CHANGE FOR THE MACHINES:

THE CYBORG IN FACT AND FICTION INTO THE 21ST CENTURY

Thesis submitted by

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* * *

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ABSTRACT

In science fiction one of the key concerns has always been the question, “What is Human?” The cyborg, an amalgamation of organic and machine, is a frequent figure in the exploration of this question. Science fiction has considered the cyborg concept as early as the 1920s and continues to investigate this figure into the new millennium. Running parallel with considerations in science fiction, military research and development into creating a cyborg soldier, a superhuman war machine, has been an integral part of military affairs since WWII. In the 1980s, Donna Haraway proposed the cyborg as key metaphor in investigating feminism in technology and science.

The cyborg in SF narratives begins with a concentrated concern with sexuality as a key indicator of what makes a human and then, into the 1980s, with the onset of general computer use in general society, the cyborg becomes a figure most often employed in the subgenre of cyberpunk. After the turn of the millennium the cyborg figure becomes more humanised and the focus on cyborg characters switches to concepts about aging and humour, while the figure is now paralleled by other alternate humanities like AIs. The cyborg has proved a critical step in this expansion of ideas on the key SF question of what is human.

In the military sphere, the advent of basic military technologies in World War I and World War II sees the advent of computer based weaponry which culminates in a revolution in warfare during the 1980’s and onwards. By the year 2000 technological warfare has entered the world arena proper, but a material form of the cyborg, at least in SF terms, remains unrealised. The closest approach has been the development of a “temporary cyborg,”

soldiers with many of the augmentations pre-imagined by SF, but developed as external add-ons, such as weapons, armour and scanning technology. Additionally, in the military-industrial-media-complex, the technology in warfare is visibly lauded as masculinised, while the soldier has become feminised. This shift has also leaked over into civilian lives and highlights a critical crisis in masculinity overall.

In the 1980s in feminism, the cyborg provided a positive metaphor for resisting and destabilising liberalist humanism, and proved a sound theoretical approach for feminists engaging science and technology. The cyborg has not disappeared from this theoretical spectrum, but it has developed so far in that it is now a companion to other theories on how feminism can combat the dominant paradigms of science and technology, as well as opening the door to more fluid and fragmented concepts of subjectivity and thinking about mobility and gendered spatiality, as in difference and “Nomad” theory.

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Approaching the Cyborg

"Cyborg" today is a familiar term, though in popular culture the word most often invokes images either of the Borg from *Star Trek*, or on the positive side, the protagonist of the 1987 film *Robocop.* In this thesis I will examine three forms of the cyborg: the fictional, the material, and the theoretical. I will trace their evolution from their origins in three apparently discrete but actually highly interactive arenas: science fiction, military research and development, and feminist theory, and conclude by establishing what I consider has become of the cyborg in the 21st century.

In this century the cyborg demands such detailed attention because of the roles it has played or continues to play in critical areas of contemporary life. Apart from its visibility in popular culture, in the recent past the theoretical cyborg has proved a central metaphor in the post-modern rethinking of subjectivity as being, like the cyborg, fluid, ambiguous and fragmented. Meanwhile in science fiction the cyborg remains an extremely valuable figure about which to construct "thought-experiments" on other possible forms of society and humanity. And in the military-industrial complex, one material form of the cyborg represents an intimidating, determinedly pursued and still possible goal of machine-augmented and even deadlier forms of present warfare. In contrast, the other form of the material cyborg, that is, a machine-supported life such as using a pacemaker, is already a reality for increasing numbers of ordinary people.

The actual term "cyborg," meaning a cyber or machine-augmented organism, was coined in 1960 in the wake of World War II German rocket science, and at the inception of space programs, hence in the heart of the US military-industrial complex. In science fiction,

however, the first cyborgs appeared in the 1920s, forming one in a group of apparently human figures descended from the manufactured Monster in *Frankenstein* (1818). Science fiction distinguishes the cyborg, a human being with machine augmentation or "replacement" for "natural" parts of the human body, from the robot, a manufactured entity entirely and obviously composed of machine elements, and the android, a manufactured entity that, unlike the robot, looks human.

In contrast to its lengthy presence in SF, the cyborg properly only entered feminist theory in 1985, with Donna Haraway's "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century." Outside theory and SF, by 2015 the medical form of the material cyborg has become commonplace, performing some of the functions listed by Chris Hables Gray for "cyborg technology," to augment, preserve or normalize a human body. "[G]randmother with a pacemaker" (*Handbook* 2) is as much a cyborg as a child with a cochlear implant. But such medical cyborgs are neither demonized nor valorised, like the Borg or Robocop, and though cyborg medical research is well funded, it carries neither the weight nor the cultural charge of feminist thinking or military research.

On this account, as well as for considerations of space, I have focussed on three areas where the cyborg's nature has made it a fertile site for theoretical speculation, fictional imagination, and attempts to realise the concept in military reality. These three areas are also integrally connected: they might be read as a trio whose central unit is SF. While the relationship of the cyborg and feminist theory largely began with Haraway's "Manifesto", on the opposite side of the relationship, SF and science, including military research, have had a long reciprocal partnership. "Hard" SF writers like Larry Niven and Jerry Pournelle have been welcome at research labs like JPL in Pasadena. The notable SF writer, Robert Heinlein, extrapolated in at least one of his novels, *The Moon is a Harsh Mistress* (1979), on his

experience as an artillery officer, while the attraction of the military for SF writers is permanently recorded in the entire sub-genre of "military SF."

At the same time, SF has contributed significantly to scientific reality: Jules Verne novels inspired inventors of the submarine and the helicopter. H. G Wells' ideas inspired both the inventor of the first liquid-fuelled rocket in 1926, and the creator of the first nuclear chain reaction, the basis of atomic energy and atomic bombs. Robert Heinlein first envisaged the escalator, and Motorola developed the US version of the mobile phone, today's biggest agent of social change outside the Internet, in imitation of the mobile communicators in *Star Trek* (Strauss).

These three areas then ask to be studied in association. Consequently, I have structured the thesis to follow the evolution of SF, military and feminist cyborgs in alternating chapters. Since SF cyborgs are, by definition if not name, the oldest form, chapters on SF cyborgs precede those on military cyborg research and development, followed, after 1985, by chapters on the cyborg in feminist theory.

In this chapter, I will go on to discuss the multiple definitions of the cyborg, and in particular, the connection of cyborgs and human subjectivity, before describing my methodology, providing an overall summary of the thesis chapters' order and content, and considering possible weak areas in my methodology as well as future directions for the research.

Defining the Cyborg:

"*Cyborg* is as specific, as general, as powerful, and as useless a term as *tool* or *machine*" (Gray *Citizen* 19). In some cases a cyborg can be taken as the simple interaction between any tool and a human. On the other hand, some consider the definition should be

based in corporeality: a strict percentage of the cyborg *body* must be machine to merit the name, or the interaction between machine and organism must be moebius, that is, a continual, interacting surface of interior and exterior, internal and external (Grosz 183).

The word “cyborg” itself is a blend of “cybernetic” and “organism” and was first coined by Manfred Clynes and Nathan Kline to name a “self-regulating” system similar to ‘Osmotic Rose,’ a laboratory rat implanted with an osmotic pump**.** It is this self-regulating system that Clynes and Kline refer to in their 1960 article in the *Astronautics* journal, republished in Gray's *Cyborg Handbook*, (29-34).

This paper first promoted engineering the human form to withstand unfamiliar environments, rather than controlling the environment to adapt to human capacity. Clynes and Kline were concerned with the limitations and possibilities of space travel and their paper, sponsored by NASA, was specifically focussed on the application of cyborgs in space travel. Hence any consideration of the impact that the cyborg figure may produce in political and social spheres was absent.

Several articles subsequent to Clynes and Kline’s work, extracted from NASA (National Aeronautics and Space Administration) and DARPA (The Defence Advanced Research Projects Agency) documents, are analysed in Gray’s *The Cyborg Handbook* (1995). These articles demonstrate that the imagining of cyborgs was drawn almost too easily from the realm of space investigations into military design and research. Johnsen and Corliss note,

> NASA is concerned with the development of teleoperators because many astronautical targets are so far away that they must be explored by proxy. Yet the amplification and extension of man via the teleoperator concept transcends space exploration. (83)

They provide a progressive list of integrated man-machine constructions from 1947-1966, stressing that a teleoperator is "*a general purpose, dextrous, cybernetic machine*" and "always has man in the control loop" (84). However, many of the developments were commissioned by the Atomic Energy Commission and most contributed to material weapons development in the Army, Navy and/or Air force.

All of these defining articles consider the cyborg figure only in a material or militarily theoretical dimension. Such aspirations represent a masculinist ideal of the man-machine. Similarly almost all of SF's earlier representations were embedded in contemporary masculinist culture. Apart from rare examples, authors and theorists only began to gender and otherwise subvert such notions of the cyborg in the 1980s, producing definitions that dealt with the figure's ambiguity, hybridity, and potential to upset binaries and categories. This process began outside SF with Donna Haraway's ground-breaking re-vision of the cyborg in 1985.

Following orthodoxly from Kline and Clynes, Haraway defines the cyborg as an amalgam of "machine and organism," but then goes on to claim it is also "a creature of social reality as well as a creature of fiction" (*Simians* 149). In "A Cyborg Manifesto" Haraway appropriated and (re)presented the then-current militarist cyborg image as a new political paradigm of interrelations between science, technology and socio-political ideologies. In the process the manifesto negated traditional views of knowledge and subjectivity, promoting technoscience as crucial in disassembling and reassembling alternatives to traditional western dualisms. Haraway considered that through such mythical figures as the cyborg, these dualities could be challenged.

Haraway also foregrounded the cyborg's hybridity, fluidity and ambiguity:

> A cyborg exists when two kinds of boundaries are simultaneously problematic: 1) that between animals (or other organisms) and humans, and 2) that between self-controlled, self-governing machines (automatons) and organisms, especially humans (models of autonomy). The cyborg is the figure born of the interface between automatons and autonomy. (*Primate* 139)

Since then many theorists and SF writers have explored the social and cultural implications of the cyborg as a direct and/or indirect response to Haraway.

One of the most important among these writers is Chris Hables Gray. For Gray, cyborg variations range from science fiction projections in literature and film, to implants and prostheses in actual human society, to augmented military personnel, and the future children of genetic engineering (*Handbook* 3). One of his most important contributions to what can now be called cyborg studies is his division of cyborgs by functional categories. Thus, Gray lists "restorative" cyborg technology, in which lost limbs and organs are replaced; and "normalising" technology, which makes it impossible to distinguish between the cyborg and what is considered "normality." These categories are easily recognisable as forms of the medical cyborg.

Gray's other categories include the "reconfigured" cyborg, which carries on the original definition as proposed by Clynes and Kline, transforming humans to adapt to unfamiliar environments. Overlapping this definition, and the further modifications it underwent in the hands of military speculation, is Gray's fourth category, "enhancing" cyborg technology, which might also lead to the man-machine weapons of military origin. Additionally, Gray adds that a cyborg may be degraded, when augmentations lead to a cyborg that is less than human (3).

Gray sees this interface between machines and humans as the relation between the organic and inorganic. But now, Gray proposes, the integration is "into" rather than "between."

> The idea of the cyborg extends down to the micro level of artificial life and nanotechnology and up to the realm of the global, where Gaia itself has been called a cyborg. (*Handboo*k xviii)

Gray suggests that even vaccinations against polio may be representative of this interaction. Integration of humans into machine environments then signifies a cyborg society, and Gray finally claims that his definition of a cyborg is "any sort of coherent system that has both components that are artificial and natural, living and dead, evolved and invented." As Gray has posited "The real issue is which tools, which machines, which cyborgs we will have in our society and which will be excluded or never created" (*Citizen* 6).

