than the other way round as is the case with men. Losing control of oneself is to a large degree synonymous with losing control of, or having no control over, one's body. (26-7)

This fear of "losing control" of the body, then, located most strongly for Shildrick in medical discourses that place the female body as simply an "underdeveloped" version of

[24] Grosz accounts specifically for Cartesian dualism, which she argues forces corporeality to be "reduced to a predictable, knowable transparency; its constitutive role [...] ignored" (10).

that of the male with blurred, permeable boundaries (28).[25] This dangerous indistinction between the mind and the body, exclusively female in phallocentric discourses, unsettles the very bases of objectivity and so the operational stage for any kind of supposedly rational intervention or interrogation:

> In Cartesian terms, the body is something to be rejected as an obstacle to pure rational being… What I have in mind is both the especial immanence of the female body, as it is frequently represented in ontological theory, such that it enmeshes women themselves; and its putative leakiness, the outflow of the body which breaches the boundaries of the proper. Those differences – mind/body, self/other, inner/outer – which should remain clear and distinct are threatened by loss of definition, or by dissolution… In the male cultural imaginary the metaphor characteristically provokes unease, even horror. This is no less true in health care than elsewhere (16-17).

"Leakiness" is again the key here. Phallocentric narratives are extremely wary of assigning agency to anything that cannot be mapped onto the mind/body dualism with neatness and clean divisions; an attempt to distance the subject from the "polluting" power. While Shildrick's Foucauldian study pays a great deal of attention to the idea of there being no *accessible* material body outside of the discourse that creates it, her reading of the masculinist basing of female non-agency on a perceived leakiness of the female body that could only supposedly have emerged from the presence of material processes is one that describes neither an exclusively pre-social (or essentialist) position nor a discursive one, but one rooted firmly in a body that affects its environment even as it changes.

[25] Indeed, Shildrick writes that the (female) body itself, as the subject of medical enquiry, "is a fabrication, organised not according to an historically progressive discovery of the real, but as an always insecure and inconsistent artefact"(1).

The work of Grosz and Shildrick lurks throughout the readings of Section One. While I deploy the work of these theorists explicitly in only a few places, their focus upon the ways in which the body (and particularly the female body) has been constructed as an inadequate seat for the liberal humanist subject informs the character of all the criticism and theorisation that I do in Section One. This whole section, in other words, operates in a way that explores each respective interface figure's tendency to a) dramatise an existential threat to the conventionally bounded mind of the putatively "offline" human user; b) code that threat as "feminine" by rooting the nature of the threat in discourses of feminine permeability (or leakiness); and then c) re-establish the patriarchal normative body subject by performing a denigration or rejection of those threatening feminine body-traits and an attendant privileging of the Cartesian mind-self. This whole operation constitutes a policing of the boundary between the human subject and the technological other. For instance, in Chapter One, I show how the figure of the avatar—a kind of digital body residing in cyberspace, controlled by a hacker or other offline user—both animates the potential disruption of gender-delineated versions of subjectivity by enacting the technologically-enabled transformation of women into active figures, and then enacts a careful strategy of rejecting or containing the potency of those feminine bodies by exacting upon them very conventional normative discourses of feminine subjective inadequacy. This, in turn, actually equivocates the bodies of female characters with the technologies under the mastery of the active masculine subjects 'in control.'

The Fursona, the Caring Computer and the Decaying Digital

The figures I examine in Section Two are found across a more wide-reaching range of texts, of a variety of different kinds. Fiction suffices well for uncovering the figures I examine in Section One—and fiction certainly has a role in Section Two as well—but, in

its search for an alternative understanding of interface embodiment, the latter section also necessitates tying together unlikely unions of texts. Web sites serve as the primary texts for the majority of Chapter Four, which is about the emerging figure of the fursona. Rather than approaching them from an anthropological, ethnographic or sociological perspective, I read these texts—which vary from *LiveJournal* blog posts, to posts on forums, to websites dedicated to the lives of the users in question—as *texts*. All are published and freely available (though some have since disappeared), and none require registration or suchlike to access. I read them through theoretical frameworks which I will outline presently. In a more conventional manner (more reminiscent of Section One), I also focus heavily upon one film in Chapter Five, which is about the figure of the caring computer, reading it through feminist (and other) theories of care, with a view towards unravelling the stereotypical view of the 'cold' artificial intelligence, which is instrumental in keeping machines out of the affective domain. And in Chapter Six, where I examine the decaying digital, I pull together the most diverse set of primary texts in this thesis: drawing together examinations of digital images, lectures on the problems of long-term digital storage, and articles on the failure of DNA evidence to link 'identity' to the body with work on the constitutive effect on the body of analogue and digital sound, I trace an emerging vision of 'the digital' that does not see it as a transcendental, permanent essence. Pulling together such a diverse set of texts requires a solid theoretical framework in each case. The theoretical frameworks I deploy in Section Two are all, too, united in several aspects: they all confound the notion of an appeal to an authentic, unitary human "self" that can be located and transmitted from one field or body to another. They all privilege—or at least account for—the contingency and materiality of the phenomenon they describe and analyse, either by their explicit appeal to the body (no matter how unusual the [a]corporeal form of that body) or by their intention to rediscover the full range of the conditions of individuated subjective constitution. And,

finally, they all maintain a strong sense of (postmodern) partiality and mobility: none of these frameworks provides a prescriptive reading, and all allow for—or indeed demand—collisions and collusions between things that might otherwise seem absurd. Looking for the emotional character of machines, the physical impact of the Internet on the body, the collapse in the bounded preconceptions of touching and seeing—all of these things are uncovered as theoretically viable and tremendously powerful tools for redetermining our relationships with technological agencies.

Alison Landsberg's *Prosthetic Memory: The Transformation of American Remembrance in the Age of Mass Culture* (2004) posits a radical rethinking of existing theories of memory, outlining a model that provides a way to understand projects of remembering that is not bound by generational, familial or essentialised memory, or even the proximity of a subject to the event or circumstance being remembered. Focusing both upon fictional examples and on the specific real-world technologies of the cinema and "experiential" museums/installations, Landsberg suggests that the nature of memory transmission (primarily in the United States) necessarily shifted in the face of disruption from mass migration, the African American slave experience and the holocaust, and that the emergence of mass culture presented the technological means by which this shift could take place (2). Arguing that existing readings of memory transmission that focus on the familial mode are both essentialist and untenable in the face of the challenges of modernity and postmodernity, Landsberg propounds "prosthetic memory" – a form of publically assimilable memory that she argues as having emerged in response:

> [Modernity] makes possible and necessary a new form of public cultural memory. This new form of memory, which I call *prosthetic memory,* emerges at the interface between a person and a historical narrative about the past, at an experiential site such as a movie theatre or museum. [...] in the process that I am describing, the

> person does not simply apprehend a historical narrative but takes on a more personal, deeply felt memory of a past event through which he or she did not live. *The resulting prosthetic memory has the ability to shape that person's subjectivity and politics*. (2, emphasis added)

This new mode of engaging with memory, mediated by mass culture and other "experiential sites", is not just a means of assimilating representations of other people's memories: it constitutes a means by which events from which a person/subject was or is radically absent can still have a material, experiential effect (affect) on that person. Traditional memory claims, "premised on forms of authenticity" make appeals to ownership and heritage in ways that prosthetic memories do not, and these latter memories allow, she argues, "unexpected alliances across chasms of difference" (3). In Chapter Four, when determining the emerging figure of the fursona, I read the activities and writings of several web and Internet users in a manner inspired by Landsberg's framework. I show how these generate prosthetic memories by way of these media technologies. I go one step further here, though: while Landsberg's work accounts for a *dislocation* of the recipient/user/consumer of the prosthetic memory from the original 'authentic' experience that is its referent, my chapter shows the ways in which 'memory' can be generated from *no* original referent, and these memories used to a significant degree in building subjective identity.

Another theoretical framework crucial to Section Two is Haraway's *When Species Meet* (2008). Her most recent monograph, it builds upon the hybridising theories of her work on figures such as Cyborgs, OncoMouse™ and so forth, and expands it to encompass "companion species". Warning against the conflation of "companion species" with "companion animals", Haraway offers the beginnings of a definition of the former:

> Historically situated animals in companionate relations with equally situated humans are, of course, major players in *When Species Meet*. But the category of "companion species" is less shapely and more rambunctious than that [...] the partners do not precede their relating; all that is, is the fruit of becoming with: those are the mantras of companion species. (16-7)

For Haraway, "companion species" are "a pointer to an ongoing 'becoming with' [... they evoke] a much richer web to inhabit than any of the posthumanisms on display after (or in reference to) the ever-deferred demise of man" (16-7).

Staying with her tactic of reading figures—in this case, primarily dogs—Haraway uses them to unravel what she calls the "fantasy of humanist exceptionalism" (11), which underwrites Western understandings of humankind's place in the world. This sense of exceptionalism is evidenced in the discourses within which relationships between human beings and "the world" are drawn in terms of separation. "[To] be human", Haraway writes, "is to be on the opposite side of the Great Divide from all the others and so to be afraid of—and in bloody love with—what goes bump in the night" (*ibid.*). She goes on to reference Freud's description of "three great historical wounds to the primary narcissism of the self-centered human subject": the "Copernican wound that removed Earth itself [...] from the centre of the cosmos"; "the Darwinian wound, which put *Homo Sapiens* firmly in the world of other critters", and the "Freudian" wound, "which posited an unconscious that undid the primacy of conscious processes" (11-12). Haraway then adds a fourth wound, one that she herself is implicated rather strongly in inflicting: the "informatic or cyborgian, which infolds organic and technological flesh and so melds that Great Divide as well" (12). Building upon these attacks on the exceptional human, Haraway produces a situated account of humankind's place in the world that celebrates the prosaic and the local, lionising individuals while rejecting the impulse for any

individuality to be transcendental, omniscient or disconnected from its environment, viewing objectively from the "outside in". Crucial to Haraway's project here is the need, upon encountering ("touching") a figure, to account for its momentary, contingent, material lines of substantiation. This need to account is the basis for my response to the question of whether a computer can "care", in Chapter Five on the figure of the caring computer.

The last major framework I deploy in Section Two is that of Brian Massumi's reading of the "real-material-but-incorporeal" body (2002: 5). In his book *Parables for the Virtual: Movement, Affect, Sensation*, Massumi develops a project aiming to redetermine understandings of the body's relationships with media technologies in terms of a radical materialism inspired by philosophers such as Baruch Spinoza, Henri Bergson and Gilles Deleuze and Felix Guattari. Beginning with a critique of what he terms "ideological accounts of subject formation" (2), Massumi laments the focus upon trying to reorder the "oppositional framework of culturally constructed significations: male versus female, black versus white, gay versus straight, and so on" (*ibid.*). The body, for Massumi, is poorly served by theories that serve to promote plurality or partiality within this grid because it only reiterates the "combinatorial permutations" on the same "overarching definitional framework" (3). "The aim of the positionality model was to open a window on local resistance in the name of change. But the problem of change returned with a vengeance. Because every body-subject was so determinately local, it was boxed into its site on the culture map. Gridlock" (*ibid.*). This "gridlock" emerges, for Massumi, from the tendency of cultural theory to break down and analyse embodied subjectivity in a manner that reveals more categories of possible subjectivity, but, in doing so, "catches the body in a cultural freeze-frame" (*ibid.*). Overcoming such gridlock is a case of

discovering a framework that can account for the body's sense of "movement and qualitative transformation" (3).

In a bid to outline such a framework, Massumi propounds as part of his study the notion of the "real material but incorporeal" body (5). This is an understanding of the body as delineated not by positionality on a grid of predetermined subjects (a grid around which one can move, or whose positions can be deconstructed, analysed or broken into smaller pieces), but as a continuously unfolding ecological relationship with "the virtual" (30). The virtual, for Massumi, constitutes the realm of material experience within and through which bodies continuously move, being affected by physical stimuli on levels that are far too small, slight or too brief to register consciously. This virtual realm constitutes, for Massumi, "a realm of *potential*" (*ibid.,* emphasis in original):

> In potential is where futurity combines, unmediated, with pastness [...] The virtual is a lived paradox where what are normally opposites coexist, coalesce, and connect; where what cannot be experienced cannot but be felt-albeit reduced and contained. For out of the pressing crowd and individual action or expression *will* emerge and be registered consciously. [...the virtual] is organised differently but is inseparable from the concrete activity and expressivity of the body. The body is as immediately abstract as it is concrete; its activity and expressivity extend, as on their underside, into an incorporeal, yet perfectly real, dimension of pressing potential. (30-1)

The body, for Massumi, is the transducer of this kind of virtual potential into affect: moving through the world of irreducibly small encounters with material physicality, the body is forced to sort through these encounters—acognitively and aconsciously—discarding some and allowing some others to register, as affect, according to cultural conditioning. He uses the example of the "missing half-second"; the results of an

experiment by the physiologist Benjamin Libet, which seemed to show that brain activity in decision-making centres fires half a second *after* a decision is made. Far from destroying the notion of free will, Massumi suggests that it reorders it as something more immanent to the body's processes of ecological interaction with the world: he suggests that "the half second is missed [...] because it is overfull [...] Will and consciousness are *subtractive*. They are *limitative, derived functions* that reduce a complexity too rich to be functionally expressed" (29; emphasis added). In other words, 'the body', for Massumi, is a highly situated, materially-linked and always-transforming entity. There is no singular essential 'mind' in control of all of its cognitive functions, and yet the possibility of thought and (ethical) action remains. This vision of the body is what inspires my approach in Chapter Six, which interrogates the manner in which digital information may be seen to possess or influence bodies as an outcome of its tendency to, as I put it, "decay". The combination of the above frameworks helps me map the functions of each of the six figures of my thesis.

SECTION ONE

CHAPTER ONE:

THE AVATAR

The avatar is a figure which resides at the intersection between the human and the digital computer, and belongs to a class of entities or metaphors intended to help us understand our supposedly intimate relationships with the imagined spaces at (and beyond) that interface. Derived from a Hindu term referring to the incarnation of a deity into a mortal, earthly body, "avatar" is a word used most commonly in the West to describe a digital or otherwise abstracted technologically-mediated representation of a physical or offline subject, controlled, puppet-like, by that subject. Avatars in fiction can often take almost any form, from simple static pictures, three-dimensional humanoid figures, to anthropomorphic animals, to abstractions such as levitating balls of light. Their existence as fictional devices has its origins in cyberpunk: they are prefigured in Gibson's Sprawl Trilogy (1984-88), and occur explicitly in *The Lawnmower Man* (1992), *Snow Crash* (1992), *The Matrix* Trilogy (1999-2003), *Altered Carbon* (2002), and *Avatar* (2009) amongst many others.[26] Furthermore, there are 'real-world' counterparts of these fictional avatars, seen most clearly in the context of the present-day Internet: here, an avatar is a 'virtual' item/object used to represent the online persona of a specific user. This type of avatar may take the form of an image or a username on a discussion forum; a video game sprite/model (either in a 'sandbox' environment such as *Second Life* [2003-] or *Entropia* [2003-], or in a single player game environment); animated or static icons in instant messaging clients (*AOL Instant Messenger* [1997-], *Gaia Online* [2003-], *IMVU* [2004-]) et

[26] Indeed, this definition of the term was popularised by Stephenson in *Snow Crash*. While some texts here predate the use of the term itself, they figure in what I am here referring to as the fictional "prehistory" of the avatar.

cetera.[27] This latter, mundane understanding of avatars is now rather a common currency in Internet experience—but avatars are found still in their most radical forms in science fiction. I choose these science fiction examples to examine in this chapter because they are the texts that most clearly represent, respectively, a kind of 'prehistory' of the electronic avatar (Sprawl Trilogy), its figurative stabilisation in the 1990s and second 'wave' of cyberpunk (*Snow Crash* and *Lawnmower Man*), and its more recent and/or widely-known occurrences (*Altered Carbon, The Matrix* and *Avatar* [dir. James Cameron, 2009]).[28]

These phases are, though, deceptive: within the nearly thirty years between the first and last texts in this list, the *conceptual* shape and apparent ontological role of the avatar in fiction has varied only to superficial degrees, maintaining a largely similar set of underlying premises. Much imaginative weight is assigned to avatars and their potential to reconfigure embodied subjectivity. The freedom implied by such relationships resonates with Haraway's position: in interaction with these new machines, we purportedly gain the opportunity to build or rebuild our identities, to dislodge ourselves from the "informatics of domination", and harness the potential of any alternate subjective configurations to overturn the fundamental problems with the liberal humanist subject. The avatar, we can reasonably assume, offers unprecedented freedom to sidestep or overcome the constraints of normative identity. However, in direct opposition to Haraway's model, I argue that the conventional and most popular understanding of the avatar has an insidiously totalising and normative character. While arising in a setting that promises

[27] The utilitarian function of player-character avatars in video games in particular requires a technically-specific examination which would overflow the remit of this chapter. Works in the emerging field of video game studies offer a number of perspectives on these issues: Mark J.P. Wolf and Bernard Perron's *The Video Game Theory Reader* gives a good survey of this field (2003).

[28] In some ways one could chart the avatar's growing proliferation as a fictional device over time, and this culminating in a film about avatars being, to date, the most financially successful film ever made (taking, as of September 24 2010, $2,768,493,594 at box offices worldwide [Box Office Mojo 2010]). *Altered Carbon* won the Philip K. Dick award in 2003; the film rights to the novel were sold for a reported $1,000,000 to producer Joel Silver (Bullock 2009).

freedom, unprejudiced difference and, to a certain degree, subversion of physical and social norms, the avatar serves to reiterate and reinforce dualistic understandings of the human subject, whose own marginalising functions are inherent to the binary logic of its formulation. The avatar provides stabilisation of a bounded and exceptional human(ist) subject in the face of a dangerously undifferentiated world, arising as a means of containing the possibilities of disruption that is represented by the human-technological interface, policing the boundary between the two respective categories. It recuperates a version of the body that can reconstruct normative body-subjects, with the additional potency of their being seen to exist in a putatively neutral (i.e. technoscientific) space. In functioning as a clear metaphorical interface between the real and the virtual, with the mind discretely transferrable from one vessel to another, it also reinscribes dualistic visions of the subject, effecting a reinforcement of the platonic real accessible beneath the level of the symbolic.[29]

This chapter interrogates the normative character of some of the most well-known depictions of avatars in fiction, considering the clearest examples from each phase of the avatar's history. The figure of the avatar recapitulates, rather than disrupts, the mind/body dualism that maps onto other binary logics of domination. The supplements of the avatar are the many subjects who are unable to properly ascend beyond their organic bodies, and they become the collateral damage of the avatar's substantiation and

[29] See the Conclusion for a discussion of different ideas of 'the virtual' emerging from my study. My approach to understanding the avatar is, as outlined in the Introduction, to examine its representation in various fictional texts and the attendant registering of certain discourses. Empirical studies do also exist that seek to determine the relationships between "real-world" avatars and users. These, in fact, suggest a more indistinct and bilateral relationship between the two than I argue is felt desirable in the texts examined here: a group of studies by Jesse Fox of the Stanford Virtual Human Interaction Lab suggests that users will imitate the behaviours of avatars that look like them, and that female avatars' appearances can affect users' perceptions of "real" women (Blackman 2010). This overspill of the 'virtual' into the 'real' confounds distinctions between offline and online in a way that cyberpunk and other conventional representations of the avatar work very hard to reject. These kinds of leaks and indistinctions are examined further in the Fursona chapter.

celebration as the *de facto* mode of moving through electronic spaces, either through being commodified and exchanged, or being written out altogether. [30] Instead of being emblematic of a co-constituting relationship between human and technological subjects, the ideal avatar is almost invariably narrativised as an empty vessel; it is a hollow shell which is filled and given life only when it is saturated by the bounded and discrete essence that is the male, white, Cartesian mind-self, and any signs representing an exploration of difference are affixed reversibly and by choice. The 'ideal' avatar's ability to affect the physical world is limited, and the embodied experience of an avatar's 'offline' user is rarely at risk of being in any way changed or disrupted. Those subjects unable to maintain properly the division between the avatar and the corporeal, organic body are marginalised, further stratifying the stability of the masculine white subject and the oppositional (non-)valuing function of its other. We can see this in representative texts from each of the three phases of the avatar's instantiation in fiction.

Disembodied Consciousness

Gibson's work has been well accounted-for in criticism and theory alike, and my intention here is not to move over very well-trodden ground.[31] It is, though, necessary to

[30] Much theoretical work (especially feminist) exists on the (at least partial) failure of cyberpunk to fulfil the potential of Haraway's cyborgic metaphor-model, as I discussed in the Introduction. My focus here is upon the specific role of cyberpunk in prefiguring the avatar, though issues of gender representation frame my reading.

[31] The body in cyberpunk has, not surprisingly, been the subject of a significant amount of critical and theoretical attention. Notwithstanding the proliferation of fictional cyborgic prostheses that, in broad terms at least, resonate with Haraway's famous metaphor, critics have identified cyberpunk's dramatisation of the organic body's inadequacy to contain or manage the "exteriorised mind" (Csicery-Ronay 1992: 193), and its attempt to recuperate (even "exalt") that body by recodifying it as the embodiment of data, which is the privileged essence of self in cyberpunk (Dougherty 2001: 6). Of the wide range of writings available on the topic of cyberpunk as a whole, there are three of particular note: Istvan Csicery-Ronay's abovementioned analysis of cyberpunk's "neuromantics" maps cyberpunk as a genre, positioning it as a specifically postmodern phenomenon as well as highlighting its failure to advance a meaningful politics of resistance against the corporate/political forces it purportedly rejects (182). Claire Sponsler develops both an overview of cyberpunk's exceptional stylistic qualities and a critique of the genre's apparent inability to reconcile properly its postmodern aesthetic with its rather more conventional realist tendencies (1992), and Dani Cavallaro's work on Gibson's influence on

return to these texts once more in order to discover the origins of the avatar as we know it today. The avatar does not appear quite fully-formed in the first cluster of cyberpunk fictions, but it is, arguably, prefigured there. Cyberpunk's obsession with representations of a prosthesised and modified organic body—and, I will argue, attempts to escape it altogether—at the very least set the terms of reference for online interaction, mooting the need for, if not yet depicting, an idealised cyberspace 'version' of the body which would, presently, become stabilised as the avatar. While the representation of avatars themselves is limited in the Sprawl Trilogy, being embryonic at most, the novels' ceaseless disparagement of the corporeal body, along with their reductive equivocation of the same to a literal physical instantiation of data, sets up the body as something inadequate for the containment of the rational masculine subject, needing replacement with something more easily controllable.

In order to determine this bodily inadequacy, my particular focus here is upon the ways that characters from the Sprawl Trilogy enter, inhabit and leave the technological interface, what this means for the novels' vision of embodied subjectivity in relation to its technologies, and how these transactions are coded as dualistic, with mind and body separate, and the former privileged. The reification of a smooth and 'clean' transition

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cyberculture covers in depth the technological and generic contexts of cyberpunk, along with its ensuing cultural legacy (2000). As well as these three well-established studies of cyberpunk as a genre, more recent work has focused upon the specifics of cyberpunk's politics of gender, sexuality and race. Extant work on racial representation within the genre as a whole is absolutely crucial too, and needs highlighting here. Greta Aiyu Niu, for instance, uncovers what she calls "Techno-orientalism" (2008: 73) in cyberpunk: she outlines that cyberpunk often erases the material history of technology, and elides in particular the roles of oriental cultures in technological innovation and production, in order to establish/defend the myth of singular Western ingenuity (75). Similarly, Timothy Yu produces an account of the cyberpunk city in *Neuromancer* as a collusion in what he describes as a tendency to "[displace] postmodernity onto the Orient, generating a narrative of postmodern origins grounded in modern orientalist anxieties" (2008: 48). These recent works show both cyberpunk's tendency for political conservatism beneath its flashy exterior, and, more generally, the continuing need to return to the originary cyberpunk texts, owing to their having generated the terms of reference for many present-day real life and science fictional representations of the interface.

between the offline and online worlds in this first wave of cyberpunk – and moreover, the pejorative ways in which overly bodily interface experiences are treated – creates the conceptual space into which the avatar is eventually installed in second wave cyberpunk. In short, the Sprawl Trilogy sees Gibson imagining two distinct visions of cyberspace—the "consensual hallucination", inhabited by disembodied mind-selves, and "simstim", the inhabitation of another body (or recordings of another body's experience)—and displaying overwhelming preference for and reification of the representation of the former, with the latter denigrated as base, retrograde and dangerous.

The cyberspace matrix or Net of *Neuromancer*, *Count Zero* and *Mona Lisa Overdrive* is inhabited by the disembodied mind-selves of hackers, as well as those of artificial intelligences and, in the latter novels in particular, preternatural spirits.[32] This "disembodied consciousness" (Gibson 1984: 12) is the "pure" vision of cyberspace; the "transparent 3D chessboard extending to infinity" (52) crystallises the notion of a matrix of data whose dimensions are comprehensible in Euclidean terms, organised visually.[33] Accounts of cyberspace in Gibson's novels tend to come from the singular perspective of the character inhabiting it at the time; the proprioceptive sensate experience of being (in) a body is elided save for descriptions of vision and motion (at great speeds). This "powerful controlling gaze" (Bukatman 1993: 48) sets the terms for the 'pure' cyberspace encounter: the cogito-self is an ethereal projection; sight is privileged as prime (indeed, only) means of perception, and for Case and other hackers in the Sprawl Trilogy, the "bodiless exultation" of cyberspace necessitates a denial of the flesh (Gibson 1984: 12). Gibson describes Case's first return to cyberspace:

[32] The quasi-spiritual nature of some encounters with information technologies is explored in depth in Erik Davis's *TechGnosis* (1999).

[33] See the Introduction for a fuller examination of the Euclidean mode of representing cyberspace.

> This was it. This was what he was, who he was, his being. He forgot to eat. Molly left cartons of rice and foam trays of sushi on the corner of the long table. Sometimes he resented having to use the chemical toilet they'd set up in the corner of the loft [...] he'd go straight to the deck, not bothering to dress, and jack in. He was cutting it. He was working. He lost track of days. (76)

This disembodiment— a "pure subject in a world of pure object" (Stockton 1995: 589)—is accentuated by the animating of a radical disjunction between the offline and online worlds, and this disjunction between the real and the cyberspace virtual is compounded in turn by the interface's relationship to the city.[34] Cyberspace has a particularly analogous relationship to the experience of postmodern urban sprawls. But what is striking here is the particular *perspective* of the urban landscape offered by the abstraction of the online matrix. The vaunted collapse of the distinction between data and material (and indeed the fragmentation of notions of spatiality and time) inspired by the burgeoning information technology permeation of the 1980s is doubtless depicted here, but its reification is confounded by the frequent reiteration of the need for *ascendance above* the grimy concrete world inhabited by Gibson's characters. The city is palatable and comprehensible only when its putative rational essence of data, hitherto obscured by the incursion of unwanted other bodies, can be abstracted and protected—a task for which cyberspace seems intentionally designed, with its "lines of light ranged in the nonspace of the mind, clusters and constellations of data... like city lights, receding" (1984: 67). So while cyberspace *is* analogous to the city, it is not analogous to the on-the-ground experience of plural cultures and radically modified bodies, but rather the experience of a detached observer, a kind of disembodied, floating flâneur. Cyberspace

[34] Sharon Stockton's analysis of the "console cowboy" in cyberpunk traces the ways in which cyberspace itself is constructed as a feminine–indeed, "virgin"–territory for colonisation and penetration by these male cybernetic pioneers, and accounts for both the gendering of this discourse and its material, economic underpinnings, as well as its development from long-standing discourses of empire (1995: 592).

offers a position of escape from and observation of those things; it strips away the dirt of bodies in order to minimise the clutter of mediation necessary to represent data itself. This disembodied vantage point is the basis for the avatar's future dominant position as the interface between the offline user and cyberspace.

Gibson's future world provides and celebrates a disembodied model for interactions within cyberspace, prefiguring the role of the empty, interchangeable shell of the avatar. But this vision's necessary supplement is a continually-reiterated rejection of alternative, non-transcendental visions of technologically-mediated subjectivity. This rejection, in fact, colludes with the actual disembodied projections of cyberspace in the establishment of the avatar as a normative figure: what we see alongside cyberspace disembodiment is a continuous rehearsal of the *failure* of organic, corporeal paradigms of embodiment to account for the pure mind activity of cyberspace, and the implied need to reconstruct that body without those putative (and, as I will outline, feminine-coded) limitations. There is, in fact, a drive not to allow the same technologies to be colonised by the desires of the flesh. While the infinite topological depth of cyberspace, as Case enjoys it, offers the possibility to manage and comprehend (indeed, to gaze upon) the digital data that both interpenetrates and (re)crafts bodies, the same basic technologies are rendered suspicious for their simultaneous (and seemingly more common) function: a means to overdetermine or hypermediate fleshy, embodied experience through its being recorded or broadcast for remote consumption.[35] The gender coding in the expression of this notion is telling. In the segment of *Neuromancer* in which "console cowboy" Case and "street samurai" Molly Millions break into the headquarters of megacorporation Sense/Net to steal the stored consciousness of a dead hacker (the "Dixie Flatline"), we

[35] Bukatman describes this mode of instantiation within cyberspace as "*perception* followed by *kinesis*" (19; emphasis in original). For a discussion of the notion of hypermediation, see Bolter and Grusin (2000).

witness Case (via his cyberspace deck) being patched into "Molly's sensorium": he experiences, remotely, the bodily sensations that she does, in real time (70). His job is to monitor and direct her infiltration of the Sense/Net building, hacking its security systems via cyberspace while she does the physical work of retrieving the Dixie Flatline. Writ large here is the inscription of Cartesian dualism into gender binary: Case is the mind, and Molly is the body. Stacy Gillis outlines this dualistic relationship in her uncovering of cyberpunk's debts to gothic and *noir* fiction, and in particular its persistent deployment and containment of the *femme fatale*: "[What] is crucial is that Millions' body here is merely one more hacking tool for Case, no different from the consoles he uses to enter cyberspace [...] the *femme fatale* Millions becomes no more than a vessel for both Case's desire and his prowess and her physical ass-kicking abilities are reduced to mere tools for the job" (2007: 15).[36] Molly's role as 'vessel' is emblematic of a fundamental ambivalence between a male heterosexual desire for the female body and the concern that such a desire is a distraction or an obstruction to masculine rational interrogation (a recurring feature and perceived danger, Gillis also notes, of the *femme fatale* [13]). Case is frustrated by Molly's feminine body's "gratuitous multiplication" of embodied stimulation, "the abrupt jolt into other flesh" (Gibson 1984: 71).

Essential to note in this scene is the *direct comparison*—even opposition—made between the ascendant joy of cyberspace and the comparative baseness of simstim "riding", a comparison dramatised by the device—both literary and, in the story space, literal—that allows Case to "flip-flop" at will between cyberspace and Molly's simstim input. This

[36] Gillis produces here an account of the "hyper-sexualised cyborgic female bodies" of cyberpunk, reading these figures in the context of their generic influences from *noir* and the gothic and uncovering an opposition between these women and the "repressed bodies of the mirror-shaded male hackers" (2007: 7). For Gillis, the putative "ass-kicking techno babes" of cyberpunk pay lip service to empowerment, but are always ultimately "contained by the language of sexuality" (12): for women in these narratives, cyborgic enhancement often serves as a means of strengthening, not rejecting, their putative role as sexualised embodied others to the masculine mind-self.

device allows for striking juxtapositions of scenes of cyberspace's disembodied purity with those of remotely-experienced hyper-embodiment:

> Her hands in the pockets of the pink coat, were flexing systematically through a series of tension-release exercises. It took him a few seconds to realize that the peculiar sensation at the tips of her fingers was caused by the blades as they were partially extruded, then retracted.
>
> He flipped back. He watched as his icebreaker strobed and shifted in front of him, only faintly aware of his hands playing across the deck, making minor adjustments (78).

Here, the comparison of respective sensation felt in each character's hands (by Case) makes clear the distinction between the modes of embodiment possible in the cybernetic interface, and the respective gender coding of each. In simstim, experiencing Molly's body, Case is acutely aware of every sensation. Switching to the mind-realm of pure cyberspace, he is barely even aware of his own body's existence – as is proper for a rational mind in control of its (or rather *his*) target of active interrogation.

Simstim technology itself is maligned throughout the trilogy for its intensification of the undesirable urges of the flesh. Those who enjoy such "meat toy" (71) escapes are regularly depicted as inferior, in a manner that highlights their bodies, often subdued and slowed by soporific drugs like alcohol (versus the constant speeding on amphetamines and coffee by cowboys like Case). The mother of *Count Zero*'s Bobby Newmark, for instance, is portrayed as grotesque, hypnotised by simstim soap operas:

> He knew her, yeah, how she'd come through the door with a wrapped bottle under her arm, not even take her coat off, just go straight over and jack into the Hitachi, soap her brains out good for six solid hours. Her eyes would unfocus, and sometimes, if it was a really good episode, she'd drool a little. About every

> twenty minutes she'd manage to take a lady-like nip out of the bottle (1986a: 54).[37]

The gendering of these depictions is, again, vital: simstim is regularly seen as either a way for men to access women's bodies (the biggest name in simstim superstardom is a girl called Tally Isham) or for women to enjoy an inferior version of cyberspace on their own, more embodied terms (Bobby's mother). It is not just simstim that keeps women separate from the masculine transcendence of cyberspace, though: the only notable female hacker figure in the Sprawl Trilogy—Angie from *Mona Lisa Overdrive*—is able to access cyberspace, but without using a cyberspace deck or any other kind of technological intervention. While this implies a privileged understanding of cyberspace, and immediate access to 'pure' data, and might then seem even to disrupt the masculine dominance of cyberspace narratives, Angie's ability to access cyberspace is thus wrested from any sense of rationality or intention. It is beyond her complete control, and positioned as a sub- or a-consciously arisen embodied experience. Her talent is transcribed to one more befitting her gender in normative discourses.[38]

The cyberspace encounter of Gibson's fiction prefigures the transcendental conceptual shape of the avatar: it both enacts the need for some kind of cipher for a standpoint position in cyberspace, and rejects any version of this cipher that might be in any way

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[37] This scene also sees Bobby expressing disgust that his mother was immersed in simstim soaps even while he was *in utero*, and that he had somehow been poisoned by the experience: Bobby "didn't like to think about being curled up in Marsha Newmark's belly. It made him feel sweaty and kind of sick" (55). This anxiety over the putatively leaky, infecting nature of pregnancy is discussed further in the chapter on the Nanotechnological Swarm..

[38] This is not to mention the obvious implications of the fact that Angie only has this ability because of a neurological intervention by her father when she was still a child. Pointing out its fragmentary undermining of the public and private spheres, Jenny Wolmark suggests that Gibson's fiction sets up the Sprawl (the tangled future cityscape of the novels) as a feminine space. "The Sprawl," she writes, "is [...] a feminised spatial metaphor in a way that the other central metaphor of cyberpunk – cyberspace – is not" (1994: 116). While this may help to rescue Gibson's work from the charge of excluding women from the future entirely, it still only further stratifies the division between the sublime ascendancy of cyberspace and the comparative hyper-embodiment of the real world, within which women are thus further and further contained.

messy, indistinct, or generally too evocative of mundane embodied experience. The rejection itself of unclean (e.g. feminine) users is constitutive of the 'purity' of the 'true' avatar by its dramatisation of the failures of these users' bodies to transcend their base desires.[39] This pattern continues through the two subsequent phases of the avatar's establishment as a common technocultural figure.

Clints and Brandys

The second phase of the avatar's permeation of technoculture is its stabilisation as a figure in the 1990s, primarily through its being explicitly named by Stephenson in his second-wave cyberpunk novel *Snow Crash*. This moment sees a crystallisation of a process instigated in first-wave cyberpunk: with the notion of explicit Euclidean cyberspaces now mooted (and beginning to take on renewed vigour in the wake of development of real-world virtual reality technologies in the early 1990s), a version of the human body is recouped in cyberspace, but that body is rebuilt in the form of the avatar. This rebuilding happens in such a fashion as to strip away the pejoratively-coded features of the organic flesh, or any danger that subjective indistinctions might incur upon the relationship of control between a human(ist) user and their subjected technology.[40] In some ways a spiritual descendent of *Neuromancer*, *Snow Crash* has much in common with Gibson's first novel. Its protagonist (quite literally, Hiro Protagonist) is a samurai sword-wielding male

[39] There is cyberpunk writing that works to account for subjective reconfiguration in relation to technology, and is less defensive of the masculine unified subject: Laura Chernaik, for instance, produces an account of a more complex attitude towards technology than is seen in Gibson's work by examining the "anti-essentialist" writing of female cyberpunk author Pat Cadigan, discovering in her writing an argument for a "responsible, and knowledgeable [...] approach to technology" (61). However, Gibson's popularity and the considerable influence of his seminal cyberpunk trilogy has arguably made his conceptions of interface encounters the *de facto* basis of almost all ensuing fictional representations.

[40] *Snow Crash* is considered to have been a major influence on some real-world cyberspaces. Margeurite Waller (1997) discusses the influence of the novel on early graphical online community *AlphaWorld* (1996). Another notable online community with clear resonance with *Snow Crash* is *Second Life* (2003-), though the creators of this system have denied the connection (Dubner 2008).

programmer and hacker, and one widely-respected architect of the novel's version of cyberspace, the "Metaverse". Hiro is accompanied by a fifteen-year-old female tech-savvy skateboarding "kourier" (a futuristic delivery agent) named only Y.T. (for "Yours Truly"), and the story's material basis is a hyper-corporate future world of privatised miniature nation states called "Burbclaves". Where *Snow Crash* develops the Sprawl Trilogy's vision of the interface experience, though, is in its establishment of an explicit avatar as kind of electronic body in cyberspace, used to stand in for the controlling user. Where the Sprawl Trilogy simultaneously celebrates cyberspace and laments the new bodily indistinctions its enabling technologies open up (and thus tries to denigrate and escape the body altogether), *Snow Crash* discovers, in the avatar, a kind of online body that is both radically mutable and subject to easy, conscious control. The avatar allows complete reconstruction of the subject, but in a manner that is always the outcome of rational enquiry. Where the narrative encounters moments in which the electronic/technological may reach out into the subject and have a constituting/influencing effect, such moments are presented as dangerous, and their pejorative nature often finds expression in language and figuration coded and reserved for the marginalisation/exclusion of non-male, non-white subjects.

In *Snow Crash,* avatars are the representatives of offline users primarily within "The Street", the fashionable part of the Metaverse where most of the cyberspace action of the novel takes place. The Street is analogous to a city street; it is not so much the formless topology of Gibson's cyberspace as a caricature of a kind of perfect simulated city (a city that would later appear in *The Matrix*). Within that space, users' avatars move around and interact in fairly conventional ways:

> As Hiro approaches the street, he sees two young couples, probably using their parents' computers for a double date in the Metaverse [...] He is not seeing real

> people, of course [...] The people are pieces of software called avatars. They are the audiovisual bodies that people use to communicate with each other in the Metaverse. [...] Your avatar can look any way you want it to, up to the limitations of your equipment. If you're ugly, you can make your avatar beautiful. If you've just gotten out of bed, your avatar can still be wearing beautiful clothes and professionally applied makeup. You can look like a gorilla or a dragon or a giant talking penis in the Metaverse. Spend five minutes walking down the Street and you will see all of these. (Stephenson: 33-4)

The recuperation of some kind of body as a requisite part of one's place in the world is clear here, as is the possibility of alternative, unconventional forms of embodiment. However, this is still very much about escaping the organic body, not reconfiguring understandings of it. Indeed, the latter is rejected quickly: "most hacker types don't go in for garish avatars" (34). The avatar itself here is a means of ensuring that the body is reconstructed in cyberspace according to the parameters of the idealised liberal humanist mind-self; that anything except a classically-finished human body is derided as "garish" speaks to these very narrow parameters. *Snow Crash*'s Metaverse, accessed through goggles rather than brain-embedded electrodes, represents a clearer delineation of an imaginary but desirable boundary between bodily and intellectual activity, with the avatar (in its 'proper', conventional form) as the proper online representative of that activity, and both point of access for—and barrier to—the offline subject.

Stephenson's version of cyberspace, like Gibson's, is one based on the abstraction of the subject-self onto projected vision; the Metaverse is a comprehensible three-dimensional space, with conventional, if exaggerated, laws of physics (indeed, the spatial analogy is policed heavily: "you can't just materialize anywhere in the Metaverse, like Captain Kirk beaming down from on high [...] it would break the metaphor" [34]). Accessed via

goggles, the avatar-mediated Metaverse reiterates the same quasi-transcendental distinction between the base, decaying material world and the cleanliness and potential of the online experience. While Hiro is down-and-out in the offline world, he is a demi-god in the Metaverse: "As one, they all begin screaming. Not that they have any idea who he is—Hiro is just a starving CIC stringer who lives in a U-Stor-It by the airport. But in the entire world there are only a couple of thousand people who can step over the line into The Black Sun" (38). Hiro's avatar becomes the marker of his privilege and status within the Metaverse; without the grime and clutter of the material world to hold him back, he is able to assert his authority based on a display of knowledge and intellectual prowess that is affixed to his avatar body. The avatar here is a site of the reassertion of conventional prejudices and preconceptions regarding the offline subject, rather than an opportunity to recraft understandings of them. Any representation of the body may be *possible* in the Metaverse, but the avatar serves to reiterate and amplify rather than collapse the expected forms of and distinctions between individuated subjects and objects. It is seen as gauche by the hacker elites of the novel to do anything but build an accurate shell likeness of one's "real" offline self, and those who choose to do otherwise are thus in possession of avatars marking them clearly with their (inferior) class or gender status. Stephenson is aware of this, but resists any significant commentary on it: in fact, we are invited to join Hiro in derision of the "white trash" who use the off-the-peg "Clints and Brandys", the poorly-rendered and identical male and female "bimbo" avatars used by those who do not have the money or skill to produce more tasteful online representations of themselves (35).

Stephenson reserves particular disdain for the Brandys, the female off-the-peg avatars:

> The user can select three breast sizes: improbable, impossible, and ludicrous. Brandy has a limited repertoire of facial expressions: cute and pouty; cute and

> sultry; perky and interested; smiling and receptive; cute and spacy. Her eyelashes are half an inch long, and the software is so cheap that they are rendered as solid ebony chips. When a Brandy flutters her eyelashes, you can almost feel the breeze. (35).

While *Snow Crash* does not perform the same outright and uncloaked loathing for the 'meat' that the Sprawl Trilogy does, it keeps the organic body subjected as a necessary supplement to the mind in similar ways, and, like Gibson's work, makes clear the feminine nature of the body's multiple threats. One of the novel's central conceits – that the human brain can be 'reprogrammed' by a computer virus (the "Snow Crash" virus of the novel's title) – dramatises the deadly vulnerability of the organic body to improper crossings-over from the (technological) object into the (human) subject realm. As Stockton notes, this virus is also feminine-coded:

> This is a disease of pre- or antirationality, infecting all cultures not inoculated through literacy, monogamy and other "kosher practices" (230) that exclude her random static. Asherah's disease [Snow Crash] is likened to herpes: "it fucks with your actual DNA" (250). The disease of the mother bites back. It is dangerous and unclean. It rejects propagation and the safety of the womb; it is syphilis [...] The diseased and virulent mother reduces bodies to one substance and language to a common babble; she disables agency, amasses all capital for herself, and crashes computers. (1995: 596)

The vulnerability to this virus is a feature of the improperly-guarded body, of which the female body is emblematic: the permeability of a feminine version of embodiment is the vector by which such eventual subjective indistinctions manifest themselves.[41]

[41] The appeal to a fear of pregnancy here resonates with a similar anxiety expressed in narratives of 'grey goo'—see Chapter Three of this thesis for a further discussion of this notion.