Elsewhere, science fiction has played an important role in the process of theorising the cyborg. Often SF writers investigate changes in contemporary society and develop theoretical fictions as a response to or a comment upon technical and cultural acceleration; they have used the cyborg in such fictions from its earliest appearance. As gender is often an underlying influence in narratives, it is essential to consider a range of SF cyborg narratives that may reveal both traditional and progressive gender politics. Additionally, this aligns nicely with the feminist concerns of gender and technology considered in later chapters. A positive view of the cyborg's potential for subversive and resistant thinking in SF appears in Jenny Wolmark's essay collection *Cybersexualities: A Reader on Feminist Theory, Cyborgs and Cyberspace* (1999). Wolmark considers that

> Recent feminist science fiction transforms postmodern anxieties about definitions of the subject into utopian possibilities for the redefinition of gender identity and gender relations. (“Postmodern Romance” 230)

Conversely, Anne Balsamo points out that, “The dominant representation of cyborgs reinserts us into dominant ideology by reaffirming bourgeois notions of human, machine and femininity” (“Reading Cyborgs” I 154).

She argues that representations of the cyborg are most often a masculinist image aligned with power, strength and rationality whereas the female cyborg is often depicted in traditional (patriarchal) “feminine” roles as “sexual, emotional, and often, naturally maternal” (148). However, Balsamo does not dismiss the positive potential of the cyborg since, “The high-tech image of the cyborg reminds us to question the assumed naturalness of the body and its function as a marker of difference” (151). This overview of cyborg definitions suggests that the theoretical cyborg’s most important function is to focus attention on the mediation between technology and subject, machine and human, organic and non-organic. Indeed, a definitive notion of the cyborg would be contrary to its very existence; however some form of consensually based definition is necessary for my study. I will therefore employ Haraway’s definition of the cyborg as a creature with problematic boundaries between machine and organism, the “interface between automatons and autonomy” (*Primate* 139), and I will add Gray’s extremely helpful classification of cyborg types.

Basic to any treatment of the theoretical cyborg is the importance of the figure to current notions of subjectivity. For the last four centuries philosophical and socio-political constructions of subjectivity have posed questions about what we can know about the nature or being of human existence. Cartesian dualism flagged the shift in concepts of subjectivity as it moved away from religious constraints and towards the notion of reason as the

determinant in human knowledge and being. This reliance on the mind as a rational state of being placed limits on how much we can know about ourselves. Indeed, this subjective idealism implied that we cannot know anything in the external world; it only exists because we perceive that it does. While not without opposition, Cartesian dualism largely underpinned the traditions and conventional agreements on universal truth and knowledge that have dominated Western scientific and philosophical views for over three hundred years. The subsequent reliance on rationality as the source of universal and absolute truth was the foundation of modern science.

However, the humanism that emerged from these developments posited the ideal human as white and male. Mary Wollstonecraft's *Vindications of the Rights of Women* (1776) first articulated the marginalised subjectivities of race and gender absent in 'ideal humanism'. In the 19th Century Marx and Engel's work led the rise of class-consciousness, focusing on class subjectivity and the socio-political implications of status identities. Sigmund Freud's research then established an approach where subjectivity is seen to arise in childhood, becoming a selfhood evolved from social and psychological conditioning. In the explosion of post-modern theory in the 1960s and '70s, the exploration of subjectivity expanded into concerns about sexual, racial and class inequalities and knowledge about 'ideal' humanism was ever more rigorously questioned and challenged.

Postmodern and feminist explorations of subjectivity now present agency as an assemblage of complex and shifting interactions and social networks. The figure of the cyborg is integral to this relocation of subjectivity, since the cyborg is by nature fluid, fragmented and ambiguous. According to Anne Balsamo, cyborgs "occupy a visionary part of our cultural imagination, the image of the future created in the present, the place of science fiction reality, of postmodernism" ("Reading Cyborgs" II, 149).

Methodology:

Forms of feminist theory will be my basic methodology for this thesis. Such an approach will fit my intent to examine the role and place of the cyborg in feminism, but will also serve as a resistance to the masculinizing of the cyborg in contemporary culture. But most importantly, while many post-modern or post-structural theoretical approaches allow for oppositional or resistant readings, feminism is the most specifically focused on gender issues, and gender issues lie at the basis of conflicting versions of the cyborg that I will discuss.

For such work the difficulty in relying upon non-feminist theories such as psychoanalysis, Marxism, and post-colonialism etc. lies in their inability to foreground matters of gender in their analyses. In a psychoanalytical paradigm, for example, the risk of universalising experience without regard to race, class and gender is apparent, and feminists consider this method of research relies upon phallocratic structures. Psychoanalytic studies must always refer to the "fathers" of psychoanalytic structures such as Lacan and Jung, where such notions of women as "lack," and recognition of the phallus as the ultimate symbol, collide with feminist attempts to avoid or remodel male-dominated structures of thought.

Feminist research methods are, more often than not, interdisciplinary and diverse, incorporating several strategies and challenging traditional research methods. Not all areas of feminism are equally flexible, however. Consequently I will be making less use of essentialist and radical feminism, valuable though their insights have been to the field as a whole.

Radical feminists, such as Renate Klein, maintain that patriarchy is ubiquitous and unitary and cannot be transformed. Their ideas on gender are often essentialist and thus their concerns about technology and science fail to escape the monolithic shadow of patriarchy. As Renate Klein's chapter title in *Cyberfeminism* (1999) asks: "If I'm a cyborg rather than a

goddess will patriarchy go away?" (185) Radical feminism tends to doubt the possibility of the cyborg as a promising monster, instead resigning the cyborg to the notion that it is already and always patriarchal.

Essentialist feminists, on the other hand, believe that biological sex is a fixed trait, unlike someone like Judith Butler who would argue that all of the body's physiology is caught up in the process of social construction. Essence implies a fixed, unchangeable, permanent sex determinant, whereas a postmodern feminist perspective rejects the notion of a predetermined mode of being and encourages fluid and unstable concepts of identity.

Within a feminist postmodern framework, theorists such as Judith Butler, Julia Kristeva and Elizabeth Grosz consider that the validity of research relies upon the illumination of uncertainty and instability in discourse rather than a fixed, universal theory: thus, fragmentation and contradiction of research is inevitable and welcome. Both these aspects will suit this thesis, where the fields of research will range from military information and history to SF texts, while the topic itself is a figure of fragmentation and contradiction to be handled best through the illumination of its instabilities. The work of Hables Gray and Haraway (and their followers) suggests that the concerns and perspectives of feminist cultural and science fiction theorists will be most helpful in approaching the figure of the cyborg in any of its versions.

Further Directions for Cyborg Research

This thesis aims to provide an up-to-date assessment of the cyborg figure's past evolutions and current status in three important and connected fields. In the process, however, further research possibilities have appeared. In particular, as the cyborg figure becomes increasingly involved with nanotechnology, and that industry is intensifying, research based

in nanotechnological studies, with a focus on gender and the military, could extend my current examination.

Other possible avenues for research would advance the almost completely gender-based approach of this thesis into research on the gendered cyborg with specific emphasis on race and colour, using a post-colonial research method. Applications of queer theory would also be useful. While I have analysed some SF written by and about people/characters of alternative sexualities, such as Melissa Scott's *Trouble and her Friends* (1994), the notion of transgendered cyborg depictions could also warrant future research.

The fiction discussed here was chosen to cover a diversity of cyborg narratives. In the first chapter on SF, the older texts were selected for their popularity, particularly with science fiction pulp readers, such as those who followed Hugo Gernsback's pioneering SF magazine, *Amazing Stories*. In the chapter that focuses on the '80s, I chose the most notable texts from the cyberpunk sub-genre, which dominated '80s SF, setting them against others which demonstrate the breakdown of gender and sexuality into two parts in feminist thinking. In the final chapter on SF after 2000, I chose texts from what is, significantly, now a smaller field of cyborg narratives, again, to display a variety of treatments of the figure in 21st Century versions.

Chapter Layout

Following this introductory chapter centred on definitions and methodology, in chapter two I examine the cyborg in SF from the 1920s, beginning with the first cyborg story by E.V Odle in 1921, up to the 1980s. This study covers a variety of cyborg SF narratives, such as the ship-cyborg, the cyborg pilot and feminine and masculine cyborgs. I approach these narratives employing Chris Hables Gray's division of cyborgs as forms of reconfiguring, normalising, restorative, enhancing and degrading cyborg technology.

In chapter three, I analyse the rise of military technology from World War I until the 1980s. This covers World War I, World War II, the space race, the Vietnam War and the Iran/Iraq War that began in the early ‘80s. This final period witnesses the fuller juncture of information technology and on-the-ground warfare, with the appearance of smart bombs and missiles, satellite surveillance, and the crucial use of computing technology. Allied with this are the concerns of post-modern thought, particularly the development of “war as spectacle” theorised by Baudrillard (“The Gulf War did not Take Place” 10) and the first generation of the attempt to realise the actual “cyborg soldier”.

Since the cyborg only enters feminist theory in the mid-1980s, chapter four examines the cyborg in SF from the 1980s to 2000. At the starting point, early in the 1980s, much SF was focused on the direct interface of humans with machines, particularly in the subgenre of cyberpunk, where cyborgs of various forms proliferate. Again, I employ Gray’s cyborg categories. At the same time, more feminine cyborgs appear in these stories and there are more women writers. Many of the concerns and patterns of cyborg narratives in chapter two reappear, but new tropes emerge from ‘80s versions of the human-machine interface, such as the extrapolations of virtual reality and cyberspace.

I return to the progress of the military cyborg in chapter five, with technological developments in warfare during the 1980s. Here there is a proliferation of information technology, as demonstrated in the Iran/Iraq war earlier, but now there is also a rapid development of man/machine interactions with weaponry, which marginally approaches Hables Gray’s definition of the enhanced and reconfigured cyborg. These developments include HUD displays, Kevlar flak jackets and other corporeally connected technology. However, this produced what may be called temporary cyborgs, rather than an actual cyborg in either Kline and Clynes’ terms or those of contemporary SF, which now presents figures

with actual machine-integrations, such as skull sockets for connecting to the Internet. The new military technologies were deliberately publicised by the US government, and the consequent media coverage of the Persian Gulf War signals a visible correlation between social and military ideology. With this came a masculinising of technology, and by intention, the as yet unfulfilled dream of the fully militarised cyborg.

In 1985, Donna Haraway's "A Cyborg Manifesto" was first published in the *Socialist Review*. Use of the cyborg metaphor quickly facilitated already common feminist debates about subjectivity and corporeality, but also led to a closer scrutiny of science and technology. In chapter six I explore how this consolidates feminist inquiry into science and corporeality. I further argue that in fusing feminist interests in science and in corporeality, Haraway established the cyborg metaphor as an efficient tool for feminist approaches in numerous disciplines. I go on to consider various responses to and critiques of Haraway's original essay.

By chapter seven the cyborg has entered the new millennium. Here I analyse some of the SF written after 2000, by writers such as Kage Baker, Justina Robson, Elizabeth Bear, M. T. Anderson and Chris Moriarty. In these texts concern over technology's effect on the individual human-machine interface is augmented by new fears of technology's masters, particularly the post-industrial conglomerates. At the same time, the cyborgs in this SF are constructed with more emphasis on their "human" side. For example, humour and aging are incorporated into visions of cyborg characters. Again, there are less specific military backgrounds and more emphasis on the perils of the corporate sphere. Significantly, by the end of this chapter, cyborgs have acquired several rivals, such as AIs and genetically modified "humans," for the prime role of exploring "What is human" in SF.

Chapter eight examines military research and development in the new millennium, where the former concentrates more heavily on the winning the "war on terror" in the Middle East. Consequently, for the first time the ideal of the cyborg soldier loses its priority. While research into cyborg enhancements continues, mainly in nanotechnology, up to the present the military cyborg remains unsubstantiated. Culturally, however, the heavy emphasis on military technology actually produces a shift in notions of masculinity and femininity in relation to such technology.

Chapter nine investigates the cyborg's position in feminism in the 21st Century. I look at more recent feminist critiques and theoretical views of the cyborg, and how feminists have actually appropriated and/or further developed Haraway's metaphor. Overall, I argue that Haraway's cyborg theory was a significant pilot for feminist enquiries into science, technology, embodiment and corporeality, but that further incorporation of all Haraway's work is required to sustain these concerns.

Having considered the cyborg's fluid, ambiguous or still unrealized manifestations in SF, feminism and military research, I conclude the thesis by summing up my findings, and setting out the cyborg's position, in these three fields and overall, at this point in the 21st Century.

Conclusion

In this study, I conclude that the medical material cyborg is already a reality. Meanwhile, the cyborg metaphor has been a significant tool in bringing feminist thought about science and technology into the new century. The figure's stress on ambiguity and fluidity has also proved a stepping-stone to new theories of difference, mobility, and subjectivity, such as Nomad theory. In SF, the cyborg itself has been extended to consider the humanising aspects of aging and humour, but it has again opened visions of other alternate

humanities, such as AIs, which includes those who can embody themselves. In contrast, the focus on a material military cyborg has been altered by significant interest in information and nano-technology, and genetic research advances. The leading edge in warfare and developments in military research and funding do not suggest a cyborg soldier will appear any time soon.

Chapter Two: The Cyborg in SF, 1920s-1970s

SF in general has viewed science ambiguously, sometimes optimistically, as in the Gernsback era, and, beginning with *Frankenstein*, often pessimistically. Both views appear in cyborg narratives; some present a positive picture of the figure, some an emphatically negative one. In this chapter I will briefly trace the history of the cyborg in SF from the 1920s up to the 1980s. Cyborg stories of this period can be grouped into certain types of narratives: these include formulaic SF narratives of the early male-dominated pulp fiction, with cyborg or human heroes, ship-cyborg narratives, narratives that include both masculine and feminine cyborg characters, and post-World War II type cyborgs, particularly the "wounded pilot/soldier." In dealing with these narratives, I will employ Chris Hables Gray's set of distinctions between restorative, normalising, reconfiguring, enhancing and degrading types of cyborg technology. Of the stories covered in this chapter, positive and negative depictions of cyborgs are almost equal in number; however, only three stories contain feminine cyborgs.

The history of the machine-based Artificial Person – 1920s-1944

Originally, all machine-based creations were defined as automata, and notions of robots and androids only arose in the early 20th Century. The term "robot" was actually coined in Karel Capek's *RUR* (Rossum's Universal Robots) in 1920, from the Czech word meaning, "indentured labour" (Clute 54). However, Capek's robots were humanlike, with artificial body parts made to look human (including internal organs) and were more like androids, that is, complete machine forms intended to pass as humans, rather than robots in the narrowly understood sense (178-9). Both robots and actual androids first appear in the 1920s, as in *RUR* and Fritz Lang's influential film *Metropolis* (1926). But actual cyborgs, that is, the blend of human and machine as opposed to machines resembling humans, emerge almost at the same time. All such figures, however, provide a fruitful site for SF writers to

debate the question, “What is human?” And as Keith Hull suggests, “Extensively and seriously science fiction explores the question, ‘How do we define humanity?’” (66)

E.V Odle’s *The Clockwork Man* (1923) is claimed by John Clute as one of the first cyborg narratives, focusing on a man who comes from 8,000 years in the future, where male humans are given clockwork mechanisms in their heads, and are able to transpose into alternate universes. The name may have been derived from the long-lasting concept of the clockwork universe. The “man” appears at a cricket game in the year 1923, at first making a whirring sound and unable to speak or function smoothly, but eventually he appears “normal.” As the cricketers are one player short, the Clockwork Man is invited by Dr Allingham and his associate, Gregg, to fill in, whereupon he hits several balls into the distance, and then inexplicably runs away at significant speeds (for 1923), leaving the townsfolk speculating about his bizarre physiology and irrational actions.

When he returns, he pleads for help from the scientist, Dr Allingham, who fiddles with the clockwork mechanism in his head, causing him to act irrationally and slip into unconsciousness. Allingham discovers that the Clockwork Man has no sexual organs, and for Allingham, this suggests the stranger is not human. Dr Allingham is conservative and not comfortable with the new science of the modern world. He is unable to accept the Clockwork Man as a possible figure of the future and prefers to think of “him” as a mere robot created as a prank. Gregg, however, finds the Clockwork Man intriguing and, in his anticipation of the possibilities of the new modern world, he wants to believe such a figure is feasible.

Thus at its earliest appearance in SF, the cyborg provides an instant site for debate over, “What is Human?” The ambiguity and fluidity that so appealed to Haraway are also demonstrated repeatedly by the terms of the debate. Is the cyborg human or machine, or a debased form of human, does its presence portend a rosy future or a menace to humanity as a

whole? While Gregg and Allingham argue, they find a sliver of metal that has step-by-step instructions for maintaining the clockwork operations. For Allingham, this is a clear indication that the Clockwork Man is nothing but a machine and thus, even if he comes from the future, he is not representative of future humans. Gregg attempts to write an article on the Clockwork Man, however the editors ask him to make the story more humorous, leaving Gregg unable to truthfully and seriously define the Man as a future human.

The Clockwork Man ultimately reveals to Dr Allingham that his makers are humans far more advanced than in 1923, and that

> ‘in my world everything is constantly moving, and there is not one of everything, but always there are a great many of each thing. The universe has no definite shape at all. The sky does not look, like yours does, simply a sort of inverted bowl. It is a shapeless void.’ (Odle, Ch. 7, Serialisation 14)

Again, the defining aspect of the theoretical cyborg is present at the figure's first fictional appearance, and extends even to the cosmos in which it was created. According to the Clockwork Man, in their past,

> ‘Life was a Vale of Tears, and men grew tired of the long journey. The makers said that if we persevered we should come to the end and know joys earth has not seen. But we could not wait, and we lost faith. It seemed to us that if we could do away with death and disease, with change and decay, then all our troubles would be over.’ (Chapter 8, Serialisation 20.)

So the mysterious and never explained “makers” gave male humans clocks, and made them virtually immortal. However, the makers did not change women, “’because they were more real’” (Chapter 8), and now the men are marooned, unable to feel love or enjoy life. Then the

Clockwork man slowly fades away, leaving the story with an open ending. Here the very form of the narrative mimics the cyborg's ambiguity.

Following *Frankenstein*'s perspective on the artificial person, this story posits a negative cyborg vision. In Gray's terms, however, the first cyborg's attributes are multiple. That he runs inhumanly fast makes him an enhanced cyborg, and his clockwork mechanism also gives him a form of reconfiguring cyborg technology. At the same time, the loss of love and/or other emotions indicates a technology of degradation, a loss of humanity. Yet the "makers," according to the Clockwork man, kept women clockless because "'they were more real." A feminist might then ask, are the women then more or less than human? It seems that the story considers them more so, and the clockwork cyborg as less, which enforces the negative cyborg view.

The tug of war between imagination of the cyborg, in Gregg's terms, as an enhanced human future, and those of the degraded, non-human cyborg, will run from Odle's novel throughout almost every succeeding treatment of the figure. However the Clockwork Man's loss of physical sexuality, equated with loss of humanity, is where the 1920s cyborg differs significantly from its original ancestor, Frankenstein's Monster. For the Monster, sexuality is not only present but implicated with emotion and of crucial importance to both the Monster and the story. In his isolation, the Monster begs Frankenstein to make him a mate. But Frankenstein, extrapolating monstrous reproduction, refuses, thus driving the Monster to "go bad" and wreak his revenge. In later cyborg narratives, as in *The Clockwork Man*, physical male sexuality will repeatedly be presented as a hallmark of humanity, while its loss is something for which not even enhanced cyborg existence can wholly compensate.

While *RUR* and *Metropolis* are easily related to fears raised by later industrial developments like the factory assembly line, which threatened to reduce human workers to

machine components, this original cyborg's clockwork mechanisms and sexually deprived angst can be derived from the figure of badly wounded World War I soldiers who come home not only to mechanical limbs, but with even more cyborg-like trappings such as metal jaws. The physical and emotional damage to these unfortunates, the sense on their own and others' parts of their being "not human" are revived in modern genre writers such as Barbara Hambly and Kerry Greenwood, though not as openly in writers of their time.

Cyborg narratives before and during World War II come from a period when SF remained quite literally under patriarchal control, with the emergence in the 1920s of SF pulp fiction whose criteria were dictated by male editors and fans. Describing a definitive template for science fiction of the period, Brian Attebery states:

> The evolving formula [of SF] had to meet a number of criteria. To provide the vicarious enjoyment demanded of all modes of popular romance, it had to generate heroes who were more attractive, more capable versions of the average reader and to give these heroes adventures in exotic settings. It had to compensate for readers' insecurities by demonstrating that their technical know-how could, under the right circumstances, bring them riches, respect and sexual gratification. At the same time, it had to suggest that these rewards were the natural result of scientific principles and that by attaining the necessary knowledge the hero was benefitting not only himself but also humanity. (Attebery 40)

Notable stories with cyborg content did not stray very far from this formula. The central characters in all of these stories were masculine, the heroes were human and, in some cases, the cyborgs were the villains.

For example, In Edward Hamilton's "The Comet Doom" (Bleiler) men are the heroes, while cyborgs are the villains (and aliens) and in his "Captain Future" series (1940 – 44) the human scientist Captain Future and his companions, a robot, an android and a man's brain in a box, are the heroes protecting the universe from their archenemy, evil scientist Ull Quorn, and various rogue aliens. On the other hand, in Lloyd Arthur Eshbach's *The Time Conqueror* (1932) the villainous scientist Kozarek murders a man to create a brain sustained by artificial maintenance, or in other words, produces a degraded cyborg. However, the brain cyborg avenges his loss of corporeality and kills the scientist (Bleiler 111). Markedly, emphasis on lack of humanity, loss of sexuality or the importance of cyborg emotions is relatively absent.

These omissions are a feature of '20s and '30s SF, which, intended by Gernsback as a boy's introduction to science, skirts most forms of sexuality or indeed mention of even heterosexuality till after World War II. In response to a reader's 1928 questioning of why there cannot be love and sex in science fiction, Hugo Gernsback replied that, "Writing stories based on science does seem to have the tendency to cause the authors to put aside the love feature as an element therein" (qtd in Larbalestier 108). Justine Larbalestier comments that, "[t]he inference is clear: the hard virile space of science operates to expel romance and thus women" (108). More than a decade later, a debate between Isaac Asimov and other contributors to "Brass Tacks" (the letters page of *Astounding Science Fiction* in 1938) argues that women have no place in science fiction, and Asimov claims that, "Stories in which the love interest drowns out everything, in which 'swooning damsels' are thrown at us willy-nilly" (Asimov qtd in Larbalestier 124) do not fit with SF concerns and speculation about science. These omissions and variations from Odle are indicative of the "power of patriarchy" over magazine SF from this time period, and a major change in this situation did not occur

until 1944, at the zenith of women's involvement in World War II and the supporting work force.

The history of the machine-based Artificial Person – 1940s – 1950s

C.L Moore's novella "No Woman Born" (1944), broke the long-standing pre-war formula, since it not only (re)-introduced topics of gender and sexuality to cyborg narrative, but produced the first feminine cyborg. This story is also distinctive because it distorted expected gender roles of its time. It focuses on Deirdre, a once-famous dancer who is fatally burnt in a theatre fire and experimentally revived and recreated, a metallic body encasing her brain. Deirdre thus becomes the first restorative cyborg in Hables Gray's sense: a human body given machine emendations to return it to a semblance of the human. The narration is from the male viewpoint of John Harris, her manager before the fire. But, though Harris is at once distraught at her new image and laments her past beauty, it is Deirdre who realises that her ability as actor, as performer, can be integrated within the being she has become.