This concern over the inability of certain subjects to attain suitability for engaging with technologies is repeated in the novel's keeping of women at arm's length from the hyper-rational subjectivity achievable in cyberspace. Stephenson reiterates frequently the gendered distinction between male mind-centric hacker subjects and female (sexualised) body-centric objects in the respective roles of the two central characters. Hiro is, arguably, more of an action hero than Case: he does not loathe or mistreat his body in the way that Gibson's hacker does. In this way, the distinction between Hiro as "mind" and Y.T. as "body" may appear less tenable than the same distinction between Case and Molly. However, the character of Hiro's embodied action is one defined by rational discipline, training and conditioning of the body, being a swordsman: "Hiro does not have time to adopt the proper stance, but this is fine since he has already adopted it. Whenever he has a katana in his hands he adopts it automatically [...] katana held at groin level like an extension of the phallus" (Stephenson: 145). Y.T., on the other hand, is chaotic and impulsive, driven by her body and carried by narrative momentum, rather, for the most part, than driving events herself (this is literally the case when she magnetically harpoons cars for a lift while on her skateboard). In fact, Y.T., as the only significant female character in the novel, is in general kept firmly in place in the physical world.[42] Her peculiar relationship with technology is not the one of disembodied transcendence that Hiro experiences in the Metaverse, but rather one that can connect her more closely with the physical, embodied world: her skateboard's "smartwheels" shift and reshape themselves to keep her as close and firmly tied to the ground as possible. At one point in the novel she says that she does not wear a helmet because it would "affect

[42] There is another female character in the novel who does, to some extent, complicate the binary between Hiro as "mind" and Y.T as "body": Juanita, Hiro's former partner and another hacker/programmer who helped write the code for the Metaverse. However, she, too, is contained by a peculiarly feminine version of this talent: her role in the design of avatars is notable primarily for enabling them to "show something close to real emotion" (59). Hiro thinks of himself and Juanita as "the Adam and Eve of the Metaverse" (59), though this is a role she is assigned from Hiro's dominant perspective alone—there is no evidence that she thinks of their relationship in the same way.

[her] hearing", which she uses to help keep her bearings (157).[43] Y.T.'s role is one of physical, active prowess, but the real intellectual work, carried out in cyberspace, is left to Hiro. She is also eventually levered into a sexualised role: Gillis writes that at the end of the novel, Y.T. is "reduced to a vaginal explosion" in a scene depicting her having sex with Raven, one of the novel's main antagonists (12).

Snow Crash produces a vision of the avatar that is the model for its reiteration in ensuing texts: a clear division between the online and offline worlds, with any overlap coded pejoratively; a policed set of requirements for access to the online world that excludes putatively inadequate body-subjects; and an overriding need to keep technology itself the object of enquiry rather than an active agent of any kind, with the avatar the digitised and controllable body that serves as the barrier to such overlaps. These features can be observed in more recent texts featuring avatars.

The Body Cannot Live Without the Mind

Despite a manifold expansion in the proliferation of digital technologies into everyday life in the West—the Internet in particular engenders a number of fractured and unexpected possibilities, and one would expect such to influence the fictional representation of the body in cyberspace—fictional texts on the body in cyberspace produced in the last decade show the conventional 'empty shell' avatar alive and well in the popular imaginary.[44] The avatar's conceptual underpinnings remain virtually unchanged from its prefiguration and stabilisation: it still idealises the reversible kinesis of a unified subject into an abstracted, transcendent other-body as the *de facto* experience

[43] Sound is often perceived as a sense that is 'closer' to the body, and Y.T.'s reliance on this rather than the ocularcentric tendency of Hiro and other hackers to enhance their vision is telling of her putative 'closeness' to her own body. See Chapter Six on the Decaying Digital for a further discussion of sound and the body.

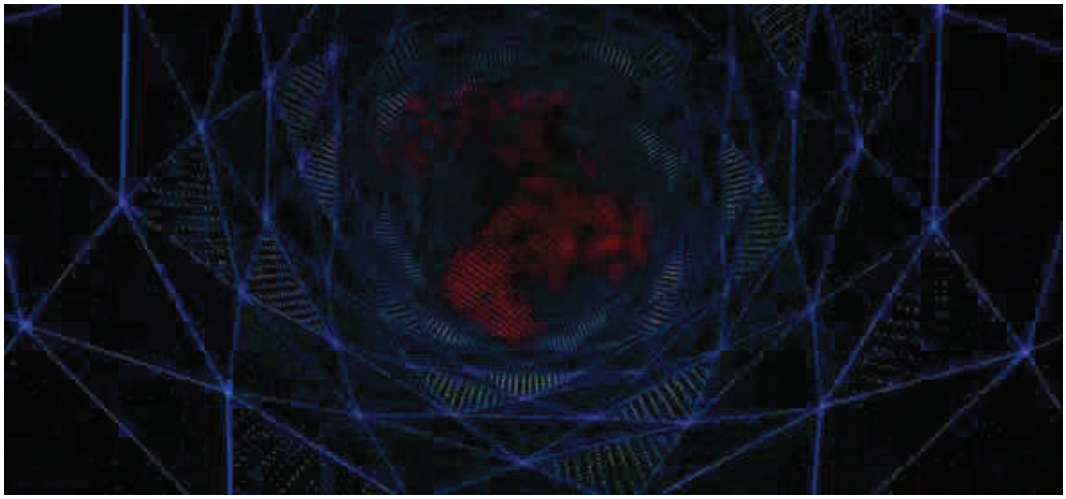
[44] Section Two of this thesis interrogates ways in which the Internet, along with other texts, may disrupt the avatar model of cyberembodiment.

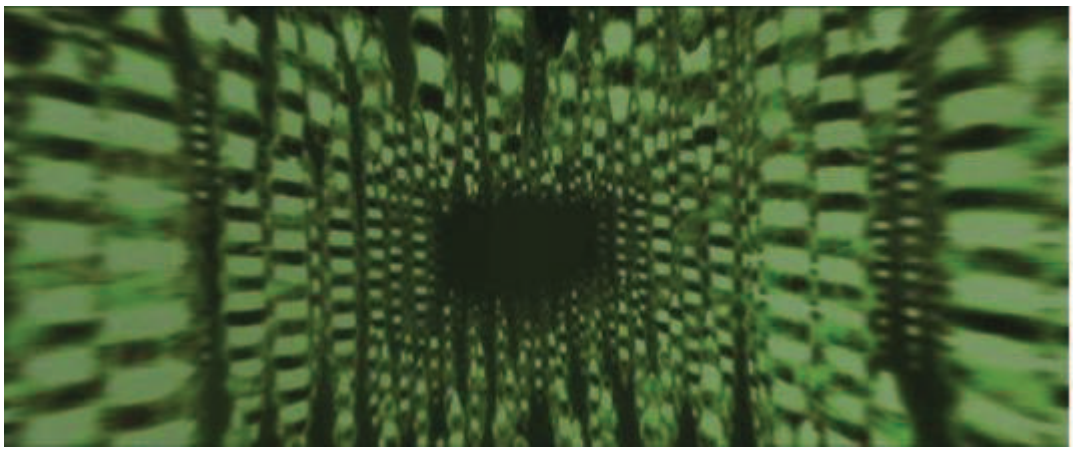
of interfacing with cyberspace. Technology remains a subjected other (the object of human enquiry), cyberspace itself remains a feminised space for penetration and domination, and any compromise of the cleanliness of this transaction remains coded as pejorative or even dangerous. To demonstrate this continuity, I examine here two of the most successful science fiction texts of the last ten years that depict avatars—the film *The Matrix*, and the novel *Altered Carbon*.[45]

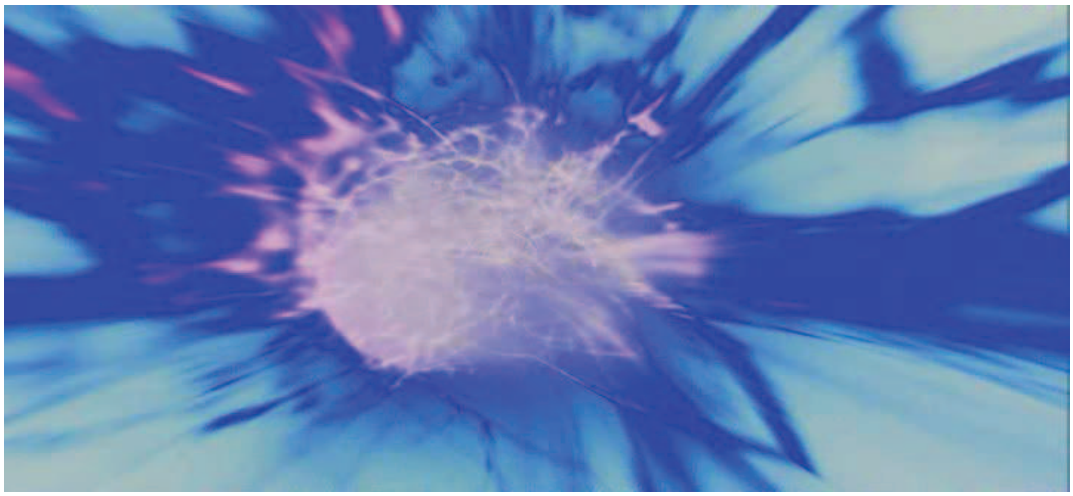
In *The Matrix*, a repressive artificial intelligence regime is battled spectacularly within a machine-designed cyberspace (the Matrix of the film's title) used to subdue humanity. At stake are the bodies and minds of the human race, whose organic warmth is used as a source of fuel for the machines while they lie sleeping in the permanent fantasy world of the Matrix. Protagonist Thomas Anderson—eventually "Neo", or "The One"—is liberated from his soporific life as a programmer to discover a band of real-world freedom fighters "freeing minds" and battling the machines within and without the simulation of the Matrix. We see a very clear avatar in this film: characters in the 'real world' project their minds into the virtual bodies of their simulated counterparts, aided

[45] Despite the aforementioned success and prominence of the film *Avatar*, I do not focus upon it in this section. This is because while *Avatar* does, of course, depict avatars, the 'avatars' in question are actual organic alien bodies, inhabited by the mind-selves of scientists, rather than digital representations in a cyberspace. While this is something that does require theorisation—and many of the conceptual assumptions I outline in the other texts in this chapter also occur in *Avatar*—the broad functional difference between this representation and the others pushes it just outside the remit of this chapter. There are some key things to note in that film, though: Protagonist Jake Sully's forays into the alien body which he is charged with controlling are technologically-mediated transmissions of the bounded mind-self from one body to another; his experiences within the alien body may change his offline attitudes, but those experiences are seen to be unsustainable in his prior (paraplegic) body. This is not narrativised as a fundamental problem with conventional dualistic understandings of embodiment: in an authorial decision that fantasises about a 'trapped' mind's escape from the disabled body into a hardened Amazon warrior body (rather than recuperating the valid experience of a disabled person), Jake's decision to transfer his mind permanently into the alien body is the consensual outcome of rational thought. Indeed, the body into which Jake's mind is transferred is marked by a complex tangle of significations—combining combining the "noble savage" with a body that is classically bounded, strong, rational, and dualistically "spiritual" (with the latter providing access to a "scientifically"-explained afterlife)—helps to obscure any potential interrogation of the logic underlying those significations.

by sophisticated computers and via plugging large metal jacks into the bases of their skulls. The avatars, appropriately hacked from outside the Matrix, have near-superhuman abilities in combat, intelligence and so on, by way of having these qualities downloaded into them. This then enables all manner of spectacular stunts and setpieces that defy conventional laws of physics. Once the curtain has been raised on 'reality'–the gritty, bodily baseness and visual weight of life on the ship Nebuchadnezzar—the transcendent, exciting adventures enactable in the hyperreal cyberspace are not only privileged as the most exciting ones, but, importantly, are positioned clearly as separate, contained, and carefully bounded. As with Gibson's vision of cyberspace, the opportunity for examining the potential distribution or co-constitution of the subject *across* bodies is never really seized, because it is always so clear which body the self is inhabiting at any one time – either the cyberspace avatar body, or the 'real' world body. Like many cinematic representations of cyberspace, *The Matrix* takes pains to dramatise the transition between online and offline. While the film builds its central premise upon a confounding of authentic experience via technological augmentation, the distinction between the offline 'real' and the online Matrix is continuously defended and reiterated. As an audience, in other words, we are never left in much doubt as to which world is 'real'. The primary way this is demonstrated visually is by the use of transition effects used in almost all cinematic depictions of cyberspace: we are given a first-person view of a digitally-rendered 'tunnel', through which we travel, with the characters, into the Matrix. In *The Matrix,* this 'journey' almost always begins at the end of a telephone line: a macro shot of a telephone receiver expands until the holes drilled into the plastic engulf the screen, and through that we plunge down the telephone lines as if they were tunnels. The endpoint is awakening in the world of the Matrix itself: thanks to this effect, there is very little doubt, as an audience, as to where the action is taking place at any one time. Almost identical effects are seen in *TRON, Lawnmower Man, Hackers,* and *Avatar*.







Figs 1-3. The transitions between the real and cyberspace in *TRON, The Matrix* and *Avatar,* respectively.

While a significant proportion of the conceit and the appeal of *The Matrix* is that the fabric of reality can be mutated or even called into question in the first place, the films' ability and desire to pursue this confusion are ultimately confounded by their decision to

reveal to us—through the kinesis of the subject between discrete bodies—that this cyberspace is a world that sits *atop* the "real", not immanent to nor co-constituting of its materiality. While *The Matrix* demonstrates a body that can be killed as a result of an avatar's death within the Matrix itself, Morpheus explains rather vaguely that "the body cannot live without the mind". There is never a sense that the opposite is true—that a self *is* a body, not the possessor and master of one, determining its survival by force of conscious will. This notion of *owning* rather than *being* a body has its roots, as Hayles points out, in possessive individualism. (Re-)reading C.B. Macpherson's characterisation of this aspect of the liberal humanist subject, Hayles notes a shift: the "paradox" Macpherson identifies—that "the liberal self is *produced* by market relations" even as it claims to predate them (i.e. in a state of nature)—is resolved in her reading by both the posthuman body's *literally* commodified character (she refers to *The Six Million Dollar Man* [1974-1978] as a neat popular cultural exemplar) and its "collective heterogenous quality", undermining the notion of any selfhood predating those relations (3, emphasis in original). However, *The Matrix* both raises and rejects the possibility of a posthuman resolution to this paradox between ownership and being: the film situates its characters at the posthuman interface, but it is an interface to be fought against and escaped in favour of the re-establishment of the pre-existing 'true' self. Indeed, this anxiety of the loss of authenticity is something borne out by the film's constant reiteration of its being inspired by Baudrillard's philosophy of the simulacrum: not only is this demonstrated by Morpheus' paraphrasing of *Simulacra and Simulations* ("welcome to the desert of the real") but a hollowed-out copy of the same book features prominently in one scene. There is not, in other words, any sense in *The Matrix* that the human/technological interface promises anything other than an apocalyptic destruction of the ideal human subject. The possibilities for alternative action or embodiment in the avatar-inhabited cyberspace of the Matrix itself are coded entirely within the parameters of omnipotence, immortality

and *control*. Furthermore, those powerful, controlling avatars are, like those in the earlier cyberpunk texts, strongly gender-coded.

The Matrix's Trinity is a strong and active female figure, and despite the "residual self-image" of their tangibly-gendered offline counterparts, the characters' avatars' gender within the Matrix itself seems, initially, unusually unconstraining to their action roles. Trinity's body is ostensibly not fetishised in the way that, for instance, that of Molly Millions of *Neuromancer* is: as Balsamo remarks, "Molly's body implants more fully literalize the characteristically threatening nature of her female body" (2000: 129). Trinity's outfit, by comparison, serves to support her active role, and even resist the objectifying male gaze (Gillis 2005: 79). Trinity is, also, unlike Molly, a hacker: along with her ability to take on dozens of men in combat, she is a member of a skilled, intellectually-revered techno-elite capable of comprehending and undermining the machines' simulations. However, by the end of the first film, beginning a process that continues throughout the trilogy, Trinity is steadily prised into a conventional feminine narrative trajectory: Gillis writes that Trinity's "transgressive and myth-making job as a hacker [...] is increasingly displaced throughout the trilogy by her 'real' job, that of taking care of Neo so that he can do his work of being 'the One'" (80). Trinity brings a dying Neo back from the brink with a kiss; her role moves from an active and rational one to a passive and embodied one. Trinity's body is, thus, re-anchored to the real world, her subjectivity proven inappropriate to the task of occupying the 'neutral' body of the avatar. Neo's perfect mind, on the other hand, makes him "the One": the prophesised saviour of humankind, able to move with near-invulnerability and freedom within the simulation of the Matrix.

There are some balder, more sadistic and misogynistic decisions made in other texts that depict avatars: in *Altered Carbon*, the apparent function of the *female* avatar body in cyberspace is to be the object of torture. Male main character Takeshi Kovacs' mind is loaded into a 'female' avatar for an extremely violent interrogation scene, a decision rationalised editorially thus: "To be a woman was a sensory experience beyond the male. Touch and texture ran deeper, an interface with environment that male flesh seemed to seal out instinctively. To a man, skin was a barrier, a protection. To a woman it was an organ of contact. That had its disadvantages" (Morgan 2002: 168). Given the extreme nature of the torture—the interrogators burn Kovacs' female avatar's feet off with a blowtorch, amongst other things, as I will outline—the claim that women feel pain more keenly seems a rather flimsy reason for this choice to have been made. The misogynistic character of the torture speaks clearly to the depicted rational inadequacy of a 'female' avatar:

> What d.h. [digitised human] storage *has* done is make it possible to torture a human being to death, and then start again. With that option available, hypnotic and drug-based questioning went out the window long ago. It was too easy to provide the necessary chemical or mental counterconditioning in those for whom this sort of thing was a hazard of their trade.
>
> There's no kind of conditioning in the known universe that can prepare you for having your feet burnt off. Or your nails torn out.
>
> Cigarettes stubbed out on your breasts.
>
> A heated iron inserted into your vagina.
>
> The pain. The humiliation.
>
> The damage. (172; emphasis in original)

Perhaps even more significant than the violence itself is the implication that if one wants to ensure that mental conditioning be overcome by torture, the best way to do so is to

ensure the tortured body is female. The "conditioning" that Kovacs might have been able to appeal to as a male avatar is diminished by his being sleeved in this digital version of a woman, reconstructed from a culturally biased, masculinist blueprint of female bodily experience.

Even outside digital avatars, we see examples in the novel of technologically-reconstructed female bodies that have the same overdetermined physical experiences, and which are marked as inadequately rational—or even dangerous—as a result. Miriam Bancroft, the two-hundred-year-old wife of Kovacs' employer, at one point seduces the protagonist while sleeved in a genetically-engineered, custom designed female body. This custom-designed sleeve, commissioned by the impossibly-rich Bancroft, is constructed with the specific purpose of intensifying sexual experience, and she uses it in order to disrupt Kovacs' mission[46]:

> Miriam Bancroft pushed herself off the window shelf and set her hips against it. She set down the glass with exaggerated care and leaned back on her hands so that her shoulders lifted. It changed the shape of her breasts, moving them beneath the sheer material of her leotard.
>
> 'Do you know what Merge Nine is?' she asked, a little unsteadily.
>
> 'Empathin?' I dug the name out from somewhere. Some thoroughly armed robbery crew I knew back on Harlan's World, friends of Virginia Vidaura's. The Little Blue Bugs. They did all their work on Merge Nine. Said it welded them into a tighter team. Fucking psychos.
>
> 'Yes, empathin. Empathin derivatives, tailed with Satyron and Ghedin enhancers. This sleeve...' She gestured down at herself, spread fingers brushing the curves.

[46] This is, of course, a familiar function of such *femme fatales*; *Altered Carbon* is unashamedly hardboiled in its narrative style.

> 'This is state-of-the-art biochemtech, out of the Nakamura Labs. I secrete Merge Nine, when ... aroused. In my sweat, in my saliva, in my cunt, Mr Kovacs.'
>
> [...]
>
> I met her halfway across the room. Merge Nine was already in the air, in the scent of her body and the water vapour on her breath. I drew in a deep breath and felt the chemical triggers go off like plucked strings in the pit of my stomach (131-2)

Merge Nine, the chemical designed for enhancing (the conventionally feminine) emotional character of empathy, is judged by Kovacs to be both useless as a form of "working"—he considers the Little Blue Bugs' use of it to enhance their work to mark them as "fucking psychos"—and a threat to his own ability to work rationally. As his "chemical triggers" are tripped, Kovacs' ability to think clearly is endangered. As Bancroft's impossibly seductive embodiment shows, even a technologically-reconstructed female body will be radically leaky, and accordingly radically poisonous to male rationality.[47]

In other words, *Altered Carbon*'s depiction of female avatars uses both digital and technologically-fabricated physical bodies in order to reassert well-established gender myths of women being "more embodied" than men, rather than in any way disrupting this logic.[48] Kovacs' being sleeved in a female avatar for torture (whose simulated skin, if mirroring that of a 'real' female body, is an "organ of contact" rather than a "barrier" to invasive entities) recapitulates the putative vulnerability of the feminine subject, couching said vulnerability in the quasi-neutral language of science, and, thus, ratifying it to an even

[47] An alternative later reading may also investigate the possibility that such depictions of the 'rebuilt' female body actually animate the tendency for male-dominated discourses of technoscience to recreate the normative female subject in the putatively neutral space of scientific invention.

[48] See Shildrick (1997) and Grosz (1999) for more on this idea of women being seen as "more fully embodied" than men. This is also examined through these writers in the Introduction to this thesis.

greater degree. Miriam Bancroft's hyper-feminine embodiment forces the female body into a position of rational inadequacy and threat to the subject by its very inability to separate mind and body. Women are inadequate or inappropriate minds for the occupation of avatars because even in cyberspace or in neutrally-crafted collisions of technoculture and embodiment their 'bodies' will let them down; they would not be able to maintain the *separation* between mind, body, and other that the masculine subject maintains by default.

The Kinesis of Conciousness

Far from bearing out promises of novel and liberating possibility, the user/avatar relationship in fiction is almost always used to close down in advance any disruptive potential in the online experience. The postmodern pastiche aesthetic is accompanied by a postmodern crisis in the boundedness of the Cartesian subject, which then registers in a need to continually rehearse a clear and intransigent division between the offline and the online, with, ideally, no permanent overspill of either into the other. Within these fictions, the human subject is not in a relationship of co-substantiation with the machine: each narrative and practice rehearses the process of re-subjecting technology and an essential division between the human and the other, whether the technological other or the 'inadequate' marginalised, too-embodied other. Within these discourses, the self does not emerge from the contingencies of its body or bodies; the body is an interchangeable possession of a self, which must always maintain its mastery of avatar bodies, their signs of otherness where appropriate, and the very cyberspaces they inhabit, which are passive spaces in themselves. The essence of selfhood remains a bounded and discrete entity, transmissible between bodies coded as recipient vessels, whose material base does not invade or pervert the purity of the rational mind in transition. The above features are observable in most of the major science fiction texts that feature avatars heavily. They

have in common the tendency to continually recapitulate a *division*, not an intimate, embodied, ongoing and co-constituting reconfiguration, between the human and the technological other, and the possibility of a kinesis of bounded consciousness between those two interchangeable bodies.

Ultimately, the avatar as an understanding of embodiment in relation to machines evinces a figure that repeats and armours the unified subject that Haraway's and Hayles' models of understanding the human/machine interface attempt to disrupt, by simply refusing to let said subject be dissolved or unseated by the experiences of distribution across non-human, technological bodies. The mind/body divided self that is cited in these cyberspaces needs to be reinforced by a distinct and repeated consolidation of the boundary between self and other, which in turn maps onto the exclusive logic of identity, excepting non-normative agents. There is never a sense that the 'self' in question is contingent upon the specificities of the corporeal form instantiating it; the materiality of the body—whether the 'true' organic body or the material form of the computer system hosting the avatar—is never seen in these narratives as significantly generative in the formation of the self. The body, whatever its form, is merely an often inadequate and vulnerable vessel for the mind, and the object of intervention and control as it ever has been in liberal humanist teleologies of enquiry. As Hayles remarks about the troubling discourses surrounding information and the history of cybernetics, the mind, here, has *lost its body*, and while a self may "own" a body, it is not seen as being part of one (3). What we see in the conventional depiction of the avatar is the very Moravecsian nightmare of mind-transfer (rather than mind-reassessment) that Hayles argues is a risk to liberatory or otherwise productive understandings of the human/machine interface (1). This version of the avatar evinces the possibility of spectacular dis-/re-embodied action, but that action is always in line with very conventional and normative models of

generational masculine "improvement" (i.e., the ability to be faster, stronger, more precise, more disciplined, more intelligent/rational, to live longer, et cetera), further stratifying rather than ever reconfiguring, reordering, or even daring to question the deterministic and exclusive logic that underpins those ambitions.

The normative potency of the avatar emerges not least from its being the logical outcome of rational projects of technological enquiry, and its attendant ability to thus ratify deterministic discourses of scientific objectivity—and in a performative turn, the anticipation of this neutrality also *conjures* that neutrality, by rejecting those who apparently do not fit the pattern. As such, the avatar embodies a powerful defence *against* the disruptive potential of the interface between the organic and the technological, and is thus an inadequate and reductive descriptor of the experiences possible at that interface. The avatar is 'the' singular idealised body in cyberspace in these narratives.[49] The mind occupies one point or another, it either fills the avatar or the offline body, never both; overspills from the putatively 'virtual' to the putatively 'real' are pejoratively coded, and those whose body-selves are inherently vulnerable to such crossovers are rejected as potentially viable users of avatars. The transferable mind must always be recuperated in these narratives; the disembodied essence must always be ratified, and that essence "is" the self of the subject in question. The issue here is not so much that it is not possible to simulate or recreate digitally a perfect analogue of embodied experience—that is a question beyond the remit of my thesis—but rather the problematic notion that the mind-self can be *transported* from one vessel to another, with continuity of selfhood. That is what the avatar dramatises: the transcendental kinesis of a bounded subject from one passive body to another. As such, this understanding fails to account for the co-

[49] The Fursona chapter outlines a different possible way to understand the body in cyberspace, where an avatar may be part of the field of implication from which the body is drawn out, but not totally constitutive of the body in and of itself.

constituting complexity of the human-technology relationship, even while it performs a desire to do so on the surface.

CHAPTER TWO:

THE HACKER

Like the avatar, the figure of the virtuoso computer/network hacker is one whose shape was consolidated in the 1980s. The hacker–the usually white male, often teenage expert user of the computer, able to penetrate any security system and crack any code—has been a prominent character in fiction and film since the 1980s: hackers constitute main or major characters in the films *TRON*, *WarGames* (dir. John Badham, 1983) and *Weird Science* (dir. John Hughes, 1985), Gibson's Sprawl Trilogy, Stephenson's *Snow Crash,* and the films *Sneakers* (dir. Phil Alden Robinson, 1992), *Jurassic Park* (dir. Steven Spielberg, 1993), *Johnny Mnemonic* (dir. Robert Longo, 1995), *Goldeneye* (dir. Martin Campbell, 1995), *Hackers* (dir. Iain Softley, 1995), *The Net* (dir. Irwin Winkler, 1995) *The Matrix*, *Swordfish* (dir. Dominic Sena, 2001), *The Core* (dir. Jon Amiel, 2003), *The Italian Job* (dir. F. Gary Grey, 2003), *National Treasure: Book of Secrets* (dir. John Turtletaub, 2007) and *Die Hard 4.0* (dir. Len Wiseman, 2007).[50] As well as appearing in these fictional texts, the hacker is a real-world figure whose representation in non-fiction texts is interconnected with that found in fiction; real world hacking practices have inspired the kind of hacking seen in fiction and *vice versa.* [51] Media reporting, critical writing and legislative action have given further definition to a stable and persistent depiction of the figure of the hacker.

[50] The preponderance of film rather than written representations of the hacker, despite its appearance in the most influential cyberpunk novels of the 1980s and 1990s, is inescapable. This shift from literary to visual representations of hacking may feasibly have taken place partly as a result of the steady shift of computer use from text-based to graphical user interfaces, as I discuss on p92.

[51] Books on hackers, and particularly non-fiction accounts, have proven an enduring subgenre, and such accounts have been published regularly since the 1980s. The subgenre began with Stephen Levy's *Hackers: Heroes of the Computer Revolution* (1984), and notable examples since include Katie Hafner and John Markoff's *Cyberpunk: Outlaws and Hackers on the Computer Frontier* (1991) and Bruce Sterling's *The Hacker Crackdown* (1992).

The hacker is a figure which ties together a variety of discourses on technology and the body in a manner that has remained relatively conceptually consistent since its inception. Considerable changes that have taken place since the 1980s in the development and role of the Internet and of the computer (both the home computer and the business network) have done little to alter the conceptual image of the hacker. The figure connects corresponding discursive elements from fictional and non-fictional texts: the computer or network hacker began to emerge as a recognisable entity in fiction at around the same time that it was beginning to be stabilised in the burgeoning technoculture that flourished in the late 1970s and early 1980s. Case, the console cowboy hacker of Gibson's *Neuromancer,* remains one of the most notorious and influential fictional hackers, but films such as *WarGames* dramatised early on the figure in a way that also helped substantiate the roles and aims of 'real' hackers.[52] Though the term 'hacker' existed before this time – with something of a different meaning—the shape it took in the 1980s, in line with the increasing proliferation in the West of relatively affordable home computers based on digital microprocessors, is the shape it maintains today.[53] Coupled with an already-present (sub-)culture of phone 'phreaking' in the USA—reverse engineering the antiquated public telephone system as a way to get free calls—the

[52] Patrick S. Ryan identifies *WarGames* as the origin of the practice of "Wardialling", a hacking technique whereby a user writes a program to make their computer dial every phone number in an area code to find vulnerable computer systems. This is given a present-day instantiation in the practice of "Wardriving", driving around neighbourhoods with a laptop and an antenna, looking for unsecured wireless networks to exploit (2004: 3). According to Hafner and Markoff, the notorious KGB-recruited hacker Markus Hess was inspired to attempt to hack into the US military's NORAD facility in Colorado after seeing the same thing depicted in *WarGames* (1991: 245).

[53] This more technically-specific understanding of "hacker" is best described in key texts examining the histories of hackers. Stephen Levy traces the origins of hacking from within an embryonic technoculture within a specific group of MIT engineers. "Hacking", for Levy, is less reminiscent of the spectacular and often criminal image recognisable to us today, and more reminiscent of a spirit of technical, unconventional problem solving; he sees hacking as a rational teleology that valorises the process of programming and systems construction as an art in and of itself (1983: ch. 2). MacKenzie Wark also draws upon this account in his analysis of both the early era of hacking and the more recently-developed phenomenon of open-source software, which he believes embodies the hacker "ethic" in a way reminiscent of those early hackers' aims (2006).

burgeoning use of home computers and the increasing permeation of digital technologies provided a fertile patch for the development of a mythology surrounding a subject able to use (and abuse) networked technologies in a way seemingly inaccessible to those outside such a natural, easy understanding.

While 'hacker' does not function adequately in describing the full spectrum of real-world practices enacted by expert users of computers, it is nonetheless a popular and recognisable incarnation which conflates the different functions implied by specific technical definitions of various forms of expert computer user. Real-world terms in common use by such expert users such as 'cracker', 'white hat' or 'black hat', and the practices/processes of or interests in coding, programming, system/network incursion, computer security and so on, are not generally represented as discrete (or at all) by popular depictions of this figure.[54] In this conflated format, the hacker figure's normative function—again, like the avatar—is rooted in its position at the interface between the human(ist) subject and the technological/technologised other. The hacker resides between human and non-human agency, but *polices* the boundary between the two rather than blurring it, paying lip service to the potential politically liberatory effects of the interface while resisting subjective crossover from the non-human to the human. This reiteration of the bounded coherence of the human subject in control of its apparent invention comprises a kind of intentional policing of that boundary, and is performed in ways coded in terms of post-Enlightenment visions of the idealised rational agent.

[54] These are contentious terms, but generally 'hackers' try to distinguish themselves from 'crackers' by the former being simply interested in understanding and modifying information and other complex systems, and the latter being closer to the more criminal element as seen by the media and the establishment. 'White hat' and 'black hat' hackers are arranged along similar lines: white hat hackers are seen to only hack systems to test security and be of beneficial effect, whereas black hat hackers are those who do so for personal gain. For further elaboration on these terms, see Wark (2006).

According to both fictional and non-fictional representations, only certain people are capable of being successful hackers (or successful transcenders of the body), and, again, being invariably white and male, they are mythologically effective manipulators of the chaotic signs of the world around them. As Deborah Lupton points out, though, these ideal hackers are usually portrayed as physically undesirable by conventional standards, even "repugnant" (2000: 481). The standing cultural myth that these awkward young men entered into close relationships with computers as a means of escaping such uncomfortable embodied experiences masks an alternative (or at least supplementary) reading: that the organic, corporeal body is (re)discovered by hackers to be a site of vulnerability and a liability to the ideal mind-subject, and thus disavowed or abused as such. That body is demoted into the same realm as several lingering others, particularly putatively inadequate and overdetermined body subjects: anyone *not* white and male or otherwise seen as an inadequate thinking subject belongs to the less or un-differentiated object-world that is both target of and threat to the hacker's rational actions.[55] 'Technology' here is thus kept from invading the mind-self of the ideal masculine human subject by the installation of the hacker as a figure that iterates and reiterates divisions between human and technology.

It is nothing new to point out that hacking is a predominantly male (fantasy) world: Squires' Derridean reading of the dangerous tendency for narratives of technological transcendence to ignore (and thus reinscribe) gendered distinctions of subjects points out that young men "generate the codes and descriptors by which bodies in cyberspace are represented" (2000: 364). Not addressed widely though is the way in which these discourses work implicitly to *reject* women more actively rather than simply exclude them,

[55] While there are non-male, non-white hackers, particularly in some film representations, either all markers of their difference are erased or assimilated/overwritten, or they are each compromised in some way by their bodies (causing them ultimately to fail as hackers), as I will demonstrate.

and indeed work to produce male hackers as subjects capable of resisting not just subjective invasion from/dissolution by increasingly lively technologies, but also the danger of a feminine incursion upon the uniquely male rational character of hacking.[56] In other words, the logic that determines the human's place in a relationship with an object-machine is gendered, and places women in the same object category along with the system being incurred upon. The symbolic entanglement of 'woman' and 'technology' thus embodies a dual function: it identifies a putative feminine character to the technology being 'hacked', and marks that feminine character as something requiring either control or outright expulsion. The feminine character discovered in these transactions is one rooted in the putatively over-embodied nature of women's subjectivity and its continuous interference in—and undermining of—the possibility of objectivity and rational thought.

While there have been superficial attempts to reconfigure the image of the hacker in some texts and drag it away from its intellectual but physically unattractive, self-loathing image (particularly in films like *The Net, Hackers,* and *The Matrix,* which all foreground conventionally attractive hacker characters) the conceptual underpinnings of the figure of the hacker have changed little since its entering of mainstream cultural consciousness in the early 1980s. This chapter examines first the emergence of the figure of the hacker in the 1980s, goes on to establish the persistence of this image through major hacker texts of the 1990s, and then examines the figure as it has existed over the last ten years. These phases are not, of course, entirely discrete, and it would be false to imply clean breaks between each decade—if anything, I group the texts in this chronological manner in order to highlight conceptual continuity rather than significant difference between them.

[56] Thomas Foster has identified "feminist and lesbian rewritings of cyberpunk fiction" that challenge the overriding mode of "disembodiment" that is invoked in relationships between human users and technologies (2000: 439). However, his essay does not address the hacker specifically.

In each period, the figure of the hacker can be seen to enact three central things. Firstly, the hacker claims status as a figure concerned with recrafting notions of human subjectivity in relationships with contemporary technologies, but this telos works instead to recuperate a dualistic notion of transcendental, essential human control of the technological other—thus further reiterating the distinction rather than collapsing it. Secondly, this act of subjective reiteration is a gendered one, mediated by the male hacker and coded in a way that excludes women from active roles as users of technology, forcing them into the object position alongside the technologies being 'used'. Feminine 'versions' of technological/intellectual inquiry are subjected, and this manifests in the rejection of women as hackers and a feminisation of the language of risk associated with computers. Both of these features of the hacker manifest, primarily, in a representation that performs a continuous and unbridled loathing for the organic body and its supposed inadequacies (as demonstrated, too, in the representation of the avatar as a means of 'escape' from that body). Finally, the hacker projects an image of political rebellion, but always ultimately reasserts the authority against which it claims to rebel: a strong figure of hyper-individual masculine control at the technological interface becomes instead a node in the project of re-rationalisation and stabilisation of capital gone increasingly global and permeable in the "common language" of its digital mode (Haraway 1991: 164).[57]

What this chapter does not do is try to 'recoup' the hacker in any way, or produce an account that assesses how realistic the cultural portrayal is of the hacker—there are some existing texts that seek to unravel or challenge the admittedly reductive image of the 'criminal' computer hacker and the moral panics surrounding it.[58] My intention here is to

[57] See my examination of the permeating, literally liquefying effect of technologised global capital in Chapter Three.

[58] For this kind of account of the hacker in particular, see Douglas Thomas's *Hacker Culture* (2002). Its main argument is that the hacker is portrayed by the media and pop culture either as a dangerous, criminally malignant "magician", or a temperamental, childish vandal,

demonstrate the culturally normative function of the hacker figure as, rightly or wrongly, it is popularly depicted in texts (fictional or non-fictional) that deploy that figure. I show that the hacker, as one of the most recognisable figures of the meeting between the human and contemporary digital technologies, embodies a function that has remained a conventional, normative one, maintaining and reiterating narrow, dualistic and (thus) exclusive liberal humanist definitions of the human even while claiming to disrupt them, continuing to help this attitude towards technological embodiment permeate technocultures to the present day. The hacker rejects any version of the cyborg or the posthuman that does not reinscribe that dualism between mind and body—Haraway's vision of the "permanently partial" entity is never ratified by the hacker (1991: 154). Instead, it uses the technological interface to dramatise, respectively, (feminised) technological threats to the boundedness of the masculine human subject, and the subsequent containment of those threats by a suitable rational agent.

A Patina of Doughnut Glaze

In examining the hacker's first real popular incarnation—moving from being a figure known only to specialists within certain scientific disciplines to a far more mainstream instantiation (in a manner echoing the shift of cyberpunk aesthetics from cult readerships to the relative mainstream)—along with the majority of extant critical work on the hacker, I focus upon several (interrelated) features: the hacker figure's ambivalent

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whereas more realistically the hacker is a less dramatic and less powerful figure, existing somewhere between the respective polar myths of criminal intent and liberatory, revolutionary bombast. Thomas negotiates hacker discourse to produce a reading of the hacker that isolates a more balanced view of its role in technoculture. It is very useful as both a factual resource and an analysis of the hacker figure in terms of its status as a concept, working primarily with hacker texts (e.g. *2600* and *Phrack*). However, the project's remit – to "determine what hacking is and what hacker culture looks like" (9) – does not require it to address in any detail the basic question of the nature of the hacker body or the modes of thought that underwrite (and by which are underwritten) dualistic conceptions of subjectivity. Hafner and Markoff, whose work I examine in this chapter—produces more subtle and contextualised accounts of the lives and aims of individual hackers, seeking to recoup each as a person rather than a stereotype (though their account is still ultimately coded as a cautionary tale about hackers' criminal potency).

tendency to perform a 'revolutionary' vision of (dis-)embodied subjectivity whilst simultaneously recuperating the mythological solidity of the humanist subject; its gender coding of this transaction (incorporating the abstraction of any failure of the transaction onto 'unstable' feminised bodies), and its own brand of fractured postmodern liberatory politics, which almost always ends up ratifying and reinforcing the very multinational corporate capitalist systems supposedly being resisted.

The essential mind's escape into cyberspace in Gibson's novels—as well as its use of the avatar to seize control of the danger of alternative embodiment—is, in one sense, summative of the hacker's attitude to the body, and the enduring influence of cyberpunk on subsequent representations of such figures.[59] Indeed, much of the limited amount of critical and theoretical writing on the hacker focuses, perhaps unsurprisingly, upon its representation in the media and in cyberpunk fiction (and, in particular, in Gibson).[60] However, the origins of the hacker overflow the Sprawl Trilogy and cyberpunk in general. Insofar as fictional and non-fictional accounts of the hacker figure co-substantiate (particularly in the 1980s), it is necessary to move between fictional *and* non-fictional hacker depictions to trace its embryonic figurative shape in this period.[61] To

[59] Many of the features of the Sprawl Trilogy's hacker bodies and their logic of identity are examined in my chapter on the avatar'. The hacker and the avatar are intimately connected in a relationship of co-substantiation: the hacker's body is an important correspondent in the offline/online relationship that necessitates the avatar, with the avatar constituting the hacker's idealised, impermeable virtual body in cyberspace.

[60] The hacker figure itself is not often interrogated in depth, in its normative function or otherwise. However, critical work that touches upon the role of the hacker includes Andrew Ross (2000), who interrogates moral panics around computer viruses and hackers as their vector of infection, and Sobchack (2000), who interrogates the apparently failed subversive politics of hackers. In terms of feminist work that examines hacker figures as part of its project, Heather J. Hicks (1996) interrogates the writing of female bodies in stories by Gibson and the work of James Tiptree Jr. (who is a female writer with a male pseudonym) and Squires' already-mentioned article the promises of cyberfeminism critiques the adolescent male hacker figure to some degree. A. Susan Owen *et al*'s *Bad Girls: Cultural Politics and Media Representations of Transgressive Women* (2007) has a chapter on "hacking women" that touches on *Hackers* and *The Net*.

[61] My method of examination differs slightly in this subsection: I must draw together here several examples of the fictional and non-fictional in this crucial establishing stage of the hacker, as well as the bulk of the critical and theoretical material. However, with this established,

uncover the normative character of the hacker figure in this first popularly recognisable form during the 1980s, I draw together the common features of its literary representation by key cyberpunk voice Bruce Sterling, its depiction in the film *Weird Science* (and others), and its description in the non-fiction book *Cyberpunk: Outlaws and Hackers on the Computer Frontier* by Katie Hafner and John Markoff (1991).[62]

Bruce Sterling's celebratory preface for the classic cyberpunk short story collection *Mirrorshades* (1988) positions the hacker as a crucial cyberpunk representative, comparing it (of course, him) to the rock star (xii). This feverish essay is dualistic even as it claims to eschew categorical, bodily boundaries:

> Certain central themes spring up repeatedly in cyberpunk. The theme of body invasion: prosthetic limbs, implanted circuitry, cosmetic surgery, genetic alteration. The even more powerful theme of mind invasion: brain-computer interfaces, artificial intelligence, neurochemistry—techniques radically redefining the nature of humanity and the nature of the self. (xi)

Sterling's respective descriptions of "body" and "mind" invasions set out both the apparent vision of radical subjective reconfiguration and the inevitable retreat to Enlightenment logic driving cyberpunk's hacker philosophies. Drawing a line of distinction between the two respective modes of invasion both reiterates a radical division in the first place and implicitly privileges the transformative power of

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I am able in the ensuing sections to use this as a basis to make deeper analyses of individual key fictional texts—which is where this vision of the hacker thrives most strongly in contemporary popular culture.