This story restates the cyborg subversion of the machine/human boundary, found in *The Clockwork Man,* but for the first time, reads it in gendered terms. Harris and Maltzer (her engineer/creator) are primarily concerned with the absence of Deirdre's "essential" gender: that is, her loss of the biological child-bearing capacity which they believe inherently limits her abilities to be human (or, more specifically, woman). For Harris and Maltzer, women can only be seen in sexual rather than intellectual terms. Deirdre plays on this notion, teasing the men, because, "she is free to *choose* (my emphasis) whether or not to maintain the disguise of vulnerable, desirable femininity" (Attebery 95). Maltzer's fear that she is hiding the despair over her un-human (un-womanly) status and that it will eventually lead to her demise prompts him to dare her with his own suicide mission, only to find she proves stronger and more agile, physically and mentally. Thus, while she is already Other and alien as a woman,

it is not until she is *obviously* other and alien as a cyborg construct that the men become aware of, and fret over, her ability to be happy and content as Other.

While she is attractive in a sense, Moore's protagonist does not meet the masculine norm for being human according to the then-current SF formula. Moreover, her new body/form does not bring her riches, respect or sexual gratification, and her attainment of the knowledge expected in the male-dominated formula of SF pulp fiction does not benefit humanity. Unlike the Clockwork Man, Deirdre does not suffer angst and she is not seemingly lost and mourning. Her loss of reproductive ability does not equate, for a woman with a cyborg body, to loss of humanity, as compared to the Clockwork Man.

N. Katherine Hayles suggests the difference between male and female interfaces with technology is that women still consider themselves human after losing their sexual abilities, and goes on to suggest that in a narrative where "there is essentially no difference between a cyborg and a woman", the difference is based on how "extensively the narrative imagines human subjectivity to differ from cybernetic subjectivity" ("Life Cycle" 168). Thus, unlike the Clockwork Man, whose cybernetic subjectivity is decidedly inhuman, Moore's narrative suggests that Deirdre is still human and hence that sexuality is not a hallmark of humanity. "No Woman Born," with its positive, gendered and non-masculine view of cyborg subjectivity, first emphatically suggests that humans and cyborgs are kin. This occurs again, with the ship-cyborg in Anne McCafferey's *The Ship who Sang*, where Helva's subjectivity is considered human. However, preceding this story, other ship cyborg narratives focus on loss of sexuality as determinant of humanity.

The far more common and considerable group of ship-cyborg narratives, that is, of ships controlled and flown by disembodied and machine-embedded human brains, begins with James Blish's "Solar Plexus" (1941). The "hero" is Brant Kittinger, an astronomer

working on an orbital observatory ship, when an alien ship docks and entices him on board. Kittinger discovers that it is actually a cyborg ship, operated by Murray Bennet, a former scientist of the "Cybernetics Foundation" who was attempting to create "nerve to circuit" connections, principally for personnel to fly spaceships. Once the UN prohibited Bennet from continuing his experiments, claiming he was illegally performing human vivisections, he faked his own death and the disappearance of his ship, *Astrid*, and merged with the ship.

Here the villain scientist cyborg-creator himself becomes a cyborg. In Hables Gray's terms Bennet is not only a villain but also a degraded cyborg, one whose change makes him less than human. This is an entirely negative vision of a cyborg because, while Bennet has reconfigured his brain into the ship, Kittinger discovers that Bennet's subjectivity no longer incorporates emotion or appears to process thought in a way that Kittinger can equate with, for example, his own. This leads Kittinger to distinguish the ship-cyborg as more computer than human. There is no mention of sexuality or loss of emotions, and, unlike the Clockwork Man whose degradation is completely related to his inability to feel emotions, Bennett does not seem able to think or feel emotions in the human sense. Hence this "loss" does not affect him.

Moving beyond the asexuality of the '30s magazine cyborg, these narratives not only include female cyborgs but lead to significant gender differentiation. In "spaceship-human coupling" Ann(e) Balsamo argues that males are often represented as castrated when they become cyborg. Alternatively, they become tougher, stronger or more adept; whereas the ship-cyborgs gendered as female are mostly emotional, sexual and sometimes maternal ("Reading Cyborgs" I, 149). In Hables Gray's terms, all ship-cyborgs are both enhanced and reconfigured, but the likelihood of their also being degraded remains a continual possibility.

Moore's husband, Henry Kuttner, published the next ship-cyborg story, "Camouflage," in 1945. This is the first ship story where male cyborg subjectivity is presented optimistically in contrast to its human counterpart. Bart Quentin is a "Transplant," a cyborg designed for piloting ships, his brain contained in a metal cylinder. After committing a crime on Venus, the villain, Van Talman, and his posse attempt to hijack Quentin's ship as it transports a nuclear power plant to Callisto. They aim to hide out on an asteroid belt. Before the flight, however, Talman is sent to assess Quentin's abilities and weaknesses and is confronted by his unhuman condition. After meeting Quentin's wife, Linda, Talman is shocked to find that she is still married to him. By this simple means Kuttner's story foregrounds loss of male sexuality as a cyborg attribute for the first time since *The Clockwork Man*, but at the same time insists on the humanity of the male ship cyborg by giving him an estranged wife, another very large deviation from the sexlessness of '30s SF.

Like most ship cyborgs, Quentin has no physical presence. For Talman, as did Deirdre's lack of reproductive ability for Harris and Maltzer in "No Woman Born," this indicates his less than human status. However, Dan Summers, an engineer who was born around Transplants, finds their lack of body irrelevant, claiming, "'It's the reasoning faculty that counts, and that hasn't altered'" (Kuttner 126). Accordingly, Kuttner posits "reason" as the definitive notion of what is human, repeating philosophical notions of reason as male. However, unlike "Solar Plexus," where Bennet's loss of moral reasoning makes him less than human, "Camouflage" presents a positive view of intellect as the distinguishing human trait.

The moral qualities of the cyborg eventually surpass those of the "real" humans, Talman and his criminal gang, suggesting morality as the definitive indication of remaining human. Quentin demonstrates this humanity when, at the end of the story, after killing off Talman's group, he lands in a remote area on Earth to set Talman free. Quentin tells Talman,

"'I told you in Quebec that you'd forget our friendship before I did. Better step it up, Van, while there's still time'" (161). This reverses the final position in "Solar Plexus," which ended with the human as the hero and the cyborg as the villain, and for the first time in cyborg narratives introduces a moral dimension to cyborg subjectivity.

While Odle's *The Clockwork Man* can be read as a reaction to the mechanical normalising of wounded soldiers, post-World War II stories see cyborg subjectivity as more important than sexuality, and it seems that there is a focussed effort on finding humanity in the cyborg figure. Consequently, a more complex and nuanced form of cyborg subjectivity appears in almost all the post -World War II narratives that follow "No Woman Born" and "Camouflage".

Over the post-World War II period and up to the '70s the publication of science fiction also changed considerably. According to Brooks Landon, there were three general movements in SF publishing, "the pre-pulp era dominated by the scientific romance, the genre SF era of Gernsback and Campbell, and the New-Wave-and-beyond era of reaction to and rebellion against the limitations of Campbellian SF" (xix). After World War II, with an opportunity to publish longer narratives in paperback, SF authors had the opportunity to explore characterisation in more depth. Additionally, the period of the New-Wave-and-beyond shifted towards "soft science" to include sociology, anthropology and psychology as sources of SF ideas (Landon 27), including the explicit determination to bring "sex" into SF, again demanding deeper characterisation.

The history of the machine-based Artificial Person – 1950s-70s

The first notable cyborg narrative after "Camouflage" is Cordwainer Smith's *Scanners Live in Vain* (1950). Here Scanners are both reconfigured and enhanced cyborg pilots, superior to human forms (which Scanners term "Other"). At this point, in 6000AD, various

planets have been colonised, but travelling in space causes serious pain to humans, so they need to be put into cold sleep between the planets. The ships are actually manoeuvred by ex-cons called Habermans who have had their brains altered, so that they can only access visual input, and none of their other senses; they are monitored by Scanners who have opted to volunteer for the operation but still maintain their reasoning abilities.

Scanners are considered elite, heroic; Martel's wife Luci tells him, "'You are the bravest of the brave, the most skillful of the skilled … [Scanners] are the most honored of Mankind, and even the Chiefs of the Instrumentality are delighted to pay them homage!'"(Smith 11). Nevertheless, Martel struggles with his Scanner status and longs to feel, touch and hear like a "normal" man. His relationship with his wife is not physical; so, while he may be a hero for humanity, once again, his cyborg body severs his capability for sexuality,

> "How can I ever be near you? How can I be a man—not hearing my own voice, not even feeling my own life as it goes through my veins? I love you, darling. Can't I ever be near you?" (10)

But now a human by the name of Adam Stone has discovered that filling the walls of ships with oyster shells will prevent humans from feeling the effects of pain in space, in effect leaving the Scanners redundant. Consequently, the Scanners plan to assassinate Stone. Martel, however, disagrees with the integrity of such an act and decides to search for Stone and warn him.

Martel finds Stone just as the Scanners' assassin arrives, and Stone tells him about the break-through, before Martel gets into a high-speed fight with the assassin and manages to twist his "Brainbox into *Overload*" (52). Martel blacks out and when he recovers, he finds his wife and Stone beside his bed. Stone informs Martel that he is the first of the Scanners to be

restored to “normality” (53) and that the assassin (who was one of Martel’s supposed friends) had been so happy about Stone’s revelation that he “‘forgot to scan, and let himself die of Overload’” (54). Martel, at least, is delighted with the change. Hence, though the story again revolves around the conflict between being cyborg and being human, and Smith delineates the differences between human subjectivity and cybernetic subjectivity, human subjectivity is eventually seen as preferable to even an enhanced cyborg’s subjectivity.

In contrast, Thomas N. Scortia’s “Sea Change” (1956) resolves this dilemma in favour of cyborg subjectivity. Matthew Freck is the first in a long series of cybernetic-pilot cyborgs, who in this case has been made redundant due to the speed of technological advances and the creation of complete ship-cyborg brains. Unless he goes into “direct hookup” (Scortia 223), that is, becomes a ship-brain, he cannot pilot a ship. Matt is depressed, isolated from both human and ship-brain worlds, and when asked what he is afraid of he expresses a basic SF technophobia: “‘I’m afraid of becoming more of a machine’” (223). However when his ex-lover, Beth, who has become a ship-brain, finds herself in trouble, Matt resolves that he must pilot a ship: he must become a ship-brain himself, to save her, and disregard his fear of losing humanness.

While he is receiving Beth’s distress calls, and “subverbalizing” his responses, a human couple attempting to strike up a conversation with him in a bar distract him. The man, George, begins to complain about how the ships give him the creeps, “‘Those things aren’t actually human anymore.’” Matt’s reply consolidates his new resolve,

> “George is right in a way. But they’ve got something normal men will never have. They’ve found a part in the biggest dream that man has ever dared dream. And that takes courage … courage to be what they are. Not men and yet part of the greatest thing men have ever reached for.” (232)

Here the cyborg claims the formulaic human hero's position, possessing the gallant quality of courage, as well as the classic SF role of heroic pioneer of progress. Like Deidre, Matt has found new strength in his cybernetic subjectivity, but he has also been able to accept almost complete disembodiment, while keeping the human emotion and value of love.

N. Katherine Hayles claims that the boundary-less body extended through technology comes across, in Anne McCaffrey's novel *The Ship Who Sang* (1969), as "life-enhancing and ultimately freeing" ("Life Cycle" 160). McCaffrey's protagonist, Helva, is a notable feminine ship-cyborg, a woman who was born with a severe physical disability; her body is now contained in a titanium shell, her brain interconnected with her ship form, XH-834. She is both an enhanced and a reconfigured cyborg, but with no problems about her sexuality. For anything physical, Helva is reliant on her brawn, the human component of her ship, but she chooses her brawn, Tanner, for the emotional reason that he aims his speech directly at her physical presence. For Helva, his recognition of her human and female status indicates that he sees beyond her cyborg state and thus their relationship is a kind of romance. As Hayles argues, this exploration by McCaffrey of the zone between woman/machine suggests, "[t]here is essentially no difference between a cyborg and a woman" ("Life Cycle" 168), and as in "Sea Change," "human bonding will triumph over interconnectivity" (168).