[62] Here is one moment where my rough division of these periods shows its ragged edges: while this subsection addresses hackers as perceived in the 1980s, this book was published in 1991. Nonetheless, it accounts for hacking activity taking place mainly in the early-mid 1980s, depicts hackers active during that period, and certainly comes before the moment (discussed presently) where the hacker is repackaged aesthetically by the Hollywood film industry (while remaining conceptually intact). As such, despite the date of its publication, the text fits squarely into a mode of discussion about the hacker that is very much rooted in discovering and representing its earliest popular (i.e. 1980s) incarnation.

interventions in the "mind", which *is,* for Sterling, the "nature of humanity and the nature of the self". While the body and the mind *may* be invaded, changed, or reconfigured, to radical degrees, each is not a correspondent in the substantiation of the other: they are separate, and do not (or should not), in themselves, cross over. As seen with the avatar, and the separation of the mind from the body dramatised by ascendance/transcendence into cyberspace, this is an understanding of selfhood borne out by the major cyberpunk narratives and characters: *Neuromancer*'s Case is, again, an obvious touchstone. Being a figure of potential vulnerability to the crossover of the digital/technological other into the 'real' self, his strategies for ensuring the survival of his discrete subjectivity even in the face of radical technological change mark him as the idealised negotiator of the relationship between humans and technology.

Cyberpunk fiction represents the more extreme end of the spectrum of representation of hackers, and dramatises mind/body dualism in the most radical ways, and while the hacker arose near-simultaneously in fiction and the real world, this particular and dualistic relationship between mind and body exists as the basis of all ensuing popular representations of the hacker. While *Neuromancer*'s dramatic science fiction future allows a radical ignoring of the body in favour of releasing the "abstract, disengaged soul-pilot" vision of the mind (Davis 2002: 12), we can see the same process at work in the comparatively mundane image of the hacker that was rooted in real technocultural activities contemporary to the 1980s. Unable to ascend literally into cyberspace via neural interface, the hacker figure nonetheless maintains the same logic—but it substitutes the mind's literal escape from the body with an everyday disavowal of, and *loathing* for, the body—expressed through a steady programme of mistreatment and/or over-satiation of its needs and desires. And, as with the avatar, the logic of identity that establishes the boundaries of the successful hacker does so on the basis of judgements about an

individual's ability to disavow the body in this way—and these judgements are gender-coded.

A somewhat standard description – even stereotype – of the body of the hacker based more squarely in reality can be found in almost all early fictional and non-fictional texts describing hackers. Deborah Lupton's writing on the body of the computer user advances an effective summation of this image: "In sharp contrast to the idealized clean, hard, uncontaminated masculine body of the cyborg as it is embodied in the *RoboCop* and *Terminator* films, this type of computer body is physically repugnant according to commonly accepted notions of attractiveness." She goes on to note that hackers might be lauded for their intellectual abilities ("their 'brain' or 'software'") but their bodies are derided:

> 'computer nerds' or 'hackers' are invariably male, usually in their late adolescence or early adulthood, and are typically portrayed as social misfits and spectacularly physically unattractive: wearing thick, unflattering spectacles, overweight, pale, pimply skin, poor fashion sense. Their bodies are soft, not hard, from too much physical inactivity and junk food. (2000: 481)

For Lupton, some texts depicting the human/machine interface produced figures like the hardened hypermasculine cyborg to resist the bodily subjective indistinctions of a shifting and potentially disruptive relationship with technology, but the hacker figure represents a kind of mundane real-world opposite, emblematic of, rather than reacting to, the problem of boundary 'softness' presented by intimate relationships with computers. Despite the hyper-rational possibilities of cyberspace itself, the bodily "softness" created by intimacy with computers is feminine-coded. In 1990s and 2000s hacker representations the ambivalence between the desire to inhabit technologically-mediated 'spaces' and the need to ensure that this transaction remains a decision made by a free-

willed mind-self, with the (feminine) spaces themselves remaining passive recipients of (masculine) action.

The clearest examples of the hacker's softened, awkward body can be found in Hafner and Markoff's descriptions of notorious real-life hacker Kevin Mitnick and his friend Roscoe. Descriptions of their physical bodies are almost always framed within a disdain for their terrible fashion sense and diet:

> Roscoe's appearance was surprisingly neat, but there was something amiss: his pale blue polyester pants with a slight flare at the bottom, and his dark polyester print shirt with an oversize collar, were already at least five years out of date [...] Roscoe lived on junk food, as did, it seemed, all his fellow phreaks. A patina of doughnut glaze frequently rested on Roscoe's lips. In the afternoons, Roscoe moved onto Doritos and cheese-burgers. (1991: 35)

It is also present in the first account of Mitnick's appearance: "[The] plump and bespectacled Kevin Mitnick [...] was the kind of kid who would be picked last for a school team. His oversize plaid shirts were seldom tucked in, and his pear-shaped body was so irregular that any blue jeans would be an imperfect fit" (31). This sense that Mitnick was failing to engage socially as a result of his inadequate body is compounded further in this account of the young hacker's encounters with law enforcement agencies: "Mitnick was on juvenile probation for breaking into other computers [...] in spite of Kevin's cool reaction [...], his fear of getting caught was so profound that it gave him heart palpitations so severe that he would soon have to depend on heart medication usually taken by people three times his age" (91). These excerpts show the ways in which the bodies of hackers are always expected to 'fail' them. This engenders both the reason for and mode of escape into the self-constructed headspace of embryonic real-life computer networks: the disavowal (and often loathing) of those bodies.

As Lupton outlines, the stereotype of the overweight or inordinately skinny hacker, pasty and acne-ridden, with poor fashion sense, unable to relate to the opposite sex is clearly most often not a prompt to dismantle the cultural myths underscoring the *reasons* for such body-centric social marginalisation, but to seize upon a new territory in which their marginalised body does not matter (and can continue to be kept quieted by junk food, drugs and pornography), and all of the trappings of viable embodied subjectivity can be reproduced on the hacker's own terms in the supposedly self-crafted mind-space of the electronic interface. I argue that this goes a step further: the near comical fantasies of power reproduced in Hafner and Markoff's book suggest a *direct* correlation between this weakened, unfinished body and the defiant demonstrations of potency nevertheless possible as a result of the virtuosity of the mind inhabiting it. One hacker is reported to claim that "given the right information, one pimply adolescent scrunched into a phone booth with a terminal and a modem—and *certainly* Kevin Mitnick—could set off the necessary chain of commands to release hundreds of missiles from their silos and send them hurtling across the globe" (Hafner and Markoff 1991: 65, emphasis in original). This specific fantasy, of course, is reflected in the film *WarGames*, which depicts a lone hacker accidentally beginning the countdown to nuclear Armageddon with his home computer and crude acoustic coupler modem.

There is also a depiction of a female hacker in Hafner and Markoff's account that is emblematic of a relationship between women, hacking and digital technology in general that continues throughout almost all cultural representations of the hacker: female hackers, unlike their male counterparts, are not driven by rational curiosity, but by the incorrigible piques and desires of their unruly and overdetermined bodies. Similarly, the "real" source of their hacking ability resides in this embodied power, beyond their full

mental control. While Mitnick, Roscoe and others are seized by insatiable intellectual curiosity, their contemporary and (former) friend Susan Thunder is motivated to her own (nonetheless impressive) hacking exploits by an emotionally twisted need to get revenge on Roscoe for spurning her romantic advances: "by rejecting her so heartlessly, Roscoe was inviting trouble […] he had yet to experience Susan's dark side" (34).[63] Foregrounded, too, is the putatively feminine character of her "hacks". Even Roscoe's brand of social engineering (the conventionally more "human" element of hacking whereby individuals are manipulated to gain passwords and so forth) is systematised and rational: he keeps careful lists and ledgers of various employees he has called at different companies, their roles, and what information he may be able to acquire from them. Susan Thunder's mode of acquiring information, though, is more familiarly feminine-coded:

> What she couldn't supply in technical knowledge she compensated for with other skills. One of her methods was to go out to a military base and hang around in the officers' club, or, if she was asked to leave, in bars near the base. She would get friendly with a high-ranking officer, then go to bed with him. While he was sleeping, she would search through his personal effects for computer passwords and access codes. (30)

Thunder's mode of hacking is rooted in her ability to seduce men. Much is also made of her job in a "bordello" called the "Leather Castle" (52), and her attendant services as a sex worker. Elsewhere, too, Thunder is described as "obsessed by her desire", (41) "ever the seducer" (55), "antagonistic and haughty" (57), and so on. The gender coding of hacker selves is clear here: Mitnick and Roscoe's hacks are guided by curiosity and rational interest; attempts to *overcome* the limitations of their junk-saturated bodies.

[63] These are, of course, reports of true events, and the authors cannot be blamed here for reporting the *facts* of Susan Thunder's actions. However, her representation here *as a hacker* is very different to the representation of Mitnick or Roscoe, and is framed in such a way that separates 'versions' of hacking into domains expressed in terms of masculine and feminine coding.

Thunder's hacking, however, is *rooted* in her body, reliant upon it, and subject to the overflows and overdeterminations of its (sexual) bodily desires. This encoding of the feminine body as only capable of an emotional, indistinct, irrational kind of hacking, in opposition to the masculine clarity of male hackers, maintains its cohesion through almost all ensuing representations of the hacker.

We see less drastic but still pervasive and convincing examples of both this continual hacker frustration with embodiment and the feminine coding of that embodiment within a number of films, too. Appearing at a moment of renewed nervousness about nuclear war in the United States (hawkish heads of state took power on both sides of the Iron Curtain: Ronald Reagan in January 1981, and Yuri Andropov in November 1982), *WarGames* is critically celebrated for its enunciation of crises about artificial intelligence, the futility of nuclear conflict, and the slippage between the real and the simulated in computer-mediated transactions.[64] In the film, the young hacker David Lightman inadvertently hacks into a United States defence computer at NORAD while trying to find new computer games to play. Initiating what he thinks is a simulation, he makes the computer believe that the Soviet Union has launched a massive nuclear attack on the United States. What the film's central hacker figure shows most prominently is another male hacker whose bodily needs are more or less abandoned in pursuit of the 'higher' calling of projecting his consciousness into the task of hacking, an over-lively computer that needs re-subjecting into a passive position, and a firmly gendered understanding of who qualifies as a legitimate user of such technologies. Like many hacker figures, David eschews sleep, guzzles cans of Coke in front of the monitor, and laments his lack of physical fitness (he expresses his regret late in the film that he "can't swim" because he "never got around to it"). The immediate needs of David's body are temporarily sated

[64] See my discussion of "artificial belligerence" in Chapter Five on the caring computer.

with the cheapest, most synthetic of nourishment as the hacker continues to push his consciousness into cyberspace. He is bored and unchallenged by his schoolwork, and only interested in the detective work of finding ways into computer systems, reordering the conditions of his offline life from the abstract online plane. *WarGames* helps stabilise the image of the hacker in some very tangible ways: as mentioned, real-life hackers were intoxicated by the film's image of the potency an expert individual could have within a computer system, and drew inspiration for hacking practices from the occasionally quite realistic depictions of such within the film. It also, though, helps to congeal the figure of the male hacker and his particular mode of engaging with both systems and with women, which he treats almost equally. *WarGames* initiates an ongoing cinematic motif that positions women as well as computers as the targets of 'hacking': the plot trajectory that sees David end up with love interest Jennifer involves his hacking school computers to impress her by improving her poor grades, and playfully flirting with the idea of a romantic trip to Paris by making seat reservations for the two of them with a major airline.[65]

These are, though, minor incursions compared to the hyper-gendered depiction of hacking seen in the film *Weird Science*.[66] In this comedy, two unpopular teenagers, inspired by *Frankenstein*, use a computer to literally *create* a beautiful fantasy woman. Their original intention of a two-dimensional simulation of a woman—"we can *use* it, we can ask it questions, we can put it in real life sexual situations and see how it reacts"—soon

[65] There is also both an absence and a failure of the familiar countercultural politics of the hacker in *WarGames*: firstly, David acts completely alone, in the absence of hacker communities. Secondly, the film's apparent anti-nuclear message actually does much to recapitulate the standard doctrine on nuclear war: the WOPR war computer's eventual discovery that "the only winning move is not to play" reinforces rather than unseats the logic of mutually assured destruction, and reassures that a rational subject would never initiate such a conflict.

[66] Jonathan Bernstein locates *WarGames* and *Weird Science* as part of a short "teen science cycle" of films that emerged in the 1980s: films about teenagers where science fiction plays a major part in propelling the narrative (1997: 128). For more on the collision between coming-of-age narratives and technologies, see Andrew Shail and Robin Stoate (46ff).

succumbs to function creep, and they find themselves hacking into distant and mysterious computer databases, feeding cutouts of body parts from magazines into a scanner, and eventually strapping bras to their heads and hooking up a *Barbie* doll to the computer while chanting gibberish incantations. Appropriately, this mode of construction begins with their sitting in front of the computer screen and deciding, with the help of a wireframe diagram, how big her breasts should be: "anything more than a handful," suggests project mastermind Gary to timid hacker Wyatt, "and you're risking a sprained tongue". The chaotic power of "Lisa", though, once she is rendered flesh and blood (by a lightning strike to the house, again evoking cinematic depictions of Frankenstein's monster), suggests the danger of the computer's potential overextension into reality. While her behaviour is essentially benevolent, intended to guide the teenagers through their coming of age (and find them conventional girlfriends), she is a figure of threatening, magical power, able to bend reality according to her whims and piques. Overall, this *ex nihilo* production of a woman within cyberspace (there is a very Gibson-esque moment of kinesis through a computer-generated space in Wyatt's first hacks) sums up the hacker attitude to both technology and women: they are objects to be investigated, controlled, and, if necessary, built from the ground up if their threatening reality does not meet the required specifications.

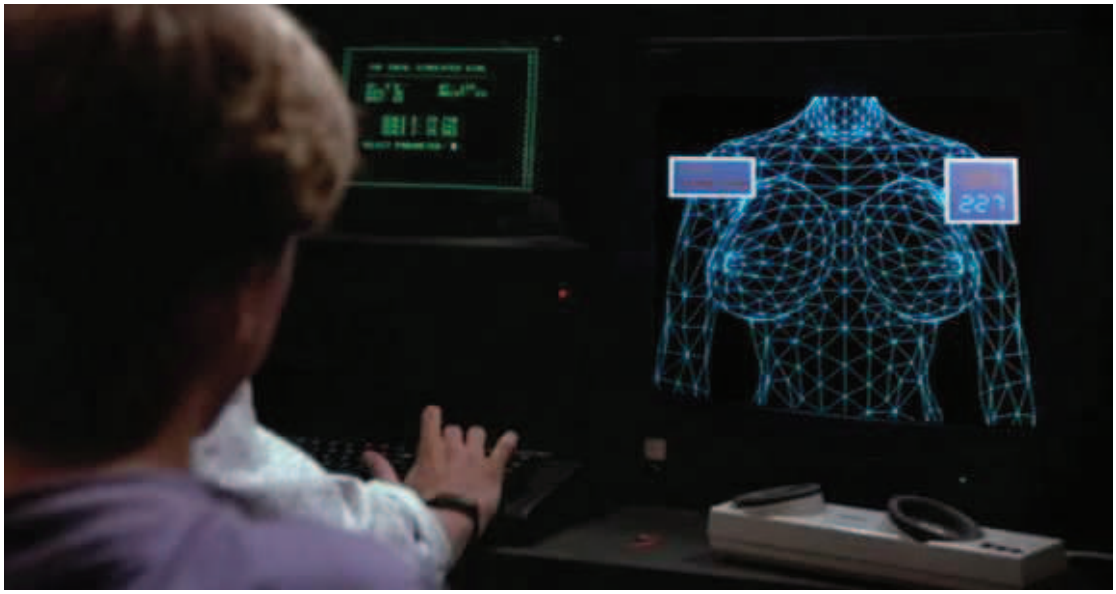

Fig. 4. Gary and Wyatt select Lisa's breast size in *Weird Science*.

Like all the examples I examine in the remainder of this chapter, the first cluster of representations of the hacker here—in both fiction and non-fiction of the 1980s—renders a character who seeks to use computers to access a space in which his subjectivity is viable and 'hard' rather than flabby and soft. This space itself is feminised, and the literal practice of hacking overlaps into the women in the lives of the hacker figures, in an effort to subject and control both. As apparently physically and subjectively subversive the behaviour of the hacker in relation to technology may seem, this, of course, does nothing to disrupt the categories that originally forced them to the margins in the first place. In fact, the possibility that unconventional subjective alliances may be forged—such as those between women and technology—is, as demonstrated in representations of the female hacker, actively contained by the plethora of discursive tools available for rendering feminine versions of rationality inadequate or aberrant.

Sweet Machines

This section examines the hacker figure in the 1990s, and the (failed) attempts to reconfigure or expand the category of subjects comprising viable hackers. There is a

relative absence of literary representations of the hacker after the end of the 1980s, and a notable turn to visual representations within major mainstream (mainly American, Hollywood) films: *Sneakers*, *Jurassic Park*, *Goldeneye*, *Hackers*, *The Net* and *The Matrix* all foreground hackers as major characters, whereas notable literary representations are limited to Stephenson's *Snow Crash*. One broad reason for this may be that film more easily reflects a change in the way computers were beginning to be used in the 1990s: the appearance and rapid adoption of Microsoft's *Windows 3.0* (1990) and *Windows 3.1* (1992) substantiated a widespread shift away from command-line (text-based) input to computers and towards Graphical User Interfaces (GUIs).[67] The relatively sudden shift to a visual/pictographic/iconic approach to computer use, along with the ability for computers to multi-task convincingly for the first time, registers in an equally visual way in cinematic depictions of the experience of using computers. Despite these cosmetic differences, though, the hacker figure continued to embody its normative function at the interface between the human and digital technologies—a function that maintains its dualistic, Cartesian character even as that dualism is rediscovered over and over again in the hacker's forays into cyberspace, keeping digital technology in its putatively rightful place as an object of invention rather than an agent of substantiating influence, and limiting access to the privilege of being a hacker. The hacker as it develops through the 1990s demonstrates a number of apparent attempts to overcome the ingrained stereotype, but also the eventual failure of each to do so, except in the most superficial of terms. Hacking remains a predominantly (even exclusively) male activity, and even within that category male hackers are an intellectually and materially privileged minority. This raising of an alternative character to hacking (i.e., the possibility that women could be

[67] *Windows* was not the first GUI – it competed, as it does now, with Apple's *MacOS* software, as well as other operating systems that have since disappeared (such as *AmigaOS*). However, *Windows* was the most successful GUI at the time: by 1993, the total number of registered *Windows* users had reached 25 million (computerhope.com n.d.).

hackers) followed by the undermining of those individuals mirrors the evocation and ensuing containment of the disruptive potential of the human-technological interface.

Of the films mentioned above, it is *Hackers* that demonstrates most clearly the gendering of hacking. The film depicts the life of Dade "Zero Cool" Murphy (Jonny-Lee Miller), convicted of serious computer crimes at the age of eleven and disallowed from using computers or touchtone telephones until he is eighteen. Dade moves from Seattle to New York, and makes a new group of hacker friends, with whom he foils the conspiracy of an oil company's corrupt system administrator—"The Plague"—to steal money from the company (as well as use a computer virus to capsize some oil tankers as a smokescreen). It also follows Dade's attempts to 'get a date' with the film's female hacker figure, Kate "Acid Burn" Libby (Angelina Jolie). Iain Softley's 1995 film bids to escape the stereotypes of the unsexy, perpetually male hacker body, and rather embraces the hacker's counterculture fantasy of a new order of social freedom and potency. As well as employing a fast-paced, colourful visual style and contemporary electronic rock soundtrack, and making its heroes more fashionably-dressed, fast-moving (rollerblading) members of a socially diverse community of hackers, *Hackers* also depicts a putatively skilled and powerful—and not to mention assertive—female hacker figure. Significantly, however, *Hackers* fails in its attempt to expand the remit of the ideal hacker figure to include previously excluded subjects—the film fails to make any fundamental breaks with the androcentric conceptual underpinnings of the particular understanding of the body on which this figure relies.[68] *Hackers,* despite its superficially socially pluralistic approach

[68] The first film to make any significant progress in representing the successful hacker as anything other than white and male is almost certainly *The Matrix*: Trinity is a female hacker of tremendous skill and ability. This representation, though, is still problematic: while embodying the culmination of 1990s attempts to package the hacker as a subversive, post-prejudicial manipulator of digital information, existing outside of normative networks of power and influence, *The Matrix* still fails ultimately to get beyond a very conventional and androcentric view

to cyberculture, participates in a mundane reiteration of a relationship between mind and body that privileges once more the former, and does so in a way that necessarily denigrates the body, and particularly the female body. The male hacker is still a mythically-unique and providentially-enabled manipulator of technology, the latter remaining (like conventional views of cyberspace itself) a feminised and passive agent, the object of rational creation and/or ordering. Similarly, the organic body is something to be managed or quieted with junk food, caffeine and nicotine, with kinesis/speed privileged as the only acceptable mode of being when one must inhabit the physical world. Women may be hackers too, in this world, and may even appear skilled, but they are emotionally or physically compromised, and always subject to become, at best, the sidekicks of the true (male) hacker virtuosos—as well as, at times, embodying (literally) a threat to the rationality of the male hacker. In harnessing, too, the vague, nihilistic 'anything but this' countercultural politics of the disaffected middle-class Western teenager of the 1990s, its implied critiques of the runaway nature of corporate capital end up restating and armouring the legitimacy of those structures, with resistance by hackers demonstrated not as resistance to runaway capital itself, but only to those corrupt individuals who criminally misuse the system.

Hackers effects a persistent symbolic entanglement of computers/digital space and women's bodies, with both comprising the objects of discovery and the passive recipients of masculine intervention or interrogation. The film's *mise-en-scène* is replete with the lurid eroticisation of the hacking experience. Posters declaring the value of a specifically masculine potency in the domination of technology assert that "information is penetration", and implore readers to "trust [their] technolust". The Plague, too,

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of the ideal hacker hero figure. See p. 66 for a discussion of Trinity's steadily-compromised and increasingly conventionally-gendered role in *The Matrix* trilogy.

frequently invokes sexualised metaphors of the penetration of a passive body for hacking: "I disguised myself as an Alabama state trooper and penetrated the FBI NCIC". "Hackers," he remarks in another scene, "penetrate and ravage delicate private and publically owned computer systems, infecting them with viruses and stealing materials for their own ends". There are further, even more explicit entanglements of women and technology: a scene where Dade and his hacker friends crowd around Kate's expensive and powerful laptop computer is particularly redolent of masculine hormonal desire. Multiple (mostly technically nonsensical) "stats" about the laptop are shared in hushed tones of awe, before exclamations emerge such as "oof, I want it!" and "I want it to have my children, man!". Coding technology as a feminine object to be penetrated, controlled or obtained, many of the film's male hackers also invert the operation of that metaphor, as they participate in the project of "hacking" women. In one party scene, Dade's hacker friends see a young woman dancing. One hacker (named "Lord Nikon") immediately reels off her full name and address, obtained illegally by computer hacking. He uses this information to attract her attention. In a similar moment, happening immediately after the group of hackers has crowded around the laptop, they see Kate and her boyfriend starting to kiss intimately on the nearby bed, while they are still in the darkened corner of the room.[69] The exchange, which circulates between the hackers, reduces sex to a computer game, with Kate's male partner as the player in question, whose prowess they admire: "Was that her top?" "One-handed." "Difficulty rating?" "Seven". [70]

[69] This teenage voyeurism by a group of hackers recalls a similar moment in *Sneakers*, where that film's group of hackers take turns watching, through a telescopic lens, a hacking target having sex.

[70] While beyond the parameters of this argument, one area of work on hackers might considers the comparisons between computer hackers and the activities of so-called "Pick-Up Artists"; communities of men who claim to be able to use psychological tricks and neurolinguistic programming to persuade women to have sex with them. The resonance between these practices and the practices of hackers, with women being the objects of a structured and almost mathematically-calculated programme of interrogation and decoding, is striking—as is their heavy proliferation on the Internet (Chivers 2010).

Figs. 5 and *6*. The hackers of *Hackers* awed by a laptop, and then by the prowess of Kate's boyfriend.

Dade is not above such remarks, either. As we first view Kate through Dade's eyes, her intended androgynous look is undermined immediately by his tendency to subsume her into a highly gendered discourse of media consumption. When Dade meets Kate, the scene flickers suddenly through a sequence of near-subliminal cuts to highly sexualised images of women from comics and films. In a precursor to the hackers' video gaming metaphors for sex, one of Dade's first 'victories' over her is beating her at a virtual reality game, after which he observes, "looks like I'm on top". Similarly, when Dade gets his revenge on Kate for her early prank (she fools him into locking himself on the school

roof in the rain), he does so by hacking the school's computer systems and causing the fire sprinklers to activate: the hackers are delighted to see drenched women bouncing through hallways in increasingly-translucent white t-shirts. Kate's tough image is replaced with a dishevelled, dripping one.

In turn, the equation of women with technology maps onto the hacker figure's need to be someone who *cannot* be controlled in that way: as seen with the deployment of the avatar as a kind of 'one-way valve' for the disembodied mind-self to enter, inhabit and act within a cyberspace, the male hacker does not wish to ever be the *object* of such penetration himself. The male hacker, in other words, must not end up tied into the object position in the logic of otherness that he uses to define both the computer and the woman. Women's bodies are thus often written to constitute a considerable threat to the rationality and stability of the hacker subject—a threat requiring containment.[71] We see two dream sequences in *Hackers*: Dade dreams of sex with Kate, and she dreams of sex with him. However, these scenes are coded very differently. In Dade's dream, Kate enters Dade's room and starts kissing him—but both are then arrested by secret service agents. Dade wakes up in horror. Kate's dream, however, is just of sex, has no appreciable narrative trajectory outside of the intimate contact itself, and when she wakes, she gives a coy grin of enjoyment in the darkness. In another moment of female liability to the hacker's rationality, The Plague uses Dade's mother as a vector for manipulating him, using the spectre of her bodily vulnerability to force him into acquiescence: he tells the young hacker that his "mom will be arrested at work, she'll be

[71] There is some suggestion that Dade's proximity to potentially over-permeable digital technologies risk effecting his exclusion from the heterosexual matrix in which he is expected to locate himself: early in the film, his mother asks him sarcastically whether he is up all night playing with his computer "or playing with himself"—following it up by asking him to reassure her that "he likes girls". This scene is one of several evoking the pressure that Dade is under to fulfil his coming of age: inexplicably, Dade responds to his mother's later question as to whether he is behaving on the Internet with "Yes, mom… and I'm still a virgin!".

handcuffed, and later strip-searched" (notably, a very similar threat is levered against Y.T. in *Snow Crash*).[72] In fact, despite the meshing of the risk/allure of women and technology, there are really no women in the film (except Kate) who understand technology to any great degree. Even Margot Wallace, a system administrator and The Plague's partner (in both crime and socio-sexual congress), parrots The Plague's technical terminology frequently and uncomprehendingly while he hacks, and seems to have little understanding of what he is doing in most cases.[73]

Ultimately, female hackers are portrayed as ultimately just not as good as male ones, unable to conquer or read masculine figures, and are, in narratives such as *Hackers*, eventually subsumed into conventional feminine roles, which are coded as inevitable (to the extent of being dictated by fate or providence). Not only does Dade beat Kate frequently 'at her own game' (which ends, ultimately, with Dade 'winning' Kate—and insisting that she wear a dress on their eventual date) we are always arguably expected to know that Dade's talent exists on a different level to hers.[74] Narrative trajectories assure the quasi-mythical nature of Dade's ability (a motif borne out far more explicitly in *The*

[72] There is also a scene in *Sneakers* that pays lip service to the idea of an intelligent and rational woman, but only harnesses, in the end,4 the putative danger of women's bodies to the rationality of the hacker. Protagonist Marty's ex-partner Liz is set up early in the film to be intelligent—he goes to her for help understanding the work of a brilliant mathematician/cryptologist –but she is only ever ultimately used to gain access to a building by seducing an awkward ("computer dating") programmer. She is valued narratively only for her ability to pollute the hyper-rational subjectivity of a computer scientist; any power she has within the text is rooted in her body and tied to her putative sexual allure.

[73] The character of Margot Wallace is another example of a failed powerful woman – an executive at the oil company, she is in collaboration with The Plague's project of stealing money from the company. Uncomprehending and confused for most of the film, with little of an active role of any visible kind, her fall is implicitly linked to her attempt to embody a masculine controlling role: her supercomputer administrator password of "God", for instance, recalls a hacker's earlier assertion in the film that "system operators love to use "God"... it's that whole male ego thing". It is difficult to escape the conclusion that she is punished here for her claiming of that title without having the (inherently masculine) intellect/hacking talent to back it up.

[74] Owen *et al* highlight in this moment a self-undermining impersonation of progressive gender politics that reflects countless such illusions in hacker narratives: "though the script makes a gesture towards gender equity by Kate insisting that if *she* wins, *Dade* will wear a dress on their date, this would not actually have achieved equity if she had won: a dress on him is a joke; on her it symbolizes the recovery of her femininity" (2007: 78).

Matrix, where Neo is literally deigned by fate to save humanity). A prologue set in 1988 shows the trial at which Dade was convicted as a child: the shot pans slowly across the faces of several serious-looking lawyers and legal officials (this while charges are read out referring to hacking crimes of considerable virtuosity, perpetuated by "a superior intelligence") before ending in empty space, and then shifting downwards to the young Dade. Foregrounding Dade's early talent in this way marks him as prodigious, the rightful owner and bearer of the hyper-rational practice of computer hacking. A later scene where Dade finally proves his unique ability comes when he is the only one capable of decoding a "garbage file": his moment of realisation comes during a montage where the other hackers, Kate included, are restless and chaotic around his calm, brooding figure. While this continues, glowing mathematical formulae swirl around Dade's head: his form of hacking is a transcendental experience, interfacing with the purity of digital data, ordering the chaos of signs into evidence for The Plague's conspiracy (*Fig. 7*).[75] Where Kate has previously been seen to be the "elite" hacker of the group, this moment proves Dade's supremacy in a kind of dramatisation of techno-enlightenment to which the other hackers do not have access.

[75] Again, too, hacking depicts computer space here as a Euclidean plane, into which the rational mind-essence is projected, and for which only certain subjects are suitable for/capable of penetration. *Hackers* sets up immediately a familiarly cyberpunk relationship between cyberspace and the city: in a deliberate obfuscation between urban and electronic spaces reminiscent of images seen earlier in *TRON* and described frequently in Gibson's novels, the film's title sequence depicts Dade flying over New York in an aeroplane, with the cityscape fading seamlessly into the image of a printed circuit board. Indeed, the film is knowingly reminiscent of cyberpunk, and makes explicit references to Gibson's work in particular: "keyboard cowboys" are mentioned at one point, and antagonist The Plague's supercomputer is "a Gibson" – the most powerful and desirable brand of computer in the *Hackers* universe.

Fig. 7. Dade 'ascends' into the hyper-rational mind-space of the mythical hacker.

Hackers is also a powerful example of the failed subversive politics of the hacker. As Sobchack points out in her reading of *Mondo 2000*, a glossy hacker magazine established in 1989 and published until 1998, the startling revolutionary claims of 1990s hackers are undermined frequently by a reductive tendency to repeat existing patterns of social power:

> This bumper-sticker libertarianism is neither progressive nor democratic [...] A list of features of the 'cyberpunk worldview' includes, at most, the notion of 'small groups' as in: 'Small groups of individual "console cowboys" can wield tremendous power over governments, corporations etc. [...] Its dreams of personal freedom and its utter faith in self-help are grounded in privilege and the status quo: male privilege, white privilege, economic privilege, First World privilege. Its dreams are grounded in the freedom to buy, and—especially—the freedom to sell. (145)

Such collapse of large-scale revolutionary claims of freedom into Reaganite individualism is a recurring pattern in hacker fictions. Apparent moments of social activism give way quickly to more selfish, even childish priorities. Like *WarGames*' David Lightman, *Hackers'* Dade is a brilliant but conventionally underachieving hacker, who, before the

film's conspiracy envelops him, focuses his talents upon playing pranks (e.g. he hacks a local TV station ostensibly to stop the ranted screeds of a racist politician, but this is replaced only with an episode of *The Outer Limits*). Dade's hacking endeavours are rebellious, but, in general, harmless. The film takes pains to ensure that Dade's future trajectory—working within the conventional system of corporate enterprise against which he bucks so superficially as a teenager—is evoked as frequently as possible: beyond the potential environmental disaster of the virus-infected automated oil tankers, one of the film's main sources of peril is the possibility that Dade will not "get into college". The film's only two relatively chaotic and socially subversive characters–Razor and Blade, media hackers and video artists—are, too, set upon a vector that sees their teenage rebelliousness commodified and resold: a major television network is said to be negotiating with them to purchase their erstwhile 'underground' show. Frenetic and disruptive hacker "Cereal Killer" invokes a "higher purpose" when trying to get Kate and Dade to work together to get their friend "The Phreak" out of prison, citing "a wakeup call for the Nintendo generation... we demand free access to data, well, it comes with some responsibility". The Plague himself has not grown up – despite being an adult in his late twenties, he is a perpetual teenage manchild (skateboarding, eating junk food, playing VR games et cetera). The film thus evokes the threat of not fulfilling the conventional corporate trajectory: 'go straight' and become a responsible adult, working for the mainstream, or end up in prison like The Plague eventually does.[76]

[76] Skateboarding is used as a signifier for teenage ways of engaging with the world; the eventual progression for the teenage character is control of the car. The Plague is implicitly coded as developmentally stunted by his reliance on this form of transport. See Shail and Stoate for a discussion of teenage ways of moving through the world (48). Wider discussion of the teen movie or "teenpic", including an exhaustive account of the consolidation of the figure of the teenager and how cinema contributed to its establishment can be found in Thomas Doherty's *Teenagers and Teenpics: The Juvenilization of American Movies in the 1950s* (1988) and Timothy Shary's *Teen Movies: American Youth on Screen* (2005).

Being a kind of cinematic manifesto for the popularly-imagined shape of the computer/network hacker in the middle of the 1990s, as well as trying to distil both the excitement and concerns surrounding the increasing mainstreaming of computers (and the Internet in particular) in the 1990s, *Hackers* is emblematic of the nevertheless contiguous flow of the hacker figure's conventional, normative logic of identity vis-à-vis digital technologies and the body, with that figure surfacing apparently as a boldly rebranded version of itself, but displaying very little conceptual change from its earlier incarnations in the 1980s. Ultimately, throughout the 1990s, performances of the hacker figure's putatively subversive influence at the interface—primarily the apparent recrafting of the gendered human-computer relationship, but also the challenging of corporate greed—are failures. *Hackers* demonstrates the need for its teenaged characters to "grow up" and accept both the narrow and normative function of the hacker role and the legitimacy of the military-industrial structures that provided the technologies that brought it into being. As Dade asks of Kate, himself blurring the line between her computer and her body, "are you sure this sweet machine's not going to waste?". Female hackers, here, remain "sweet machines", and those in control remain the masculine mind-subjects capable of decoding, penetrating and owning them.

Playtime's Over, Sweetheart

While the 1990s saw the Internet being established firmly in the public consciousness in the West—and registering prominently in the abovementioned texts—the more romantic, outlandish and exaggerated vision of the online experience (and indeed hacker communities) became less tenable after the turn of the millennium, partly because more people were familiar with the rather more mundane realities of using the Internet (and

arguably jaded by such technocultural anti-climaxes as the nonexistent Y2K bug).[77] For the most part, too, attempts such as those seen in *Hackers* and *The Matrix* to reconfigure the image of the unsexy male hacker dwindle after 1999. *The Core* (dir. Jon Amiel, 2003) and *Die Hard 4.0* (dir. John McTiernan, 2007), the two mainstream Hollywood films depicting hacker characters, display if anything a backsliding towards the 1980s understanding of who can and should be allowed to occupy the figure of the hacker.[78] If the 1990s representation of the hacker sometimes comprises a superficial attempt to expand the figure of the hacker to include more previously excluded subjects, after this point we witness a *reassertion* of the exclusively male hacker, reproduced through the subjection of technology as a discrete but threatening object requiring decoding and control, and, again, the gender-coding of these encounters. The hacker continues to possess a singular, quasi-mystical and essential ability to use technology, and technology itself continues to embody a passive—if occasionally dangerous—entity whose permeation by digital information can only be regulated legitimately by this kind of hacker. Female hackers exist, but fail in their roles, because their bodies are as unruly as the digital information that they are ultimately unable to control.

Conversely, the male hacker's near-loathing of his own organic body, the desires and influences of which are, too, coded as feminine (or aroused by dangerous feminine influences), manifests once more in a programme of bodily hardening, body disavowal and body subjection—along with a deliberate rewriting of the meaning-value of any

[77] Estimates suggest that the number of people using the Internet worldwide rose from 13 million in 1995 to 458 million in 2001; current figures are close to 2 billion (internetworldstats.com 2010).

[78] *Swordfish* attempts to overcome this image, but does so by hypermasculinising the hacker body rather than expanding the remit of the hacker figure to include women: the film's lead character, played by Hugh Jackman, is a conventionally handsome and hard-bodied action hero as well as being a hacker. In one scene, Jackman's character is challenged to hack a computer while being fellated by a woman: this representation is perhaps the absolute distillation of the threat of embodied feminine sexuality to the putatively masculine rational activity of computer hacking.

unavoidable embodied signifiers (such as scars) to better suit the discourses of masculine activity.[79] As seen in earlier texts, hackers' (non-)politics espouses a liberatory, anti-corporate, subversive character while working simultaneously to reassert (and later join) the conventional social and economic order it claims to disrupt. The hacker's putative 'rebellious but righteous' role in taking on 'the system', manifesting once more in a confrontation between the hacker and the corrupt system administrator, usually just actually reinforces that system rather than critiquing it. The hacker never smashes the established order; he just has unique insight into people who are using it in a corrupt or power-hungry fashion, and uses his privileged perspective to help restore order. Focusing mainly here upon *Die Hard 4.0*, and drawing comparisons with some other nearby hacker depictions, I examine the continued role of the hacker in policing the symbolic boundary between the human and the technological other, and the ways that this policing is mapped onto other subjectively 'risky' interface encounters. As is the case with all the hacker narratives examined so far, the ongoing reiteration of the dualistic view of mind and body manifests in unidirectional interactions with technology, along with the socially exclusionary practices of its reinscription.

The fourth film in an ongoing franchise that began with *Die Hard* (dir. John McTiernan, 1988), *Die Hard 4.0* (entitled *Live Free or Die Hard* in the USA) concerns an attempt by a brilliant but disgruntled ex-government computer security expert, Thomas Gabriel, to get revenge on the United States of America for his earlier dismissal. With the paid help of armed mercenaries (and the unwitting aid of several hackers' coding skills), he sets up a "cyber attack" on the United States' information technology infrastructure that culminates in an attempt to download financial records to give him untraceable access to every digital cent of the country's money. The film's hero, New York cop John McClane

[79] "Chicks dig scars," McClane explains to Matt at the end of *Die Hard 4.0*.

(played by longtime action hero Bruce Willis), works with teenage hacker Matt Farrell (played by the comparatively nerdy Justin Long) to foil the plot. It is primarily an action film, the high-technology theme of which serves ostensibly as the scaffolding upon which to hang lots of violence, gunfire and explosions.[80] However, the relationship between McClane and Matt—as well as those relationships between all the film's hackers and their respective technologies—animates the hacker figure's role, as well as reasserting who can become an effective hacker, and what the risks are to the hacker subject.

Firstly, *Die Hard 4.0* projects a highly gendered depiction of the relationships between individual subjects and technology. As seen in *Hackers*, women are both inadequate and potentially dangerous masters of technology, with their inadequacies and their risks to more legitimate (male) users rooted in their sexuality and the 'more embodied' character to their gender. *Die Hard 4.0* has a prominent female hacker figure: antagonist Thomas Gabriel's partner, Mai Linh. She tricks several of the world's most notorious hackers into writing code for Gabriel's cyber attack, by playing the part of a systems administrator for a fictional company, 'employing' the hackers to 'test' their security systems by writing advanced computer viruses. Each of these hackers is murdered by remote control when their part of the job has been delivered: a bomb built into their computer is triggered, killing them and destroying the evidence. Implicit in these opening scenes is the quasi-seducing nature of Mai's task: her appeal to the vulnerable embodied desires of these uniformly teenage, single male hackers is highlighted during a telephone exchange between Mai and Matt (one of the hackers in question): "you have a sexy voice," he remarks, "is there anything else I can do for you? To you?". It is only McClane's

[80] The film's underlying concern—that digital information is radically permeable and vulnerable when not being corralled into order by a conventionally legitimate user/subject—also reflects concerns regarding the infectious/contagious nature of globalised common capital, and these concerns are expressed in a gendered manner. See Chapter Three on the nanotechnological swarm for a discussion of the pejorative marking of digital capital as feminine and "leaky".

intervention—he arrives to arrest Matt on suspicion of his involvement in an earlier cyberattack—that averts Matt's death. This is a scene, though, that plants the seeds for a more acute failure of Mai's role as a hacker. Having hacked into the radio despatches system of Washington DC's police department, Mai attempts to mislead the driver of the police car transporting McClane and Matt to the headquarters of the government's computer security agency. As Mai tries, over the radio, to direct the driver into an ambush, a police officer in the car remarks: "man, that's a sexy voice". Matt recognises the voice, having had his attention drawn to its "sexiness", and this is followed up by McClane testing Mai with a kind of police officer shibboleth (he remarks, using radio "10-codes", upon a fictional mass outbreak of nudism). Not knowing this code, she fails to parse and respond properly to his reference. Her deception is thus uncovered by her inability to rein in her too-lively sexuality: "cut the bullshit, honey," McClane demands, "and put your boss on." Mai's body, here, beyond her rational control, has let her down.

Despite her proximity to and apparent understanding of the relevant technology, and her ability to move through digital spaces and access systems in a fluent and informed way, Mai's role is less that of the rational hacker and more that of the temptress, whose body is both the source of her power and the cause of her inevitable downfall as it is decoded and mastered by the masculine subjects whose rational legitimacy comes under no such scrutiny. "Playtime's over, sweetheart", McClane tells Mai as she attempts to hack the control system of a major power station: her masquerade as a hacker has been brought to an end, and the rightful male hacker—Matt, protected by McClane's powerful body, and learning to armour his own body in similar ways—has been installed in her place, to repair the damage she has done. The role of women here is to not to be hackers, but to be used to disrupt the rationality of an active male subject—an emotional or erotic connection to a female character is a vulnerability for the male protagonists and

antagonists. Gabriel tries to force McClane to take unnecessary risks by kidnapping his teenage daughter, Lucy.[81] McClane taunts Gabriel over Mai's death, using extremely sexualised and misogynistic language: "Mai... little Asian chick, likes to kick people? Last time I saw her she was at the bottom of an elevator shaft, with an SUV rammed up her ass".[82] Mai is not, though, the only simultaneous embodiment of failed rationality and technological permeability. Again, like in *Hackers,* women-with-technology in *Die Hard 4.0* are more frequently the *objects* of hacking than effective hackers themselves. For instance, in a moment where McClane and Matt are trying to start a stolen car whose immobiliser has been triggered, Matt persuades the woman remotely administering the car for the manufacturer ("Delores") to start it for them, appealing to her emotions by pretending that he is with his critically ill father, and needs to drive to a hospital. Easily manipulated via her emotions, Delores is emblematic of the vulnerability to the system that is posed by women installed at the interface, women's attendant inability to ever truly embody roles of effective users of technology, and, indeed, the symbolic equivocation of women *with* technology, as passive commodities subject to 'hacking'.