However, as Anne Balsamo illustrates, Helva's missions, which include saving colonists from a world about to be scorched by a rapidly advancing sun and transporting embryos to a barely occupied planet, are "[c]ertainly appropriate missions for a female-gendered spaceship" ("Reading Cyborgs" I, 148). Thus, in contrast with C.L Moore's Deirdre, who realises that she can subvert and manipulate notions of femininity, the figure of Helva as cyborg celebrates both cyborg and human subjectivity, but she ultimately maintains a traditional female role.

In strong contrast to Helva or Deirdre, Kurt Vonnegut's **"**Fortitude**"** (1968), published the year before *The Ship Who Sang,* foreshadows significant research and development into prosthetics. "Fortitude" features another feminine cyborg; however, although Sylvia Lovejoy is a restorative cyborg, she is degraded in the sense that she is also progressively disembodied and her freedom constrained. Over the course of thirty-six years, Dr Norbert Frankenstein has gradually replaced all of Sylvia's organs and her upper limbs; consequently, she is now only a head with tubes that connect to her artificial organs in a room below her. The coupling of the names, Norbert and Frankenstein, implies that to Vonnegut the perilous potential of Norbert Wiener's cybernetics could result in a scenario similar to Victor Frankenstein's creation of the Monster.

Furthermore, because Dr Frankenstein controls Sylvia's emotional responses, and maintains her organs, he can make her believe she is happy despite her lack of freedom and autonomy. However, when a "bum transistor in the console" (Vonnegut 43) malfunctions, Sylvia falls into a depressed state and writes a letter to Dr Elbert Little, a general practitioner, asking him to bring her some cyanide. Sylvia's beautician, her only other human contact, is aware of Sylvia's unhappiness and, while the doctor is visiting, brings Sylvia a revolver so that she may end her life. However, Dr Frankenstein has set her prosthetics so that she cannot shoot or poison herself.

Frankenstein explains to Dr Elbert that there have only been two women in his life, his mother and Sylvia. As he was unable to save his mother from cancer, he has focused on saving Sylvia. This suggests an echo of Freud's oedipal complex; Frankenstein transfers his love for his mother onto Sylvia, while appropriating her body at the same time. Frankenstein explains to her that he has planned to live alongside her as another disembodied head, so, though Sylvia cannot shoot herself, she shoots him instead. The story ends with their two

heads waking up together listening to sweet music, pumped up on LSD and martinis, "*Sylvia*: How do you feel? *Frankenstein*: Fine just Fine" (59). This reduces them both to the level of tranquilised zombies and implies that all cyborg subjectivity is definite degradation. The closure draws on its contemporary context, the period of the 1950's and 60's, when the prescription of tranquillizers was commonplace for discontent, particularly women's discontent.

While both McCaffrey and Vonnegut present versions of cyborg subjectivity strongly related to society of the times, Arthur Clarke's *A Meeting with Medusa (1971)* turns the SF gaze outward into space. Attebery claims,

> Because the scientific gaze is so insistently masculine, whatever it touches upon is feminized. Not only alien spaces, but aliens themselves must play the role of female Other to the male observer. (52)

This is the case in *Medusa*, which focuses on Commander Howard Falcon, another cyborg pilot, seriously injured during the maiden flight of the airship, *Queen IV*, over the Grand Canyon, and reconstructed. Again, caught between the two worlds of human and not quite human, Falcon is frustrated, detached and resigned to the notion that he has no purpose in normal everyday life. As a result, Falcon offers to be the first to touch down on Jupiter's surface, determined to avoid the meaninglessness he feels, and trusting in his enhanced ability to act without the millisecond delay that a normal human would show in any danger.

When he reaches the surface he discovers two life forms – one is the mantas, like the Earth manta ray in form. The other is the Medusa, a giant jellyfish-like creature one hundred kilometres wide that becomes curious and descends on Falcon's ship. But he does not want to confront it; instead Falconer guides his ship further and further into the vortex to avoid making contact, so that she (Falcon's term) is above him and he does not have to look at her.

In Greek mythology, the gaze of Medusa turns men to stone. Hence in a nihilistic sense, looking into her eyes confirms the meaninglessness of the universe; and for Falconer, such meaninglessness is central to his awareness of his cyborg status.

For Freud, Medusa represents castration, and in this context, Falcon, like (most of) the other male cyborgs, feels that his cyborg status signals not only his inability to have any type of relationship with another human, particularly a sexual one, but his inability to claim the status of the male gazer. The resolution is a glass half-full, glass half-empty scenario. Falcon accepts his cyborg status as being unhuman, but assumes the heroic role of ambassador between humanity and machines and concludes "both would have need of him in the troubled centuries that lay ahead" (67).

Though Falcon refuses the power of the male gaze, Attebery considers that "the meaning of the female gaze differs dramatically from that of the male" (49). He argues that while women's eyes are represented,

> [l]ike their bodies, they are defined as something to be looked at, by men. They are typically described in terms of coyly dropped eyelids, sweeping lashes, luster, and soulfulness rather than acuity, focus, or force. Men's eyes, by contrast, seize upon objects and control them. (49)

This symbolic representation of the contrast between the male and female gaze is further explored in D.G Compton's *The Continuous Katherine Mortenhoe (*1974).

This story, the first from the mid-1970s, makes a long step back from the space travel-based pre-occupations of Clarke's *Medusa* to the rapidly evolving form of everyday life on earth under media domination. Katherine Mortenhoe is diagnosed with a fatal illness and told she has four weeks to live. In this future scenario it is rare for people to experience

illness and premature death; thus the media companies, anxious to film her last days on reality TV, besiege her. After continuous harassment, Katherine agrees to sign a contract with the media company NTV. One of the media people is the cyborg Roddie, who has had cameras inserted into his eyes to maintain constant filming for the show. After Katherine tricks NTV into believing she has consented to being monitored, she creates a hobo disguise and disappears into the fringe community, hoping the effects of her illness will appear as effects from drug taking. However, NTV have bugged her handbag and send Roddie to befriend her. Katherine is unaware that her movements are being relayed, via Roddie's eyes, to the nation.

Initially, Roddie has no emotional involvement in the surveillance. However, he comes to find Katherine beautiful despite her illness. When he witnesses his surveillance broadcast on TV in a public bar, and he hears the audience jeering at Katherine when she dances on the beach, a scene that he saw as beautiful, he goes down to the pier and destroys his eyes. Here the male gaze is drastically reversed, because while Roddie is completely blind, he knows that Katherine is watching him. Nevertheless, though they become lovers, Katherine dies of her illness. In this version of the human versus cyborg subjectivity question, there is no clear resolution in favour of either. The story may be read as a further development of the cyborg narrative, as shaped by Scortia and Kuttner, where the central focus is on possessing what are considered good human values such as honesty, and humans and cyborgs are considered equally human, a stance that will reappear in much later cyborg narratives.

According to Brian Aldiss, SF did broaden its focus after World War II; SF magazines, often presenting future dystopias, were now confronted with the real dystopic threat of the atomic bomb. Thus the SF military scenarios of the Cold War and the once

considered far-fetched stories of space travel were soon seen as real possibilities (233-4). While SF written after World War II often incorporated the formula previously mentioned by Attebery, post-World War II saw the emergence of more SF coinciding with the development of cybernetics as a recognized discipline. Thus, several texts emerging from the beginning of the Cold War era explicitly outline this concentrated focus on cybernetics.

N. Katherine Hayles claims that Bernard Wolfe's *Limbo* (1952) "is powerfully marked by the turn to a post-World War II cybernetic economy of information and simulacra" (*Posthuman* 113) She also considers that Wolfe's story first fully articulates the gender dichotomies implicit in previous cyborg narratives. If it was just about a "perpetually adolescent male," Hayles claims, it would just be frustrating but she also contends that: "What makes it so compelling is its ability to represent and comment upon its own limitations … Amputation allows the man to return to his pre-oedipal state where he will have his needs cared for by attentive and nurturing females" ("Life Cycle" 163).

In *Limbo*, a recognisable variation on *The Island of Dr Moreau*, during the Third World War Dr Martine flees to an island in the Pacific, where the inhabitants practice hack lobotomies to maintain social order. Martine heroically takes over the process to prevent infections and unnecessary deaths, and simultaneously to study the neurological mappings of the brain. Martine then discovers immobs – men who have had their limbs replaced with atomic-powered prosthetic limbs. This leads Martine to return to the Mainland, the Inland Strip, which is the site of a new (American) society that places significant emphasis on the notion of immobilisation, sustaining the belief that aggression occurs during mobilisation and consequently, war. The novel reveals, Hayles argues, "deep connections between the narrator's struggle to maintain control of the narrative and the "threat" to natural body boundaries posed by the cybernetic paradigm" (*Posthuman* 23).

The grades of immobilisation in *Limbo* illustrate simultaneously political, race and gender hierarchies. Thus, Vol-amps are (white) men who opt for voluntary amputation signifying literal disarmament and Quadroamps, always (white) male, denote an upper social standing. These immobs are contained within baby baskets, attended by women. Lower on the social scale are Uniamps (single limb amputees, usually janitors). However, women (who are at least visible, unlike in Odle's narrative) and blacks remain unmodified.

Written in 1952, *Limbo* reflects the trepidation during the Cold War when the distorted boundaries between alien and other (American or spy) were not wholly apparent. Wolfe articulates these concerns through the dualisms in *Limbo's* narrative (Island/mainland, one/other, mobile/immobile). As Hayles emphasises, "The time was right for a text that would overlay the cybernetic reconfiguration of the human body onto the US geopolitical body and (given Wolfe's misogynistic views) onto the contested terrain of the gendered body" (*Posthuman* 113). Thus, as Hayles suggests, the emphasis on hyphenated rather than spliced configurations within the story, and the way the construction of the narrative highlights Wolfe's anxieties about boundaries. Equally important, Hayles suggests, though not a new aspect of cyborg narrative, "the novel's sexual politics revolve around fear of symbolic and actual castration, manifested as extreme anxiety issues of control and domination" (123).

These cyborgs are the first clear case of both degraded and enhanced cyborgs since "Solar Plexus." When it is realised that immobs are restless, some (men) are rearmed with powerful prosthetic limbs that give their users superhuman abilities, and rather than utilising these powers for war, a superhuman Olympics is created. The Olympics are held between the inland strip (what is left of America) and the East Union (Russia and surrounding countries); a Cold War parallel to the contest between capitalists and communists. However, as a result

of tension between the two powers over “columbium” supplies, the necessary element needed to produce prosthetics, the East Union creates cyborg athletes with guns embedded in their arm prostheses. These cyborgs fire on the Inland strip representatives during the ceremonial conclusion of the super Olympics and, consequently, a new war begins. This is a particularly intense and complex treatment of the cyborg versus human question, but it comes down powerfully on the negative side.

Algis Budrys’ *Who?* (1958) also builds a cyborg narrative directly upon the tensions of the Cold War. Budrys’ protagonist is Lucas Martino, a physicist who was working on a secret American project, K88, but was caught in an explosion and taken by the Russians who modify his body with cybernetic replacements and then return him to the Americans. His left arm is mechanical and has been grafted onto his shoulder, his head is a metal casing with a metallic face and his respiratory system relies heavily on artificial breathing. He is thus a restorative cyborg, but he is not normalised. Martino’s alterations cast doubt on his identity for the Americans, not only as a possible spy of the Soviets, but also as a human being. Accordingly, Martino is kept under surveillance and is monitored by Shawn Rogers, an agent who must determine Martino’s true identity. As the story oscillates between his augmentation during his time in Russia and his return to the USA, this question is never resolved.

Finally, Martino returns to his father’s farm, content to live out his days as a farmer despite continuous surveillance from the government. When the American government is desperate to secure the K88 project, Rogers returns to ask him to come back. Martino suggests to Rogers:

> Even so, people don't like machines. Machines don't talk and tell you their troubles. Machines don't do anything but what they're made for. They sit there, doing their jobs, and one looks like another---but it may be breaking

> up inside. It may be getting ready to not plow your field, or not pump your water, or throw a piston into your lap. It might be getting ready to do anything---so people are afraid of them, a little bit, and won't take the trouble to understand them, and they treat them badly. (Budrys 85)

Like the machines, Martino might crack up, destroy things, and refuse to obey orders. The government has not taken the trouble to understand him and the implication is that this will not profit them in the future.