The film's central relationship between McClane and Matt evinces the subjective risk at which the hacker subject places himself, by existing at the intersection between uniquely "human" selfhood and the potentially disruptive domain of information technologies. The need to resist the crossover of influence of the technological into the masculine

[81] While Lucy is given a "fiery" personality in the film—she is defiant and violent—this is explained as her being "her father's daughter". She remains the imprinted outcome of McClane's overbearing masculinity, and this imprint pales to a poor replica when he himself is present: she is subsumed immediately into the traditional damsel role when she is rescued by McClane, and tearfully says that she "knew [he] would come for [her]". Gabriel's attempts to disrupt McClane's life by hacking focus first upon emptying his pension account. Lucy belongs, apparently, to the same pliable domain as the dangerously indistinct digital entity of McClane's financial security.

[82] His remarks are also more than slightly racist—at one point he refers to her as an "Asian hooker bitch", deploying an Orientalist discourse of obtainable and commodified Asian female sexuality.

mind-self, and to ensure complete control of dangerously permeable (feminised) digital information, is evoked by the pairing of a stereotypically pale, teenaged, socially/sexually immature, physically unfit boy-hacker with a strong, heavily-built, literally battle-scarred, gun-toting action hero. While Matt is viewed at the outset as a typical hacker, obsessed with the mind and ignoring the body (foregoing sleep, swilling energy drinks and eschewing physical exercise) there is a dangerous ambivalence in this particular tactic of body-subjection that only McClane can correct: Matt's brand of bodily disavowal is tied to his vulnerability to a kind of digital seduction, and manifests in an ignorance and weakness of his own body rather than a commanding recrafting of it. McClane frequently browbeats Matt for being unfit—"it's a little thing they invented in the sixties, called 'jogging'"— or mocking him for being on the cusp of being an immature man-child: picking up a collectible model in Matt's apartment, McClane asks, "not spending a whole lotta time with the girls, huh?".[83] Matt whines frequently and childishly about his body—"I skinned my knee and my asthma is acting up"; "I just need to catch my breath", "I have low blood sugar", and so on—but by the end of the film, has taken a bullet in the leg and shoots a man dead. One of McClane's roles in the film is to help Matt to learn how to "grow up": he teaches the young hacker about his body. When Matt says he "can't stop shaking", McClane tells him that it's "the adrenaline, you're just scared, it'll pass." Matt is so divorced from the prescribed parameters of the masculine bodily experience that he has lost track of even what fear and adrenaline are. The young hacker requires McClane's help in learning how to interpret properly (and, significantly, disavow where necessary) his own body's signals and desires, armouring himself against invasions made more likely by his sustained proximity to digital technology. We witness a young

[83] At some moments, McClane and Matt's homosocial relationship borders on the homoerotic—there are several shots of a panting, sweating Matt watching with awe as McClane violently kills another henchman. In one particularly charged moment, Matt asks to see McClane's identification, and McClane coyly lifts his jacket to reveal a large gun at his hip. Matt stammers, "that… that actually looks pretty good."

and physically unassertive hacker supplied with a counterpart hypermasculine body to help him learn how to re-conquer the interconnected dangers of the feminine and the technologised other: the risk to the hacker subject here is that his proximity to feminine-coded digital technologies could, in some way, invade his rationality, disempower—and ultimately emasculate—him, if the latter is not ordered properly (by violence) into conventional patterns of influence and separation. McClane sets about rediscovering a potent embodied masculinity where the over-feminine permeable weightlessness of data has emerged as powerful force (and in the process, reasserts the fading influence of the nation-state: "it's not a system," he insists; "it's a country"). [84]

Fig. 8. McClane telling Matt to ignore his fear.

The hacker figure's occurrence in *Die Hard 4.0* re-establishes once more the conceptual shape it has held since the 1980s. Systemic resistance dissolves into a collaboration with authority, and this, too, is partly absorbed into the discourse of 'growing up': teenage hackers need to be helped onto the correct masculine path or end up browbeaten and

[84] Other characters give us insight into the potential consequences of failing to master the computer's feminising influence: the character of "The Warlock", an overweight hacker who lives in a basement (and feebly refers to it as his "command centre") shows the danger of not having this kind of masculine guidance—he is browbeaten by his hysterical caricature of aging single mother.

controlled by women or technology. Thus here technology is raised as a threatening 'object' in order to dramatise its taming and controlling. Women and technology are still symbolically entangled, too: putative female inadequacy in handling technology is rooted in the sexualised body, but this bodily 'unruliness' overspills into technology itself, necessitating the imposition of a unified and rational (male) self to ensure its subjection. The ongoing reiteration of the dualistic view of the relationship between mind and body, then, manifests in these interactions with technology, along with the exclusionary practices of its reinscription.

Hack the Planet

The hacker appears to be a progressive figure, poised to use technology to radically reconfigure the boundaries of subjectivity according to egalitarian principles of merit and intellectual ability. Instead, however, this figure resides at that interface and defines the terms by which subjects can interact with technology. It does so in a way that projects an *image* of possible social transgression through relationships with technology, while in reality effecting a policing of the boundaries between the human and the technological other. Suspicion of individuals/users who are judged to be inadequate at keeping those two things separate run deeply in hacker narratives, and the ejection of those inadequate mind-selves—either through denigrating their ability to hack based on their unruly bodies, forcing them into the object position (i.e. producing them as objects of hacking endeavours), or killing them outright—is emblematic of this suspicion. Women are frequently the losers in these transactions: the ongoing effort to keep the category of the rational hacker subject 'pure' operates through deployment of the discursive tools of misogyny and an androcentric status quo. Even the stated political dreams of hackers—the overturning of corporate power, the appeal to plural voices rather than monolithic government ones, technologically-enabled social and literal mobility for all—are reduced

to a libertarian fantasy of radical individualism, where the individuals concerned are all those who are inherently privileged by their being included in that extant narrow category of white, male, technologically-educated computer users, and that privilege is invisible to them.

Despite considerable social change in the way digital technologies are distributed and used since the 1980s, the hacker figure maintains a conceptual role which is virtually unchanged over time. From the beginnings of cyberpunk, through the hacker's 'sexy' period in the 1990s and to its further consolidation as something of a cinematic stereotype in the last decade, this figure of the hacker has not changed, except to take on superficial elements of rebranding, and, perhaps to become even more stable. Even apparent conscious attempts to expand the hacker role outside of the narrow and prescriptive definition founded in cyberpunk are hamstrung by the fundamental logic of bodily disavowal and categorical exclusion on which the hacker figure is based. The hacker is therefore a figure that is so fundamentally built to *reject* alternative notions of embodiment and reinscribe the rules of engagement along exclusive and dualistic lines, that it is very difficult to imagine it being reclaimed or deployed for more progressive political purposes. Attempts to extend the category of the hacker from its narrow white, male heterosexual stereotype only raise the possibility of those alternative hacker subjects *in order to contain them*. While the encounters between putatively human and technological subjects in these narratives may evoke fantasies of social liberation and escape from prejudice, they are far from the cyborgic hybrids of Haraway's metaphor: if anything, hackers want to maintain at all times a solid and incontrovertible sense of rational, masculine control, and anyone not included in that category is subject to being the object of that control.

CHAPTER THREE:

THE NANOTECHNOLOGICAL SWARM

In *Engines of Creation* (1986), MIT nanotechnology pioneer Eric Drexler coined a name for a catastrophic phenomenon that was beginning to appear in science fiction.[85] The "grey goo" scenario describes a situation in which a swarm of microscopic, molecular, self-replicating technologies—an idea based largely on concepts propounded by the physicist Richard Feynman (1959), and eventually intended for any number of beneficial purposes from medical aid to experimental science—spontaneously start to evolve and multiply beyond control, literally consuming their environment and turning it into a homogenous organic slop that eventually spreads to assimilate the entire universe. This process, described as "ecophagy" (literally "eating the environment") by Robert Freitas of the Insitute for Molecular Manufacturing in California, and rooted in dramatic projections regarding contemporary developments in nanotechnology, appears in a number of science fiction texts. Greg Bear's novel *Blood Music* (1985) is the most widely-cited example of this phenomenon; the novel describes a near-future world in which simple molecular "bio-computers" (later "noocytes") consume and transform the specific human body into which they are injected, before spreading to absorb and transform the whole of North America into vast, formless strata of matter. Another, more recent fictional representation can be seen in the remake of the 1951 science fiction film *The Day the Earth Stood Still* (2008), the climax of which depicts an alien robot transforming itself into a swarm of "nanites" that dissolves everything in its path.

[85] For a version of this argument which is framed by work by other authors on similar apocalyptic scenarios, see Stoate (2010).

Fig. 9. Nanites absorb a stadium in *The Day the Earth Stood Still* (2008).

It is also a concern that has attracted wider attention in the 'real' world—self-described transhumanists such as Raymond Kurzweil and mainstream media organs such as *The New York Times* have published pieces on the need to contain the potentially global threat of nanotechnology through a "responsible" development and deployment of the idea. In 2004 Prince Charles responded to the notion in a way that did not name grey goo directly, but which urged particularly careful handling of nanotechnology, and expressed concern over a perceived lack of ethical consideration: "[If] we look at the EU's research programme for nanotechnology, only an estimated 5 per cent of total funding is being spent on examining the environmental, social and ethical dimensions of these technologies. That certainly doesn't inspire confidence" (Wales 2004). The imaginative weight of this idea, then, evokes a particularly fearful response from some quarters.

The third and final figure that, I argue, has a policing effect at the boundary between the humanist subject and the technological other is this nanotechnological swarm. Like the avatar and the hacker, the nanotechnological swarm *both* animates technological threats to the cohesion of the (dis-)embodied liberal humanist version of the human subject *and*

dramatises those threats being brought under control by a conventional, rational (masculine) subject. However, the nanotechnological swarm goes further than the previous two figures: rather than acting as just a representative of digital technology's metaphorical or conceptual threat to the exclusivity of masculine human agency (in ways that the avatar and the hacker are, I have argued, figures deployed to resist), the nanotechnological swarm *literalises* that threat to the cohesion of the subject: the swarm threatens the complete and *literal* dissolution of the mind *and* the body of the hitherto differentiated human subject. In that sense, the nanotechnological swarm stands as arguably the most dramatic figure of technological threats to, and recapitulation of, conventional and dualistic visions of the human. Furthermore, the trajectory of nanotechnological development and its unique position as the product of a collision between transnational private/state capital, the digital and the material (e.g. the transmission of capital, into code, into material) allows us to discover an ongoing concern over the possibly radically permeating effects of globalised commodification upon difference itself.

It is not, of course, unreasonable to warn or build safeguards against such a scenario—nobody really wants to be dissolved into a fluid grey mess—and indeed, my purpose here is not to determine how likely a grey goo scenario is.[86] My focus is, again, on the figure's representations in fiction: what can be uncovered in fictional depictions of the grey goo scenario are wider concerns about the homogenising effect of global capital and an ensuing total obliteration of difference itself—but with the latter 'blamed' upon the bodies of marginalized subjects. In other words, anxieties about literal corporeal dissolution into a continuum of matter are symptomatic of fears of a capital-driven global

[86] For a scientific critique of fictional representations of nanotechnology (and Crichton's *Prey* in particular) see Chris Phoenix (2003).

assimilation of all subject positions into transmissible, digitally encoded, abstracted, commodified ciphers—and yet, within these narratives, the perceived source of this disastrous global sameness is, ironically, displaced away from capital and onto exoticized representatives of difference itself.[87] While the levelling of difference, by the transcription into what Haraway terms the "common language" of (digitized) capital in those considered 'other' is desirable for the agents of capital itself (particularly in the drive to create new market demographics), there is a lingering risk that that obliteration of difference will overspill into the agent coded as active; the subject in charge could lose control and human(ist) exceptionalism could be eroded or erased (164).[88] The scapegoats for this rampant dissolution become the putatively inadequate bodies of those traditionally coded as other to the lingering normative subjects of Western discourse: those who are non-male, non-white, non-heterosexual, et cetera.

This chapter examines grey goo texts as points of convergence for those varying, tangled, and often contradictory concerns. Important to note here is that while my previous two chapters have focused upon the resilience of their respective figures over time, theorising the significance of the figures' (non-)changes as ongoing normative responses to the subjective threat of the interface, this chapter focuses on two texts produced in a much shorter historical moment. Rather than moving through several decades of texts and tracing the figure's shape through those texts, the nanotechnological swarm's normative, boundary-policing functions are best uncovered by comparing thoroughly a strikingly

[87] Digital, globalised capital lurks in the contexts of this thesis, too, of course: as highlighted by Haraway's "common language", the flow of subjectivity between humans and machines engendered by technological change is lubricated in no small part by the increasing promiscuity of (digitised) money between private and public institutions, countries, individuals and so on. But the nanotechnological swarm represents an absolutely acute entanglement of technology, culture and capital in a way that *literalises* the flow of digitised money into material (as I explain presently), and this necessitates my foregrounding the role and influence of such capital much more strongly than I have in previous chapters.

[88] That is, considered other within the frameworks of normative logics of identity, which includes as other 'the world' itself.

similar set of discourses in two books published within just four years of each other.[89] Unravelling the discourse of grey goo in two novels—*Prey* by Michael Crichton (2002) and *Bloom* by Wil McCarthy (1998)—we can see the ways in which grey goo serves as both a model for the capital-driven dissolution of difference, and a cluster of metaphors which scapegoats normatively marginalized subjects (primarily women) by linking the putative inadequacies of their bodies to the burgeoning threat of the constantly-expanding, gooey menace. My approach here has much in common with Stephen Dougherty's work on the biopolitics of the killer virus novel (2001), upon which I draw at several points throughout my argument, but, as in the rest of this section of my thesis, I also draw upon feminist scholarship on embodiment that considers explicitly the effect that the perceived permeability of the female body has on normative notions of subjectivity and difference.

The latter appeal to such theories signals a further necessary slight difference in approach in this chapter. Compared to the previous two figures I examined, the nanotechological swarm embodies a collision of discourses that is remarkably specific in the character of its feminine coding, and, as such, demands a reading that is aligned more explicitly with pre-existing theoretical frameworks dealing with that feminine coding. Informed here in particular by Grosz and Shildrick, I move through readings of each of the two novels that focus specifically upon the part that women have to play in these narratives of dissolution. My overall contention is that, despite its explicit links to 'post-industrial' economies, and its obvious metaphorical connection to the flow of capital inherent in these structures, a trajectory of nanotechnological research resulting in the outcome of

[89] The nanotechnological swarm, despite its dramatic instantiation in the texts I have mentioned, is not a figure that has permeated as widely as the avatar or the hacker. However, its cohesiveness in the texts in which it *does* appear, and its attendant and seemingly stable cultural function as the very literalisation of the dangers of the interface, makes it a figure that cannot be ignored. The two novels I examine are replete with evidence of the figure's discursive function.

ecophagy by grey goo is perceived to be less a problem with capital itself, and more a problem of adequate *control* of the 'invented', technological other. Pollutant effects on that sense of control, which (supposedly) hitherto rested in the hands of rational, humanist agents, may be derived from interference by damaged or incomplete subjective participants at the crucial stage of the interface, most of whom are feminine-coded.[90] And, as with the avatar and the hacker, what is dramatised here ultimately is a restoration of the border between the human subject and the technological object: the nanotechnological swarm, as a figure, is concerned with policing, rather than collapsing that boundary.

Nano-capital

Fluidity is built into the very vocabulary of global capital exchange: liquidity, cash flow, income streams, floatation, solvency, bailouts, slush funds, dark pools, bubbles et cetera. Money – or rather, the digitally-abstracted simulation of the same – is increasingly (and perhaps inherently) liquid, promiscuous and intangible, even as its flows become more carefully mapped technologically (and indeed constituted by that mapping). Perhaps more interestingly, though, this liquidity in itself can be bound up, like nanotechnology, with the issues, possibilities and problems of the imperceptibly small. For instance, there are concerns over the receding palpability/comprehensibility of financial transactions in the wake of practices such as high-frequency trading: firms and hedge funds with enough money and foresight to do so use datacenters of powerful computers to read the financial markets algorithmically, and thus profit from automatically buying and selling shares instantaneously, taking advantage of combined gains from thousands of miniscule

[90] The continual reiteration and rehearsal of this battle for control in the face of such permeable subjects is performative in its construction of that controlling humanist agent assumed as an *a priori* entity.

millisecond-to-millisecond discrepancies in prices.[91] The nanoscale character that this practice takes on in the imagination resonates with the notion of grey goo almost as much as does its firm rooting in the technological: these computer-originated transactions are too small for us to comprehend; they are too quick for us to perceive. The liveliness of this mode of capital exchange has inspired deep anxiety in financial institutions: the practice of high frequency trading, which currently accounts for forty-two per cent of the US market, is under scrutiny from a number of regulatory bodies in Europe and the United States. The practice itself has little or nothing to do with the nature of what is being bought or sold, but is based simply on the algorithmic relationship between figures, stabilized into sameness by abstraction and encoding. Many lament the tendency for money to slip through our fingers, but the concerns evidenced by such widespread investigations show that this nano-capital goes further than that—it threatens to soak through our skin and pass through our bodies, beneath perception and beyond control.[92]

There are still more tangible examples of this seeping dissolution of difference by globalized capitalism. Rosi Braidotti demonstrates how the homogenising effect of capital in post-Cold War Europe is distilled in the commercial campaign for the United Colors of Benetton clothing brand:

> The colossal success—at least here in Europe—of Benetton's advertising campaign seems to sum up the semiotic code of the European unification project: all united in our respective differences, provided that our currency is the same, our living standards comparable, and our designer clothes, of course, made in [...] Italy, with capital held transcontinentally. (1994: 246)

[91] See Caroline Binham (2010).

[92] The venture capitalist group NanoCapital supports financially the development of nanotechnology.

This advertising campaign cheerfully imagines a post-prejudicial world "united" by a specific product, and the unique selling point of that product is the very levelling effect of its "universal" appeal, this state being accessible only by the act of purchasing. Difference itself is annexed, reproduced as a version of itself that can become a saleable commodity in a common order of exchange (Braidotti refers to this in a later work as "the global market of Sameness" [2006: 58]), and thus, effectively, dissolved.[93]

The potential overspill of this flow of capital into the *controlling* subject (the consumer, the corporation, et cetera) rather than the commodifiable object poses the threat. The cognitive dissonance in the constant expansion of homogenising capital crystallizes in the tension between the desire to control difference (the other, the markets, the world) through liquidity and the comfort of marketable sameness on one hand, and the fear that capital itself could run out of control (as seen in the imperceptibility of high frequency trades) on the other, meaning that such interventions would reach back out and drag the (mythically) unique individual subject into the abstracted, commodified mire, too. This "Benetton effect" and high frequency trading are both, then, visible intensifications of a process of financial and digital abstraction (and thus, through the global commonality of this encoding, homogenisation) of the subject that is well accounted-for in work by a number of scholars. Citing Donna Haraway, Stephen Dougherty shows how fictional discourses of infection and contagion found in killer virus novels express anxieties about a steady transcription of the body into an abstract and staccato digital code, a tendency occurring within a sociopolitical and economic landscape that advances "a search for a common language in which all resistance to instrumental control disappears and all heterogeneity can be submitted to disassembly, reassembly, investment and exchange"

[93] For further discussion of the Benetton effect and difference, see Sarah Franklin *et al* (2000: 146ff).

(qtd. in Dougherty 2001: 1). For Dougherty, a crisis of subjectivity engendered by the flow of global capital and the associated "ontological shift whereby the corporeal body is turned into an information system, a purely discursive network of signs" (2) is signalled by a series of metaphorical breakdowns between the language of infection and the language of digital communications within novels describing the dramatic spread of contagious, deadly viruses which dissolve or haemorrhage the body (4). Crucially, Dougherty points out an alignment between embodied/subjective instability and marginalized subjects – in this case, the "nonwhites" who "most viscerally embody the threat of viral contagion": these diseases are almost invariably seen to arise on the African continent or other areas of former explicit Western colonial control, and to spread through the vector of normatively inadequate and indistinct body-subjects (5). The killer virus novel is only, for Dougherty, able to reconcile or rescue the embodied self by appealing back to colonial narratives in which a normalising (white Western) force restores order and containment to this rising threat (20).

This raises the issue of the representation of uncontained subjects in grey goo narratives. Grouped together here are a cluster of studies examining the shapes and representations of embodiment in post-Enlightenment Western culture. Firstly, let us return to the (relatively) recent turn to the body as subject of study in feminist theory, as outlined in the Introduction. This turn engenders a wealth of critical positions on the ways that corporeal instantiation of any kind, and especially of the kind marked as "other" to the liberal humanist subject, disrupts the "objective" primacy - and threatens the very bounded existence - of that subject. Grosz's *Volatile Bodies* advances ways to understand gendered subjectivities "through" the body (vii). Grosz suggests that this approach

> helps to problematize the universalist and universalizing assumptions of humanism, through which women's--and all other groups'--specificities,

> positions, and histories are rendered irrelevant or redundant; it resists the tendency to attribute a human nature to the subject's interior; and it resists tendencies to dualism, which splits subjectivity into two mutually exclusive domains. (ix-x)

Grosz's work generates the beginning of a framework for examining the dangers of permeability for the Cartesian cogito-self: the body's ostensible purpose is purely to provide a binary other to the mind, and its tendency to invade and disrupt the reason of that mind resides in its (perceived) unensouled, physical, desiring influence (5).

Offering an understanding of embodied otherness that resonates strongly with Grosz's study, Shildrick's *Leaky Bodies and Boundaries* (1997) and *Embodying the Monster* (2002) both examine the question of the body's pejorative position and its attendant inadequacy as a vessel for the Cartesian subject. In the former, Shildrick writes that women are denied full objective agency by the way that certain things place them 'closer to nature', specifically bodily processes such as menstruation and the much larger female role in reproduction. Both of these things are seen as somehow polluting to the rationality of the humanist self:

> In being somehow more fully embodied than men, women have been characterized simply as less able to rise above uncontrollable natural processes and passions [...] It is as though bodies could somehow interfere with moral thought, instructing the mind[...] Losing control of oneself is to a large degree synonymous with losing control of, or having no control over, one's body. (*Leaky Bodies* 26-7)

This fear of "losing control" of the body is located most strongly for Shildrick in discourses that place the female body as simply an "underdeveloped" version of that of the male with blurred, permeable boundaries (28). This dangerous indistinction between

the mind and the body, coded as female in phallocentric discourses, unsettles the very bases of objectivity and so the operational stage for any kind of supposedly rational intervention or interrogation, and threatens absorption of the subject into the undifferentiated object-realm of nature.

Permeability is, again, the key here. Phallocentric narratives are extremely wary of assigning agency to anything that cannot be mapped onto dualisms with neat, clean divisions: an attempt to distance the subject from pollutant others is coded into the bases of the binary oppositions that determine the logic of identity, and the putative literal "leakiness" of othered bodies—whether through menstruation, childbearing, perceived vulnerability to infection or otherwise—maps inevitably onto the ontology of the self, and construes a constant threat to these divisions. Shildrick's later monograph expands further upon this by examining the bodies of entities considered 'monstrous' in Western culture:

> The security of categories—whether of self or non-self—is undone by a radical undecidability. The issue is not one of revaluing differently embodied others, but of rethinking the nature of embodiment itself […] Where normative embodiment has hitherto seemed to guarantee individual autonomous selfhood, what is monstrous in all its forms—hybrid creatures, conjoined twins, human clones, cyborg embodiment and others—disrupts the notions of separation and distinction that underlie such claims […] In short, what is at stake is not simply the status of those bodies which may be termed monstrous, but the being in the body of us all. To valorize the monster, then, is to challenge the parameters of the subject as defined within logocentric discourse (2002: 2-3)

In other words, not only do monstrous bodies—defined primarily by said leakiness, permeability and hybridity of selfhood (10)—threaten to compromise the normative

subject, they do so by the very ontological indistinguishability between the two. Readings of monstrous bodies, for Shildrick, uncover anxieties not just about the threatened invasion of the monstrous to the normative, but about the possibility that, actually, the dualistic subject is always already monstrous (4).

My own position combines elements of these perspectives. The grey goo narrative expresses anxieties about a steady dissolution of difference in the face of increasingly fluid capital, but those anxieties manifest through older discourses of the threat posed by leaky natural (female) bodies to the white, masculine, Western mind. The grey goo narrative associates the dissolving, haemorrhaging leakiness and contagion of catastrophically powerful nanotechnological agents with the perceived permeability of specific kinds of othered bodies, which, in turn, function as scapegoats for the homogenising effects of codified capital. These bodies are unable to maintain properly their ontological boundaries and thus contain their tendency to infect or dissolve bounded subjects hitherto instantiated in ostensibly solid, finished body-vessels. In other words, the late capitalist "point of crisis" (Dougherty 2001: 2) for the body-self reaches perhaps its most explicit instantiation when that crisis is literalised by the threat of nanotechnological entities created in a laboratory by profit-making corporations, but, as the project of transcription into code remains desirable as part of the late capitalist project, blame for the 'goo' of money shifts to marginalised subjects, loathed for their inability to properly master the process.

Like it was Her Invention

Of the two novels under examination in this chapter, the most normative in its portrayal of the nanotechnologically-besieged body is also the most recent. Jack Forman, the protagonist of Michael Crichton's *Prey*, is an unemployed computer programmer from

California, made redundant after whistle-blowing on his employers' corporate fraud and then clandestinely blacklisted from jobs at other similar firms. He is, by this turn of events, made into a stay-at-home dad, while his brilliantly intelligent wife Julia leads work on nanotechnologies at the secretive Xymos laboratory.[94] Jack once designed a series of computer programs with so-called 'emergent behaviour', which a team of Xymos researchers – led by Julia - licensed for use in its experiments with medical nanotechnologies. In broad terms, the novel defines "emergent behaviour" in programming as when the computer program in question, rather than being pre-programmed with rules and responses for every eventuality, is given a set of basic rules, and left to run and learn from its own mistakes. Xymos uses emergent code, designed by Jack, to control a swarm of billions of the microscopic particles it has created, ostensibly for the purpose of looking inside the human body (but as it later becomes apparent, having been at first a military surveillance technology).[95] However, owing to a number of misjudgements made by Xymos researchers, the swarm escapes into the surrounding Nevada desert – and begins both to reproduce and to 'learn'.[96] Its learning is guided by the particular set of rules that Jack programmed into the system that was originally intended for "pure" software applications. The emergent behaviour that the swarm control programme emulates is modelled on emergent behaviour seen in "nature", specifically the rules underpinning the "instinctual" actions of predators.

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[94] The name is rather unsubtly descendent of real-life nano-research laboratory Zyvex (Phoenix, 2003).

[95] The ocularcentric tendency to use new technologies first as a means of extending the visibility of a "target" resonates with Paul Virilio's consideration of the joint development of the film camera and the machine gun as co-dependent technologies of warfare, in *War and Cinema* (1984). This is not to mention the ramifications of this kind of imaging for the male gaze and its scopophilic attempts to "know" the female body.

[96] Placing the action of *Prey* in the Nevada desert also quietly marks it as resonant with a tradition of military-industrial complex "skunkworks" ventures (organisations of scientists given considerable autonomy by their employers to carry out experiments that may or may not lead to specific marketable breakthroughs).

Thus, when the swarm escapes the confines of its hermitic laboratory birthplace, it begins to "hunt" creatures on the outside – first small animals, and then, inevitably, human beings. The codified body-subject – the swarm, borne of capital investment and intended to be a generator of more capital, constructed molecule-by-molecule of "pure" data - is seen as dangerously unstable and potentially absorbing of the human subject. However, the deadly cross-contamination made possible by the money-lubricated flow of software into nanoscale hardware (the licensing of Jack's code) is only paid lip service - notably by Crichton's doom-laden foreword, which notes the increasing investment in nanotechnology, but is less concerned with that than with "our self-deluded recklessness [and] the long and difficult journey to control our technology" (xii). While the foreword is ostensibly a comically grave one-size-fits-all condemnation of human naivety to the liveliness of technology, digital capital itself – while used to indicate the increase of research over time - is never implicated as a basis for the threat. The dangers here are posed by the "recklessness" of certain subjects, manifested through a lack of "control" of technology. The foreword, to some extent, exculpates global capital - from whose impulse the push for nanotechnological breakthroughs originates - before the novel even begins. Crichton mentions Fujitsu, Intel and IBM, along with the US Government, as major investors in nanotechnological research (xiii), but does not consider this penetration of cross-pollinated state and private investment into the erstwhile pure/bounded rationality of the natural sciences (another outcome of the increasingly promiscuous language of encoded capital) to be, in itself, a problem. Rather, he outlines the possibility of managing the ensuing technology through "international controls", making comparisons between the threat of nanotechnology and that of computer crime: "we've learned to put hackers in jail [...] errant biotechnologists will soon join them" (xv).[97] Individual rogue subjects are a risk within the global system of capital exchange,

[97] This is reminiscent of Prince Charles' manner of surveying of the nanotechnological

but the liquidity of the system itself does not have to constitute a risk. The novel, as a whole, glosses over the role of capital, even as it depicts the capital-driven circumstances within which the story takes place. In order to do this, it locates a scapegoat for the threat: the novel's most deeply-ingrained anxiety, on which the blame for the outbreak of the nanotechnological swarm is more squarely laid, is over female bodily permeability, and the risk that this poses to male boundedness and subjective stability.

Prey's particular deployment of the permeability motif for the purposes of horror is shared by both the grey goo narratives in this chapter: the swarm of nanobots kills subjects by literally soaking into their bodies and transforming them. It gets into the mouth, nose, eyes and lungs and breaks the body down as "food", at the molecular level – eventually turning it into homogenous goo. We see this first on a small scale, when the swarm attacks a wild rabbit and partially dissolves its insides, and we see it with increasing frequency and intensity as the swarm begins to kill human characters:

> I looked down and saw David Brooks's shirt. Then I realized I was standing on what was left of his torso, which had turned into a kind of whitish jelly. My foot was right in his abdomen. His rib cage scraped against my shin, leaving a white streak on my pants. I looked back and saw David's face, ghostly white and eroded, his features eaten away until he looked [featureless]. I felt instant nausea, and tasted bile. (419)

Jack's accidental stepping into the dissolved shell of a fellow scientist's disintegrating carcass shows the disgust generated by the literal dissolution of the body to pale

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research landscape; he also produces figures about investment in nanotechnology. Like Crichton, though, Prince Charles does not implicate this capital flow itself in potential problems with nanotechnology, so much as opine that the money is just not being spent correctly (i.e. on controlling the technology).

featurelessness.[98] The primary explicit source of horror in the novel, then, is in the swarm's ability to literally dissolve the bodies of those it attacks, rendering them into an averaged-out sameness. The bounded human subject, as instantiated within an organic body, is seen as vulnerable to this invading influence; the monstrosity of the swarm emerges from the fluid nature of its radical leakiness – it does not just contain and/or emit a dangerously fluid influence, it absolutely embodies it in and of itself.

Crichton's anxieties about the permeability of a data-encoded body are made the most explicit when looking beyond the obvious horror of physical dissolution and death. Eventually, the swarm learns to literally invade the brain and take "conscious" control of subjects: by the end of the novel, Julia has fallen completely under the influence of the swarm, and takes on an explicitly antagonistic role. She embodies as a hybrid the murderous leakiness of the nano-entities with what appears to be the unstable pseudohuman form *par excellence*: the female body. In many ways she starts to become something of a caricature of the *femme fatale* – she becomes sultry, and her earlier infidelity (Jack's early suspicions over her having an affair with a co-worker all are confirmed) erupts into a kind of pansexual promiscuity; her figure and features become hardened and statuesque, she is suddenly given to hysterical outbursts of jealousy (466), and begins to dispatch her enemies by way of transferring swarm particles to them with a deadly, poisonous kiss:

> Vince grabbed a fistful of Charley's hair and tried to hold his head steady. Julia continued to kiss him. Then she stepped away, and as she did I saw a river of

[98] As Dougherty (2001 n8) also points out, this kind of bilious response to the corpse may also be viewed through Julia Kristeva's work on abjection (1982). It is worth noting too that, as a character, David Brooks is a scientist of great rationality until he is struck down by a moment of hysterics leading directly to his death (310ff). His failure to embody a properly masculine paradigm of behaviour under crisis leads to his overtaking first by intellectual instability and then literal dissolution by the feminine-coded swarm.

> black between her mouth and Charley's. It was only there for a moment, and then it faded [...] Julia wiped her lips, and smiled.
>
> Charley sagged, dropped to the ground. He appeared dazed. A black cloud came out of his mouth, and swirled around his head. (457)

Julia is, in fact, the axial point around which the novel's gender-coding of nanotechnological horror rotates. There are a number of ways in which the alignment of this horror as female is manifested through her, but clearest is the line drawn between a perceived incompatibility of woman and scientific endeavour because (and through the motif) of women's presumed biological destiny: childbearing. It is apparent from early in the story that Julia's inability to balance properly her domestic and working lives (along with the replacement of Jack as breadwinner) leads to the slow decline of her family.

The most explicit expression of this poisonous collision between rationality and the feminine sphere of childcare, though, is in what initially causes the swarm to become dangerous in the first place. When it first escapes the lab, the male members of staff at Xymos are intent on destroying it while it would be easy to do so. But Julia refuses, as shown in this conversation between Jack and one of the Xymos scientists:

> '[It] was Julia's idea to treat [the swarm] like a child. She went outside with bright blocks, toys. Things a kid would like. And the swarm seemed to be responding to her. She was very excited about it.'
>
> [...]
>
> 'But David,' I said, 'You all knew this was a runaway, evolving outside the laboratory. Didn't anybody think to just go out and destroy it?'
>
> 'Sure. We all wanted to. Julia wouldn't allow it [...] She was, I don't know, she was really taken with it. I mean, she was proud of it. Like it was her invention.' (256-7)

Julia cannot bring herself to wipe out the swarm because her feminine and ontologically unstable "instinct" to rear children has interfered with the rationality of her subjectivity and polluted the hitherto objective scientific project she was leading; as Shildrick, remarks pregnancy is "the paradigm case of breached boundaries" (1997: 35). The supposed inevitability of the feminine right/desire/need/requirement to bear children is always at risk of manifesting the kinds of subjective indistinctions that make women's bodies inadequate vessels for a bounded, objective self. And, combined with the Enlightenment gender myth that while men create with their minds, women can only create with their bodies, in this case, the collision between those two approaches is disastrous, and eventually engenders total dissolution of tangible embodied difference. Julia's decision to treat the swarm like a child is instrumental in the entity's shift from contained experiment to near-invulnerable, hyper-permeable menace. We see the effects of this poisoned subjectivity everywhere in the novel; the swarm infects and absorbs more and more subjects – mainly scientists – turning them to Julia's side.

Significantly, the swarm even begins to take on human form; it imitates the physical characteristics of the human beings around which it has spent time, but often de-coalesces into faceless, uncanny mannequins. This failed attempt by the swarm to attain the embodied manifestation of a "true" human subject allows us to view the normative perception of the female subject: a failed (but dangerous) caricature of male selfhood, thwarted by its own body's ambiguous boundaries. Perhaps the most bizarre example of this is the point at which Julia's swarm body literally engulfs Jack's:

> And the moment I spoke, a river of pale particles streamed off Julia, curved in the air, and came down like a shower all over my body and into my mouth. I clamped my mouth shut, but it didn't seem to matter, because in the mirror my body seemed to dissolve away, to be replaced by Julia's body. It was as if her skin

> had left her, flowed into the air, and slid down over me. Now there were two Julias standing side by side in front of the mirror. (506)

In this strange scene (somewhat resonant with a kind of inversion of the mirror stage), Jack's self-image disappears as his own body is literally (re-)integrated into a female body. The novel's motif of the polluting and disintegration of scientists by the swarm functions as a particularly acute example of the threat of a hyper-feminine permeable body to putatively hyper-rational subjects. Apart from Jack (who nonetheless reasserts his father role by the end of the novel), those operating outside very conventional normative gender roles may fail in their work (Jack's psychiatrist sister cannot control Jack's kids while he is away) or even end up dead if their subjectivity has not been adequately shored up against the seeping, permeating invader.

David Brooks, for instance, is killed because he becomes hysterical while trying to hide from the swarm:

> 'Coming,' [David] said. 'They're coming.' His voice shook with tension. 'Oh Jesus, they're coming.' He pulled back on the doorknob with both hands, using his whole body weight. He muttered over and over, 'Coming... they're coming...'
>
> 'Oh great,' Charley said. 'The fucking guy's cracked.'
>
> I went over to David, and put my hand on his shoulder. He was pulling on the doorknob, breathing in ragged gasps. 'David,' I said quietly, 'Let's take it easy now. Let's take a deep breath.'
>
> He was sweating, his whole body tense, his shoulder shaking under my hand. It was pure panic. I said softly, 'Let go of the doorknob. It's not doing any good'.
>
> [...]
>
> Rosie went to the refrigerator and came back with a bottle of water. She gave it to David, who drank it as he cried.[...]

> David Brooks bolted [...] the swarms instantly spun and chased him. (292-311)

Brooks fails to maintain his rationality in the face of danger, and dissolves first into rather feminised hysterics, before eventually then being dissolved in a more literal sense by the swarm: his vulnerability emerges from his failure to act in a putatively masculine way. In a following scene, too, an assertive young female programmer, Rosie, is killed when she disobeys Jack's orders not to try and help Brooks escape after he has been attacked. Characters who maintain their prescribed positions in the gender matrix fare better: Jack's most trusted companion in the novel is Mae-Chan, a stereotypically demure Asian biologist-cum-programmer who rarely speaks in the novel but manages to survive its duration through her quiet assent to the protagonist's wishes.[99]

Less subtly, this focus on portraying the failure/death of those outside of those gender roles exemplifies (and is underpinned by) a more conventionally misogynistic subnarrative. The most explicit manifestation of this is Crichton's digression into a screed about parental custody rights after divorce proceedings. Jack's initial fears in the novel are that Julia is planning to leave him, and in particular that she is carefully constructing an argument that she will use in court to gain custody of the children when she does so:

> I felt uneasy for a lot of reasons. A lot of her comments sounded like she was building a case against me. Laying it out methodically, step by step [...] I could easily imagine the lawyer saying those things in court. And I knew why. According to a recent article I had read in *Redbook* magazine, 'alienation of affection' was currently the trendy argument in court. The father is turning the

[99] Between those two extremes, characters such as the overweight, flatulent Charley are tolerated for their hyperrational minds which compensate for the failings of the body (the vile, farting Charley is an "expert in genetic algorithms" and his company is endured "because he is so talented" [172]).This image of the grotesque hacker seems near-universal, and resonates both with the figure of Dennis Nedry in Crichton's novel *Jurassic Park* (1990) and any number of other hacker figures in fiction.

> children against the mother. Poisoning their little minds by word and deed. While the Mom is blameless as always. (92)

Jack goes on to describe an anecdote where a friend was unable to gain custody of his children after divorcing his heroin-addicted wife, because "every father knew the legal system was hopelessly biased in favour of mothers... the judge said that the wife was genuinely trying to overcome her addiction, and that children need their mother" (92-3). Crichton's concern (through Jack—it is difficult not to conflate the author's voice with the character's in given the venom of this screed) that women can somehow corrupt the legal process with (feminine) appeals to such "alienation of affection" or "poisoning of little minds" is, of course, borne out by the apparent truth of the novel: that the "real" risk of corrupting influence upon children comes from Julia (as seen with her "improper" treatment of the swarm).

Throughout *Prey*, we are harrowed by depictions of the dissolution of difference into gooey homogeneity, ostensibly driven by the literal conversion of capital into code into matter (the cyberpunk dream of "data made flesh" [Gibson 1984: 26]).[100] However, culpability for the liquefying side-effects of that process is frequently dislodged onto vulnerable body-subjects. As Dougherty notes in his examination of the killer virus novel, "bodily crisis and expressions of authentic anxiety about humankind's fate in an increasingly digitised, late capitalist society" are depicted in "the loathsome disintegration of the organic body beset by infection (4). This "loathsome disintegration" becomes all the more of a risk when we start to encounter bodies that cannot adequately shore themselves up against subjective invasion, and Julia is the clearest example in Crichton's novel of the ways in which the "blame" for the instability of the coded subject is

[100] Dougherty, though, rightly warns against seeing cyberpunk as a genre adequate for interrogating anxieties over the encoded body – partly because cyberpunk revels so much in these shifts, ignoring their wider implications (2-5).

dislocated onto the similarly unstable condition of femininity. In a concerted and steady assault upon the novel's female characters, it produces an image of womanhood which is designed to highlight a putative instability, and an attendant influence that is literally poisonous to rationality and dissolving of the cohesion of the thinking masculine subject.

The Fecund Zone

Bloom presents a picture of nanotechnology gone awry that is simultaneously more radical than *Prey* in the swarm's transforming reach and equally marginalising of those figures that the novel's discourse marks as responsible for that dissolution. While *Prey* limits the infestation/infection of its nanoscale antagonist(s) to a small laboratory in the Nevada desert and its unfortunate occupants, *Bloom* concerns a truly vast expansion of grey goo – in this case, "technogenic life" known as "mycora," a man-made fungus-like entity which rapidly assimilates not just human beings, but most of Earth's solar system. Set in the late twenty-first century, *Bloom*'s protagonist, John Strasheim, is a bootmaker and part-time journalist, carving out a meagre living on/in Jupiter's moon Ganymede. [101] Like most survivors of the accidental escape of this manmade life form on Earth, he is part of "the Immunity"; a rather uptight culture of workaholics living mostly among Jupiter's moons. The Immunity lives in an artificially-engineered and environmentally ubiquitous "immune system", which protects them, largely, from the invasion of the mycora which have colonised most of the rest of the solar system—though there are still occasional outbreaks or "blooms". Noted for his volunteer "news" coverage of an outbreak of mycora on Ganymede, Strasheim is asked to join an Immunity mission to travel into the heart of what is now known as the "mycosystem". Because most spacecraft would quickly be dissolved and assimilated by the mycora, the ship in which the "myconauts"

[101] McCarthy's work falls into the so-called "hard" science fiction category, where the exploration and extrapolation of scientific ideas are privileged. Strasheim is a bootmaker before he is a journalist, because on Ganymede gravity is so different from on Earth that providing special boots for the colony's occupants is of the highest priority.

must travel – appropriately named the *Louis Pasteur*—is treated with an experimental "T-Balance" coating; a substance painted onto the hull that is capable of resisting absorption.

Bloom makes similar judgements to *Prey* about the respective values of a strictly humanist version of bounded subjectivity, and the dangers of a feminine-coded invasion/infection/perversion of that subjectivity. Its portrayal of nanotechnology-gone-mad apparently absolves capital of its own solvent threat: the novel sets up a money-free "ladderdown" economy based on the relative energy potentials of various elements within nuclear transmutation. Perhaps, though, this is also the novel's only real explicit symptom of anxiety over the diminished tactility of digital capital. Replacing the abstraction of encoded money with a system that has constant recourse to a scientifically-measurable use-value (in the form of energy released and metals produced) speaks of a desire to be able to comprehend the value of a thing in and of itself, rather than its increasingly homogenous exchange-value. Indeed, Strasheim's home is a city inside a moon, where the streets are literally paved with gold (19). In a segment where the *Louis Pasteur*'s value in the ladderdown economy is explained in scientific terms, one of Strasheim's colleagues outlines why this is the case:

> Many people are surprised to learn that lead's energy potential is only twenty-five percent less than uranium's, but the thing to remember is that lead has ten fewer transmutation targets -- eighty-one versus ninety-one –which translates into a factor of a thousand reduction in its value. Gold, three rungs lower still, is worth about a five-thousandth as much as uranium. It has beautiful mechanical and electrical properties, but really, the major cost of paving the streets with it is the labor. (75)

The flow of capital in *Bloom* is made invisible by ladderdown exchange – or at least, presented in a form that eschews the infinite interchangeability of digital code. The economy underwriting the mission to the heart of the Mycosystem (and indeed everything else) is built upon nuclear transmutations that have specific, solid, unshakeable foundations, rooted in the comfortingly *im*mutable laws of physics. Infinitely reciprocal, undifferentiated abstraction of value has been denied here in favour of linear relationships between materials and their ability to animate specific physical outcomes. The absence of money here is telling both of the subjective anxieties surrounding its permeable diminishment into digital code, and the need to defend projects (i.e. scientific teleologies) whose explication is heavily reliant upon the driving forces of corporate capital. These anxieties are displaced, as with *Prey*, onto the marginalised bodies of women.

The way that the mycora infects and absorbs (and thus kills) in *Bloom* is very similar to the way that the swarm does so in *Prey*: It effects a total dissolution of the vulnerable corporeal body. When an outbreak of the lifeform happens, the environment and human beings alike are quickly broken down and assimilated into the mass – as shown in a section describing a deliberate release of mycora by a man attempting to sabotage the *Louis Pasteur*'s mission:

> The air vent and the wall it was part of began to boil, their substance turning fluid, turning into rainbow-threaded vapors as the tiny, tiny mycora disassembled them molecule by molecule [...]Tug's body did not come apart at once into threads and dust, but his skin had gone rainbow-crystalline with mycoric frost before he'd even hit the floor, and of course he never did rise [...] That Jinacio

> suffered in the twelve seconds of his death goes without saying, but the images are not on file. God, I owe him that much, at least. (58-9) [102]

Bloom illustrates once more the fear of a leaking, fecund, aggressively indeterminate body to the bounded subject, and like *Prey*, it enriches its sense of horror by drawing upon the mycora's 'feminine' characteristics. Descriptions of the mycora in *Bloom* often focus on the entity's radical fertility as a source of fear. The outbreak of bloom described in the novel's opening segment laments the fates of those "unfortunate enough to be within the fecund radius when the fruiting bodies swelled and popped" (4). This idea of a "fecund radius" or "fecund zone" crops up regularly in the novel, and the threat of being permeated by and integrated into this radically embodied entity's "meaningless program" (5) is ever present: the caricature of pregnancy that we see here is, of course, lacking in the 'meaning'—the unified, teleologically-stable mind-self—of the male characters who fight it.[103] One of the primary means of on-the-spot defense against mycoric outbreak is, too, feminine-coded: those at ground zero of an emerging bloom will hope that, before they die, they will be able to drop a couple of "witch's tits"—devices that drop the temperature in that small area and literally freeze the bloom in its tracks (3). The unexamined deployment of this somewhat medieval metaphor, with the attendant maintenance of its connotations of coldness and abjection, essentially fights one feminine stereotype with another: the relentless, all-consuming reproducer is neutralised by the equal-but-opposite spectre of the frigid, unnatural vision of a female body with no apparent use for men.

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[102] The "zee-spec" described here is a mobile computing device, worn like goggles. For Strasheim it serves as a means of recording and enhancing his "real-world" perception and experience. This is another example of the desire to use technology primarily in order to intensify the gaze of the (male) subject into the object-world.

[103] Being "in bloom" is also a term for being visibly pregnant, and has any number of descendents; to have "flowers in the window" et cetera.

Apart from this one rather striking trend of devices underpinning the depictions of the mycora, there are characters and entities who even more clearly embody the text's tendency to displace the grey goo enemy's undesirable, ontologically indistinct qualities onto othered subjects—and, again, women in particular. As with *Prey*, *Bloom*'s primary antagonist figure is a female scientist whose objectivity has been 'polluted' by her succumbing to the will of this radically embodied entity. And, as with *Prey*, it is a version of pregnancy and the nurturing 'instinct' of the mother that is the foil to the scientific project, and, by extension, the integrity of the bounded subject itself. As shown earlier, *Prey*'s Julia distorts the teleologically pure aim of the nanomachines by literally treating the swarm like a child. In the case of *Bloom*'s bioanalyst character Renata Baucum, clandestine sabotage of the *Louis Pasteur* at several points during the mission culminates in an attempt to release an outbreak of mycora onboard the ship – by rupturing a pouch of TGL spores that she carries inside her body:

> She gasped, then screamed. Alarm klaxons sounded. Warning lights began to flash. Baucum's skin began to change color, and then to shimmer in an oil-on-water sort of way. She screamed again, and this time it sounded all wrong, like she was coughing up a lungful of dandelion fluff, or trying to [...] Baucum's skin had lost its smoothness, had developed an unmistakable powdery-vapory aura of rainbow-blossoming mycostructure, and I was more afraid of that than I can tell you, more afraid than if she were burning, or aiming a weapon, or anything. (234-5)

This literal, physical dissolution of Baucum—effected by her desire to let the mycora assimilate her—plays out before the rest of the crew like a grotesque caricature of birth. There is a resonance here with the 'chest-bursting' xenomorphs of *Alien* (dir. Ridley Scott, 1979), and both representations of this process represent, on one level, an expression of male fears of female fecundity. It is notable that Strasheim considers the

threat of absorption into sameness represented by Baucum's changing, permeable/permeating body to be a more grave threat than that of the potential death that would ensue from being attacked in a more conventional manner. The nightmarish permeability of grey goo remains the source of horror because of its enduring threat to the boundary logic of humanistic subjectivity that makes normative difference possible, rather than the (apparently) comparatively mundane risk of organic death. Before this moment, though, Baucum exhibits a number of other behaviours which suggest a much closer alignment between women and the mycora (and so, women and this dangerously unbounded body). Baucum, like *Prey*'s Julia, evokes the figure of the *femme fatale* by seducing Strasheim, (assumedly) to stop him from "reading" her in the way that he had been attempting, and thus prevent him from uncovering her plot.[104] 'Using her body' in an attempt to disrupt the clarity of Strasheim's inquiry in this way is a microcosmic resonation of the threat from the mycora: "those soft tissues I had so recently admired" (234) are what transfix the journalist-protagonist's gaze, even as Baucum is assimilated by her own gut-borne colony of spores.

In fact, Baucum's representation in the novel is, in general, best measured against that of Strasheim. Strasheim is on the *Louis Pasteur* as a journalist; he is engaged in the highly rational (and conventionally male/masculine) practice of ordering chaotic information from the mission into linear, cohesive narratives and sending it back to the Immunity.[105]

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[104] Indeed, in one moment, Strasheim is horrified when Baucum wishes to "trade zee-specs" - despite having just had sex with her. He sees this as "a shocking intimacy": it is fine for him to share the base flesh of his body with this woman, but allowing her into this ocularcentric extension and representation of his mind-self is almost too much for him to bear (193).

[105] As the *Louis Pasteur* moves further away from its Immunity home, Strasheim's despatches gradually dwindle from vast audio-visual presentations to short "plaintext" messages which, nonetheless, still contain the "essence" of the message. It is a prescient model for a particular trend in real-world Internet-style broadcasting, given the novel's 1998 publication date: these messages might be compared to the stripped down "tweets" of the online social network *Twitter*. Digression aside, Strasheim's ability to locate and re-present this "essence" is, again,

He does so mainly using his zee-spec which he also occasionally uses, like many other members of the Immunity, to escape the drudgery of his miserable, claustrophobic life, and model alternative, escapist virtual reality spaces (in a manner not a million miles away from what we also see in *Snow Crash*). While aboard the *Louis Pasteur*, Strasheim uses his zee-spec to play around with *Conway's Game of Life*, a piece of software (or "cellular automaton") designed to model the progression of artificial life in the form of dots, which "evolve" generationally according to the program's internal rules and the initial state constructed by the player.[106] While trying to better understand the progression of mycoric life—and under Baucum's suggeston—Strasheim begins to alter the rules of Conway's game in order to accommodate a more ready simulation of mycoric progression and bloom (171). However, he consistently fails to produce the kind of all-consuming, hungry "life" of the mycora in his simulation (172-6). Baucum, too, wishes to model the mycora – and while she has a microbiologist's understanding and insight into this form of life, she, too fails to create a workable celluar automaton within the *Game of Life*. However, while Strasheim falls back on crafting a conventional virtual vision (i.e., a static 3-D 'construction' rather than a life simulation) of his ideal city based on that of a pre-bloom Earth—full of the cool straight lines of rational urban planning (177)—Baucum's virtual proclivities push her towards constructing a vision of the Earth that is overrun by the mycora.

Strasheim's interest, in other words, is in the logical penetration of the mycora's inner workings (by which to understand the enemy more fully)—whereas Baucum's priority is to attempt to immerse herself aesthetically and proprioceptively in the bloom. She relishes losing herself in this world; it is a guilty pleasure - and she shows it to Strasheim:

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linked to a very traditional understanding of the male decoding of signs – and indeed, of there being an "essence" to a message in the first place.

[106] *Conway's Game of Life* is in fact a real piece of software, created in 1970 by John Horton Conway.

> I gasped […] not fields, not forests, not jungles or deserts, but…something else. Something clearly alive, breathing, pulsing, *moving* in organic fits and spasms. Not one thing, not even a million things, but an infinity of them—mounds upon mounds, branches upon branches, flowers upon flowers upon flowers… And things more disturbing than that, things like eyes and mouths and tentacles, like slimy pools filled with wriggling forms, like bristly brain-coral reefs sprouting fish, snakes, monsters, from penile stalks of quivering meat. Suggestions of form, only, like animal shapes glimpsed in cloud […] I would have nightmares for a week, a month, the rest of my life, now that I knew what Hell looked like. (193-5; emphasis in original)

Strasheim can only recoil at this vision of Earth, and we are left with an image of Baucum as having a polluted understanding of what it is 'correct' to create in cyberspace. Strasheim may model the mycora in the *Game of Life* in order to better understand it, but when he fails, he does not try to create a top-down, fractal facsimile of the entity's body in the manner that Baucum does. Baucum's motives for modelling mycoric development are irrational; they are emergent from a desire to 'touch' or to join the entity in some way, rather than a more conventionally rational need to understand or analyse it.[107] This is not the only time when Baucum's ability to maintain her commitment to the established teleology of objective scientific inquiry is questioned. A moment where Strasheim interviews Baucum about her views on the potential for mycora to exhibit any kind of collective consciousness or "self", and the rumours of some form of humanity still living within the Mycosystem, is another opportunity to show the slippage of the woman scientist's ability to maintain an objectivity or distance from the object of inquiry: "Humans in the Mycosystem, more than just a silly rumor? Maybe. Maybe. The thought

[107] That the entry to this 'world' happens in a post-coital moment only exacerbates the link between sex with a woman and the danger of subjective dissolution.

was unsettling. But Baucum's tone was beginning to bother me as well; too much like the Temples' propaganda, more anger than true scientific indifference. How open was *her* mind?" (100, emphasis in original). Of course, even with that striking emphasis on the openness of "*her*" mind, and the rest of the above evidence, taking Baucum to be a cipher for the novel's rejection of a putatively feminine appropriation of subjectivity and conscious intellect (reflected in the mycora) is limiting. However, while Baucum is the only fully fleshed-out (as it were) female character in the novel, McCarthy's representation of the conspiracy that aids and abets her desire to join the bloom is steeped in a similar kind of feminine coding.[108] The "Temples of Transcendent Evolution" are a quasi-religious organisation dedicated to researching the mycoric bloom, attempting to locate the "mycoric soul" (29). The only definite representatives of this organisation that we encounter in the novel are women, and Strasheim, like most members of the Immunity (their churches are regularly burned to the ground), has little time for them.

We see this clearly in a segment relating an interview by Strasheim of a Temples "spokeswoman", Jeanine Proust:

> *"Some people* [...] *accuse the Temples of going too far. The psychotropics, the fecundity rituals, the Confessions of Awe... Some suggest that the Mycosystem has become an object of actual worship among your followers."*
>
> *She shakes her head. "No, I'm sorry, that would be stating it far too strongly. The spiritual implications of complexity on such a scale are simply not known. If a mycoric soul exists down*

[108] Minor female characters in *Bloom* are represented by an engineer named Davenport, who does not get enough words in the novel to be fully appraised, and, a little more significantly, Strasheim's mother. In an early chapter (called "Wombs"), Strasheim meets with his ageing, senile mother, to tell her of the mission upon which he will be embarking. His view of her condition seems a mixture of mourning and contempt; he loathes the fact that "she used to be *smart*" (emphasis in original) and feels that she is "dead already, an empty shell of flesh and nerve" (21). Robbed of her earlier impersonation of masculine thought, Strasheim's mother is loathed for her disintegration into the flesh.

> *there in that fractal wilderness, our apprehension of it must be fragmentary at best* [...] *It's a frontier that can only be explored when we're brave enough to let a bloom run its course* [...] *this is all very easy for outsiders to misunderstand."*
>
> *"I agree," I say to her, fighting to hold my temper, my impartiality suddenly strained just a bit too far. "I doubt I've understood you at all. I don't see you people vacationing on Mars. I don't see you volunteering to die in a bloom. Isn't apprehending spiritual truths a little empty if it isn't backed up by actual deeds?"*
>
> *At this, she flashes a kind of disappointed smile—I've got her and she knows it.* (29, emphasis in original).

McCarthy does not seem to be entirely aware that Strasheim's browbeating of the Temples' representative could come across as fallacious as it does (and this is not the only moment where Strasheim is written to have had the dubiously triumphant final word in an argument with a woman—it happens in his first meeting with Baucum as well [48]). We are no doubt expected to agree with Strasheim here, that those in search of "spiritual truths" should put up—by committing suicide, piecemeal—or shut up; we are led to concur that this kind of thought has no place in the Immunity's economy of knowledge. It is, though, just one of several of the novel's expressions of frustration at a somehow-feminised version of inquiry represented by the Temples. Despite the Immunity's dwindling birth rate, Strasheim singles out "fecundity rituals" as one of the inexplicable Temples practices worthy of concern, and it is difficult not to consider this to emerge from the same anxieties about the perceived pollutant effect of the female body.

Grey Goo and You

Overall, the deployment of the figure of the nanotechnological swarm demonstrates a tendency for the instability of categories of difference evoked by the digitized,

commodified subject to be blamed upon marginalised bodies. This in turn effects an exculpation of the coalescing of effects produced by the codification of the human body emerging out of late capitalist attempts to transcribe the self into abstract digital (and thus universally saleable) essence. There is a deepening concern about the homogenising effect of the breakdown of subjective boundaries by the codification of the subject, and, in response, fictions that register these anxieties rehearse marginalising discourses, which have the perceived ability to restore objectivity, and thus the possibility of normative difference. Indeed, at times, both of the texts above uncover threats in female subjectivity as a means of exonerating the capital-driven codification of the subject, performing an explicit removal of money from the bases of the novels' dissolving jeopardy altogether. What haunts both novels is the spectre not of the inherent mutability of digitalised capital, but that of lost control: control of the scientific project, control of nature; control by—and of—women. While promiscuous, steadily-atomised money itself either lurks somewhere in the texts or is represented by a money-shaped hole in the texts' logic, the notion that it is in any way responsible for the gooey collapses of human subjects into the undifferentiated object-world is rejected with alacrity. Instead, persistent and pervasive discourses regarding a putative female inadequacy to attain rational subjectivity are deployed as the real reason why our systems of abstraction and digitization are inherently risky, prone to leaks and cross-contaminations.

The rehearsal of these discursive patterns flows, constantly, through the narrative of the nanotechnological swarm. Of particular importance is the recurring issue of how conventional, bounded subjectivity is both threatened and then policed: like the avatar and the hacker, the swarm is a figure that exists at a point where a putatively artificial subject arises out of its predetermined role as a passive invention, and reaches for viability to the detriment of the literal and figurative cohesion of the human(ist) subject

that "created" it. It is true that both the avatar and the hacker are figures that animate the containment of such threats, while the swarm is the radical embodiment of one of those threats—but the figure's cultural *function* is near-identical: we only see grey goo appear in order that it be resisted, ordered, contained or, at the very least, explained and compartmentalised. *Prey*'s Jack and *Bloom*'s Strasheim are active individuals imbued with the same mythical rationality as any hacker, and their roles in their respective stories are to ensure that only that narrow category of subjectivity is defended as viable. The nanotechnological swarm is, in short, a means of ensuring that increasingly lively technologies remain at the "object" end of the subject-object dyad, in spite of (and in explicit resistance to) the pestering of conventional agency that such technologies continue to represent. We see demonstrated here exactly the kind of monstrous, promiscuous hybridity made possible by fundamentally unstable relationships with technology, but as with those kept subjected by narratives of the avatar or the hacker, they are only animated in order to be rejected or destroyed. Once again, both Haraway's and Hayles' subtle readings of the interface go unheard here: while there is no evidence that either Crichton or McCarthy had read Haraway or Hayles, the same kinds of subjective dissolutions described by both thinkers—ones that could unseat the exceptional human from its privileged position atop its fictional taxonomy—are repelled with alacrity, and the attendant political possibilities of that unseating are repelled alongside them. This representation of subjectivity at the interface reinscribes hegemonically once more the triumph of humanist exceptionalism, and the tiny sliver of humanity that is even capable of being assigned full agency within that exceptional category.

Intersection

Cultural conceptions of the human-technological interface are frequently channelled into robust and normative figures that recapitulate exactly the kinds of dualistic concerns that Haraway, Hayles and others have argued could be unravelled by them. The figures in Section One have demonstrated the ways in which the human/technological interface is reproduced frequently as a means of reiterating the boundaries of the liberal humanist subject *in the face of* the threats of its reconfiguration by that interface, and how those threats are gender-coded.[109] In Section Two, I examine—and determine by examining—three figures which may offer an alternative means of understanding the interface, which do not reiterate those dualistic concerns, and do not ratify a singular, reduced, essential vision of the human subject in operation or control of a technological other. An important thing to acknowledge in connecting the two sections is a slight shift (and expansion) in the nature of the texts under examination. The figures examined in Section One of this thesis are pursued, on the whole, through analysis of literary and cinematic texts, but this is not—and indeed cannot be— exclusively the case for the figures that I examine here in Section Two. The avatar, the hacker and the nanotechnological swarm all evoke real-world questions and issues, and co-exist in technocultural discourses alongside their appearances in fiction—but all register by far the most clearly as consolidated figures in fiction. Literature and film provide, for those figures, the richest and most stable ground from which to effect an analysis. The figures I outline in the ensuing chapters, though—the fursona, the caring computer, and the decaying digital—overflow easy location within fiction, because they have not yet been clearly consolidated or stabilised. While the avatar, the hacker or the nanotechnological swarm can be

[109] I focused here, of course, on fictional examples. However, for more on the 'policing' of this subject online in the 'real' world, see Stoate (2007). In this article, I point out the tendency for users of the Internet to police explicitly performances of authentic identity online. These "Internet Detectives" pursue a project of ensuring that those making claims to certain life experiences (such as, for instance, life-threatening accidents) have actually had those experiences—and take pains to point out falsehoods where they occur. This process is, I argue, performative—it reproduces the boundary logic of the self by the very practice of stating the exclusion of those whose performances of authenticity are putatively inadequate.

identified as stable and recurring entities within individual texts, the figures I outline here are *emerging*, and can thus only be described as tying together elements and features seen *across* texts—texts that overflow books and films, and run into practices and processes enacted on the Internet, in the news media, computer/video games, scientific texts, and many other sources.[110] Identifying these emerging figures, in other words, is less about the relatively simple task of locating them fully-formed in individual texts (fictional or otherwise) and subsequently discovering their features and normative functions, and more about mapping the connections between alike phenomena in various disparate but resonant discourses permeating fiction and non-fiction texts alike.

Stabilising the image of each figure in Section Two is, then, partly *performed* by the analysis itself. I make connections between texts that can identify tangible evidence of the far more complex nature of present-day human/technological embodiment, and, eventually, to promote a partial recouping of cyberspace as something that does not necessarily have to be as knowable, solid, three-dimensional and Euclidean, subject to domination and control (or indeed, as I will argue, even a space at all). Their commonality emerges further in their recapitulations of corporeality and finitude; this is not a posthuman fever dream of the kind described by Hans Moravecs or Raymond Kurzweil, and there is no opportunity for dualistic transcendence here. Attempting to rediscover the role of the corporeal body, though, in the face of so many deterministic and transcendentalist discourses, is a complex task. The ensuing figures are messy, mobile, temporary, contingent and materially located; they are as embodied as it is possible to be, and both rely upon and correspond in generating the material conditions of their own occurrence. They may never even be identifiable again outside of the specific discursive

[110] The figures in Section One do, of course, tie together discourses across these varied kinds of texts, too—but their shapes and functions are so comparatively well-established in fiction that examining them in this context is by far the best way to illustrate their features and functions.

entanglements that I engender in the following chapters. Naming and locating them does not produce a taxonomy of figurative species to be identified as specific bounded entities in future texts, or a toolkit to provide emblematic examples of 'correct' collisions between the human and the technological—but rather to show the possibility of operating outside the dualistic policing seen in the figures of Section One.

The power of the extant and most highly-proliferated, prescriptive models for understanding embodied subjectivity at the interface is great, and they may, to an extent, have succeeded in containing the subversive potential of that interface. But the relationship between humans and technologies still need not be exclusive of alternative understandings, and the purpose of Section Two is to map three such possible alternative understandings. Apart from the difference between the stability or level of congealment/consolidation of the two respective groups of figures I examine, my methodological shift reflects several other crucial points. Firstly, and notwithstanding the broad-strokes examples given above, the figures I map in Section Two are *not* direct and finished replies, answers, replacements, or progressions from those seen in Section One. They are not individually opposite (nor even always directly comparable) as discrete entities. I do not, in other words, purport to just invert the same troubling dualisms and valorise the body to the exception of the mind, or uncover (or indeed prescribe) a distinct chronological shift from the previous to the now. Nor do I even claim a necessary shift here from the normative to the non-normative: the figures in Section Two do not escape possible colonisation or (re)appropriation by existing discourses of power and domination, though they may be *more* resistant to them in their mobility and contingency than those uncovered in Section One.

SECTION TWO

CHAPTER FOUR:

THE FURSONA

A fursona is a constructed alternative depiction of the self, negotiated primarily through the Internet. The word is a portmanteau of "furry persona": this alternative depiction usually takes the form of some kind of anthropomorphic or cartoon animal. In this chapter, I read the fursona as an emerging node of collision between human subjects and technologies that reflects the first of three potential alternative ways to read the embodied relationship between human subjects and digital technologies. The fursona animates a relationship between embodied human users and technology that is considerably more complex and less reductive than the boundary-policing figures discussed in Section One of this thesis. "Fursona" is a word in common use within the 'furry fandom': a collection of interest groups, united mainly through the Internet, with a shared obsession with (and often sexual fetish for) fictional, graphical, role-played and otherwise performed representations of anthropomorphic animals as seen in cartoons, comics, et cetera. Emerging out of science fiction fan communities in the 1980s (the first exclusively furry convention, *ConFurence Zero*, took place in Southern California in 1989), the furry fandom has grown considerably.[111] There are now several online communities dedicated entirely to furries: the largest single example is *Fur Affinity* (2005-present), which, according to its annual statistics for 2009, caters to over 215, 000 active users.[112] There are also dozens of furry conventions worldwide each year.[113] These conventions, in a manner similar to science fiction and fantasy conventions, bring together furry fans,

[111] A detailed chronology of the growth of the furry fandom by science fiction historian Fred Patten can be found at http://yarf.furry.com/chronology.html.

[112] See Dragoneer (2010).

[113] The largest, *AnthroCon*, is an annual three-day meeting of over 3,000 furries held in Pittsburgh; one of nearly equal size is held each year in San Jose, named *Further Confusion* (Brandolph 2008).

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artists, writers, animal/mascot costume enthusiasts ("fursuiters") and so on.[114] Furries have also registered—largely, and perhaps somewhat understandably, as curiosities—in several mainstream texts: a focus upon the furry fandom's sexual elements is typified by depictions such as that in an episode of the forensic police drama *CSI: Crime Scene Investigation* ("Fur and Loathing" [2003]) or in the showbusiness comedy-drama *Entourage* ("The Day Fuckers" [2007]). Mainstream news media coverage also accounts for furries.[115]

Unlike the avatar, hacker or nanotechnological swarm, the fursona is not a term that represents a clearly-consolidated figure that can be identified within fiction, but rather a contentious and variable one, upon which I seize here to demonstrate a concatenation of discourses and theoretical moves. A concrete definition of "fursona" is the topic of lively contestation even within the furry subculture, but it is possible to give an outline of its basic and most widely-accepted functions.[116] Furries' interest in anthropomorphic animals often extends beyond merely drawing/collecting relevant artwork or attending conventions. Many furries develop a virtual, alternative fantasy representative of themselves, normally an anthropomorphic version of their preferred animal although, as I will show, the idea of the fursona being a 'representative' of an offline subject is not

[114] Given the comic book/cartoon underpinnings of the interest, many, if not most furries have an interest in drawing.

[115] Media coverage generally either plays up to the sexual fetish aspect, such as in the *Vanity Fair* article by George Gurley (2001) or, less frequently, attempts to produce a more complete picture of the fandom, such as in a report by Denise Winterman (2009). Recent attempts to do otherwise notwithstanding, the media's frequent reduction of the furry fandom to its (nonetheless considerable) sexual fetish element has led to a growing resistance of furries to being represented or surveyed by the media and social researchers alike. This makes finding reliable data on furry demographics difficult, though furries' strong online presence means that what is available is frequently and collaboratively updated by members of the community. A particularly valuable resource is the continually-updated *Furry Survey*, which records data on users' perceptions of their own furry interests, political views, sexuality, and so forth, and accounts for over 3,000 respondents to date: http://www.klisoura.com/ot_furrysurvey.php

[116] There is a dearth of peer-reviewed publications on this subject, but a reasonable broad description of the major different understandings of "fursona" *within* the furry community can be found on *WikiFur*, a knowledgebase for information related to furries and their community: http://en.wikifur.com/wiki/Fursona.

quite an adequate reflection of its functions. This fursona may be as simple as an avatar picture to use on a forum, or may extend to being a complex fictional character with a personality, history and residence in a "setting" distinct from the user's own life. Furries very frequently produce (or commission) drawings of their fursonas, roleplay ("RP") as them, or (somewhat less frequently) dress up as them in expensive, custom-designed costumes (fursuits). The crucial aspect of the fursona though, and its importance for understanding an alternative representation of the body in cyberspace, is that many furries do not draw any meaningful distinction between their offline (or 'mundane') human selves and their fursonas. The fursona, as it is understood in the furry fandom, is a furry user's creation, but it is almost always both heavily invested with a user's own personality *and* generative of experience and identity in that offline user's subjectivity. Furries' performances and depictions of their fantasy selves, built over time from clusters of various media and experiences, reach out from the facilitating/enabling technologies of the Internet, and impact upon their identities in affective, embodied ways.

This is not, in other words, a unidirectional relationship of human control of technological agency/space, with a clear and continually-performed separation between the offline and the online. If the avatar (as well as the hacker and the nanotechnological swarm) are each respective kinds of cyberbodies, dramatising the recapitulation of a dualistic division at the electronic interface, and resisting the crossover of influence from the technological into the (masculine) mind-self, the fursona is a kind of cyberbody that rediscovers the indistinctions and crossovers that emerged while possibilities as relationships with technology shifted (as highlighted by Haraway), but which those more normative figures reject. As a particularly acute example of an emerging cyberbody, and thus existing in motion beyond the discourses within which the figures of Section One are gridlocked, the fursona represents a mode of using technologies that does not (and

cannot) ratify unidirectional instrumental control of/intervention into an 'other' (cyber)space or agent, keeping the mind and body separate, but a willed (and, perhaps more importantly, unwilled) collapsing of that dualism: it allows, by its very substantiation, the uncontrolled seep and leak of influence into the formerly putatively controlling subject—in a manner that prompts or forces the ongoing reconfiguration and resubstantiation of that subject. Where the figures in Section One all animate threats to the boundedness of the conventional liberal humanist subject and then dramatise the containment of those threats by a rational (male) actor, the fursona is the first figure I analyse that emerges from similar human/technological interfaces (user/computer/network et cetera) and yet *overflows* the possibility of such containment. Furthermore, it initiates a recouping of the organic body's role in its affective character, which is so often discarded or subjected in conventional encounters with or depictions of the electronic interface. Finally, it confounds the possibility of imagining cyberspace as a penetrable plane or space: the fursona demonstrates an understanding of cyberspace that distributes it across various strands of material contingency, and the subject purportedly inhabiting cyberspace is not really *inhabiting* it at all, but is materially linked to and drawn out of that cyberspace itself, in opposition to the cyberpunk-influenced image of the mind-self as a separate, discrete essence that travels through a grid at great speed and with near infinite potency.[117]

Finally, it is important to note that this chapter is not about furries themselves so much as it is about their particularly complex manner of constructing and living the alternative identities they seek, with a specific focus on their encounters with the Internet. This account of the fursona is *not* intended to offer or prescribe a mental, social or

[117] This idea of cyberspace and the interface body as, respectively, a material milieu and the explication of potential into contingent and transient transductions of affect is taken up further in the Decaying Digital chapter.

psychological diagnosis of any kind, or to compartmentalise their behaviour as 'outsider art' or any other such categorisation.[118] Nor do I assert any kind of particularly revolutionary ethical relationship between humans and animals in or related to the furry community: the fandom's basis in comics, fiction and cartoons marks it as a phenomenon arising out of media representations of animals rather than encounters or relationships with so-called real animals themselves.[119] Rather, I seize upon the unusual and complicated processes in action to investigate how furries' proximity to and relationships to digital technologies, such as the Internet, can affect or aid in the construction of their desired alternative embodied identities—which nonetheless are never produced as the discrete and unified outcome of a rational and intellectual crafting or arrangement. The question of 'what happens' to the body and the human subject when it encounters the permeating reach of digital technologies can be illustrated in far more detail by examining a figure like the fursona, which is open, shifting, indistinct, and operates at least partly beyond the conscious control of any individual agent involved—rendering it inherently resistant to totalising gestures of domination. The nature of a putative user's subject can be significantly transformed by online interactions congealed in the figure of the fursona. Discovering—or rediscovering—the fursona in this complex transaction is a task rooted in showing this cyberbody's material (and affective) character: the fursona is both the nexus of and the active generator/distributor of the subject-constituting body-effects of the Internet as a concentration of media technologies.

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[118] For an account of "the furry typology" that examines furries' perceptions of their respective human and zoomorphic identities from a more empirical perspective, see Gerbasi, Paolone et alia (2008). Gerbasi et alia assert that a quarter of self-described furries produced a "distorted" view of identification with their own species (197). They conclude with a tentative identification of "species identity disorder", making comparisons to "gender identity disorder", though stress that much more research is needed (ibid).

[119] The 'question of the animal' is widely theorised. Perhaps the best example for me to list here is the one that most closely resonates with the work I am undertaking. Haraway writes on the question of the animal in *When Species Meet*, accounting for and responding to version of 'the animal' as perceived by Jacques Derrida and Gilles Deleuze and Felix Guattari respectively. (2008: 20-35)

Prosthetic Memory

The performative character of certain online activities helps to police claims of authenticity in a way that serves primarily to reject inadequate authenticity claims in order to better constitute the subjectivities of those doing the policing. While a mode of inquiry focusing upon the performative is certainly robust, and explicative of the normative effects of some online encounters, it is not entirely appropriate for examining the more dispersed and affective/affected nature of the loose collective that is the fursona. There is undoubtedly a performative character to many of the online interactions I describe here, but my focus upon the body (rather than just the discursive) makes it necessary to engage a register that accounts, perhaps somewhat counter-intuitively, for the *material* quality of the putatively immaterial experience of the Internet. My primary strategy here for unravelling the fursona's material function is positioning it as the simultaneous generator and recipient of bodily impacts on the register of the affective. My trajectory for mapping the affective quality of online encounters is inspired by Landsberg's notion of "prosthetic memory".[120] In *Prosthetic Memory: the Transformation of American Remembrance in the Age of Mass Culture* (2004), she argues that memory can manifest as something directly transplantable (and saleable) among people in a radically new way, facilitated by mass media technologies. These kinds of technologically-mediated experiences can reach out into the physical, sensate world of the viewer/consumer/subject in collision with those mediations, and make a tangible impact on their subject formation.

[120] The study, practices and representations of memory in and out of literature and culture constitutes a vast field of critical, theoretical and philosophical study. I do not claim here to represent all of that field, but to focus on one specific intersection between memory, the body and commodified media technologies, as analysed by Landsberg. For a thorough survey of key theorists of memory, as well as studies of some major intersections between memory and literature, see Anne Whitehead (2009).

Her project comprises a theoretical account of "the production and dissemination of memories that have no direct connection to a person's lived past and yet are essential to the production and articulation of subjectivity" (20). Within this model, watching a film, reading a book and so on are embodied experiences *in themselves* rather than representations of experiences, and we take away from those experiences real and tangible memories that can have permanent implications for the constitution of our individual identities. Landsberg builds this notion upon theories of the "bodily, experiential component of film spectatorship" (32).[121] A collapse between representation and experience which is *not* coded pejoratively is emblematic of the possibilities of alternative subject formation that can be enacted in concert with the Internet. While the capacity to move an audience synaesthetically through media meets its explication *par excellence* in the cinema, I argue here throughout that the Internet produces effects/affects in the body in very similar ways, as evidenced by the writing of the participants/users I examine. Indeed, though she does not focus upon it in any great depth, Landsberg does gesture towards the Internet as another technology that can enable the circulation of prosthetic memories: "in the twenty-first century, this challenge [to ownership of "authentic" memories] is lodged even more strongly by the Internet, with its capacity to freely disseminate texts, information, music, and so forth" (147).

These "prosthetic" memories are "sensuous", "worn on the body" and "produced by an *experience* of mass-mediated representations" (*ibid.*, emphasis in original). The experiences one has at the cinema, or at a holocaust museum, or reading a graphic novel, can generate memories of events and identification with the represented individuals that extends beyond suspension of disbelief, and into the archiving of memories that could be

[121] Landsberg references here the work of Steven Shaviro: Shaviro writes that "cinematic images are not representations, but *events*" (qtd. in Landsberg, 32; emphasis in original).

(and sometimes are) mistaken for 'real' ones. Recipients of these prosthetic memories use them in tangible ways; their life and actions are guided by these experiences in ways that do not mark them as inadequate or inferior to 'real' experiences. To illustrate this phenomenon, Landsberg makes reference to two science fiction texts that dramatise a more radical prosthesis of memory. Reading the films *Blade Runner* (dir. Ridley Scott, 1982) and *Total Recall* (dir. Paul Verhoeven, 1990), both of which deal with the idea of technologically-mediated memory implants, she outlines the ways in which this 'false' memory could be appropriated and assimilated in the process of individual subject formation, and the ultimate unimportance of their dislocated (or absent) experiential origins.[122] "Both *Blade Runner* and *Total Recall*", she writes, "are about characters who understand themselves through a variety of alienated experiences and memories that they accept as their own and subsequently make their own through use" (47). What is important here is that these characters *use* these memories, no matter their origin, and construct identities around them. I would add to Landsberg's analysis that the very viability of these conventionally baseless identities—with which we as an audience are, in both cases, clearly expected to sympathise—is not compromised by the decision taken by both films' directors *not* to ever reveal their respective protagonists' putatively true or authentic identities. This deliberate ambivalence resists totalising readings of the films' narratives, but it also functions to illustrate the relative unimportance of the origins of the memories in question. Where these memories arose originally, if anywhere, is less important than the ways in which they constitute or affect the subjectivities of those who come to possess or wear them.

[122] This radical form of prosthetic memory implantation is also an idea taken up in the film *Moon* (dir. Duncan Jones, 2009). I examine this film in detail in the Caring Computer chapter.

That these memories, particularly in *Total Recall*, can come from nowhere at all—or at least, no specific conventional source of memory—illustrates the potentially transformative nature of representations of even things that have no clear basis in one recognisable 'real' event or phenomenon. As Landsberg writes:

> Because these mass cultural commodities, these images and narratives [...] are mediated through the cultural, political and social worlds of people, they have the capacity to affect a person's subjectivity. The radical potential of prosthetic memory derives from the fact that the subjectivities they produce are not "natural", not based on some count of authenticity [...] What matters is not the source of the memories but how they are invoked and used. (146)

Significantly, while Landsberg's examples demonstrate the circulation of prosthetic memories through mass media texts, and their apparently radical alienation from the supposed phenomenal experiences of the individuals or collectives who originated them, the examples she gives tend to be about distributing the reconstructed/re-represented memories of events that have putatively real-world, historical referents: she highlights the possibility that spectators can and do appropriate prosthetic memory in order to "suture themselves into history" (14). However, the focus upon the representation of major historical events is not necessarily indicative of the notion that only conventionally 'real' things (i.e. known events with such a documented historical register) can be represented or reproduced as prosthetic memories.

I perceive two reasons for this. Firstly, while the un- or hyper-real experiences invoked in the prosthetic memories I show in this section may not have obvious conventionally real historical referents, their status as cultural texts, embedded within historical and social contexts, renders them, like all texts, at least partly the expressions of those material bases, inextricably linked to and contingent upon the materialities of their local

histories.[123] Secondly, even though a link to history is foregrounded in Landsberg's study–the memory-generating mediated reproductions of the Holocaust, the Second World War or the experiences of African-American slaves are rightly prevalent because of their overwhelming historical significance, a need to understand and manage the ongoing cultural effects, and the ensuing wide social and economic support for mediated strategies to do so—the focus upon these widely-represented and rupturing moments/durations of known history does *not* necessarily preclude the possibility that representations *without* mimetically-indicated and concrete historical counterparts—such as fictional or fantastic representations—could obey the same rules, and thus produce similar effects (affects) in the bodies of those exposed to/participating in them. Landsberg's framework can, I argue, bear this theoretical weight. In a direct challenge to two widely-repeated protestations about a perceived postmodern collapse of authenticity, she explicitly disavows the urge to appeal to a pre-existing, essential (and impossible to access) real:

> Jameson's argument does not consider that the technologies of the "postmodern" moment might themselves change what counts as experience. Both assumptions unwittingly betray a longing for some earlier moment when, for Baudrillard, there was a "real", or, for Jameson, people experienced history in an authentic way. But the "real" and the "authentic" are and have always been a limit case, an ideal state. People's relations to both the world and the past have always been mediated through representation and narrative. Even in the historical moment that these theorists label "the postmodern," one *experiences* one's life as real [...] In other words, Baudrillard and Jameson may be conflating "the

[123] Landsberg in fact makes the same point to further justify her examination of the representation of prosthetic memory in fictional texts (22).

> authentic" and "the experiential", erroneously rendering them both obsolete in what they call postmodernity. (33)

For Landsberg, the desire to privilege prosthetic memories which are traceable back to tangible real-world events—over those which, by Platonic logic, are not—only ratifies a vision of authentic remembrance and authentic experience that is just not tenable.

This relationship between (in)authenticity, memory, technology and subjectivity is one whose character can be extended to describe the Internet-organised concatenation of effects and affects that is embodied by the fursona. While the identity-building practices of the specific subculture I examine here do not register as being sourced from discrete events on the same level of cultural significance as those Landsberg describes, the *process* of combining various mass-media technologies to invoke absent experience is analogous. The fursona manifests a colliding cluster of memories reflecting completely fictional/fantastic events/creatures[124]/lives—which have *never existed*—and the arguable postmodern shift in what counts as experience renders those putatively inauthentic origins broadly immaterial. Whether users produce their subjectivities based on prosthetic memories circulated as a response to real historical moments or as a fabrication stabilised only by community consensus, the effects/affects induced in the bodies/subjectivities of spectators/participants are, feasibly, identical. I want to emphasise the importance of a multimedia aspect of online interaction here: what has become more apparent now in the wake of wider deployment of broadband technology is the delivery of a much wider variety of media than merely text. Many considerations of online interaction have delineated their remit in their consideration of mainly text-based

[124] Landsberg, while examining the prosthetic circulation of memories relating to the Holocaust, analyses Art Spiegelman's celebrated anthropomorphic graphic novel *Maus* (1972-1991). Referring specifically to the fantastic nature of the graphic novel's characters—they are bipedal anthropomorphic cats and mice—she writes that "artificial parameters do not make the affective experiences any less real" (117).

forms of interaction, or attempts to encompass online experience into the bounds of conventional theories of narrative (mainly through examinations of hypertext) or psychology.[125] While a huge majority of person-to-person communication online does happen in terms of text (and indeed the first example I outline in this chapter is rooted first in text-based roleplaying), the intensification of other media online, especially images and video, means that the consideration of online experience must be allowed to account for the ways in which a user may be impacted aesthetically by those things.

Each example I discuss here shows the variety of ways in which the various media technologies of the Internet are used to produce, circulate and affix memories and experiences to the bodies of users (and thus problematise the unidirectional implication of the conventional relationship between a 'user' and a 'technology'). The fursona emerges as an entanglement of these processes; it is an indistinct but material agent, contingent upon the performances, media texts (and thus memories) in circulation, and with substantive influence upon its 'creator' even as it is produced itself, in an ongoing co-constitutive exchange.[126] Importantly, while I discuss things here like avatars, profiles, characters, totems and so forth, these are not to be *conflated with* the fursona: all of these things form *part of* the fursona. The fursona is the indistinct body-subject that simultaneously includes, influences and reflects all of the above and more—including players themselves. This complex entanglement lies at the root of the fursona's power to

[125] Marie Laure-Ryan's *Narrative as Virtual Reality: Immersion and Interactivity in Literature and Electronic Media* (2001) is exemplary of the kind of theoretical interventions that situate Internet texts (and hypertext in particular) within a wider literary tradition. A major work on Internet interaction taking the perspective of a clinical psychologist can be found in Sherry Turkle's *Life on the Screen: Identity in the Age of the Internet* (1995). Both of these are emblematic of the theoretical tendency to consider primarily the role of text in online identity construction.

[126] The examples I outline here—especially that of Otherkin and of "Simon"—are particularly extreme examples of furry or furry-related identity-construction. There are varying levels of engagement with the furry community and furry interests, and these examples should not stand as representative of every person who identifies as "furry".

move beyond the enduring boundary logic of conventional visions of the human/technological interfaces outlined in Section One.