The uncertainty over Martino's identity reflects the irony of the Cold War, exposing the self-defeating tendency of anxieties about the Other. In fact, the possibility of cyborg subjectivity is denied through the doubt imposed upon Martino's identity. Martino's retreat to the farm signifies the cyborg's disappearance from the human/political landscape, even his political agency is denied. It is notable that this is the first cyborg narrative to consider the possibilities of cyborg decay and breakdown as opposed to conversion to villainy. This might well be a mark of the cybernetic age, in that the cyborg has been around long enough for issues of longevity and continued function to be considered.

In Martin Caidin's *Cyborg* (1972) the source for the television series, *The Six Million Dollar Man,* Steve Austin is another cyborg pilot, this time a military test pilot seriously injured in a crash that leaves him with no limbs but his left arm, blind in one eye and with a partly crushed skull. It is important to note that the normalizing cyborg, built around a damaged soldier/space pilot/test pilot, is an ongoing trope in cyborg narratives, being both a plausible start-point for a cyborg construction, but also inevitably introducing the question, What is human? and the debate over the humanity or otherwise of such a figure.

A friend of Austin's, Doctor Rudy Wells, works for a secret department of strategic operations concentrating on bionics, and helps rebuild Austin with bionic replacements.

Austin now has super-human capacity; thus he is a reconfigured and enhanced cyborg, and in real-world terms, since he is expected to use his new capabilities for the government, the fictional forerunner of a militarised cyborg soldier. The story focuses however, on Austin's struggle to accept his loss of human limbs and what he perceives as his loss of humanness, particularly, once more, his sexuality. Wells explains to Austin's nurse, Jean,

> "His arms and legs, Jean, were the key to his flying, to going to the moon, to his athletic prowess, and they highlighted his appeal to women. I expect it to get better until there will be a shocking realization of what I've just passed over lightly. At that point Steve will be absolutely convinced that no woman will ever want him, and impotency will become just as absolute." (Caidin 69)

Eventually, Wells gets Austin back into flying, believing it will cure his impotence, and, initially, it does. But Austin relapses after a child is terrified by the sight of his bionic arm, and is only reluctantly persuaded to take up a mission for the government. This mission sites the story in the late '60s, early '70s political landscape, where Russia is an enemy and Israel a trusted ally. Austin and Israeli Army Captain, Tamara Zigon, are sent to Egypt, where the Russians have been secretly testing their new fighter jet, equipped with nuclear warheads. Austin and Zigon's mission is to steal one so that American forces can replicate and figure out how to deactivate it. After various adventures they steal a jet but have to crash land it and walk a hundred miles out of the desert to the Israeli border.

Where Austin's enhancements have previously been used for military purposes, he now uses them to carry Zigon to safety. This achievement not only reconciles him to his cyborg status, but also restores his sexuality, as he falls in love with Zigon. The story concludes with "These two had found one another. [Austin and Zigon] And Steve Austin had found himself" (248). In contrast to Budrys' and Clarke's stories, Caidin's closure

emphasizes the reclamation of complete human identity (including male sexuality) by a government-produced cyborg, who also achieves limited, that is, covert heroic status.

Frederik Pohl's *Man Plus (1976*) also bears the marks of its publication period. Firstly, it foreshadows the 21st century fears of scarcity, a lack of resources. In *Man Plus*, Mars has to be colonized to remedy the depletion of Earth's resources. Furthermore Brian Aldiss suggests that the story is again concerned with the traumatic effects of becoming a cyborg (403), similar to Martino's fate in *Who?* In a return to *The Clockwork Man*'s precise scenario, Torraway becomes a cyborg only to find his genitals have been removed. It hardly compensates that he too has become an enhanced cyborg, with extremely fast learning abilities as well as the usual superhuman strength. His augmentation is further clouded by his knowledge that his wife, Dorrie, and his best friend, Brad, have been sleeping together. Much as with Caidin's Austin, Torraway's masculinity is based on the control of his physical attributes. However, once he reaches Mars his body quickly adapts to the environment and he finds new confidence in his cyborg status. Furthermore, his nurse from Earth, Sulie, arrives on Mars and declares she wants to be with him; consequently Torraway becomes a hero, creating the first colony on Mars and saving Earth.

The other element that marks the story as belonging to the '70s is the use of computers. The technophobia aroused by computers was under way as early as 1977 with the film of Dean Koontz's novel, where an artificial computer-generated intelligence impregnates a woman with an evil embryo (*Demon Seed)*. In *Man Plus*, computers are the invisible authorities who oversee Torraway's cyborgization and consequently his castration. Computers also tell the story, and it closes with, "We had systematically biased mankind's plans to drive them in the direction we wanted them to take" (Pohl 215).

From this survey of the cyborg in SF history up to the 1980s it can be surmised that all cyborg stories were concerned with the question “what is human?” and equally, what is not human. The contrast between human subjectivity and cyborg subjectivity is repeatedly explored, often demonstrating the uncertainties and anxieties current at the time of publication. In many of the stories with male cyborgs, lack or presence of sexual abilities expresses the contemporary anxieties over cyborg “humanity.” The dichotomy between good cyborgs and bad cyborgs indicates that these concerns are usually solved by choosing the one or the other, hence maintaining dualist terms, and often preserving formulaic male-dominated narratives.

The scarcity of feminine cyborgs suggests that the masculine cyborg is the “one,” echoing a time where subjectivity and identity were primarily related to masculinity. As the fiction of the 1980’s and onwards expands to incorporate more positive and informed concepts of cyborg subjectivity, these considerations often reappear, particularly in cyberpunk. Nevertheless this chapter indicates that from the beginning, the cyborg in SF has been considered in a more complex and often affirmative view than the cyborgs found in military-oriented research constructions, which are considered only in terms of how well a human can emulate a military machine. The positive treatments of the cyborg also foreshadow Haraway’s co-opting of the figure for feminist theory.

Chapter Three: The Cyborg and the Military - World War I to 1980

At this point, I make the first switch from the less tangible areas of theory and science fiction to cyborg evolution based on and aiming for material reality. In this chapter I will follow the cyborg in military research and development through a survey of wars and corresponding changes in military technology from World War I to the 1980s. First I will briefly discuss modern European warfare pre-World War I, singling out any technological developments that can be seen as preliminary to the construction of a military cyborg. Then I examine the evolution of modern weaponry during World War I, before focussing more lengthily on the period 1939-1980. This saw a number of significant technological advances in World War II in communications and electronic technology, such as radar and computers, toward the point where a military cyborg might be possible. Post-World War II, I consider the after-effects of the atomic bomb and the rising interest in the space race. These prompted further important developments in electronic technology for jet fighters, the production of Intercontinental ballistic missiles (ICBMs), and the critical change in views of warfare after the Vietnam War. Finally the military developments of this stage merge with information technology during the Gulf Wars in the 1980s. The material cyborg becomes a plausible possibility during the advent of the post-modern and post-human period.

Pre-World War I - World War I

In modern history, nation states developed along with industrialisation and capitalism, and during the late seventeenth and early eighteenth centuries, definitive national frontiers were concretized in modern Western nation-states like France, Britain and Germany, although Germany's status was shaky during the 18th century. The Hapsburg Empire was the biggest "nation state" of all, and had a corresponding military sophistication, particularly in fortification techniques. The development of such states changed, and continues to change

war, from a conflict which had been fought largely on a battlefield, to a war significantly involving the home front. Such change was supported by notable technological advances, particularly in the 19th century.

> The rise of larger states has often been made easier by the rise of technologies that have enabled the state to rule a particular territory with some consistency: roads, railways, telegraphs, telephones and of course military technologies. (Murphie & Potts 181)

The railway, which allowed fast movements of large numbers of people; the internal combustion engine, which permitted greater mobility to match the railway's speed; the telephone, which sped up and extended communication; and the aircraft, the fastest and most powerful new invention of all, were all forms of peaceful technology which were then rapidly adapted for war (Boot 197).

The biggest advance in military technology before World War I was in missile weapons. In modern history these changed from the muzzle-loading cannon and muskets of the Napoleonic Wars, to the exploding cannon shells and repeater rifles of the Civil War period, to chambered breech-loading revolvers like the Colt, and then chambered rifles, which were developed across nations: the American Winchester, the British Martini-Henry, and the German Mauser to name only three of the later colonial period (Willbanks 2-16). Finally, the machine gun, developed in the Crimean War and the American Civil War, and employed in many British colonial massacres (Blackmore 59), was the weaponry that most threatened the use of armourless infantrymen.

Given the effect of machine guns in World War I, it can be argued that such improved missile weaponry might well predispose the military toward the idea of a cyborg soldier, machine-augmented to use or match these weapons. As Blackmore suggests,

> The newly created twentieth century soldier was really two or three soldiers: the riflemen now killed beside people handling crew-served weapons like machine guns, mortars, small artillery pieces— weapons requiring two or three person teams to operate (59).

Another crucial part of the defining notion of 19th century nation states was an obvious preparedness for war, a "credible defence capability" (Webster 61). The first half of the twentieth century, however, saw war of a new type, an *industrialised total war* (Shaw 20). In the 19th and 20th century the concept of automation, adapted by industry with the factory, and then the production line, flowed over into military technology. World War I signalled the beginning of true modern technological warfare with weapons developed from the peace technologies of cars – the tank – the fighter and bomber plane and the blimps from aircraft and airships, and battlefield radio communications (Boot 270).

However all this technology was fairly restricted due to lack of range, reliability and portability. The Zeppelin (Blimp), used by the Germans in bombing raids, carried machine guns and bombs, but it was too easy to shoot out of the sky. Tanks travelled at minimal speeds and could not go across trenches. At first airplanes were used for bombing and spying but soon were equipped with machine guns and "dogfights" ensued between fighter aircraft. Nevertheless, most victories in World War 1 came from foot soldiers on the ground in frontline battles.

The most significant technological advances in World War 1 derived chiefly from air warfare, and they changed two major facets of war: mobility, and the ability to reach behind enemy lines. This meant that not only did a nation state's population need to be mobilised to supply the soldiers, but also for the first time, civilian populations might be subjected not

merely to raiding and pillaging by armies on the march, but to attacks previously only made on battlefield combatants.

Pre-War and World War II

By World War II, "total war" mobilisation incorporated significant economic, social and ideological changes. Firstly, though women in World War I had worked as "land girls" or in other "male" civilian jobs, in World War II women were increasingly employed in arms and aircraft factories, as mechanics and engineers, as air raid wardens, and in the armed forces, as well as serving as nurses and ambulance drivers as in World War I. Secondly, by World War II, the radio had been developed far enough to sustain a new war technology, propaganda. Through radio broadcasts, the elevation of successes and downplay of troop losses and battle failures was widely disseminated, or even falsified. Such misinformation included stereotyping the enemy and positing the opposing side as unjust and evil (Shaw 55).

Thirdly, by World War I, military aircraft had developed ranges and capabilities for significant long-range bombing behind a purported "frontline", which put all civilians directly in the line of fire. During the Blitz in Britain in World War II nearly 3,000 people were killed and over one million people left homeless (Boot 270). As Chris Hables Gray points out, cyborgs have a "long birth process," and even though the Great War had mechanised weapons, if "[t]he ideal of cyborg soldiers and automated war had been born; the reality lagged somewhat behind. World War II would have to come before it reached fruition" ("Culture" 146). The leading technological developments of World War II included anti-aircraft devices such as radar detection and the appearance of information technology, originating with cryptanalysis. When communication through radio contact proved to be less than precise, because they were bulky instruments difficult to operate on the battlefield, and the range and reception was significantly unreliable, radar technologies began to develop.

Radar proved an essential tool in protecting the home front from aerial attacks. The first successful radar detection devices aided England in winning the Battle of Britain, and post-World War II years saw the development of more sophisticated radar systems . (A system of deceiving enemy radar to conceal the true direction of advancing planes or ships was also instrumental in achieving the Allied invasion of Normandy (Brickhill,180-86)). All these technologies, however, required heavy government funding.