City of Unity

One of the ways by which furries bring their fursonas into being is through Internet Role Playing (commonly referred to by participants as RP). RP is very much like a kind of collaborative writing, and can take several forms, but there are two very common ones: chatting/writing in 'real time' using an Internet Relay Chat (IRC) client (*mIRC* or similar) or instant messenger service (*MSN Messenger, AOL Instant Messenger* etc), or posting messages on blogs or web forums. In the former format (which is closer to 'real time'), users/players connect to an IRC server or to their messenger service, join a themed RP channel or set up a one-to-one chat with another user/player. In the latter, themed forums or blog communities (such as are found on *LiveJournal* or similar services) are used as a place where players can take turns posting messages. In both cases the users involved co-operate in 'acting out' scenes with original characters, each taking turns to write a section of the ongoing narrative.[127] There is no object to the game other than enjoying the immersion in the interaction and the story produced, and there is no way to 'win' as such.[128] Roleplaying is about the generation of prosthetic memories as a means to build a story, but those memories also have a constitutive effect on the identity of the user(s) involved in the building of that story.

[127] In some online RP games, both things are done: users play out the 'scenes' on IRC in real time, and then dump the logs of those scenes on forums for others to read at a later date. The logs can be drawn upon at a later date by other players, in order to help deepen and further substantiate their own scenes. The highly-organised dystopian furry role playing game *City of Unity* is one such example of this practice (2007-).

[128] Turkle's work on Multi-User Dungeons (MUDs) is widely-cited and gives a good sense of this dimension of the debate (1995).

An excerpt from an RP log, published on the game's web forum, gives an idea of the kind of play enacted on one furry roleplaying site—the dystopic future cyberpunk setting *City of Unity* (the asterisk denotes a player character's action in the third person; a word enclosed in angle brackets indicates the name of the player making that contribution to the story):

> * Krendius jumped at the sound of a voice behind him, turning to face the source. Tiger, female, seemed relaxed if tired... Hm. The fox's face remained mostly impassive, looking her over with a slightly curious air about him. He seemed to be sizing her up, but maybe that was just paranoia. "Aye, can be. Depends on who tells ya. What brings ya back here?" Glancing around, one could see warehouses set into the walls of the massive trainyard, facing each-other across a drainage channel as deep as the average man was tall. Only a few improvised bridges cobbled together from sheet metal spanned the gap. "No' much for someone like y'self here."
>
> <Tatyana> "Someone like myself?" Tatyana echoed with a short laugh before taking another drag on her cigarette. "And tell me, exactly, what sort of person am I?" She adjusted the fedora on her head, looking around at the desolate trainyard, the old warehouses watching over the place like stoic guardians. "For anyone, I would say, this place offers... tranquility, potentially. Calmness and solitude are two of the rarest commodities on this city," she explained, looking around as if expecting something to jump out at her for testing fate, "and I know a thing or two about rare commodities." The tigress chuckled, tossing her burnt-out cigarette to the side. "Unless, of course, you're suggesting this your... 'turf' or something of that nature. I would hate to be on the bad side of one of your... motorcycle gangs or what have you." Her tone suggested that she wasn't actually very afraid of that at all. (Overwatch 2009)

An excerpt from a larger scene depicting an encounter between the player characters Krendius and Tatyana, this scene in turn forms part of a colossal and ongoing story. A quick search discovers that the poster playing the character of Krendius—"Overwatch"—has nearly thirty such posts in the RP logs forum, each one accounting for thousands of words of interaction, and these stretch back to May 2008. There are, according to the game's character list, over 150 player characters in operation, each one with their own dedicated profile page.[129]

These RP posts exemplify the format that much freeform roleplaying comprises. But just as important as the posts themselves are the texts generated *around* them by the players involved: the experiences enacted within these RP posts have significant and widely-reported implications for the putatively 'offline' memories of those who have taken part. Apart from the supplementary texts to support the in-character (IC) story/setting, one does not have to search hard for examples of the *overflow* of these textual/visual experiences into the vernacular, out-of-character (OOC) conversations of players.[130] Crucially, these conversations frequently foreground the emotional development of their characters as central to their appeal. As one RPer (as they are known) reports on the OOC forum of his memories of writing within the RP setting(s) offered by the furry game *World of Feila*:

> RP Name: The Public Enemy
>
> Setting: Age of Drive-by Shootings (1930s)
>
> Character(s): Charles 'Mooney' Ashby
>
> Basic plot/genre: 30s gangsters racketeering and fighting each other.

[129] http://city-of-unity.com/characters.html

[130] *City of Unity* has forums for character artwork, setting-specific fiction to support later RP sessions, as well as at least one ongoing forum thread dedicated to producing the perfect "soundtrack" of songs for RP.

Reasons Why: This one just went so well, on my end at least. There was always an overtone of violence, but it was never the same old dithering around player-vs-player combat where nobody gets hurt. I always had lots to write, and most of all I really enjoyed writing and developing the character of Mooney, whom received a few odd details and character elements as he went through different situations from one end of the scale to the other. His actions towards different people, both players and NPCs were the most interesting to me. I think my favourite developed aspect of him is his subconscious which torments him with dreams of being Number One, and in another RP, nightmares about going to hell, an idea that stemmed from this RP. The only downside is that the story was cut short by absences, and eventual petering out of interest.

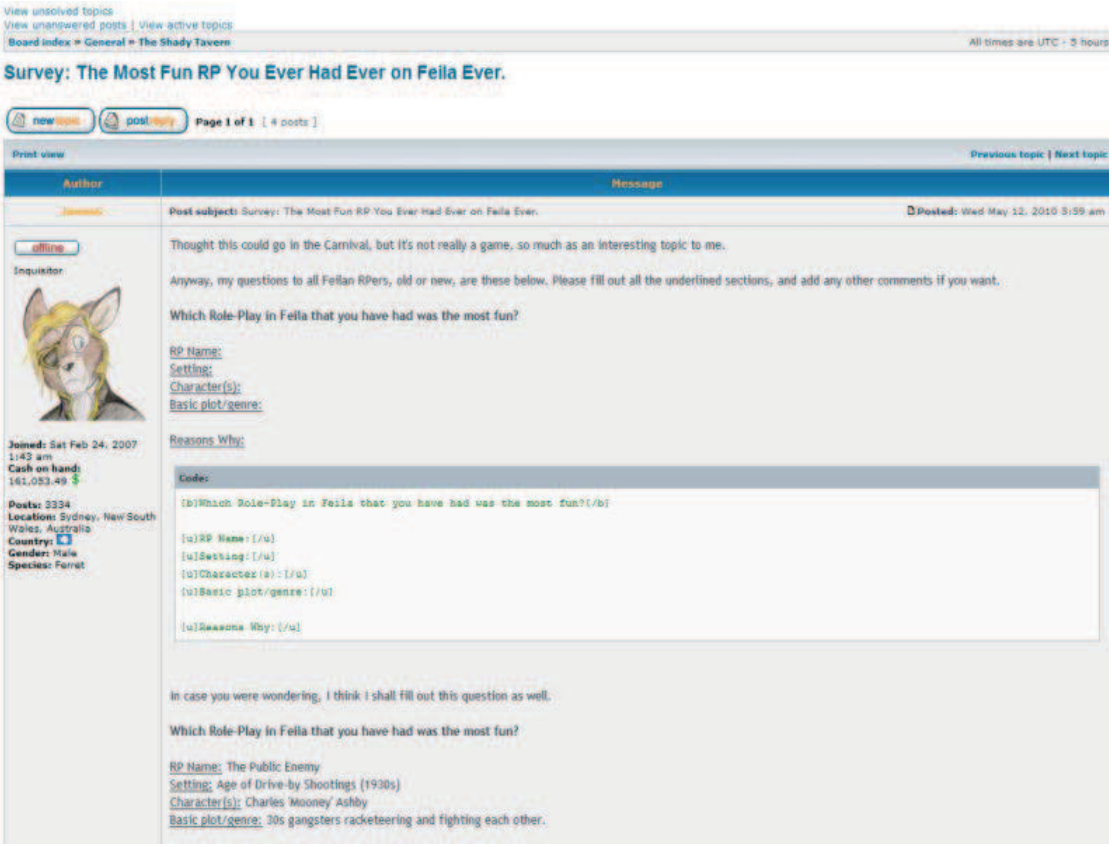

Fig. 10. A post by a regular player on the RP game *World of Feila*. The fursona here is evidenced partly by the entanglement of the nonhuman avatar image, the "species" ("Ferret") listed beneath it, as well as the appeal for framing discussions of RP sessions.

Players often talk about their characters as if they are acquaintances, and have a deep attachment to them; there is much social capital in conversations about characters (threads on the *Feila* forums centre around questions such as "Can your characters read?", "[do you play] Serious or Silly characters?" or "What do your characters sound like"?). RP here represents a very similar process to Landsberg's model: players 'experience' events that they have never, actually, experienced 'for real"—through and with the proxy of their character. The reported experiences are ones of emotional, affective connection: stabilised by consensus and the preponderance of writing *about* RP both reports the affective impact of the roleplaying experiences and reiterates it, in its drawing of other readers into the collusion with and ratification of those experiences. These experiences are seized or used (knowingly or otherwise) in the production of their own subjectivities.

In a forum thread on the topic of relationships between players and their characters, player "Themnax" describes his typical character type, and figures it in terms of his own life:

> wandering hermit, usually more interested in scenery and technology then in individual people, but never wants to make anyone unhappy, and always tries very hard to avoid doing so. likes to show up where least expected. sometimes comes and goes entirely unnoticed. sometimes leaves comments, often as anonymously as he can [...] not really arrogant at all, just a-social, as in not usually seeking company.
>
> not inclined to display emotions or trust having them, though without entirely denying them either. (Themnax 2010)

Themnax's RP experience is one of repeating and reiterating elements of his own life even as those RP experiences overlap back into it. His focus upon the personality and

emotional type of the character is telling of the register in which the character's exploits appeal. This kind of roleplaying, despite it being about the putative control of a character, is clearly not the same as the notion of an avatar as described in Section One. It is not about transcendence of the body or hyperrational control of an othered, neutral cyberspace. RP characters are infinitely more unstable than the bounded, discrete digital shells of avatars. Quite distinct from this simple calculus, the comparatively esoteric nature of these RP characters reflects a version of identity that is partial; it consolidates only in the presence and unstable context of other characters and components. And, even then, is not tied down or discrete: trying to 'locate' a character on the Internet is quite impossible because it is not a discrete entity, but rather one that is held together only under specific conditions. In this way, the player becomes inextricable from the character, because each influences the identity and self of the other through what amounts to 'shared' experience.

The manifold strands of experience, shared between the deeply complex informing contexts of player, character, other players, mood, memory, situation, and so on, congeal into what is effectively a deeply unstable version of body, neither within some other-plane version of cyberspace nor outside of it. It is not a 'digital' nor an 'organic' body, but both: affecting and making unstable the notion of the player as an entity that can ever make a clean break from its cyberspace experiences, this unstable body, combined of those media and affects, is the fursona. If, as with Landsberg's model of prosthetic memory, events that happen in roleplaying are, like films and other media, real bodily events themselves, with a distinct affective character, and not just representations or reports of events, they can affect the construction of identity in the same way as conventionally real, lived, 'genuine' events. Indeed, here the user *is* experiencing a real event: its bounds are merely drawn in unstable ways, and the impact of emotional affect

emerges from the stage of a fantasy enabled by technologically-mediated interaction with others. The 'event' here is that the user is (say) in a room, using a computer, typing words, experiencing the emotions they feel from being involved in a story that is overwhelmingly personal, and which is figured and built over days, weeks, months or years in a manner that grows alongside their own 'offline' life.[131] The origins or triggers of the emotions are less important than the fact that the user feels, assimilates, and uses them to help formulate their identity, even if they do not know they are doing so. The fursona, then, is the material, discursive, metaphorical node of connection between those informing contexts; it confounds any kind of subject/object relationship between a user and a technology and spawns multiple and co-substantiating entities that are as hard to stabilise as they are to map.

Hardly OOC

RP and the frequent appeal to its affective character so defined, we can use it as the way into still more acute examples of fursonas. The first I examine in this section is that of a user who takes RP and uses it as part of a complex assemblage of varied media to perform and shape the bounds of his own version of the fursona. "FirefoxMcCloud" is (or claims to be) an eighteen-year-old user, who presents online as either an anthropomorphic fox or a hybrid fox-dragon. His performance is rooted in RP, pictures, and detailed descriptions of his characters. However, in an intensification of the kinds of performances seen in *City of Unity* or *World of Feila*, FireFoxMcCloud does not tend to distinguish between himself as a player and his character. His website, *World of this Kitsune*,

[131] The difference between roleplaying and just reading more conventional published fiction is clear here: the ongoing contribution from the user makes the experience extremely personal. The user's connection to the character is, as frequently reported by such users, very intimate. Unlike video games/hyperfiction, roleplaying of this kind is almost unlimited in scope. One can play for years and a character can experience anything that can be imagined, and if the other players are good enough and make it convincing enough, the potential impact upon subjective construction is endless.

serves as the organisational nexus of this performance, and its landing page gives an overview of his approach and attitude (*Fig. 11*):

Fig. 11. Firefox McCloud's Website.

> This site is about FireFox (Me.)
>
> Gotta problem? Deal with it.
>
> Oh yeah, the site contains mature content, so be aware.
>
> No longer on *Furcadia*, contant [sic] via YIM or YIM through Live Messenger, yoallwyn@yahoo.com (McCloud 2010).

Here he lays out several items: links to the various media elements constituting his character(s), a somewhat confrontational approach to challenges to his chosen performance, and a warning that his site contains "mature content" (meaning pornography involving his character).[132] He disavows participation in a graphical furry RP game called *Furcadia*, and says he is to be contacted through an instant messenging programme (*Yahoo Instant Messenger*). On the linked "description" page, which gives detailed descriptions of his two respective character instantiations, FirefoxMcCloud claims that he is "Rarely OOC"—that is, he is rarely 'out of character', and is to be treated as in-character at all times (*ibid*). FirefoxMcCloud's experience represents a quite common vision of the fursona. His construction of an alternative identity online is elaborate, carefully-defined and produced in painstaking detail—but he also does *not* have full control of the affective impact of this fursona upon 'him'. The fursona affects him even as he constructs it; the emotional register of his relationship to the fursona (evinced not least by his apparent need or craving to continue the RP and his wilful refusal to give an account of his "authentic" offline body) demonstrates the pleasurable confusion of fantasy taken to the point of prosthetic memory, and the overflow of any unidirectional,

[132] Given the dubious legal status of so-called "furry porn" or "yiff" (which apparently only really comprises drawings of fantastic creatures—albeit sexually explicit ones—but whose animal physical characteristics intermeshed with human ones could, theoretically, fall foul of obscenity laws, not least owing to their monstrous hybridity) I choose not to examine it here. However, further examinations of the fursona could account for the considerable affective power of furry pornography on the subjective experiences of those who consume it (and perhaps should, given its large role in the furry community). A study of this kind has precedent: I point here, as a possible example, to work by Susanna Passonen, whose analysis of her own affective encounters with unsolicited porn emails "involves taking seriously the power of pornographic texts to move their readers" and asserts that "affective encounters with porn are ambivalent and often contradictory" (2007: 43). A collision between Paasonen's nuanced reading of the affective impact of pornography (i.e. moving beyond frequent feminist standpoints of *either* pleasure *or* disgust in encounters with porn) and the constitutive effect of that affective experience upon individual subjectivity could be potentially fruitful in furthering the examination of the fursona, and other unconventional online-mediated body-subjects for whose communities such erotica forms a part.

instrumental subject/object control relationship of the user to the technological other (or indeed cyberspace).[133]

This further-augmented kind of RP, represented by FirefoxMcCloud, is a particularly intensive use of the Internet to generate memory (and so experience) that has not 'actually happened' to the user in question. However, while the experiences of RP may serve to alter the archive of experience of this user, and change his putatively separate offline identity to the point where he collapses the distinction between his offline self and his character, there are even more explicit attempts to use the Internet to generate fantasy worlds, bodies or characters that could not be enacted or ratified in another way. Examining performances enacted upon *LiveJournal*, as well as a website maintained by the group itself, it is possible to locate a collective of users organised around their claim to some kind of a non-human essence (or "soul", as it is often enunciated). These "Otherkin" stake a claim on identity that is not limited to human experience, but that incorporates elements of fantastic (but, interestingly, often highly uniform and specific) experience – that of being inhabited by the soul of an animal, such as a wolf, or even a dragon:

> Otherkin (aka Fairth, Metahuman, and sometimes overlapping with Vampires and Furries) are those people who believe themselves to be spiritually and/or physically other than human. While mythological species (elves, satyrs, fairies, dragons, and so on) are widely accepted as being included under the term "Otherkin", many people in the community prefer to include aliens, vampires, therianthropes, furries, extraterrestrial humans, and other nonhuman races. A mythological or literary equivalent is not necessary to be included under the

[133] This is a performance that not only eschews appeals to the offline body for proof of subjective authenticity, it does the absolute opposite, hiding the putatively offline body in favour of representing and celebrating that body constructed in cyberspace.

> "Otherkin" umbrella-term; there are types of otherkin that have not shown up in known legends or fiction (star-dragons, Elenari, etc.) (Windtree n.d. [a]).

The experience that they claim is generated by a variety of media. Like the extreme RP performance of FirefoxMcCloud, as I show above, Otherkin create a 'character' that they play. But, unlike FirefoxMcCloud, they *do* distinguish between their 'authentic' self and the character: it is just that in case, the *character played* is their 'true' self. This imagined, longed-for subject is one with which Otherkin are engaged in an ongoing struggle to articulate, through the vast catalogue of aspects and flows of media that they generate: drawings, fiction (and combinations of those two such as webcomics), forum and journal participation which may include discussions of paganism, visualisation and meditation techniques, down to the self-consciously placed minutiae such as everyday language used in online discussion or the tags used to describe comment or linking systems on their journals (Otherkin *LiveJournal* blog user "Lupabitch" encourages visitors not to leave comments, but to "nose the earth" [Lupabitch 2006]).

I focus here on a few members of the Otherkin community, who believe (and enunciate) that their life experience is influenced by the spirit or soul of non-human creatures in one capacity or another. Some are less explicit in their claims of this than others, ascribing belief to be rather more totemistic than a direct belief of being, for example, an animal trapped in a human body[134], but the varied media generated makes Otherkin a useful example of the way that attempts are made by some users to stabilise a radical identity via the Internet, showing the lines of influence that can and do emerge. One user (Kuwaizair) of the LiveJournal community posts the question:

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[134] For a more detailed definition of these types, see Windtree (n.d. [b]): "Transgendered people feel they were born into a body of the wrong gender. Trans-spirited otherkin usually feel they were born into (or are residing within) a body of the wrong species. Like someone played a collosal joke upon them at conception and they were put into a body of the wrong species" (ibid).

> does anyone here think the dragon, if existing in the flesh in another paraell [sic] universe could be related to those mammal-like reptiles? only more evolved and somehow with six limbs? (given we are talking about winged dragons) or would wing less and winnged be differnt familys [sic]? (Kuwaizair 2006)

The reply by "Flarecarrot" is swift and decisive: "by definition no they cannot be related" (*ibid.*). This type of discussion typifies the exchanges of conversation used (employing presumed knowledge, amongst other devices) to help to stabilise, consensually, the reality of the non-human identity that is claimed. Reinforced by confident, assertive co-operation by other participants in the role, supposed facts about the physical attributes of the fictional creatures are imbued as truths. Further to this kind of interaction, and importantly when considering the material, affective mode of access to this notion, is, again, the entanglement of the above performances with a wide array of artistic representations of the non-human creatures that Otherkin are supposed to represent. Drawings, in particular, are everywhere in Otherkin communities. One particular webcomic, called *Theri There* after the notion of "therianthropy" or shape-shifting, depicts the problems that Otherkin have with dealing with everyday, 'mundane' life. One example shows an anthropomorphic tiger shedding a smart suit, with the caption "Halloween is when our costumes are taken off".

Fig. 12. A frame excerpt from the Otherkin webcomic *Theri There* (Sandstorm 2005)

The way they enact their fantasy does, in a way, make it real on the level that it materially alters their archive of experience, if only owing to the amount of time spent online and involved in projects producing the aesthetic effects of being this kind of media-negotiated 'other' (evidenced by the elaborate, fully-fleshed out nature of the fantasies). By producing vast amounts of media artefacts using the Internet as both an organisation tool and a stage of display, Otherkin gather a contingent assemblage of cumulative aesthetic experiences from which new 'memories', in Landsberg's terms, can be explicated.[135] The fursona, held temporarily in flux out of all of those contributing media, with their varying levels of sensate impact, again comes into being somewhere between those experiences (not, importantly, as the discrete object of the Otherkin's invention).

Despite, though, the intense attention paid by Otherkin to the reality-effect of their online performances, there are still more radical examples to be found. My final reading of the fursona deals with, again, a similar premise, but taken even further in its attempts

[135] The idea of 'explicating' embodied experience from a milieu of implication is explored fully, in terms of radical materialist conceptions of the body, in Chapter Six on digital decay.

to embody a radical reality enabled only by networks of material instantiation enacted on and via the Internet. "Simon" of "Furryneko.com" uses his website as a means of offering a manifesto for his lifestyle choice. A British male in his twenties with a number of failed relationships, he has come to the conclusion that his best hope for companionship resides within the furred arms of an imaginary character of his own creation; a cartoon anthropomorphic tiger he has named "Kara". In the "Life as a Furry" section of the site, Simon identifies himself as belonging to a vast "furry" Internet subculture. Simon defines being a furry as follows: "To me, being a furry means I have a love for anthromorphs [sic]. Anthromorphs are commonly animals with human features, or vica-versa [sic], some examples are; Bugs Bunny, Lola Bunny, Daffy Duck, etc. There are many people around the internet who choose to draw adult art of anthromorphs, some slightly risqué, and others explicit." (Furryneko 2006). What is most pertinent is how Kara is created as an assemblage by Simon's attempts to make her more 'real'. His site contains drawings of Kara that he has had commissioned, many of which are erotic in nature.

Fig. 13. "Simon" and "Kara" (BBMBBF, 2006)

He gives her a birthday, interests (the same interests as him) and says that "she works out daily to maintain her shape" (*ibid.*). He describes how she is "always there", and hints at their sexual exploits. He even wears, in "real life", a ring engraved with her name. Using his website as a way of describing all of these things, Simon forces Kara into online discourse and makes her as 'real' to the website viewer as he is himself. She is, he writes, "as real as any other person" (*ibid.*). If it were not for Simon's explicit stating otherwise—and the fact that, of course, Kara is a kind of creature that does not exist outside of this kind of assemblage of circumstances–she would not seem any less real than Simon himself from the description that he gives. Kara is a cluster of effects that is temporarily created out of the many circumstantial, peripheral things that Simon asserts on the site, the site itself, the drawings, the ring that he wears, and the viewer(s) of the website. And, in turn the Kara assemblage creates between herself and Simon another assemblage which constitutes the fursona. The Internet serves as one of many tools of media

production, making Kara real in a disembodied (in the unified sense) way, but one that nevertheless has a profound effect on Simon's identity and the way that he lives his life.

Fur Affinity

These examples represent individuals who deliberately take advantage of the bodily sensations that can be generated by participation in certain online experiences. The affective aspect of the interactions, arises in both the emotionally-implicating character of the texts produced, and the production of media outside of text (such as the prevalence of character images). The prosthesis of imagined and transplantable memory enacted through these texts, performances and images intensifies the available material, sensate archive of experience to the extent that a new understanding of the online body/subject can be drawn out from it. Furries are not the cute bunnies or the mighty wolves that they portray themselves as, of course: but they are not discrete/separate humans operating puppets/avatars either. The indistinctions caused by the generative effects of furries' 'false', 'inauthentic' memories—produced through the 'lived' experiences of roleplaying, performance and fantasy social networking—mean that there is no way to separate the ensuing identity/subjectivity of the furry in question entirely from the fantasy they have constructed. What emerges here is a hybrid existing between the offline subject and the memory effects of the media texts involved. The fursona is not, then, representative or mimetic: it is not the furry character/animal/cartoon reflecting the unidirectionally-applied intentions or thoughts of a person occupying or experiencing it, but something in between. The entity emerging from these interactions exists in a way that is contingent upon them, and it substantiates as an irreducibly local effect of the online/offline experience.

Important, again, is the synaesthetic aspect of these kinds of interactions. There is no instrumental transfer of 'meaning', discursive or otherwise, from which a new self is consciously assembled or condensed. This is not a Foucauldian model of docile-bodied inscription. As Landsberg has pointed out with her observation that "the physical sensation of one's body being moved was a fundamental aspect of cinema" (13), transference of visual meaning into a genuinely felt, physical sensation is exactly the kind of transformation that exemplifies how certain modes of interaction can have an affective character beyond obvious expectation. While considered to be weightless, disembodied, and so forth, the Internet actually allows a conflation of media that allows those kinds of overflows of visual, textual, emotional and other stimulus into felt experience to be evoked alongside other kinds of texts. With prosthetic memory, one does not need to have 'been there' to access, share in, and be affected by the feeling of the experience represented, and in this case, 'there' does not even have to exist in any conventional, knowable, mappable sense. Thus, on the Internet, transformations of sensate experience may be brought about by writing, by drawings, by music, by voice-to-voice real time communication, by journal-keeping, by roleplaying, by cybersex, or by any combination of those things.[136] The participation in those Internet-mediated practices represents the intensification of a milieu from which this cyberbody may emerge, between and dependent on the participants, whose subjective experience and positioning remains qualitatively altered by the process.

The fursona is less just another reinstantiation of the dualistic, dominating avatar, and more a complex, hybrid pastiche of effects and affects generated out of an extremely diverse set of technologically-mediated practices and interests. Rather than policing the

[136] For accounts of cybersex and its constitutive effects in online embodiment, see Roseanne Allucquére Stone (1995) and Stacy Gillis (2004).

boundary between the human and the technological other, and embodying a normative function that follows and remaps familiarly exclusive dualisms, the fursona, in its dispersed, mobile (and disputed) character, collapses the interface between the human user and the technological agent, and infolds online experiences into offline ones—privileging no one particular aspect as authentic—with implications for that user's memory and subjectivity. It is true that, in its position at the interface between the human and the technological, it is undoubtedly a figure that presents temptations to draw a line of direct comparison with the avatar, or to consider the former to be the latter's superseding version. However, rather than being an *answer to* the avatar, the fursona partly *absorbs* the avatar: in a modified form, avatars may (and indeed often do) form part of the complex but contingent structure of the fursona.

Chapter Five:

The Caring Computer

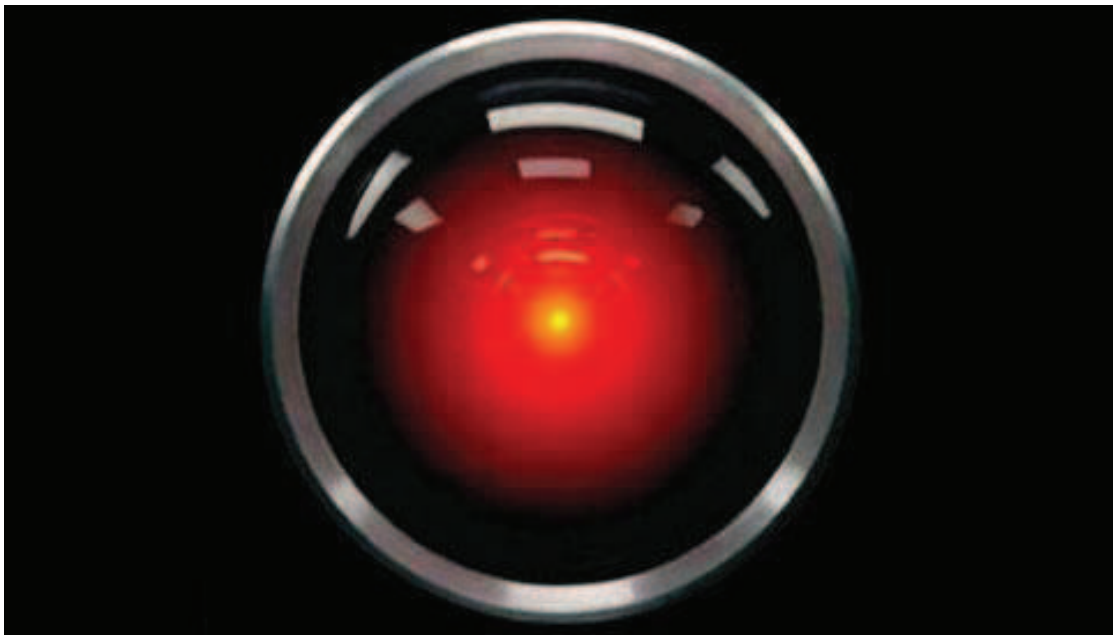
I have offered an account of one figure that constitutes a consolidation of an alternative set of discourses and practices for understanding the murkier, messier interactions implicated in the usually highly dualistic relationship between human and technological subjects. The second figure that I offer here as an alternative mode of envisioning the human-technological encounter is the caring computer. Representing an overturning of well-established science-fictional conventions of evil or genocidal artificial intelligences, as well as intervening in debates over prescribed cultural notions of care, the caring computer assigns an affective, materially-contingent character to agents previously considered radically incapable of having such impacts—specifically, artificial intelligences. The possible discovery of a conversely complex, multidirectional, affective quality in interfaces with these agents both opens up new possibilities for understanding the roles of those involved in relationships of care, and, like the fursona, allows us to imagine encounters at the human-technological interface that are not about reinscribing once more the flawed dualistic Cartesian human subject into a putatively neutral (cyber)space. The persistent, ongoing ratification of the subject-object relationship that sees technologies as the passive inventions of a rational project (as reinforced by the avatar, the hacker, and the nanotechnological swarm) is ruptured by the caring computer, and the deterministic, quasi-eschatological trajectory of singularity thinking associated with that project is short-circuited: the caring computer foregrounds in its becoming the highly materially-contingent nature of *all* participants in the constitution of subjectivity, whether conventionally viewed as human or as 'artificial'.

This chapter finds the primary evidence for its claims mostly in fiction—where questions of the relationships between humans and artificial subjects have been very thoroughly examined—but it does so in a manner informed and inspired by Haraway's recent work. To establish the shape of this new figure, I first look briefly at the conventional representation of the AI in fiction, and how (and indeed why) it has been almost overwhelmingly positioned as a belligerent, destructive force or a threat to the very existence of humanity. Then, I outline the caring computer as an alternative figure. To do this, I first account for work that has uncovered problems with normative understandings of 'care'. Then, reading the science fiction film *Moon* through Haraway's theorisation of companion species and the "touching" of material histories and contingencies, I show how some of these problematic, prescriptive roles in caring relationships may be unravelled: *Moon* depicts what can only be described as a relationship of care and responsibility between a (cloned) human being and an artificial intelligence. In short, I argue here that allowing the unusual, unexpected intimacy of putatively artificial 'carers' to form the (partial) basis of subject formation confounds humanist exceptionalism and re-embeds the human into its material contexts. The figure of the caring computer represents a capacity for affective impact upon human subjects that is not normally ascribed to 'cold', 'emotionless' technological subjects. It animates a disruption of the linear, instrumental relationships of power between humans and technologies by showing the ways in which ongoing processes of co-constitution are responsible for bringing each participant in the relationship into being (or becoming). *Care* here is a manner of activating and making conspicuous those processes and the ways in which they unravel, rather than prescribe, the roles and positions into which respective participants in those relationships are assigned.

Artificial Belligerence

I am making a distinction between computer-instantiated AIs (such as HAL 9000 in *2001: A Space Oddyssey* [dir. Stanley Kubrick, 1968], the Master Control Program of *TRON*, the WOPR war computer in *WarGames*, or Wintermute in *Neuromancer*), and artificial intelligences as installed into androids, cyborgs and the like: as I will demonstrate, the non-anthropomorphic mode of embodiment taken by most AIs in fiction assigns them a particularly belligerent character. Unlike humanoid, more recognisably-embodied robots (such as C3PO from the *Star Wars* series of films [1977-2005] or Commander Data from *Star Trek: The Next Generation* [1987-1994]), these intelligent, self-aware, linguistically conversant subjects exist as free-floating essences, nevertheless bounded within the more recognisable, traditional shape of the immobile, statuesque computer system—and they almost always seem to inspire a certain discomfort, or even outright paranoia. But there are more specific tropes that repeat themselves continuously through narratives containing these AIs: the fact that these particular subjects lack a cohesive, visible body is deployed as a constant source of fear. The peculiar, potentially unsettling way in which these AIs are embodied is exploited through a reduction of their presence to the objective observing tool *par excellence* of Western thinking—the human eye; represented almost invariably by camera lenses that may or may not be modified to look like human eyeballs. HAL9000's single red 'eye' was and is a definitive, striking image of vision backed by an unseen, artificial agent, while the player of *System Shock 2* is constantly forced to either *avoid* the multiple security cameras that are hunting them down, hack them, or even destroy them completely. Likewise, in the game *Portal,* each room the player inhabits is dotted with silent, roving cameras, and any attempts to interfere with their operation draws abuse from GLaDOS, the AI upon whose advice the player is reliant. Where the camera-as-eye is not present, such as in *WarGames*, there is a proliferation of monitors and screens. While the bodily presence of

the AI character is limited in the physical sense by this reduction to a series of eyes, this presence is effectively an omnipresence—the saturation of disembodied 'eyes' throughout the spaces in which the influence of these AIs can be felt creates a constant sense of literally being watched—but with the supposedly fractured nature of an AI's subject, the long-known paranoia of panopticism is amplified into a sureness that one is definitely *always* being observed.



Figs. 14 and 15. HAL9000's distinctive red 'eye', and a camera-eye of *Portal*'s GLaDOS.

As well as these 'eyes', the presence of the AI is often supplemented with some kind of voice. This is, of course, a useful device within film in particular to avoid the need for an audience to read lines and lines of text on a screen-within-a-screen, but the particular way in which the 'voice' of an AI is presented within these texts has certain effects in terms of producing a sense of fear or unease. HAL9000 speaks in a kind of monotonous, calm, but unsettlingly disaffected manner. Advances in special effects between the 1960s and the 1980s, though, mean that *Wargames* AI WOPR's voice could even more clearly embody the personality of a cold, socially dead machine. Similarly, SHODAN of *System Shock* is even more frightening, her voice layered, stammering, corrupted, pitch shifted, timewarped, compressed, modulated and overlaid onto a persistent background electrical hum. GLaDOS of *Portal* seems to achieve a level of supposedly realistic intonation and emotion, but does not quite manage it. The almost-voices of these AIs are chilling, particularly when coupled with the lonely settings in which they are heard – a spaceship millions of miles from earth; a darkened bedroom, or a deserted underground laboratory. Perhaps more importantly, though, many of these fictional AIs want to harm their human creators, or even wipe them out completely. HAL9000 of *2001* successfully murders all but one of the crew of the spacecraft it administers, the Skynet defence system of the *Terminator* franchise starts a global thermonuclear war to extinguish humanity altogether as soon as it "becomes self aware". *TRON*'s Master Control Program wishes to infiltrate government computer systems and take control of one or both of the superpowers, and the WOPR war computer of *Wargames* nonchalantly begins the countdown to global nuclear holocaust when it is hacked by a teenager, apparently just as an idle experiment for its own edification. The AI antagonists of both the *System Shock* series and *Portal* attempt to murder the player-character either explicitly or with sly, yet increasingly obvious intent. Both AIs taunt and goad the player throughout—and in the case of *Portal's* GLaDOS, who is written for both horror and for laughs, rather

passive-aggressively. There is at least one possible historical explanation for this: *2001, WarGames* and *TRON*, three of the texts that helped consolidate the terms for how AIs are portrayed in cinema, are Cold War era texts. These 1980s texts in particular resonate with a fear of nuclear holocaust renewed in the 1980s by the instantiation of hardline conservative heads of state Ronald Reagan and Yuri Andropov. The increasing encroachment on Western life of the computer reflected by a proliferation of microchip technology and the increasing influence of the digital may have provided a conduit through which concerns over the faceless, automaton-like governments of the superpowers could be expressed.[137]

There are other ways in which the AI figure has been used to stand in for the emotionless onward march of a much more complicated set of social processes. In an assessment of "computer as character" in these films, Fred Glass focuses upon the AI partly as a representative of the unbridled, runaway capitalist as he writes:

> As anthropomorph, the human qualities of the computer [Master Control Program] in *TRON* are the negative characteristics of a technocrat; power-hungry, ruled by profit, authoritarian, unscrupulous—the qualities of a modern captain of industry. Unlike earlier capitalists, this one has the functional narrative advantage of literally lacking a heart. (1984: 18)

The powerlessness of the everyday human being to reason with an emotionless machine could equally relate, then, to feelings of an inability to influence potentially apocalyptic government policy in the nuclear sabre-rattling 1980s, and the same decade's perceived widespread roboticisation of labour to improve efficiency and profit (and the attendant

[137] For a discussion of the specific impact of nuclear politics on prominent cultural representations of technology in North America in the 1980s, see Shail and Stoate (2010: 55ff).

consequences for employment, "replacing" human jobs).[138] The two concerns are even interconnected. Glass points out a fundamental collision between nuclear technologies and the very technologies by which the spectacular graphics of *TRON* were facilitated:

> Today, the new technology contains the ability to destroy not some symbolic representative human character, but all of humanity itself. That's why in these films computers and 'the bomb' appear on neighboring pedestals in a modern pantheon of sign and myth. Ironically, the founder of MAGI (Mathematical Applications Group, Inc.) was inspired to create the computer graphics program that figured prominently in the visuals of *TRON* while a nuclear physicist in the mid-sixties. This bit of biographical trivia reveals one clue to the success of the film in establishing its hold over the viewer's imagination: the confluent relationship between nuclear and microchip technologies, embedded not only at the narrative and ideological levels of contemporary popular culture, but even in the history of its image-making. (16)

What the above concerns both recapitulate, though, are the terms of the most popular vision of the fictional human/AI relationship: this interface encounter works to police the boundary between the human and the technological by establishing the technological subject to be one of unreal hyperrationality, distance, coldness and lack of emotionality. All of these depictions dramatise *calculation* taken to its logical conclusion by AI subjects: putatively vulnerable human beings become numbers to be crunched (the WOPR war computer sees the real nuclear destruction of humanity as an ideal opportunity to gather data: "would you like to see some projected kill ratios?", it asks). The AI subject emerges

[138] This is a decade where the Soviet Union had pulled out of arms control talks, and in which the United States had instigated a huge NATO exercise that the USSR almost misinterpreted as the prelude to a nuclear first strike against them. This anxiety is registered, too, in a crop of films that address those fears explicitly, such as *Threads* (1984) and *The Day After* (1983), both of which depict realistic portrayals of nuclear conflict (in Britain and America respectively), in an overt attempt to awaken public and government awareness of the true stakes of this posturing.

here as a figure upon which a number of specific historical anxieties are inscribed, but also as another example of a fear of the object of rational technoscience reaching back out into the world and compromising the human subject—not as a subject that always already has implications in the construction or constitution of that human subject as it is invented itself.

This instrumental yet perpetually threatening vision of the AI is the one which the caring computer is, perhaps, capable of overturning. Despite the vast amount of cultural work done to establish the AI subject as a radically emotionless other to be kept in its place, it is possible to theorise a way in which computers can *care*—and this caring dimension to interactions between human subjects and these types of computers activate a new visibility in the material contingencies of the substantiation of both (all) actors involved.

Constructions of Care

The meaning of care is a complex one: care is one term amidst a cluster of connotatively resonant other words. These include, but are not limited to, compassion, sympathy/empathy, help/helping, responsibility, contact, investment, and sharing. Care is not conflated with these terms—when I use the word in this chapter it is important to emphasise that I do so in the context of it and its most immediate common connotations. Always lurking too is the shadow of a more instrumental understanding of care: if we consider care to be not just a motivator or participant in economies/ecologies of feelings or affects between personally-invested individuals, but also a set of more tangible embodied *practices* with a certain structural social shape and meaning, then we need to account for that version of care, which is congealed as a socialised and biopolitical enterprise. In other words, as well as care being something that somebody does for someone else on an individual level, it is also a state apparatus, a site of medical

interrogation and intervention, an industry and focus of capital exchange and investment—and often a complex convergence of all of those things. Care for the elderly, the unwell, the disabled and so on are the clearest examples of this conventional instrumental understanding of care. Both of these understandings of 'care'–the personal and the public–overlap. As shown by a plethora of (mainly feminist) writing on the subject, there is potential in investigating the collision of the public sphere of capital, the state, the biomedical/pharmacological industries (and so on), with the private and putatively "personal" sphere of individual care, driven by interpersonal connection and responsibility, but, importantly, obscuring the labour of subjects—particularly women—who are expected to carry out this labour as a "natural" responsibility.[139]

Amongst the most prominent writing on this topic is the work of Joan Tronto, whose *Moral Boundaries: A Political Argument for an Ethic of Care* (1993) is widely cited in work interrogating the social functions of care and caring. As well as highlighting the emotional dimension of care as a potential mode of understanding ethical engagement[140], Tronto points out the ways in which those existing within relationships of care are pushed into roles with very specific cultural connotations:

> […] care-receivers are viewed as relatively helpless. On the most general level, to require care is to have a need; when we conceive of ourselves as autonomous, independent adults, it is very difficult to recognize that we are also needy. […] Because neediness is conceived as a threat to autonomy, those who have more

[139] The introduction to Janet Finch and Dulcie Groves' *A Labour of Love: Women, Work and Caring* (1983) sets out clearly this latter problem: "the fact that real, but unpaid, labour is hidden under the emotive rhetoric of 'caring'", they write, "is part of the designation of women as the 'natural' carers" (4).

[140] She writes: "Care is a common word deeply embedded in our everyday language. On the most general level care connotes some kind of engagement; this point is most easily demonstrated by considering the negative claim: 'I don't care' […] Care seems to carry with it two additional aspects. First, care implies reaching out to something other than the self: it is neither self-referring nor self-absorbing. Second, care implicitly suggests that it will lead to some type of action" (1993: 102).

> needs than us appear to be less autonomous, and hence less powerful and less capable. The result is that one way in which we socially construct those who need care is to think of them as pitiful because they require help. Furthermore, once care-receivers have become pitiful by this construction, it becomes more difficult for others to acknowledge their needs as needs […] Those in the disabled rights movement have long acknowledged how difficult it is to get so-called able-bodied citizens to recognize them as people who are equally deserving of dignity and respect. (120)

The social denigration of "care-receivers" is one symptom of the manner in which caring is constructed as work undeserving of material recompense. Accordingly, Tronto appends an analysis of how this ghettoisation of caring labour is rooted in assumptions and contexts that are coded as feminine:

> I have portrayed care as a marginal aspect of our society. Surely, a critic might argue, my reading must be wrong; we accord great importance to mothers, for example. I have suggested, however, that even those aspects of care that do receive value in our society receive a value that is tainted by an association with lesser social values: with emotion, the private household, and the relatively weak. Care has little status in our society, except when it is honoured in its emotional and private forms. (122)

The conventional understanding of care, then, is concerned with ensuring the stratification of participants in such relationships are kept subjected in predetermined roles, and that the emotional character to the labour of caring marks it as inferior to other (more rational, 'masculine') forms of work.

Tronto's mention of the disabled rights movement's dissatisfaction with the concept resonates with the later observation of Teppo Kroger:

> [Many] disability researchers have rejected the concept of care, claiming that the notion carries an understanding of disabled (and older) people as passive and dependent recipients and that this kind of perspective makes it impossible to really comprehend and promote empowerment and an independent life. […]the concept of care locates power with the caregiver and promotes patronising attitudes towards the recipients of care, who become portrayed as a burden, (2009: 399-404)

Theorists of disability in particular have felt it necessary, in fact, to jettison the possibility of care as a useful concept of *any* kind: as Kroger goes on to establish, researchers of disability have long since considered the body of work on care that has emerged since the 1970s "conceptually contaminated" (404). Both Tronto and Kroger mobilise understandings of care in order to develop very different projects, ranging from the ethical to the political. However, the common feature of readings of care upon which I focus is their identification of two roles: the 'carer', and the 'care-receiver' (though I call this the role of the 'cared-for'). These positions, as shown, embody a number of claims, assumptions and possibilities. As they are commonly understood, they rehearse fundamental discourses that stratify the participants in these relationships into specific roles, with all the attendant connotations of power over and alienation from the cared-for subject for the carer (as well as the latter being forced into the carer role by social assumptions regarding gender), and the abjecting connotations of vulnerability and disempowerment for the cared-for. The cared-for agent is frequently inscribed as the object of rational management, in a way that helps to reinforce the objective distance of the carer, though that carer is compromised as a political subject by the emotional character to their labour.

It should be noted here that my intention is not to condense, reduce or even account for the entirety of the vast sub-field of work on relationships of care. The theorists I mention here are only a sample of that area of thought (which in itself straddles several disciplines), and while I mobilise a version of care as an inspiration for discovering new ways of activating transgressive, co-substantiating relationships between putative human and technological subjects, I do not do so in a way that is meant to denigrate the complexity of this huge question by offering an all-encompassing theory or ethics of care. Such a move is, of course, beyond the remit of any one chapter. I also hasten to add that these theorists of care do not give any definition of care as *prescriptive*–indeed, many are engaged in a project of trying to map visions of care that do not fall into such normative categories. My own approach shares this need to rethink care, and I ally myself with many of the same political objectives, though as my work concerns the specific issue of technological agency, my trajectory for conceiving of such relationships moves through different theoretical territory. To that end, I refer to these theorists' work as a way to establish the broad shape of conventional relationships of care, rather than to transplant their own responses and reconfigurations into my thesis.

AI characters have been established to lack a dimension of care in their interactions with humans, as evidenced by their absence of emotionality and their tendency to act out the arguable opposite of gestures of care (harm). And the notion of care itself is, notwithstanding considerable efforts by several prominent theorists, still deeply problematic in its most everyday understandings. So how can we possibly be permitted to imagine subjects—carer and cared-for—that are both putatively *artificial*, and what could this unlikely collision offer to both visions of human-technological interfaces and the notion of care itself? Interrogating a fictional relationship between cloned human beings and an advanced artificial intelligence – two figures of as-yet fictional modes of near- but

non-human agency—in *Moon,* I now advance a mapping of some of the tangled possible alternative trajectories of understanding relationships of care. Bringing this fictional text into contact with Haraway's vision of companion species, I am here participating in asking the increasingly vocalised questions of what care *does,* what is done to care, and by whom or what, in a manner that has striking implications for the assumed roles of technological agents and their propriety of their ability (or inability) to have an affective, material impact on their human counterparts. A continuous turbulence of co-substantiation and contingency is implicated in Haraway's work on the production of individuals and networks of substantive influence, and the aim of this chapter is to uncover some of the turbulences implicated in relationships of care, what they might mean for its shape and position as a cultural notion, and how they may be used as a way to advance an alternative understanding of relationships between humans and technologies. The "haptic-optic" experience of actual or visual contact with "another" subject allows–or demands–the acknowledgement of the embeddedness of that moment of contact in a vast entanglement of recent and ancient histories. Putative relationships of care animate the shapes and implications of these histories in particularly lively ways, and force reassessments of both the implicated agents and the relationship itself. Fragmented and sometimes contradictory trajectories of care and empathy can play a significant role in undermining conventional understandings of categorical boundedness and the notion of care itself, as well as undermining the assumption that encounters at the interface must leave each participant in the encounter clean and unchanged.

What do I touch?

The understanding of care that can be mobilised via Haraway's work is based primarily upon a central idea from her monograph *When Species Meet*. A significantly instigating question central to Haraway's study—"whom and what do I touch when I touch my

dog?"—is instrumental in mine (2008: 1). As outlined in my Introduction, the asking of the question of "what" is touched is, for Haraway, the instigation of a genea-/archeo-/bio-/socio-logical unravelling of that one dog's contingency within the interrelated fields of becoming that constitute it, and which it helps to constitute. Referring to a moss-covered treestump resembling a dog, a picture of which was emailed to her by her friend Jim, Haraway embarks upon a consideration of multiple histories and material trajectories, which traces the irreducible circumstances that conspired to produce that temporary mutt and bring it into the range of her perception:

> In this camera-begot canid's haptic-optic touch, we are inside the histories of IT engineering, elecTRONic product assembly-line labour, mining and IT waste-disposal, plastics research and manufacturing, transnational markets, communications systems, and technocultural consumer habits [...] the leisure-time promenading practices of the early twenty-first century in a university town on the central California coast [...] the labour practices of late nineteenth-century loggers [...] the greenbelt policies of California resisting the fate of Silicon Valley ensured that Jim's dog was not bulldozed for housing... (6)

This analysis goes on: as Haraway admits, "[t]he rich naturalcultural contact zones multiply with each tactile look" (7). But in this small snippet, we can see the shape of what it means to "touch" within this model. For Haraway, our moment of tactile contact is one that demands *response* to the accumulation of material-semiotic circumstances that led us to that contact. Response here is the process of opening up and acknowledging our temporary place within that accumulation, and our capacity for being shaped by other agents with which we engage. We are not, in other words, subjects in pursuit of our domination over objects. Every *touch* is, or should be, a reminder of those great wounds

to humanist exceptionalism, and our co-constitution with the world as it exists and becomes.[141]

Clearly, the practice of "touching" that Haraway propounds does not *have* to be physical, immediate, or actual, in the most mundane senses of those terms. The boundary breakdowns she desires include those between touch and sight; body-subjecting ocularcentrism is defied in the wake of what she variously refers to as the "tactile look" (7), "haptic-optic touch" or "visually fingering" (6). This "tactile look" is crucial for locating tangible practices of care: if we are to be *affected* by our shared contingency with a caring or cared-for subject, the reach of *affect* cannot be limited to the modal bounds of privileged, essentialist notions of immediate physical touching.[142] We can, therefore, touch those histories even if we are, loosely speaking, distant from them: the temporal/geographic dislocation from the object/companion of our touch is not, here, a radical removal that allows viewing from a distance. Our participation in systems that allow us to touch with "fingery eyes" (6) is in itself an animating of implication that collapses the distinction between representation of that object/subject and the experience of our touching of it. For Haraway, one of many ways by which we as human beings can enter into a more embedded relationship with the world is by attempting to

[141] For Haraway this vision of becoming is not just another rehash of the Deleuzean position of "becoming-animal" – in fact, she takes aim at Deleuze and Guattari's position on the animal, lamenting their "scorn for the homely and the ordinary" in preference for deploying a fetishised vision of wild animality encompassed by the figure of the wolf (29). She has much more time for Derrida's work on his "little cat", but also highlights his failure to ever really consider the cat as an agent whose responses were worthy of philosophical inquiry at length (19ff).

[142] The haptic-optic breakdown is also important on a methodological level, for the multi-layered practice of reading, feeling and unravelling the film itself: not only am I compelled to map the "touching" that happens between characters within the film's story space, but my own place in the experience and my basis for analysis is a haptic-optic one, outside the diegetic or even the semiotic framework. I touch the film's fictional histories by my witnessing of, and being affected/shaped by, the film. The 'real' histories and practices inherent in my being in a position of spectatorship, as well as an influence on the text's existence and its fictional remit, are, too, all being touched.

understand and participate in, in an embodied and affective way, the experiences of those whose suffering and labour we rely upon to help produce the conditions of our continued (and comfortable) existence in the world.

Referring specifically to laboratory animals, Haraway gives an account of a scene from a novel wherein a Zimbabwean scientist slips his arm into a cage where tsetse flies are placed deliberately to bite guinea pigs for the purposes of research:

> The animal caretaker is engaged not in the heroics of self-experimentation (a common trope in tropical medicine histories) but in the practical and moral obligation to mitigate suffering among mortals—and not just human mortals—where possible and to share the conditions of work, including the suffering, of the most vulnerable lab actors. Baba Joseph's bitten arm is not the fruit of a heroic fantasy of ending all suffering or not causing suffering, but the result of remaining at risk and in solidarity in instrumental relationships that one does not disavow. (70)

This sharing of suffering does not, here, emerge from an imperative that strains for the vain possibility of a clean, painless ethical encounter. The embeddedness of Baba Joseph within the networks of relationality and co-substantiation that produce all subjects is inescapable; he is not claiming to "feel the pain" of the guinea pigs so much as to assert his implication within the tangle of substantiation responsible for it, as well as the possibility that those "unfree" subjects can exact back upon him a similar, if less acute, painful experience – which in turn further informs the ongoing constitution of his particular agency. The lack of "heroics" here is significant: there is no possibility of extending, mimetically, the category of the human onto the suffering animal subjects in Haraway's example by trying to claim that the *same* suffering is "felt", because to do so

would be a reiteration of the *unidirectional* instrumentalising of the animals in question. She goes on to pose the questions:

> What happens if we do not regard or treat lab animals as victims, or as other to the human, or relate to their suffering and deaths as sacrifice? What happens if experimental animals are not mechanical substitutes but significantly unfree partners, whose differences and similarities to human beings, to one another, and to other organisms are crucial to the work of the lab, and, indeed, are partly constructed by the work of the lab? What happens if the working animals are significant others with whom we are in consequential relationship in an irreducible world of embodied and lived partial differences, rather than the Other across the gulf from the One? (72)

Thinking through Haraway's relational understanding, the possibility of *caring* emerges only from the moment of acknowledgement of a caring subject's embededdness within the processes of co-substantiation with the erstwhile other subjects being cared *for*.

The asymmetry of the experience is crucial, too, to the avoidance of hopeless relativism: the roles of "carer" and "cared-for" are still tangible within this relationship, even while their fractured boundaries are disruptive and reciprocally influential. *Sharing* suffering – not miming it or pretending it is possible to avoid it, or even to take it away – is a way of animating, both figuratively and literally, the carer's implication not only in the process of mitigating that suffering, but in the fields of constitution producing the conditions of that suffering and the generative outcomes produced as a consequence of it and its circumstances. The 'carer' here is not the enactor of a preordained set of practices intended to minimise suffering for a perceived majority by the sacrifice of individuals. Importantly, Haraway eschews any utilitarian *calculation* of this kind as the basis for a response to a significant other: "Calculation, such as a risk-benefit comparison weighted

by taxonomic rank, suffices within relations of bounded self-similarity, such as humanism [...] answering to no checklist, response is always riskier than that. [...] calculation takes heart from the primary dualism that parses body one way and mind another" (2008: 71).The possibility of making a calculated judgement as the basis of the mitigation of suffering only reinscribes the division between the carer and the cared-for. Suffering, though, through its being shared, *is* capable of animating the relationality at the basis of subject formation. The possibility of *care* emerges here from the need to *touch*, and by touching, to re-embed oneself more deeply in the co-substantiating processes that produce subjects. To care, one must not calculate, objectify or hold at arm's length the cared-for—and to be cared for, one must not, and indeed cannot, be only the passive *victim* of cruelty and/or just the *recipient* of the hospitality of the carer. Care is the entanglement of these roles, even as they remain tangible, tactile and influential in their singularity. A relationship of care in this mode is one where inter- and intra-action illuminates the contingency of the actors involved, and diminishes the dualistic impulses of a pre-ordained ethics of response, empowering the carer and the cared-for by ejecting them from the binary roles to which they were previously affixed, along with the grid upon which the putative 'values' of those roles are ranked.

We're Not Programmed...

Moon follows the story-arc of Sam Bell, a man whose job it is to supervise the largely automatic harvesting of Earth's future fuel source Helium 3, which is found in relative abundance on the moon. Working for Lunar Industries, the American-Korean corporation that is responsible for supplying "over 70% of the world's energy", Sam lives alone in the Sarang moonbase facility for the duration of his three-year contract, with only an artificial intelligence called Gerty and pre-recorded messages from home for company. His partner, Tess, lives back on Earth, with their young daughter, Eve, born

while Sam has been on the moon. At the beginning of the film, we meet Sam at the end of his contract, with two weeks remaining, and very much ready to go home. However, over the course of the film, Sam discovers several shocking truths: that he is actually a human clone, that his replacement clone has already been awakened, and that each clone only lives for three years, meaning that he has only days left to live. Gerty, the AI, has been complicit in the operation all along, and instrumental in hiding the conspiracy from the respective Sams.

I look primarily here at the representation of the relationship of care in the film between Gerty and the Sams: the first Sam we meet (whom I call Sam One) and the newly-awakened clone (Sam Two). What marks this as a relationship of care is related to the understanding I outlined above. The AI is charged with the explicit task of "helping" each Sam clone, ensuring that they stick to their programme and get through their three-year contract without discovering the truth about their role. Gerty is gentle, accommodating and proactive, and even faintly patronising, in his offers of help. He manages the Sams' meals, collects and accounts for his possessions, cuts his hair, dresses his wounds, and offers emotional support: when Sam One appears distressed by something, Gerty says to him, "you don't seem like yourself today", and that "it might help to talk about it". It is difficult not to see this as a conventional relationship of care, with Gerty in the role of carer, and each Sam clone in the role of cared-for. The relationship between Gerty and the clones, too—at least at first—appears to rehearse a discourse of the management of a vulnerable (but dangerously marginal) body-subject, as does keeping the clones alone on the moon and not ever allowing them live contact with Earth. The technoscientific corporate entity of Lunar Industries uses the clones in a way akin to working, food or laboratory animals, and their strategy of responsibility is limited to the model of minimising the suffering of the clones' sacrifice (from an instrumental

and controlling position), and not sharing it. Their approach is a calculation: expending one clone every three years is, for them, a small price to pay to ensure supply of 70% of the world's energy. This minimising of suffering (by implanting the Sams with memories, supplying an AI for company, building in a three-year lifespan and euthanizing each clone before the degradation becomes too acute) is all part of that calculation, which has the added effect of keeping the artificial subjects in a position of subjection and victimhood.

The clones are thus the passive objects of Lunar's inquiry—not significant, affecting others—and Gerty is ostensibly the reliable, controlled, hyper-rational and calculating barrier keeping them at arm's length. However, the relationships of care in *Moon*, along with both the trajectory of its story and *mise-en-scène*, rather than reinscribing this discourse of subjection and victimhood, with clearly divided roles of carer and cared-for, instead dramatise the "touching" of histories and their constitutive effects/affects, refusing to endorse the singular humanistic model of selfhood generated by a conventional understanding of care. The film also—beneath the instrumental "minimisation" of suffering already mentioned—evinces a vision of the *mitigation* of suffering that has resonance with Haraway's model of "sharing" suffering. The occurrences of "touching" evoked by the relationships of care in *Moon* make visible the effects of those processes that constitute individual subjects, and, in turn, override the problematic conventional roles of carer and cared-for, as each becomes more clearly invested in the other. Any possibility of a calculated, *a priori* ethical framework for crystallising the specific responsibilities of care is denied, too, by the film's dramatisation of a failure of calculation as a basis for a relationship of care. *Moon* is full of subjects, objects and markers that each serve as the node for a number of different but related histories and material-semiotic trajectories of substantiation, and collisions of those

nodes are brought about by the enacting of putative practices of care. Moments of touch or contact between those nodes—literal and figurative—dramatise the acknowledgement of those trajectories either through implication or through explicit narrative exposition. The most obvious of these nodes are Gerty and the clones themselves, and the most obvious collisions are the literal ones between the AI's robotic body and the clones' organic ones—all of which are constructed commodities. There is an explicit crafting or affecting of the Sams' bodies by Gerty. Gerty engages in frequent physical contact with the Sams while meeting their needs. We see Gerty's robotic appendages cutting Sam One's hair, helping to dress a burn that he sustains from boiling water, and, at one point, accidentally bumping into Sam One while he loads a container of Helium 3 into a conveyor. Gerty even lays a clumsy robotic claw on Sam One's shoulder and 'cries' in apparent empathy when the latter discovers that he is a clone.

Fig. 16. Gerty 'crying'.

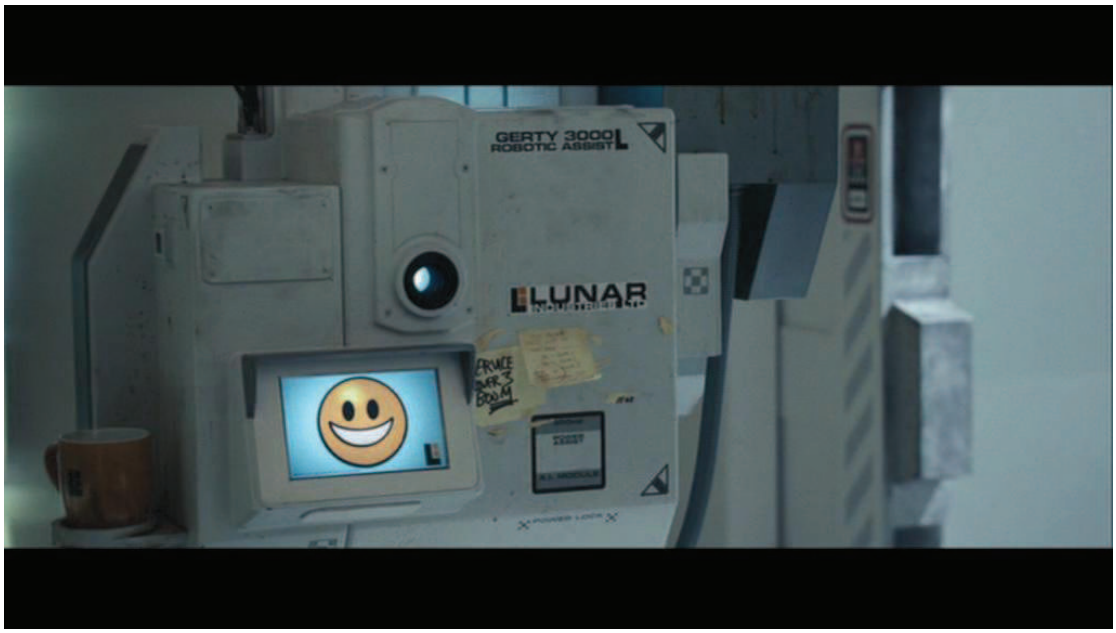
Gerty's mode of embodiment is somewhat peculiar given the history of representations of AI in science fiction cinema. While he is reminiscent of earlier cinematic AIs – director Duncan Jones says that HAL9000 from *2001: A Space Odyssey* was a major

influence – there are some immediate and significant breaks with the cinematic convention of 'artificial belligerence' in Gerty's representation.[143] Gerty's relationship of care with (the) Sam(s) is set up as a rather unconventional one for an AI; it is very much about *contact*, both physical/actual and in terms of mutual *response*. While it may be limited, Gerty has the ability to move; his "main" body is a chunky white computer mounted on overhead rails. While HAL's panoptical omnipresence is expressed by the presence of multiple red eye-like cameras, Gerty trundles around the Sarang base so that he can be in the same place as each Sam, and engage with him face-to-face. Gerty is a *located*, temporally and spatially-individuated and contingent agent, not a distant distillation of the ideal calculating subject, observing from some other plane of abstract objectivity. Where HAL's social engagement with the crew of the *Discovery* extends only to such intellectualised pursuits as playing chess (by monotonously giving out the positions for each piece in play), Gerty continuously engages the Sams with emotional and practical support of the most domestic kind: "Two weeks to go, Sam"; "how's the hand?"; "would you like some hot sauce on your beans?". Finally, while Gerty does indeed possess the HAL-style camera-eye, he also has a face. This face is a screen that displays a very limited number of facial expressions, based on smiley face emoticons with which we are most familiar from the Internet. With this small cluster of facial caricatures, Gerty can smile, frown, look shocked, puzzled, and, as evidenced in one scene, cry.

I do not want to take too literally Haraway's point on this, but the resonance with her idea of our need to recognise significant others as "having face" is illuminating (24). Haraway references the experience of primatologist Barbara Smuts, whose practical investigations into baboon communities initially started with her trying to become invisible by being unresponsive to the baboons, but soon proved impossible without

[143] See the Director's Q+A feature on the *Moon* DVD (2009).

responding to the baboons' behaviour – "acquiring a face" in their social order (25). Affixing a face to Gerty, who in so many other ways appears the absolute distillation of abstracted technoscientific enquiry, is significant; his is not the pure and dis-/unaffected gaze of the perfect agent of rational projects. His gaze comes at the necessary price of acknowledging and asserting a specific affecting presence and role in the substantiation of the subject with which he interacts. His interactions with the Sams are necessarily substantiating, and the Sams' actions and responses affect Gerty, and are reflected in both those respective facial expressions and the shifts in his behaviour that defy the intentions of his programmers. They also register in later decisions, such as that to erase his own memory.



Figs. 17 and 18. An enthusiastic Gerty, and Sam touching Gerty.

Crucial to the film's comfort in embeddedness is the lack of a convincing sense of paranoia over the protagonists' artificiality, along with the film's ability to help us sympathise or empathise with the radically-constructed agents of Gerty and the Sams—even while performing their artificiality in both plot and image. Both the Sams and Gerty are the imprinted recipients of recorded memories, implanted (as seen in *Blade Runner*) to help maintain control over them. Both are emblazoned with corporate branding – Gerty on his body and screen, the Sams in their clothes, almost all of which display the "Lunar Industries" logo. The constitutive effect upon bodies of the circulation of transnational capital manifests in these memories and logos, and reminds or informs us of the ways in which both Gerty's and the Sams' bodies are expensive property; the outcome of rational inquiry, motivated by investment, copyright, trade and exchange. Perhaps the most striking example of this is the moment where we see the hidden basement where the sleeping clones are kept: each one has with it a collection of clothes and personal possessions exactly the same as those of the awakened clones. However, the viability of these supposedy artificial subjects is continually recouped by the film. It does this partly

by distancing the 'true' human subjects: we never encounter a 'true' human subject in the film except behind a gulf of distance, both topographical and temporal (again, the staff at Lunar are recordings and images on screens, Sam's family is the same). Again, Gerty and the clones' artificiality is final and absolute—but not a 'problem' in and of itself. The film's source of tension is not—for long, at least—over whether we will discover the 'true' Sam. The clones are just that: clones—but they are 'genuine' subjects.

This is not a film about discovering or even questioning which subject is the 'real', a common trope in science fiction cinema, and the story does not seem to panic for long over the notion of lost authenticity, and indeed the 'real' original Sam, while he does turn up in the film, is only ever perceived off-screen during a phonecall to Earth, confirming finally one of the clones' suspicions of his own constructed nature. Neither is this an ethical inversion, though—it is not the impossibility and arrogance of claiming to see and represent the point of view of the other. These distant human subjects are still constitutive of identity; they are not elided as important even if they are far away. Their impact is still felt, even at a distance, but their influence has been fragmented. Each touch is one of partiality and embeddedness. *Moon* does not just dramatise and lionise the lived partiality of each subject—indeed, the film shows the *im*possibility of maintaining literal (and thus figurative) distance from these marginalised but needed subjects. Promotional material emphasises the "paranoia" and "isolation" intended by the film, as does the clinical design of the set and the suffocating disconnection from Earth—but this isolation is arguably only set up to be destroyed.[144] As well as being disrupted by the aforementioned affinity between Gerty and the Sams, this failure of distance is also true in a literal sense: while Lunar do everything they can to keep Gerty and the Sams isolated on the moon, including jamming real-time communications with Earth and not

[144] See the back matter on the packaging for the DVD of *Moon* (2009).

delivering the Sams' recorded video messages to the woman they each believe is their wife, this distance fails to hold. By the end of the film, the jammers have been smashed and at least one of the clones has managed to make a live phone call to 'his' now fourteen-year-old daughter. These lively artificial subjects have acted unexpectedly and individually, and have forced the controlling agent of Lunar Industries to reacknowledge its place in an economy of co-constitution.

As well as dramatising the assertive and localising touch of a relationship of care, the film evokes the notion of sharing suffering, also enacted within that relationship, to be another way in which subjective contingency could be reaffirmed. There are no moments of sharing suffering as exquisitely evocative of the notion as that seen in Haraway's example, but some moments do come very close. Towards the film's climax, Gerty offers to erase his memories so that the record of events so far will not endanger the lives of new clones. This serves as a contrite admission by Gerty of his being implicated both in the current Sams' predicament and in the future killing of clones, even as it mitigates potential harm to the clones that will follow—rather than as a transcendentally heroic act of impossible selflessness. His role of carer is reinforced by this decision, as is the Sams' position as cared-for, but the strengthening of this relationship is not victimising or subjecting, but rather empowering. It is also an acknowledgement of reciprocal, if asymmetrical consequence: Gerty's offer constitutes an admission that his project of care cannot remain unidirectional. To fulfil his task of 'helping' the Sams, Gerty must be affected and significantly changed. He would reboot, but he would have lost fifteen years of 'memories'.[145] Finally, the film uses the relationship of care as a way to show a rejection of calculation as an adequate model for ethical decisions, as well as being

[145] The film's use of implanted memories is, of course, another example of the notion explored by Landsberg in her monograph: it remains a persistent, widely-accepted and robust trope in science fiction. See Chapter Four on the fursona for a discussion of this concept.

another means of re-embedding each agent in their respective histories and material-semiotic contexts: Gerty shifts from being the unidirectional instrument of rational control (by Lunar) to being another significant actor: he has been programmed to ensure the safety of Lunar's considerable investment, and the aporia he encounters in his programme—unable to decide which Sam he is supposed to be caring for—serves as the basis for his caring for both. As he remarks: "Sam, helping you is what I do". Unlike in *2001*, where HAL's hyper-rationality brings about the deaths of most of the crew of the *Discovery*, Gerty's logical short-circuit leads him to a more prosaic decision to continue and intensify his responsibility of care towards Sam—both the clones—to the detriment of the subject/object relationship between Lunar and the company's putative 'inventions'.

Gerty's logical short-circuit does not, in other words, lead to Sam's being harmed, but the opposite. Gerty—who, within the aforementioned conventions of AIs in cinema, one would expect to go mad and/or attempt to kill Sam—does have a kind of breakdown. This break from cinematic convention was highlighted by the director – he claimed that he deliberately set up Gerty as reminiscent of HAL in order to later defy those conventions. Gerty may have a similar logical breakdown to HAL, but Gerty's breakdown does not bring about a murderous rampage: instead, it generates an intensification of a responsibility to care for Sam. This decision arguably endangers the energy security of 70% of planet Earth (the potential disruption to the planet is dramatised in the film's closing moments, which dub recordings of several media reports of the Lunar/Sarang cloning scandal). Thus the film eschews calculation as a singularly adequate model for this kind of ethical responsibility by embedding a failure of logical control into what is conventionally considered the most logical subject possible—the computer—and yet not making this a disastrous outcome (as an audience, we are clearly

expected to feel sympathetic to the Sams). While he says outright that he was not intending to make any kind of "academic" statement with *Moon*, Jones does acknowledge that his being a graduate in philosophy informed the film. He says that he was partly inspired by reading work by the philosopher of cognition Daniel Dennett on the question of what Jones calls "trying to apply ethics to artificial intelligence".[146] While there is a wilful absence of a stable *a priori* ethical system by which Gerty operates, the mere fact that the AI is himself an actor implicated in an ethical encounter is a significant shift from prior depictions of AIs, which tend to embody a role as agents for whom an ethics is fundamentally impossible, being replaced by cold calculation or the carrying out of orders from a taxonomically 'higher' power.

...We're People

Sam Two's final assertion to Gerty is perhaps emblematic of the willed (and wilful) ambiguity evinced by the relationships of care depicted in the film. When Gerty insists gently that his sacrificing of his memories—so precious to the Sams, even implanted as they are—will be a small price to pay, and that the AI and the new clone will return to their normal programming afterwards, Sam affirms: "Gerty, we're not programmed; we're people. Understand?". There is a very obvious ambivalence here in the use of the word "we". It is unclear whether the "we" encompasses just Sam Two and his fellow clones, or indeed includes Gerty as well. I would argue the latter: the Sams' affinity for the AI, implicated as he is in the conspiracy, is clear, and Sam Two's concern in the same moment that Gerty might be harmed by the reboot is genuine ("Are you okay with that?", he asks, twice; "will you be okay?"). The use of the word "people" intensifies this ambiguity further: Sam Two does *not* affirm his 'humanity' in a way that would position the clone, a more recognisable human figure, as one that just requires inclusion into the

[146] See the Director's Q+A feature.

humanist paradigm. He does not say, "we're not programmed; we're *human*", he says, "we're *people*". "People" is that much more inclusive a term than "human", and is much more in the spirit of companionship that Haraway's interrogation of co-substantiation requires. Sam One, Sam Two, and Gerty are all *people*, enrapt by each other's influence and implicated in each other's histories, labour, suffering and liberation.[147] The enunciation of these constitutive becomings is compounded in this final affirmation by Sam Two by his claim that they are *not programmed*. They are not the passive object-victims of a rational project of linear inscription or intervention, even as their bodies are the products of the technoscientific projects responsible, in the short term, for bringing them into material existence.

The inscription upon the body of *programming*, in the form of the biopolitical control of their daily routines, is shown over and over again in the film to be an inadequate model for understanding how these lively artificial people come into being. Care here is the multi-faceted invocation of this kind of significant otherness, which has asymmetrical and somewhat unpredictable effects, but always enunciates the collapse of the Great Divides that mark the carer and cared-for as gridlocked victims of prescriptive relations. Any sense of some tangible, linear index of 'quality of life' or a taxonomic relationship between these companions is confounded in this kind of an exchange, as is the attendant depersonalisation and ghettoisation of the cared-for subject (e.g., the turning of both that subject and the carer into roles within a rigid discourse rather than individuals capable of accounting for their own trajectories of becoming). Suffering is necessary but can be shared, and illuminates the connections between respective actors, and the failure of calculation as a basis of engagement with those significantly unfree subjects upon whose participation we rely for our own continued existence.

[147] Indeed, Haraway uses the term "people" frequently in *When Species Meet* for this very reason.

Crucially, the caring computer does not represent the pushing through of some kind of technological threshold, where futuristic computers are capable of affective, emotional impacts and earlier ones are not. This is not about claiming that in the future, processing power or programming or the like will pass some fictional radical boundary where emotionality and personality become accessible to computers, and that this is a moment we should anticipate as one where the boundaries between humans and computers will collapse. Instead, what *Moon* demonstrates is not that there is something special about Gerty, but rather that it is viable and even comfortable to imagine allowing such putatively artificial subjects to have such an intimate role in the constitution of human subjectivity. Here we see, then, the caring computer as a figure that concentrates previously popularly unconnected discourses of technology and care, emotion and rationality, in a manner that is productive, non-exceptionalist, and always materially and discursively contingent. Unable to be contained within the dualistic frameworks of any of the types of figures seen in Section One, the caring computer does not ratify any sense of radical separation between the human subject and the technological other. The conventional dualistic vision of the interface here is collapsed by the ongoing recrafting of subjectivity evinced by the complexities of these always-already-artificial relationships; the partiality of the subjects involved emerges not from construction or *bricolage* but from unwilled—but still willing—connections of an emotional, affective character.

CHAPTER SIX:

THE DECAYING DIGITAL

As discussed in the Introduction, for Hayles, information "lost its body" primarily as one of many outcomes from cybernetics research during and subsequent to the Second World War, with Shannon's "Mathematical Theory of Communication" (1948) serving as a founding document of the field of information theory, and the most significant single moment of information's theoretical disembodiment. As Hayles goes on to show, information itself—and particularly digital information—has since been essentialised as ideologically neutral, transhistorical, transmissible, discrete and capable of reflecting or distilling the platonic authenticities of subjects or objects, in ways their mundane phenomenal physicalities cannot. In other words, digital information has been popularly established to be both *disembodied* and *permanent*. Digital information is produced culturally as an entity dislodged from its material bases, reproducible and accessible perfectly and infinitely. Functioning as a kind of idealised rational essence transmissible between varying material bases, it reiterates and ratifies the culturally contingent and dualistic liberal humanist version of the human subject (a belief distilled and represented in fictional narratives describing the perfect digital reproduction of the human self).[148] I argue in this chapter that this understanding of the digital is increasingly untenable in the face of continual reminders of the material bases of the digital. The failure of digital information to live up to the transcendental promises of its putatively disembodied nature activates the need to scrutinise that failure in a way that re-embeds it within its physical contexts. It is possible, even necessary, to understand digital information itself as contingent and slippery—but rather than this compromising the role of the digital, it

[148] See my discussion of *Altered Carbon* in Chapter One, on avatars.

opens up new possibilities for understanding digital information and its relationship to its material conditions of instantiation.

Haraway identifies in "The Cyborg Manifesto" the tendency or need for late capitalist economies and ecologies to recuperate a version of the dualistic subject-self that can be *encoded* as a (digital) essence. The purpose of this drive is to generate a universal language for capital exchange; literally everyone and everything must be subject to penetration by the instrumentalisation of a standard code:

> Human beings, like any other component or subsystem, must be localized in a system architecture whose basic modes of operation are probabilistic, statistical. No objects, spaces, or bodies are sacred in themselves; any component can be interfaced with any other if the proper standard, the proper code, can be constructed for processing signals in a common language. […] information is just that kind of quantifiable element (unit, basis of unity) which allows universal translation, and so unhindered instrumental power (called effective communication). (1991: 163-4)

For Haraway, reproducing human subjects as vessels for information, with that information commodifiable and saleable without material boundaries, allows an accounting-for of difference that renders it the known object of rational construction and interrogation. That this informational essence is a digital one is implicit; Haraway points out that all of these systems of instrumental control "depend intimately upon electronics" (*ibid.*). However, this desired vision of the subject is fundamentally untenable: as I demonstrate, even the most perfectly preserved digital information is subject to decay and finitude. This "decaying digital" embodies a figure for re-examining the role of digital information in our society that does not reprise its role as this essentialised "common language", circulating perfectly and ethereally through bodies in a

manner reminiscent of the quasi-spiritual subject-self of the Enlightenment. Compromising the digital's transcendental quality in this way allows us to seize it away from those kinds of fundamentally marginalising discourses, resisting their attendant and ongoing (re)inscription of lines of access and restriction of access to technological authority, whose rules of engagement are, as demonstrated in Section One, arranged in highly exclusive ways. It also points to a reading of the relationship between technology and culture that is not technologically deterministic: the engineering of digital fidelity registers here as an ongoing and regular reassessment of aesthetic mores or knowledge/aesthetic experiences of digital technology within a society, rather than as the generational advancement of a radically dislocated technological agent invented and controlled by a rational subject.

Like the digital itself, my method of showing this phenomenon moves with fluidity between various ostensibly different texts, but unlike that idealised, transcendental fantasy essence, I pause at each text to unravel and trace its role as a node of social and material contingency. I first interrogate the material contingency of digital information itself, by interrogating, respectively, the technical phenomenon of "digital decay" (the highly limited lifespan of digital information based upon its instantiation in eventually-deprecated and unusable physical devices), and the tendency for digital information to "decay" in the cultural sense: "perfectly preserved" digital images/sound from earlier generations of digital devices actually look very "old" because they are artefacted, of poor resolution, or are smaller than would be expected in the present day. Further to this, I examine a slipperiness in the digital's ability to fulfil a modern biopolitical project to reflect a stable, essential but transmissible bodily identity, as made visible by instances of fundamental failures in biometrics. After establishing this inherent tendency for digital information to "decay", I examine—particularly through work on the aesthetics of sound

and music recording—how this tendency can be harnessed to rethink the position and role of digital information in ways that are less disembodied, transhistorical or biopolitically marginalising/normative. To show this, I examine first Brian Massumi's Deleuze-inspired work on the "real-material-but-incorporeal" body and its relationships to analogue and digital information respectively, along with Aden Evens' work on the material quality of musical implication. At stake in particular here is a reading of how the digital may be more capable of explicating experience from the virtual than generally thought. While both Massumi and Evens have argued for the "superiority" of the analogue in affecting the body, I resist decrying the digital as an inadequate agent in the process of transducing sensation into embodied experience. I use their writing to examine the work of electronic musicians who foreground the slipperiness and material contingency of digital information as an aesthetic decision, in order to produce music that engages with, rather than attempts to hide, the interference in digital information by its physical bases. The foregrounding of the formerly invisible/inaudible material, background or 'noise' character to sound, made possible by digital technology, permits an embodied transduction of potential into affect that is as constitutive of the real-material-but-incorporeal physical body as other affective experiences.

I contend that the quasi-immortal digital artefact itself, even if reproduced perfectly from the 'source' at a later time, is subject to a transformation of meaning and 'quality', rooted in the influence of its newly-altered cultural and material contexts. The transcendental continuation of a digital artefact as a unique spectral essence, radically disjointed from an interchangeable material base is, thus, punctured: contrary to the fears elucidated by representations of the grey goo scenario, the digitisation of the material (or indeed the materialisation of the digital) does not collapse the possibility of difference into an indistinct field of homogeneity, but instead uncovers more opportunities for

understanding the material contingency that has *always* been present in the embodiment and representation of digital information. In turn, this unstable image of the decaying digital helps us to understand the ongoing constitution of embodied subjectivity at the interface, with digital information forming one strand of co-substantiating influence that is not separate from bodies (ours or its own), but which is both inextricably embedded in and contingent upon and productive of them: the putative collision between the human and the technological here cannot, in other words, be resolved into a subject-object dichotomy, even with the imposition of the encoded presence/pattern of the digital. The decaying digital thus constitutes a figurative opportunity both to map some of the subject-constituting effects of digital information (so, its overflow from the conventional object position into the subject), and to discover a body for information, replacing—or, perhaps, recovering—the one that it has lost.

How the Digital Decays

The most common understanding of digital data's tendency to 'decay' is one based in a tangible and well-known technical problem: making that data permanent and indefinitely accessible. In a keynote address to the *Preserving the Immaterial* conference held at the Guggenheim Museum in New York in March 2001, Bruce Sterling outlined several tangible issues faced by those aiming to preserve and archive digital information for the future. The situation outlined was a direct challenge to the dream of digital immateriality, whose discursive power Sterling highlighted in his ironic enunciation of the major tenets of that fantasy, evoked in response to the problems of preserving works of art:

> Thanks to fantastic breakthroughs in modern technology, we've got a cure for [material disintegration]: digitalization! Flawless computer memories! Lightning-fast chips! Fat fiber-optics! Massive storage facilities! Bits not atoms! It's immaterial, so it needs no preserving; it's escaped from the python coils of

> history; time harms it no more; it's up there at the pearly gates, spotless and radiant, right next to Saint Peter. (Sterling n.d.)

In opposition to this dream (and marking a departure from his earlier, more dualistic cyberpunk claims about technology), Sterling produced an account of the phenomenon of *digital decay*: the tendency for supposedly immaterial and permanent digital information to become gradually inaccessible and/or unusable as its material bases (computers, and other devices, as well as optical and magnetic storage media) wear out over time. "Bits are moving electrons, moving photons, or they are magnetized clumps of atoms, laser burn marks in plastic, iron filings stuck together with tape," Sterling asserted, "we have no way to archive bits that we know will be readable in even fifty years. Tape demagnetizes. CDs delaminate. Networks go down." (*ibid.*) One of the key promises of the digital—its putative uncoupling from the risks and vulnerabilities of the material realm—is shown here to be fundamentally untenable for very practical reasons. Pointing out the parallels between preserving indefinitely a "top of the line *iMac*" and "some Van Gogh sunflowers", Sterling made clear the need for both to be continually maintained, protected and supported in order to sustain them: "number one threat, sunlight. Bad for oils, quite bad for plastics too. Ten years of hot sunlight on that glossy iMac console, and our candy-coloured iMac is a lot less yummy [...] Next, water. Glass of water onto the oil painting. Oh my. Glass of water into the computer? A catastrophe!" (*ibid.*). The need to keep digital information protected by the sheltering of its necessary physical bodies animates the limits of the logic of digital immateriality—the finitude inherent to material bodies *also* applies, fundamentally, to seemingly weightless digital information. If it was invulnerable to decay in its mythical immateriality, the re-embodiment of digital information—its being brought back down to earth—makes it subject once more to all the contingencies (and ravages) of physical instantiation.

Despite the escape from the fervour of supposed digital infinity, there is still a none-too-faint air of technological determinism about these claims: one major assumption here is, ostensibly, that digital technology will continue to develop exponentially over time, and it is we obsolete humans who must rush to keep up.[149] Indeed, the terms of Sterling's conference address were rooted in a war against entropic dissolution of order that had ongoing recourse to information theory, rather than intervening in any fundamental way to unseat its discursive influence. However, what Sterling identified in this speech is still a concrete and inescapable problem, and, accordingly, a demand to rethink the nature of digital information's relationship to embodiment. By demonstrating the very practical, real-world material contingencies of that information, Sterling highlighted primarily the fallacy of assuming digital information to be disembodied—but he also set the terms for a wider discussion of digital's tendency to decay than just the eventual physical degradation of its material instantiation. The problem of *compatibility* (solved, conventionally, if temporarily, by software emulation) evokes further questions about a digital artefact's being tied to a cultural, historically-specific moment.[150] The idea of the digital's free-flowing motion between interchangeable electronic device-bodies (the transfer of a digital text from one machine to another) collapses: frequently, the new computer bodies reject, repel or just cannot process or comprehend the digital artefacts leftover from the past: "It can't run off that operating system. It can't run on that make of computer," Sterling pointed out, "it may be making lonely system-calls to some piece of equipment or some data that no longer exists [...] It's an emulator of an emulator's emulator." (*ibid.*) As a digital artefact is migrated from one system to another, its

[149] Recapitulating this technologically deterministic view is not a necessary outcome of this argument: the idea is less that an onward march of digital technological development is inevitable, and more that technological change that *does* happen (for whatever complex social, economic and cultural reasons) underscores the fragility and material contingency of digital data.

[150] In this chapter, I use "artefact" to refer to a (putatively) singular digital item—so, for instance, a text document, an executable file, an image, a recording of a song, et cetera. The common encoding of the digital assigns these different kinds of texts functional equivalency, and accordingly all are equally subject to the phenomenon of digital decay.

permanence is compromised by the increasingly tricky task of enabling that it can interface productively with the machine on which it has been installed.

However, this problem of compatibility goes beyond the mundane technical question of basic functionality and access. Even if the digital artefact at hand is reproduced flawlessly on its own, then it fails largely to function satisfactorily outside of the very specific material conditions within which it was originally conceived, necessitating a whole new set of practices to decode and support access to that artefact. In fact, I argue that rather than the digital mode of instantiation helping to make an artefact transhistorical, the diminishment of compatibility in particular demonstrates how even the perfect reproduction of data greatly *intensifies* the importance and visibility of a digital artefact's connection to its material contingency. Beyond the problems of its mundane material degradation, even if a digital text *is* somehow perfectly preserved, its material underpinnings protected and maintained, the artefact's very "perfection" embeds it more firmly in the moment of its substantiation, and enacts, with each viewing/reading/et cetera, a performance of that embeddedness.[151] Digital artefacts which can be both stored and accessed later, with all technical compatibility problems solved, suffer from a more mundane and culturally-instantiated form of eventual incompatibility: their perfection in reproduction of their "originals" means both that they gradually fail to represent effectively their intended object of signification, and instead represent increasingly the conditions of their instantiation.[152]

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[151] This also resonates with Haraway's model of moments of "touching", as I examine in Chapter Five on the caring computer: the encounter with the old, often overcompressed, low-resolution, (so "decayed") digital artefact forces a confrontation with its material, social, economic and discursive histories that is more acute than we get with a digital artefact whose format, dimensions, resolution and so on are more clearly in line with those we expect in the present day.