Radar became such a critical military technology because of concurrent developments in air warfare during World War II. First, strategic (though highly inaccurate) air strikes were developed. Later came a new breed of fighters too fast for unaided human interception. In 1944 the first turbo-jet fighters were launched. The first effective jet fighter, the German Messerschmitt Me 262, could reach a higher elevation than piston-driven engine fighters, gain greater cover age and was less detectable (Boyne 59).

As importantly, World War II saw the first development of the guided missile. Hitler commissioned the production of the V1 (Vengeance 1) rocket, aiming to produce a rocket with a jet engine manoeuvred by a type of autopilot - they were fast, could fly long distances and at low altitudes. However, allied pilots rapidly discovered how to bring them down and artillery shells with 'proximity fuses' soon made them an inefficient weapon *(V1 and V2 Rockets).*

The V2 missile was much more effective. The V2 was a liquid-powered missile that shot straight up into the atmosphere and plummeted directly down at great speeds and minimal sound to its designated target. The V2 was the true ancestor of the Cold War ICBMs. Britain, the Soviet Union and the USA all scavenged German personnel and technology to develop further missiles and rockets post World War II. The development of this weapon

continued during the Cold War and designs such as Scud missiles and more importantly ICBM's were often modelled on the V2 (*V1 and V2 Rockets*).

The second most significant development of World War II military technological advances was in information technology. As with missile weaponry, the work began in the 19th century. After such developments as Leibniz's "four function" calculator and Jacquard's loom, the history of the computer really began with the Difference Engine developed by Charles Babbage in 1822 (Murphie & Potts 149). Due to the numerical errors of this steam-driven machine and despite the extensive funds contributed towards it, the project was never completed. However, Babbage continued to develop another idea, born from the notion of Jacquard's punched cards, the Analytical Engine. Not only could numbers be stored on this engine, but unlike the calculator it was conditional – meaning it could produce diverse results in different instances. While Babbage did not pursue his Analytical Engine, Ada Lovelace prepared programs for the machine and made a series of notes which suggest she was the first computer programmer (Murphie & Potts 150). However, the Analytical Engine also was never completed.

The next advance was the Hollerith Desk, created to assist in census calculations in 1890. Hollerith's company was eventually bought out and named International Business Machines (IBM) and brought punch cards into civilian life extensively (Pugh et al. 2-3). However, World War II saw the computer employed for ballistic and nuclear calculations, and most importantly, for cryptanalysis (Gray, "Culture" 147).

In World War II, however, computers were developed so far that the Allies first used them for decrypting German codes. The so-called Enigma machine led to the forestalment of air raids well before radar could pick up the aircraft, and to the counter of critical German strategies. Underpinning this advance, one of the most significant investments England made

in World War II was in the ULTRA intelligence project, a top secret, thus "ultra" secret, collection of intelligence specialists who decrypted the codes of Italy and Japan as well, making a vital contribution to the Allied victory. While this development of information technology was critical to the project of a cyborg soldier, of all the new weapons to emerge during the war, it was the atom bomb(s) that demonstrated just how far technological development of weapons had come.

The Manhattan Project (Bacevich 334), the United States' title for the creation and production of the atom bomb, resulted in the horrific hydrogen bombing of Hiroshima and Nagasaki. This new and alarming weapon increased notions of remote mass destruction initially implanted by the recent massive fire bombings such as Dresden. Now, not only could assailants wipe out entire cities with one bomb, but the radiation fallout and its later effects were catastrophic. The casualty figures from these bombings are vague due to the lack of population statistics beforehand, and the casualties from such effects as radiation fallout and burns can only be surmised. The statistics do, however, point to at least double the amount of casualties in the Battle of Britain.

As with the machine gun in World War I, the consequences extended to thinking on the military cyborg. After World War II, Gray states, for the first time, "important elements in the military began pushing for the full integration of the soldier into weapon systems … humans would have to be modified in order to successfully operate as part of a weapons system" ("Culture" 148). Thus, the US military initiated HUMRRO (Human Resources Office) in 1951. This agency was responsible for research and development into "human engineering," "human quality control" and the "man/machine weapons system" (148).

Post World War-1970s

The post-World War II period was already becoming an age of fear, as political games of nuclear deterrence ensued between the new superpowers. Mutually assured destruction (MAD) became the catchcry of leading nations, wielded in a bid to prevent nuclear attacks (Payne and Walton 168). The Cuban Missile Crisis, in particular, highlighted the intense fear of remotely delivered devastation, and the uncertainty about increased technological armaments (Payne and Walton 177**;** Boot 308). These armaments also included new and more powerful fighter aircraft. After World War II, jet-fighters such as the Gloster E.28/39 from Britain, the Bell XP-59 produced by General electric in the US and, from the Imperial Japanese army, the Nakajima J9Y Kikka, saw the rapid expansion of jet-fighter use from the Korean War onward (Payne and Walton 177).

More alarmingly, advances in rocketry produced the full-blown intercontinental ballistic missile, the worst nightmare of the Cold War (Boot 308). In 1957, the USSR tested the first ICBM. This was allegedly aimed at getting man into space but again, was ultimately utilised in military applications. These missiles were actually two-stage rockets tracing an orbital arc and containing nuclear warheads (often several at once). The ICBMs were more effective than delivery by a bomber due to their ability to reach higher altitude and speed. ICBMs were difficult, if not impossible, to intercept, and early warning systems were often prone to error. After the initial test in the USSR the United States, alarmed and panicked, made research and development into ICBM's a major priority (Payne and Walton 175).

Gray believes the atomic bomb flags the end of "Modern war" and the beginning of "Postmodern war" ("Soldier" 44), and it most likely helped cause the Cold War. For my perspective, however, the Cold War is significant primarily because its methods first became more heavily dependent on information technology. As Gray posits, "Computers… form the

underlying basis and rationale for post-modern war doctrines, policies and weapons, both materially and metaphorically" (44). Nowhere is this claim more clearly demonstrated than in the other most important strand of Cold War technological development, the Space Race. And with the demands of the Space Race the material if not military cyborg became an imminent reality.

Russia had launched Sputnik, the first satellite to orbit earth, in October 1947. In an attempt to catch up with Russia, the United States utilised the knowledge of Werner Von Braun, the German V1 research scientist. Braun developed space rockets for the United States and launched "Explorer 1" in 1958. In 1961, American astronaut, John Glenn became the first human in space, giving the US a lead in the race maintained until the moon landing in 1969. Such technology, like the contemporary weapons, further stimulated the necessity for accurate control, communications, command and intelligence (C3I). C3I systems are now incorporated into the "US worldwide Military Command and Control systems" and Mosco claims,

> Computers have expanded the range, speed and accuracy of weapons systems. Linked to communication technologies, particularly satellites, computers have expanded intelligence gathering, surveillance and reconnaissance. As the real size of the battlefield increases over the earth and into space, C3I systems to acquire, process, communicate and issue commands grow more vital. (91)

At this point, the technological developments from World War I and before had reached a point where it became feasible to attempt the construction of a material military cyborg.

Ultimately the goal of US military research on this project was to create a weapon commanded by humans, whose orders could be carried out by machines. But as Gray points

out, the idea of a man-machine weapon became "institutionalised through operations research and scientific management practices," and was then "irrevocably changed by the computer" ("Soldier" 58). But scientific research into the possibility of a material non-medical cyborg had already begun in the early wake of World War II.

Norbert Wiener first used the term "cybernetics" in 1947 to indicate "the entire field of control and communication theory, whether in the machine or the animal" (19). As N. Katherine Hayles points out, Wiener's intentions in developing cybernetic systems were to extend the tenets of liberal humanism, and demonstrate the ability of machines to be like humans. However, "Wiener's antimilitary stance was not sufficient to prevent the marriage of war and cybernetics, a union that he both feared and helped to initiate" (*Posthuman* 119). And Gray considers "postmodern war" entails two significant factors: first, the collapse of colonialism, the collapse of the idea of a nation state and a reassessment of contemporary science, and second (the idea of) a new integration of man and machine that results in a cyborg soldier (*Citizen* 56).

For the military, an integrated man/machine weapon was considered essential after World War II, and as C3I systems alone would not be a sufficient communication system for a growing worldwide military "space communications anchored in satellites would meet this pressing need" (Mosco 92). At this junction the cyborg is an inhabitant of space, but the military interest in the perhaps space-inhabiting cyborg contributed significantly to developments in the nearer air, such as augmented vision and reflexes for fighter pilots. Funding for such projects was often devious, or cloaked by supposedly civilian projects. For example, in 1953 the US Navy received the backing of the US Atomic Energy Commission to "oversee the design and construction of the first civilian nuclear power plant built in the United States"(53).

The AEC, established by the United States government after World War II to foster peace and place research into civilian rather than military institutions, funded many of the other experiments and research into the augmentation of man and man/machine interface systems. Military funding of space research was also re-initiated (Robins and Levidow "Socialising" 125). In 1958 "the Eisenhower Administration gave primary responsibility for manned space exploration to an ostensibly civilian agency, the National Aeronautics and Space Administration (NASA)" (Mosco 93). However, as Mosco reveals, the civilian projects were subject to the directives of the military. This agency was directly involved in cyborg development. In May of 1963 NASA produced a report on cyborg study called the NASw-512. "Engineering Man For Space: The Cyborg Study" was specifically aimed towards adapting man to alien environments in outer space (Driscoll, 76). Thus, although Clynes and Kline presented their cyborg paper in 1960, the reality of cyborg assemblages in military technology had preceded its labelling.

Though this overall study concerns itself with the adaptation of man to alien and hostile environments, implicitly it invited investment in military research for just such environments, and it predictably drew the interest of United Aircraft Bio-science group. In "Engineering Man for Space: Final Report NASw-512", a report prepared for NASA in 1963, Robert Driscoll claims that, "the calcium-excretion levels evidenced by three U.S orbital man space flights were significantly elevated to arouse the interest of United Aircraft's Bio-science group into an active pursuit of reasons for this phenomenon" (77).

This report detailed investigations into biocybernetics, where experiments concerning the human cardiovascular system and subsequent sub-systems of human physiology were made in extra-terrestrial environments. There was also an inquiry into sensory deprivation, in which the central nervous system was monitored while physiological and psychological sense

inputs were distorted; and, finally, an investigation into fluctuating mineral dynamics during manned orbital flights and the effect, if any, of calcium drainage from the system (Driscoll, 78-80). While there were no direct developments from Clynes and Kline's paper, further research by NASA (and Russia, although little information was shared until after the Cold War) saw the development of space suits and extravehicular activity in the space flights of the Mercury, Gemini and Apollo spaceflight missions in the 1960s and 70s.

Meanwhile, by the 1970s the Cold War strategies of defence had become a closed-system of technology-based warfare. But as Gray points out, their shortcomings were almost immediately highlighted by defeats at the hands of guerrilla and terrorist opponents, as in the Vietnam War (*Postmodern* 160). The latter types of warfare, ironically, "are a logical response to systemic closure. They are a refusal to fight by the 'rules of engagement,' to accept the fixed set of entities and actions of a systems discourse" (Edwards 156).

Terrain played an important part in this reversal. The Vietnam War was fought in jungles, where technological weapons were relatively useless. As Kiras also suggests: "Triple-canopy jungle limited US and South Vietnamese attempts to apply overwhelming manoeuvres and firepower against the Viet Cong and North Vietnamese forces" (179). Not surprisingly, this defeat instigated a major reshuffle in US strategies and overall thinking on war. Firstly, it destroyed confidence in the USA's 1945 strategy of containment, and many government officials even pushed for a downgrade in military and technological funding. Secondly, research and development into space flight and applications continued, but interest in developing the cyborg soldier lost momentum. As terrain destroyed faith in the technological warfare in Vietnam, however, terrain restored that faith in the '80s with the Iran/Iraq war, whose desert settings made reliance on technological warfare again possible. I shall discuss these wars in my next chapter on the cyborg in military research and

development. It is clear, however, that from World War I onward, military research moves steadily toward a technological base capable of constructing a militarised material cyborg. Having traced the SF evolution of the cyborg from a rudimentary man-machine to a complex cyborg subjectivity in Chapter Two, I will move now to the evolution of the fictional cyborg figure during the 1980s, and then to the cyborg's entry, in the same decade, into feminist theory.