[152] Assuming a 1:1 ratio of representation of some kind of stable 'authentic' object in digital photographs is not, of course, easily tenable—this is something troubled by a number of thinkers, most obviously Baudrillard. However, as digital texts 'decay' in the manner I describe,

A simple example might be digital images as reproduced on the web at different points in time. The December 1996 banner logo for the search engine *Yahoo.com* is saved as an 8-bit GIF format digital image (*fig. 19*). This format limits the palette of colours to 256, something which can be seen in both the error diffusion (the 'stipple effect' in the colours) and the aliasing ('jaggedness' of lines at angles other than ninety degrees). The 2010 logo for the same website, however, is rendered more smoothly, in lossless 24-bit (16 million colours) PNG format, with antialising (a softening of jagged lines allowed by the high colour depth of the format), and no error diffusion in the colours (*fig. 20*).

Fig. 19. The *Yahoo!* search engine's web banner from December 1996.[153]

Fig. 20. The *Yahoo!* web banner from August 2010.

The 1996 logo is reproduced (notwithstanding inevitable minor differences as a result of printing in this document) *perfectly* as a result of its digital instantiation and proper archiving. It is a flawless copy, technically speaking, of the logo that a user in 1996 would have accessed. But its very perfection in reproduction (re-)animates its being situated within the period and technical context in which it was conceived. The dimensional and

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they increasingly fail to maintain even an ostensible connection to their supposedly signified objects.

[153] http://web.archive.org/web/19961227005023/http://www2.yahoo.com/

resolution compromises that are obvious to tech-savvy present-day Internet users mark the 1996 logo as technically obsolete; less a banner for a website, this image steadily becomes a historical artefact of the earliest days of the World Wide Web. It looks, in short, *old*. The 2010 logo, though, its aesthetic finish comparable to any major website of today, arguably does not (yet) mark it primarily as anything other than such a title banner.

While this is, of course, something one could argue about almost any shifting of styles in design history, the crucial point here is the manner in which the absolutely perfect replication of the digital artefact *intensifies* its historical contingency—that is, rather than the artefact being immune to such contingency as a result of its supposed ethereal nature. This GIF image file from 1996 has been collected by a crawler bot, copied and saved within the *Internet Archive*, and now reproduced again in the RAM and on the hard drive scratch files of the various computers I have used to write this thesis. It has been displayed on monitors several inches larger and a foot thinner than any that would have displayed it at the time it was current—and in at least twice the screen resolution (most computers in 1996 would have been displaying around 800 pixel wide displays; the computer I use now has a monitor running at a resolution 1600 pixels wide). The GIF *file* is, theoretically speaking, *exactly the same* as it was when it was first uploaded to *Yahoo!*'s servers nearly fourteen years ago, down to the individual byte of information, and yet, its representational value has shifted. The putative perfection of the digital artefact fractures itself by its own unavoidable performances of material contingency. The wholly-preserved digital artefact is deprecated, fragmented and obsolete as a direct result of its being flawlessly reproduced in 2010 exactly how it was first stored in 1996. Decay here thus happens not *in spite of* attempts to preserve and reproduce digital artefacts perfectly, but *because of* them. Like a faded Polaroid photograph, the digital image implicitly

highlights the material signifiers of its own place in history in a manner that goes steadily beyond the function of representing the depicted subject.[154]

Further examination of the inescapable embeddedness of digital texts (and their attendant tendency to decay) can be enacted by interrogating contemporary biopolitical projects intended to use digital information to 'fix identity to the body' (as seen in biometric projects of stabilising a digital essence that can be easily transmitted or exchanged). These projects perform a deliberate obfuscation/amnesia of the cultural contexts within which their ensuing technologies were developed, but this obfuscation itself serves, in fact, to make those contexts and informing elements more apparent. In other words, as with the rotting *iMac* of Sterling's example, or the overcompressed, lossy GIF of my own, the digital decays here in its continual highlighting of the very mundane material and cultural contingencies it is developed to transcend (and indeed obscure). In an article which seeks to reclaim the social history of biometric development away from the assumption that such technology was simply seized fully-formed and deployed after the attacks on the World Trade Center, Kelly Gates cites a quotation describing a widely-held belief that facial recognition technology could have somehow averted the events of World Trade Center attacks. According to Alexandra Stikeman of *Technology Review*, "face recognition technology that's already commercially available could have instantly […] sounded the alarm before the suspect boarded his flight" (cited in Gates, 35). As Gates observes, this "regretful yet strangely hopeful assertion" seems a massively reductive approach to an event whose causes are rooted in a vast network of social and other causes, and yet it was a claim that appeared "simultaneously from multiple sources" (35).

[154] This occurrence—the foregrounding of a digital artefact's historical contingency over its putative content/denotative function—is something further borne out by web exhibits such as *Internet '96*, which presents snapshots of websites from 1996, and then uses each one to take an askew look at changes in design standards over the last decade (rather than what any of the sites are actually "about"). https://www.msu.edu/~karjalae/internet96.htm

Gates determines this to be a claim betraying what Pat Gill has called "'Technostalgia': the desire to revise the past to redetermine the present, at the same time admitting the impossibility of this endeavour" (qtd. in Gates 36). This phenomenon separates the technology in question from the networks of its construction (which are "black boxed") and places it on a kind of pedestal, whereby blame can more easily be placed on those bureaucrats, institutions or forces apparently responsible for being simply too ignorant to appropriate and apply the technology. This is not just a matter of the benefit of hindsight: the "whole set of social actors" implicated in the production and deployment of the technology is elided, and in doing so a certain historical pattern describing a wide-reaching socially-motivated project to attach identity to the body becomes obfuscated. This project of affixing some stable (but transmissible) version of identity to the material body is one whose authority is founded upon the supposed perfect reproducibility and sustainability of the digital (as well as its technological neutrality). But despite these discourses of immaterial perfection, the digital records created are subject to a kind of decay both equivalent to and in excess of the decay of conventional analogue records of identity.

Gates shows several of the ways in which identity was tied to the body before contemporary technologies of biometrics matured, as well as the reasons why a digital solution was mooted as the mode in which they would be instantiated in a contemporary context. Many of these methods originated in the nineteenth century, and some of them are still in heavy use today, such as photography and fingerprinting (39). The example of photography is one that Gates focuses on in its attempt to "modernise" identification systems, owing to its supposed "realist representational capacity" (*ibid.*). These "late-nineteenth-century ancestors to biometrics"—early photography, fingerprinting, and anthropometry (an extensive series of bodily measurements)–provide, for Gates, a

starting point for reopening a discussion on the historical background to these technologies, and an opportunity for interrogating the origins of what she terms a contemporary project to "create a universal digital representation of human essence" (*ibid* 37). With this digitized human essence in place, it would be easier to "control access to the benefits of citizenship, to the national territory, to information, to computer networks themselves, to transportation systems, and to specific spaces of consumption and safety" (*ibid.*). She notes a tendency to try and locate "individual constituents" of identity to the body, but the problem that "the seemingly natural connection between the body and the identity of the person reveals itself to be in perpetual slippage" (38). The photograph, for instance, is not a definitive marker of bodily-affixed identification, as it poses a number of fundamental, simple problems. People's appearances can change drastically over time, or depending on what facial expression they hold, the light in a room, and so on. Photographs also deteriorate and are easily misinterpreted based on social bias or prejudice, or basic misjudgement. Further to this, the number of photographs would require a vast indexing and archival system along with an extra level of human expertise (40). These are, though, features common to both analogue and digital photographs: I argue that this slippage goes a step further in a manner unique to the invention/intervention of the digital artefact. The deterioration of a photograph may appear to be alleviated or removed by the digital by its perfect reproducibility, but it is only ever dislocated—in a way that intensifies the effect of this decay, and illuminates the social and cultural contingency that that digital artefact was developed to overcome. Like the *Yahoo!* logos, a 'perfect' digital photograph will, over time, come unstuck from the context in which it was produced, and thus betray its material and symbolic reliance on that context: not only will it be subject to the same mundane storage/retrieval problems that Sterling outlined, but its function as a perfect record of its moment of inception undoes its ability to represent, by activating a new role as a 'relic'. Older digital

photographs decay steadily by their being (in relative terms) of increasingly poor resolution, small dimensions, and high compression and 'lossiness' (the loss of clarity caused by some forms of image compression). Furthermore, as well as the digital photograph's substantiating material bases, the physical object documented within the photograph *will* decay in the most straightforward, entropic way: the photograph's perfection, again, is responsible for its increasing failure to represent.

This decay goes further still, though: digital information has an absolutely inbuilt tendency to undo its own permanence of representation by opening up *new* venues and stages of interrogation for which it has not (yet) been coded to account. The problem with the digital artefact's supposed ability to stabilise representation beyond doubt—by delegating both the interpretation of meaning and the archive of memory to technologies—is that the increased scrutiny and accuracy afforded by the technology reveals hitherto unknown areas of representational failure. Moving beyond the example of photographs and to another avenue of digital identity stabilisation—that of human DNA records—we can see how the digital undermines its own effectiveness as a marker of essential but transmissible identity by highlighting more areas where its systemic implementation fails to account for the body supposedly being known. A 2006 television documentary reported the case of Lydia Fairchild, an American mother of three whose separation from her husband forced her into claiming welfare. On having to provide routine DNA evidence that her children were, in fact, hers, the results from the tests came back and 'revealed' that she was not, in fact the mother of her own children: her DNA did not match that of any one of them. This had remarkable legal consequences: she was charged with running a surrogacy scam, and the government also charged her with claiming benefits to which she was not entitled (five.tv 2006). Even hospital records of the birth and witness reports were disregarded as evidence, as the DNA test was

judged to be infallible (*ibid.*). Eventually, the only thing that saved Fairchild from prosecution and having her children removed by the authorities was her enlisting of a lawyer who had heard of a similar case, where a woman named Karen Keegan had, during tests to determine a close family match for a kidney donor, been shown to share no genetic material with her adult sons. It had been discovered that Keegan was a "chimera": she had started off in the womb as one of twins, each with a unique genetic makeup, but one embryo became fused with the other, creating a mix of two sources of genetic code. Despite carrying this with her for her whole life, it did not affect her in any way until her DNA was challenged as a base of identification, at which point that identity became unviable.[155] A *New Scientist* article also highlighted that these cases may be far from a minority:

> […] 80 to 90 per cent of women carry their children's cells or DNA in their blood during pregnancy and up to 50 percent carry them for decades after giving birth, a condition called microchimerism[…] If your mother then had more children, some of your cells could in principle slip back through into your younger sibling's body. And twins can end up swapping cells in the womb, especially if they share a placenta. So a single person can be a veritable menagerie of different cell types from different generations (Ainsworth 2003: 34).

Clearly, visible cases of these chimeras are few, but what this illustrates is that the abstraction of biological embodiment into digital data, with the attendant systems to manage and archive that data, participates in the uncovering of areas for which the system cannot account—which would not have been revealed *without* the implementation of that system. Here, the digital is instrumental in reproducing its own finitude by its very perfect mode of reproduction: the reliance upon DNA data as the *de facto* witness of

[155] This, in itself, arguably illustrates an organised structure of intended identity stabilisation undoing itself through its own modes of surveillance: if her DNA had remained untested, her disruptive example would not have been uncovered.

individual identity—which is vulnerable to quite catastrophic failure—produces itself the limit cases that expose the contingency of that information.

The *decaying digital,* then, here registers the clustering of digital decay (as a technical issue), the intractable slipperiness of digital identity when trying to affix it to the body—and a tendency for these projects (i.e. to mark digital information as permanent and reliable artefacts of representation) to undo the very conditions of the digital's permanence. The digital decays even as various social bodies attempt to stabilise it for communication and exchange, and its decay is partly a direct result of those attempts. Significantly, this decaying digital returns a recourse to the bodily-material to the previously dualistic and ethereal nature of the digital, dragging it back into the physical domain of temporary, contingent instantiation. The ensuing argument outlines both the rest of the decaying digital's makeup as a figure, as well as how it can be 'used' both aesthetically/artistically and as a means to recoup a non-dualistic understanding of the digital. This non-dualistic understanding allows us to imagine the digital not as an 'essence' equivalent to the idealised Cartesian cogito-self, but as an entity with historically-situated material consequences, and as a materially-embodied and finite entity in itself, emerging from complex conditions and completely dependent on those conditions for its existence. This constitutes a human/technological interface encounter that is dependent upon, rather than obfuscating of the body, while prompting the reconfiguration of what constitutes 'a body' in the first place.

Real-Material-but-Incorporeal: the Digitally-Affected Body

In order to examine the most explicit ways that the digital can be seen to be embodied, I examine the physically constitutive effects of digital sound. Sound represents a domain within which theoretical discussions over both analogue and digital representation occur

with considerable frequency and alacrity. It is also where these debates enter the territory of considering the respective impacts of analogue and digital sound *on the body*. The body as I define it here is one rooted in radical materialist conceptions of the "real-material-but-incorporeal" body, rather than the 'finished' ideal body (harbouring a discrete mind-self) of liberal humanist conceptions. There are a number of precedents for reconsidering the embodied human/technhological relationship in terms of sound. Most of them, as I show presently, focus upon the affective character of sound. In this section, I consider a number of perspectives that may recoup the role of the digital in embodied rather than disembodied experiences at the interface: while (as I demonstrate) the *status quo* on debates over sound seems to be that digital sound cannot 'express' affectively in the way that analogue sound does (because of the digital's moment of abstraction into code, which interrupts its affective link with its material bases), I argue here that the digital can allow access to domains of physical experience currently excluded by the analogue: this digitally-mediated sound *can* impact on the body in affective ways.

Before outlining the difference between analogue and digital, it is necessary here to set up first a brief understanding of what sound actually *is*, in both its analogue and digital instantiations. Sound is a mechanical vibration of matter, on any scale. When matter vibrates, the organisation of these vibrations is endlessly transmitted in waves through the medium in which it is instantiated – in our everyday experience, the complex milieu of gases and particles that we label "air", and is differentiated from light by its occurrence in matter rather than electromagnetic waves (Roads 2001: 6). This is, in the purest sense, "analogue" sound. When it is recorded with an analogue medium, such as vinyl record or magnetic tape, it is transferred onto the medium through basic mechanical and electrical processes. For instance a dynamic microphone contains a diaphragm which vibrates as it is hit by the pressure waves of 'real' sound, and this diaphragm, collared with a magnet,

generates through induction an electrical pulse which is then transcribed directly onto a physical medium, either etching a vinyl groove on a record or rearranging microscopic magnetic particles on a surface of a magnetic tape. This groove or arrangement of magnetic particles is a direct transcription of the mechanical wave of the original sound, and playback happens effectively by reversing the process (Evens 2002: 174). The *physicality* of the mechanical, analogue sound wave figures strongly in its aesthetic importance, especially when compared to ways in which sound is stored digitally. Digital sound operates on the principle of taking regular (tens of thousands of times a second) samples of a sound picked up (for instance) with a microphone, instead of mechanically reproducing the whole wave. Those samples are then transposed into binary values and stored as data, to be retrieved by a software process and decoded for output through speakers (*ibid*.). The advantages of digital audio include the ability to make infinite 'perfect' copies of an original with no generational degradation between them (because copying does not introduce any kind of "noise" into the process), the decrease in size between an LP record player and a compact disc player, the incredible signal-to-noise ratio, and the lack of conventional degradation over repeated playback when compared to tapes and records, which wear out the more they are played due to the erosion effect of tactile friction. Digital instantiation also allows, of course, for music to be compressed for the purposes of downloading onto portable MP3 players such as iPods. However, despite its many practical advantages, the digital has come under heavy fire from critics and audiophiles alike as an adequate means of containing the experience of music, mainly due to its basis in the notion of sampling and abstraction into the digital code that allows its storage and transmission.

This process provides, for example, the point of contention in digital aesthetics for both Brian Massumi and Aden Evens. As outlined in the Introduction, Massumi's project is to

theorise the body's ecological relationships with 'virtuality': the field of material implication from which all affective experience is drawn out in acognitive, sensate encounters, which are retrospectively ordered by cultural conditioning into meaningful experience, emotion, memory and so on (Massumi 2002: 35). The chapter of his book (tellingly) entitled "On the Superiority of the Analog" is dedicated to criticising the digital's inability to access that virtuality, because of its reduction of experience to a sequence of sampling (134). Digitality reduces potential to possibility by taking approximate measurements at certain points and leaving empty gaps in between:

> Digital technologies in fact have a remarkably weak connection to the virtual, by virtue of the enormous power of their systematisation of the possible…Equating the digital with the virtual confuses the really apparitional with the artificial. It reduces it to a simulation. This forgets intensity, brackets potential, and in the same sweeping gesture bypasses the move through sensation, the actual envelopment of the virtual. (137-8)

Massumi deploys the notion of topology—non-Euclidean shapes that maintain a qualitative homogeneity of organisation despite their ability to be bent or reshaped—to demonstrate the transductive inadequacy of this reduction of potential to possibility. Topological shapes maintain a certain organisation that is relative only to itself, and has no empirical basis of comparison with any other shapes.[156] Massumi describes the transformation of potential into explicated perception as a topological change, stating that it is "impossible to diagram every step in a topological transformation…practically, only selected stills can be represented" (134). And it is in the reliance on "stills", and the illusion of motion between those stills, that digital fails in providing any kind of access to virtuality. This position is taken up by Massumi in a way that has even further

[156] An often-cited example of a topological organisation is the London Underground map: it will not tell you how far apart stations are, or even where they are in relation to each other in terms of compass points – but it tells you how the lines connect together. It provides topological, rather than geometric information.

implications for the body's position in relationships with the virtual: his consideration of the digital aesthetic must necessarily be read alongside his Deleuze-inspired discussion of affect. This is, broadly, the idea that the body is in a relationship of constant encounters with potential experience, and that these encounters are organised into culturally-determined senses *after* being intercepted and certain aspects *selected* for explication into emotion or perception by an acognitive, indeterminate but distinctly embodied organ of sensation – half a second after the encounter, in fact (28). In this context, the digital code is a red herring, standing for virtuality but only really containing at best out-of-date snapshots of it, while the analogue sound wave, on the other hand, being already firmly instantiated in matter, is supremely fit for vibrating through the "body-as-transducer" (135). The analogue domain constitutes what Massumi describes as:

> a continuously variable impulse or momentum that can cross from one qualitatively different medium into another. Like electricity into sound waves. Or heat into pain. Or light waves into vision. Or vision into imagination. Or noise in the ear into music in the heart […] Variable continuity across the qualitatively different: continuity of transformation. (135)

Digitality lacks the continuity that Massumi seeks in considering the virtual, and wants for the depth of potential expression that Evens expects in a live musical performance. Code indeed cannot *contain* the virtual or constitute in itself a field of material potential, reducing, as it does by its very nature, the potential into the possible.

Similarly, Aden Evens problematises the digital mode of sound recording as purely an "engineering challenge"; "[reducing] fidelity to physics" (171-3). He points out an issue in digital sound recording that is often raised by critics of the digital: the fact that limitations in technology mean that the detail of the "sampling" undertaken in digital recording is limited to only capture a certain range of frequencies and amplitudes: "Complex real

world sounds almost always have components above the cut-off frequency of the CD, and below the noise floor or maximum resolution of the CD. Sound varies faster and more subtly than CDs can capture" (175). Music recorded onto a CD is effectively limited in its maximum frequency to about 20kHz, or 20,000 samples per second of recorded audio. This means that the maximum frequency of sound it can capture is 20kHz, generally considered to be more than adequate, as it is also considered to be the upper reaches of even the sharpest human hearing (175). However, Evens points out a widespread unease with the CD as a recording medium, with many digital listeners complaining of a "coldness" about the sound; there is supposedly a loss of subtlety, a failure to "express" (176). In attempting to resolve why this might be, he both points out the fact that frequencies beyond our consciously-perceived range can and do register in our bodies and as such affect our understanding of sounds. He goes on to outline "an ethics of intensity" (*ibid.*). This is a notion of musical/sound experience which places noise at the privileged end of the long-standing signal/noise dichotomy: according to Evens, noise does not modulate signal, but the opposite is in fact true (177). Noise constitutes the raw material, a field of implication from which musical aesthetic experience and perception are drawn out (and exhausted) by performance. For Evens, there is no such thing as silence when considering music:

> The background of noise means that the air which a sound vibrates is not still to begin with, and silence is never total. Every string plucked, every throat cleared, is vibrating a vibration, modifying an existing difference without dampening it or squelching it…Noise is the uncontracted, the depth from which these contractions of perception are drawn, and though senseless and insensible, it makes sense or gives sense to sound, by providing sound with its direction and by focusing sound to a point of clarity. *Noise is the reservoir of sense*, the depth in which sounds connect to each other, the background, the difference whose

> modulation is signal…*What rises and falls is already a field of difference, an entropy of difference, a noise which is the problematic substance of sound, the obscure reserve* (177, emphasis mine).

By removing noise, and isolating everything except the 'pure' signal in the process of recording, and in combination with its inability to record frequency ranges that, while not directly perceptible, may psychoacoustically affect the 'quality' of a listening experience, the digital falls short of capturing the infinitely complex realm of acoustic spatiality implied and explicated in a live performance, or even an analogue recording of a performance. The milieu of the implicated is filtered out by digital technologies obsessed with removing everything apart from signal, and by extension these technologies are responsible for removing expression from the recording (182). As he says at the end of the article, "expression exceeds fidelity, so hold on to your LPs" (185).

The above positions are strong criticisms of the digital's ability to express, and constitute a reiteration of that sense of the digital's disembodiment. However, I argue that it is possible for the digital to play a role in creating a material milieu, previously inaccessible, that draws out some kind of access to virtual experience, and that this constitutes an activation of its position as a local, contingent, material entity, rather than a transcendental essence. In other words, harnessing the digital's ability to *intensify* rather than obscure its connection to material contingency, we can rethink the effect (and affect) of digital code on the body, and as such, rethink all such interface encounters. It is true that it is initially difficult to see how digital technologies may be useful for increasing our understanding of, access to, or incorporeal ecological relationship with the virtual, and by extension any reconfiguring of embodied subjectivities. Massumi's persuasive treatment of the gaps and lapses inherent in the "sampling" nature of a digitised aesthetic clearly position it as a shallow illusion of the virtual, pasting together snapshots of the

already-exhausted into a zoetrope of potential-turned-probability, which must then in turn be reinstated into the analogue in order to even be perceived. A discussion of 'glitch' music and Curtis Roads's understanding of 'microsound' will provide some way of recouping the digital's relationship with the virtual.

Microsound is one of nine time scales that Roads maps in his text of the same name. He argues that digital technology has allowed us access to a level of sonic space that would be previously untouchable (3). Microsound is the time scale on which events are at the very threshold of human aural perception; perhaps the tiniest events, in other words, that we can hear, just milliseconds in duration. "Glitch" music, such as that pioneered by artists such as Oval, who painted images on the undersides of CDs to make them skip, and then sampled the results—uses this microsonic level of sound to expose something between notes that just cannot be captured with analogue; Kim Cascone calls it "creating artefacts and exposing them as timbral content" (15). Cascone also points out a practice some artists undertook to transform non-audio code into audio; taking image files and opening them up with wave editors, and sampling the sound that this process produces (17). Similarly, the avant-garde electronic musicians Autechre create digital music based on microsound tones generated in software and programmes of their own creation. What the something between the notes of glitch music is, exactly, is not "the virtual" itself—but it is certainly a level of audio experience that would have been inaccessible prior to digital sound technologies. In concert with an instantiation in the analogue (through speakers or headphones) microsonic music mimics what Massumi describes as the transduction of potential: "as sound passes from one time scale to another *it crosses perceptual boundaries* […] it seems to change quality […] this is because human perception processes each timescale differently" (Roads: 4, emphasis mine). The function of the digital, here, is not to escape the material conditions of its inception, but to *foreground*

them. Glitch music boosts and aestheticises the influence of its nature as emerging from code; it makes no attempt to hide the conditions of its production but exposes them and forces them into the foreground. There is no escape from the 'body' of the digital here; every glitch song is a celebration of its particular system and the specificities of its material bases.

As well as glitch music, there are other burgeoning practices of electronic music-making that celebrate rather than try to avoid the failures and systemic limitations of the digital. 'Circuit-bending' describes the practice of taking cheap electronic devices—often toys with inexpensive, tinny speakers and sound processing chips—opening them up, and randomly rewiring their insides. New connections and interfaces are also added; many of these circuit-bent 'instruments' are augmented with inputs and outputs that allow them to interface with recording, sequencing and performance equipment. As self-professed 'bender' Reed Ghazala describes it:

> Circuit-bending is an electronic art which implements creative audio short-circuiting. This renegade path of electrons represents a catalytic force capable of exploding new experimental musical forms forward at a velocity previously unknown. Anyone at all can do it; no prior knowledge of electronics is needed. The technique is, without a doubt, the easiest electronic audio design process in existence. [...] the circuit-bent instrument, often a re-wired audio toy or game, is an alien instrument: alien in electronic design, alien in voice, alien in musician interface. Through this procedure, all around our planet, a new musical vocabulary is being discovered [...] Circuit-bending's anti-theory approach to electronic design makes accessible to all audio explorers an endless frontier of original sound-forms [...] Within these adapted devices, along with the unusual voices of circuit-bending, are often found aleatoric music generators; that is, chance-music composers that

> stream unpredictable audio events: elements shifting and re-combining in fascinating ways. (Ghazala n.d.)

The sound produced by circuit-bent devices vary from twittering flutters to terrifying, inhuman shrieks. As Ghazala remarks, though, the emphasis here is not on the conscious and instrumental (in both senses) *design* of an instrument, but on the possibility that the digital allows *discovery* of new domains of sonic influence; each circuit-bent device is a new and unique item, situated as a result of its being deliberately vandalised, turned from its intended purpose and the very teleology of its design brief—presenting a representative sound—overturned in favour of discovering what lies in the background to that representative sound. It is also a thoroughly embodied encounter: as Ghazala adds: "Body-contacts are also found through circuit-bending. These allow electricity to flow through the player's body, flesh and blood now becoming an active part of the electronic sound circuit. This interface extends players and instruments into each other" (*ibid.*) The 'lost' connection to embodiment that Massumi, Evens and others perceive in the digital is restored here in the most literal sense; circuit-bent devices redirect the current of input and output through the body, using it as a transducer of the signal; a signal processor without the conscious encoding or decoding of the digital.

So, despite Evens' and Massumi's concerns, it is possible to imagine, at least to some extent, the possibility of an affective character to the digital, by finding ways that digital incursions and interventions can generate new milieux from which embodied experience can be explicated. Altering the balance in the signal/noise ratio—in a direction that would infuriate most communications engineers—appears to account for a large proportion of the creation of these digital aural milieux, from which the listener then stretches out what 'means' the most to them. As Evens writes about live music, the implicated exists in potential during, before and after the performance (177). It is a

macro-historical milieu and the driving force behind the affective impact of music, and can only be accessed when it is explicated, exhausting its potential. It may then be more useful to consider the relationship between digital sounds and noise as one of a topological stretching apart of two interrelated and non-discrete entities, creating an illusion of separation but never making the Euclidean break. Signal to noise is always a ratio, never a dyad or dichotomy, and arguably not bound by a kind of Derridean economy of supplementarity either. Signal is *stretched out* of noise topologically; nothing is cut and nothing is glued. When this signal becomes stretched out to the point of perception, its potential is exhausted, but it is a full exhaustion; an exhaustion of transduction rather than an internalised database reduction to possibility functions.

The Dying Digital

It is necessary to understand digital data as an entity that is completely reliant on its material contexts. Criticisms of the digital's failure to 'express', to some extent, reiterate the mythology of disembodied information, of a transmissible essence that has no relation to the contexts in which it first arose. To return briefly to Hayles' project of re-embodying information, these decays, glitches and errors generate momentary lapses in the belief of this disembodied information myth, and reveal to us the equally momentary and finite nature of the form and representative capacity of the digital itself. The digital, like everything else, has a lifespan: digital texts decay, and eventually even 'die', either as their literal physical bases are eroded or as their cohesion as representative texts is disintegrated by time and social change. The disintegrating, burned out computers of Sterling's museum; the gauche, pixellated *Yahoo!* logo from 1996; the impossible digital 'essence' of Gates' critique of Technostalgia; the failed DNA match of Lydia Fairchild; and the glitching, stuttering music of Oval, Autechre and the circuit-benders all

demonstrate the same thing: that the digital can only really be understood as something intimately connected with its body, whether that body is of a discrete technological device, or something more abstract and all-encompassing, such as the acorporeal churning of affect and transduction exemplified by Massumi's theory.

The decaying digital is, then, a different way of conceiving of digital information: not pure, essential, commodifiable and discrete—but noisy, contingent, error-prone and physically consequential for embodied, subjective experience. *Decay* here is a feature of all things that are subject to contingency, physical materiality, mortality, and finitude, and the experience of decay is both representative and generative of those entropic, transient properties. The digital does *not* escape these properties, but its being implied in them provides, fortunately, more opportunities than may be conventionally suspected.

CONCLUSION

The purpose of this thesis has been to trace the cultural functions of encounters between human beings and technological agents: first, the ways in which those relationships are depicted in order to shore up a fracturing sense of originary humanist authenticity in the mind-self, and then ways in which we might understand similar (but different) relationships between putative humans and machines that do not reinscribe those same anxieties and strategies of bodily disavowal. Across the chapters, I have examined two groups of figures representing and constituting embodied encounters at the human/technological interface. While the second is not a linear shift from the first, the two groups express two divergent visions or sets of possibilities for understanding relationships between human subjects and machines, and the attendant possibilities for those relationships to recraft or unseat the post-Enlightenment vision of humanity that causes so many catastrophic political problems. In my Introduction, I outlined that I would return to the question of cyberspace when I reached my conclusion, having spent the six chapters unravelling figures whose varying encounters with various forms of cyberspaces form part of the various informing contexts for their constitution. Through examining these figures, I have made a number of observations about cyberspace, how it is conceived as a conceptual backdrop for interface encounters, and how those relationships between humans and technologies may be re-thought or re-figured to overcome the endemic problem of liberal humanist subjective reinscription. Before drawing my final conclusions, though, I recap briefly what the examination of each figure has brought to the foreground.

What is evident by the first group of figures is that in many cultural representations of such, interface encounters are kept normative: their boundaries are policed by figures like the avatar, the hacker, or the nanotechnological swarm, and the encoding of the

boundary threats as feminised, or the conflation of putative female (over-corporeal) embodiment and the risk that technological agents will over-reach with the same kind of leakiness. Each of these figures does indeed demonstrate the clear tendency, as identified by Hayles and Haraway, for the human/technological encounter to disrupt and threaten the boundary logic of the normative liberal humanist subject—but they only do so in a way that reproduces the interface as a stage upon which those disruptions can be contained or rejected, in a manner elucidated by the body theory of Grosz or Shildrick. And, as I outlined in the Introduction, while cyberspace itself has not been the direct object of examination in any of my chapters, it has haunted every one of them. The avatar rebuilds a digital version of the perfect Cartesian mind-self in cyberspace as a way to keep technological agents in the object position, and those (women) whose bodies make them putatively liable to suffer interference with their clarity of perception are never given more than lip service in these interface encounters; they are equivocated with the technological agents being (re-)subjected. The avatar is a quasi-spiritual weightless alternative body in a clean and pure mind-space. This is the space within which the hacker mind is ascendant, finally in a form that is not as bulky, finite and limiting as the organic body. The figure of the hacker, too, which often operates hand-in-hand with the avatar, sits at the meatspace end of the offline/online dyad, and ensures that crossovers of material influence from the technological into the human(ist) remain minimised and inconsequential. It does this by performing, re-performing and reiterating continually the normative parameters of access to and control of technological others, in a way that, again, conflates that object of inquiry with female subjects. The nanotechnological swarm dramatises less of an explicit foray into a typically recognisable cyberspace in Gibson's terms, but performs much the same function: it shows the dangerous overflow of a putatively-passive technological object into the realm of active agency, facilitated by a character of thought that is constructed as feminine, and deploying the image of a

monstrous female fecundity as a device to express its anxieties. The nanotechnological swarm, while not depicting an explicit cyberspace as such, imagines technoscience as the other space in which rational inquiry takes place, and where putatively inadequately rational subjects (such as women) threaten to push that object into the subject domain. This understanding of cyberspace marks it as the outcome of generational projects of scientific progress; cyberspace is both the object of rational invention and the very object that defines the liberal humanist subject by supplementarity. It is a reductive, normalising space that simultaneously gives room for and reconstitutes binary logic. So if an effective and full understanding of cyberspace experience is not to be found the quasi-spiritual, transcendental, disembodied mind-space of Gibson's writing, nor the glossy Metaverse of Stephenson's *Snow Crash,* nor the formulae-filled supercomputer space of *Hackers,* nor the clearly-delineated cityscape of *The Matrix*, then *where* is it to be found?

As the figures in Section Two demonstrate, the question of 'where' to find cyberspace may well be a teleological dead-end. These figures represent three unstable, asymmetrical, materially-embedded experience of technologically-mediated embodied subjectivity. Unlike the figures of Section One (though, as pointed out in the Intersection, a totally clean break cannot and must not be drawn between them), the relative novelty and diffuse/dispersed nature of the Section Two interface figures draws them as outside the linear transcendental encounters depicted by the avatar, the hacker, or the (containment of) the swarm. The fursona is a tangled project to rebuild individual identity using the Internet as a prime collaborator, but is a project that escapes and overflows any individual's instrumental control. The overflow of memory without originary experience into the archive of selfhood of the user is not a deliberate project; it just *happens*, informing the constitution of their subjectivity and disintegrating the cohesion of the category of 'user' itself. The fursona is not like an avatar, which contains the disembodied

mind-essence of an otherwise offline subject—the lines of influence are curved into overlapping concentric circles; they ripple from the material technologies outward to the self even as those material technologies are influenced in turn. The caring computer first overturns a long-running cliché of cultural representations of 'artificial' subjects, by ascribing a computer an emotional character, and then goes so far as to advance a partial reconfiguration of the notion of care itself—a notion that, as the scholars referenced in that chapter point out, requires some reconfiguration in its difficult, often pejorative connotations. Mobilising Haraway's work on companion species, rediscovering ways of ejecting the humanist-exceptionalist view of the human subject, we can understand care differently. Haraway's inter-relational model of co-constitution—or companionship—iterates the need for every encounter between like and unalike agents to be one in which their material contingency is evoked and used as a means to disrupt instrumental, linear relationships of control and exceptionalism. Care can emerge from both the very animating of material contingency and co-substantiating need, and the possibility of "sharing suffering" rather than claiming a morally superior position of alleviating or even reducing it. The role of the technological is in its striking highlighting of the inherent artificiality of all agents involved in the process, and the interminable, ongoing co-constitution being effected. And, perhaps most widely of all, the decaying digital gives us a means of understanding digital technologies—the *de facto* arbiters of the reconstructed liberal humanist vision of a distilled subject-essence, decoupled from its material bases and radically disembodied—as firmly, inescapably embedded in the physical world. The ability to both see the ways in which the very perfection of the digital artefact animates its fragile cultural function (and thus its cohesion as an artefact at all) and to *hear* the unpredictable, microscopic operations taking place beyond the easy rational comprehension of a Cartesian subject, is the ability to recoup digitality as not being essential, transcendental or immortal. This latter point is crucial: one of the most acute

ongoing problems with the mythology of the digital is that the digital allows the distillation of 'the consciousness' into an essence that can be unproblematically passed between bodies that are empty, interchangeable vessels. The digital's tendency to decay in the manners I have described confounds this vision in a simple, but robust way.

Any conception of cyberspace as a singular 'space' at all is misguided, as far as overcoming liberal humanist logics of identity are concerned. This is despite this being the simplest, easiest way to conceive of cyberspace: a neutral plane, dislocated from (hovering above) the conditions of its conception. This space is the space inhabited by avatars, controlled by mythologically discrete hackers; it is the space that threatens an undifferentiated overspill into the 'real' world within narratives of grey goo only to dramatise the triumphant defeat of such an attack by a brave masculine subject. It is, in short, the space whose rules of engagement are so thickly stratified that movement between points on the prescriptive grids of normative identity is rendered utterly impossible there: if it is thought of as a 'space' at all, cyberspace functions as a means to hold at arm's length contemporary technologies' potential to uncover fundamental fallacies at the basis of the humanist subject. Alternative visions of cyberspace make its form and function so entirely contingent upon the material milieu and actors involved in its constitution/explication that it is (or should be) *indistinguishable* from them. If cyberspace is to be 'found' at all, it is in the technological components of that milieu; the material bases of the multiple sensate experiences of affecting and being affected by technology, and in the ways in which, as Haraway argues, our encounters with the putatively artificial activate the need to account for those material bases (i.e., by 'touching' them in a manner that reveals their histories of becoming). In fact, this latter, overall comparison is well served by a brief appeal to some further writing on virtuality itself. I draw attention once more to the figure of the decaying digital: there is a reason

why I placed it last in the sequence of chapters. It leads relatively neatly into the ensuing vision (if such is even an adequate metaphor any more) for a more embodied, alternative cyberspace, based on its relationship between the body and virtuality.

The radical materialist conception of virtuality—theorised extensively by Massumi, and inspired by Spinoza, Bergson, Deleuze and Guattari and others—is one that stands to rethink the reductive vision of the virtual as conflated with the commercial (and largely failed) technologies of "virtual reality". A useful and rigorous interrogation of virtuality must ensure that it neither simply dislocates the task of determining the condition to a fetishized technological agent, nor reifies some kind of pre-existing 'real' as the yardstick against which virtual instantiations must be measured. Marcus Doel and David Clarke strongly criticise this "impoverished understanding of the real and the virtual" (1999: 261). Drawing (cautiously) on Baudrillard, Deleuze and others, Doel and Clarke set out to demonstrate that assessments of the virtual commonly "collapse" into questions of "quality", rather than interrogating qualitative differences in "power" and "affect" (261). In other words, they express dissatisfaction at the way that the virtual is understood in terms of direct comparisons to some kind of essentialist notion of the pre-existing "real". What they believe to be the main contemporary modes of (mis)understanding virtuality are criticised in their respective tendency to consider the virtual as a flawed representation of a platonic and pure real ("simulation", or "discourses of false approximation" [264]), to claim an augmentation of the pre-existing real and an ability to perfect its "flaws"("suppletion" [268]), and to offer the ability to pre-generate and exhaust all fields of possibility, ending with catastrophe or the end of the world ("seduction", [272]). They subsequently offer that a Deleuzean reading of the simulacrum remains the most feasible model for understanding the virtual, (although they do not guarantee its "adequacy"). "Confusing the virtual with the possible" (277)—that is,

reducing the question of virtuality to one of quantitative and comparative degrees of Platonic representation – fundamentally misunderstands and places a value judgement on the virtual. The ontological/epistemological ramifications of virtuality are only addressable, for Doel and Clarke, in terms of becoming; these ramifications become visible only in the temporary exhaustion of potential, rather than as a serial playing-out of finite possibilities stored within and linked to an essential and stable "real":

> Instead of reducing reality to a tangible actuality, and expelling virtuality in the process, we wish to argue that reality is the actual and the virtual. This "and" is not a *one* that is directly lived. Rather, it is the "and" of folding, unfolding, and refolding. Reality is the immanent twofold of actuality-virtuality. Such a twofold is never given in advance, like the matrix of possibility is supposed to be; it always has to be created and worked over in situ. The badly thought-out notion that the real realises a pre-formed possibility rests on a retroflex movement according to which the existent is assumed to precede itself and the creative act that constitutes it. (279; emphasis in original)

This assessment of the virtual resonates with that of Massumi: it is no para- or extra-normal space which can be 'accessed' as such, but the sum total of material potential and implication from which embodied experience may be drawn out. This informs the direction in which my understanding of cyberspace begins to advance: assessing the virtual as some kind of plane of representation into which we can project a consciousness, or from which we can extract some kind of experience, whether artificial, inferior, or improved, is an arguably inadequate model for accounting for the complexities of the embodied experience itself. Like the virtual, cyberspace is not something that can be located in the manner of a geographical plane, and technological instantiations of any such plane cannot claim to embody or even represent what constitutes cyberspace. There is no representation at all here: cyberspace emerges

between and as an inherent part of all explicated bodies and affective experiences enacted in interaction with technologies.

Here, of course, is a fundamental danger that I have not, fortunately, overlooked: in this article, Doel and Clarke are arguing *against* a conflation of virtuality and cyberspace (albeit the cyberspace of 'virtual reality'). However, I think that to a certain extent this conflation *must* take place—just not in the direction against which they argue. If virtuality constitutes a field within which the possibility of embodied experience can be drawn out, then cyberspace is a vast concatenation of material components that forms an inherent part of that same milieu. Cyberspace *is not* the virtual, but *it is absorbed into* the virtual, and only makes itself felt or noticed when it erupts from implication into affect, from the indeterminate acorporeal material substrate, through transduction, into experience that can be felt (rather than known) by the putative individual in interaction. Here, if anywhere, is where we can locate the intersection between the human body and the technological other in a way that collapses the distinction between the two. Moving understandings of embodiment at the interface beyond the conventional, dualistic, finished body-subjects of the Enlightenment, where any impingement of the body upon the mind is coded pejoratively, can only be done by an ongoing recourse to the material conditions of digital (and other) technological entities.

Finally, I return briefly to the two frameworks that instigated my study, being the main formulations for imagining and (re)thinking the human subject at the interface. Donna Haraway's cyborg is a figure that has given us unprecedented opportunities for theorising the changing intersections between the category of the human and the technological agent. That interface, which accounts for more and more intimate encounters, requires examination that overflows any one figure. N. Katherine Hayles' posthuman builds upon

Haraway's work (though is not a 'figure' in Haraway's sense, and is certainly not conflated conceptually with the cyborg) aiming to re-embed the posthuman subject within its material history rather than see it as a transcendence of history, and show the ways in which the altered relationship with technology emerging out of cybernetics and information theory transforms the liberal humanist subject rather than armouring and continuing it. Both of these responses constitute powerful arguments against the tendency for the human/technological interface to be reclaimed for the liberal humanist subject as a neutral stage upon which to rebuild binary logic and all its attendant prejudices and exclusions. But these two frameworks cannot account for some of the ways in which the same changing relationships have *already* rejected any possibility of overturning the liberal humanist subject, nor the ways in which technologies are being used that did not exist or were not widely deployed at the time of their writing. This thesis has been an attempt to respond to and augment those limitations. Though indeed, the six figures I have examined here represent just six further nodes of interface between those two categories, and my assessment of their cultural functions in turn only represents a relatively small proportion of their considerably broad dimensions: much work still needs to be done to delineate more fully the scope and depth of these figures, and to explore more fully their political or ethical implications, if any are to be found. In this thesis I have demonstrated that some conclusions about the interface can, at least, be drawn from unravelling or reconstituting these figures, as well as conclusions about what those figures do to the notion of cyberspace.

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