Chapter Four: The Cyborg in SF 1980-2000

At the beginning of the 1980s, the military appeared on the verge of creating a material cyborg, and in SF there seems at first to be a corresponding movement toward emphasis on technology, most notably in the new sub-genre of cyberpunk. Two new computer-based tropes also entered SF, those of virtual reality and cyberspace. “Cyberspace,” actually coined by William Gibson in the benchmark cyberpunk novel, *Neuromancer* (1984), referred to the entire computer-generated space now open to human navigation, including business, entertainment, and military elements. “Virtual reality” is a sub-set of cyberspace, referring to human experience of cyberspace events that appear to be physical realities. Both tropes were a rich source of experiment for SF writers.

These tropes also influenced cyborg narratives. In the ‘80s, for the first time, boundaries are blurred not merely between the human and the cyborg machine-human, but between other forms of questionable humanity. Cyberpunk first introduces the complete AI, or disembodied sentience, a complete division along the Cartesian mind/body line. At the same time feminist SF writers particularly began to include cyborgs as only one among biologically or genetically modified forms of the possibly human. SF writers in the '80s loosely follow the traditional gendered mind/body dichotomy, with male writers tending to the disembodied AI sentience, while feminist writers base their experiments on corporeal alterations.

1980s cyborgs can again be classified on Gray’s terms as restorative, normalising, reconfiguring, enhancing, and degraded forms. These cyborg stories often destabilise gender dichotomies, particularly among women authors, who are now published more often, and there are more women in these 1980s stories, though their treatment is not always innovative. Many of the previous tropes reappear, such as the test pilot cyborg and the implicit debate

about what is a good or bad cyborg, along with variations based on cyberspace and virtual reality. Though *Neuromancer* presented the first cyberpunk AI s, Zoe Sofia points out previous instances of theorising via the cyborg about emergent technology (60).

The Cyborg, in Cyberpunk and Previously

Vonda McIntyre's *Superluminal* (1983) published the year before *Neuromancer*, is the first to blur human boundaries using biological and genetic as well as machine variants. Furthermore, as biotechnology is often predominant in the construction of her cyborgs, McIntyre becomes an important source for Haraway's theoretical work. Indeed, Haraway uses *Superluminal* to illustrate how "[I]n a fiction where no character is 'simply' human, human status is highly problematic" *(*"Manifesto" 179).

McIntyre's Laenea Trevelyan is a reconfigured and enhanced cyborg with an artificial heart that enables her to pilot FTL (Faster Than Light) space flights, and she has an internal communicator for ship-to-ship transmission. Laenea was previously part of the crew for interstellar travel, but crew need to sleep during FTL, whereas the augmentation of her circulatory system means she does not. This is a notable gender shift, as, with the exception of *The Ship who Sang*, previous cyborged pilots have always been male.

Being a pilot is a privileged position, as they are privy to the wondrous images experienced during transition, but thanks to the technological advance of her new heart, Laenea's relationship with the other pilots is strained and she befriends a crew member called Radu Dracul. Radu is from the planet Twilight, and the sole survivor of a plague. Despite their close relationship, Laenea cannot have sex, since, due to her augmentations, "[H]er system and that of any normal human being would no longer mesh" (McIntyre 68). Wolmark claims that this signifies she is "free from both biological and social constraints" (*Aliens* 68). In fact, this restores the original machine/human divide set up in The *Clockwork Man* and

Caidin's *Cyborg*, where loss of sexuality equals loss of humanity. Applied to a woman, the trope appears to reverse the advances made in gender politics by "No Woman Born," where becoming a cyborg does not destroy a woman's sexuality.

This apparent reversion to '50s and earlier views of cyborg sexuality is balanced by a new variation from normal humanity, Radu. He is not "simply" human, as the virus that caused the plague on his home planet has left him with an altered perception of time and space. Radu is now an FTL-capable human, a form of augmentation that is neither genetically nor machine-based, but might be called mutation-based. (There is no evidence in the text that the change is heritable.)

Despairing of becoming a cyborg pilot, Radu signs up as crew, and wakes up in transit, which is highly unusual. The cyborg pilot, Vasili, finds this anomaly threatening: if Radu, an unaugmented human, can remain awake in transit, so may other humans, leaving the special abilities of cyborg pilots redundant. This echoes earlier SF stories, notably *Scanners*, where cyborg pilots exist specifically because humans are unable to handle FTL speed. Vasili is convinced that Radu must be mechanical to survive FTL awake. "'What are you? … are you some disguised machine, are you being tested, am I?'" (McIntyre 122). His assumption is that humans are inferior to cyborgs. This also recalls earlier cyborg narrative debates over the superiority of human or cyborg.

The opposing boundary-blurring figure to Radu is Orca, who is not a mutant, but a genetically engineered "Diver." Like the pilots, Orca has internal transmission and communication capabilities; however, she is also engineered to survive (and live) underwater. Orca wants to become a pilot, but this would mean getting implants, and is something that would risk her relationship with her family, particularly her father. The text indicates its consciousness of the "What is human?" debate when Radu asks Orca if she still considers

herself human. Orca replies, "'I'd say we're more different than a race, but less different than a separate species.'" (138) This implies that they are not alien even to each other. These three differing examples illustrate, that as Haraway claims, this novel is "[P]articularly rich in boundary transgressions" ("Manifesto" 179).

When Laenea's ship goes missing on her first training flight, Radu is able to rescue her by steering the ship into the seventh dimension, which pilots have never achieved. Vasili confesses that he cannot see the fantastic sights of transition, and again sounds the familiar note from *Scanners*: "'Pilots would be obsolete – we may be anyway, because of you, no matter what you are, despite all the effort that's gone into making us … acceptable'" (McIntyre 122). This repeats the earlier split solely between human and cyborg, but McIntyre's text has already moved beyond this simple opposition, by including the figure of Orca, and the conclusion affirms this new diversity.

When the voyagers return, the Administrators take particular interest in Radu and his ability to travel FTL without any side effects and to internally communicate with Laenea. They plan to find the genetic disposition that enables this, in order to genetically engineer pilots without having to augment them. However, Radu opposes this idea. Instead, he finds an affinity with a blue whale and decides to join the ocean dwellers, happy that he can still internally communicate with Laenea. In contrast, Laenea takes her second flight and releases the ashes of her human heart to the universe, embracing her cyborg status, while Orca leaves her water family to be converted into a cyborg pilot. McIntyre thus explores and destabilises the relationship not only between human and pure cyborg, but with other forms of ambiguous humanity, all based in corporeal variation. However, the emerging sub-genre of cyberpunk, though rich in confronting technology, computers, and VR, often saw the cyborg figure once again confined within traditional formulaic narratives.

By the year *Superluminal* appeared, a new sub-set of contemporary technoculture had begun to manifest in SF, with the sub-genre of cyberpunk visible at its forefront and the cyborg as one of its important themes. Lauraine LeBlanc suggests:

> Cyberpunk is differentiated from the more mainstream science fiction literature by three central themes which illuminate the role of technology in society: futurology, techno-paradigms and the cyborg presence. (72)

While the term "cyberpunk" was originally the title of a story by Bruce Bethke, it was employed by Gardener Dozois to describe a host of SF writers who wrote "bizarre hard-edged, high-tech" (Merrick 182). To Helen Merrick the sub-genre "captured a particular zeitgeist, resulting in an unprecedented valorising of sf as a cultural text necessary to, and revealing of, our techno-cultural moment" (182). What distinguished *Neuromancer* as the seminal cyberpunk novel was not only its articulation of SF noir, but its single-handed fictional invention of cyberspace.

Bruce Sterling's *Mirrorshades* (1989) first outlined who the "cyberpunks" were (Merrick 182). Problematically, the cyberpunk movement was limited to a (mostly) white, middle-class male paradigm, and Merrick suggests:

> Ironically, just as feminist SF had been formalised as an object of study, critical attention was arrested by a male-dominated movement that seemed to eclipse the impact and import of feminist SF: cyberpunk. (180)

In contrast, Jeanne Gomoll's "Open Letter to Joanna Russ" (1986-87) argued that Sterling praises Gibson's exploration of techno-social relations as a new and exciting appropriation that rejuvenates a decade of SF "boredom," and hence dismisses the significant contribution of feminist writing and theory in SF during the 1970s. Gomoll claimed, "Both abridgements

(the decade-lumping and the catch-phrase) are, however, part of a very effective strategy of suppression." For Gomoll this strategy implies "a backlash to feminist writing and activity in SF" (qtd in Merrick, 186). Conversely, as Wolmark points out,

> A shift of emphasis … can be discerned in feminist SF written from the 1980s on, as it confronts the question of gendered subjectivity more explicitly within the context of the masculine hegemony of technology. ("Postmodern Romances" 231-32)

Indeed, *Neuromancer* was continually referred to and critiqued in feminist explorations of cyborg and human subjectivity, particularly as one of the cyborgs at the forefront of the novel was the razorgirl, Molly Millions.

While *Neuromancer* is often claimed as the definitive example of cyberpunk writing, a comparison with McIntyre immediately renders it problematic to feminists. Where McIntyre blurred boundaries across a variety of corporeal forms including the machine cyborg, Gibson utilizes a virtual/real landscape to reiterate the traditional conception of mind/body dualism. The mind as superior and contempt for the flesh reappear despite a radically altered physical and mental space and the tradition's hold strengthens when Gibson's version of more-than-cyborg alternates to humanity is an AI character.

Wintermute is an AI in the employment of Tessier-Ashpool, situated on the space habitat Straylight, and performs a subsidiary role in the plot as one of the opposition to the main ploy run by Molly and Case, to retrieve a vital ROM containing the personality of a dead hacker. Wintermute is capable of directing or even invading the minds of human agents, but like a ship brain, he/it is not shown to have a physical form, even a computer basis for the cyber-presence. The name is also symbolically significant. Wintermute can talk, but Gibson does not have his AI pass the Turing test. At no point in conversations with Wintermute is

there even ambiguous possibility that the characters are speaking to a human being (Gibson 219, 201, 269). Wintermute remains an isolated example of an unembodied sentience, rather than an extension of what may be considered human.

Gibson's actual cyborgs also reinforce the traditional mind-body hierarchy. Case is an enhanced cyborg because he physically "jacks in" to cyberspace, using machinery to augment his humanity; Molly Millions is a reconfigured and enhanced cyborg relying on her physical augmentations for basic survival. Molly is a literal razorgirl with retractable four-inch blades under her fingernails, mirrorshades surgically attached to and covering her eyes, and a boosted nervous system to enhance her reflexes**.** But where Case's sexuality is either frustrated or elided, Molly represents the traditional sexually fetishized ideal woman. Furthermore, Molly earns the money to maintain her augmentations as a prostitute, so her cyborg body is doubly compromised (147).

> In effect, Molly's agency resides in her ability to transform herself from one commodity to another, Molly is described as being like Case in that 'her being' is the 'thing she did to make a living,' and the 'thing she did' was become a cyborg. (Foster 223**)**

This claim contradicts Molly's job as the strong arm of the pair, which would imply an agency rare among female characters in pre-'90s science fiction.

However Claudia Springer contends that:

> Because of the ambiguities and contradictions of her presentation, … cyberpunk's figure of the angry woman can neither be hailed as a feminist paragon nor repudiated as a mere sex object; she incorporates aspects of both but fully embodies neither. (*Electronic* 139)

Thus, when Molly and Case must steal the ROM from media company Sense/Net's premises, Case uses a "simstim" and remains safe from physical danger, while being able to see and feel through Molly. Molly's material embodiment is hence available to Case, reinforcing his heterosexuality and highlighting Molly's "available" sexuality. But at the same time, Molly, like Deirdre in "No Woman Born," uses her sexual embodiment for her own ends, including taunting Case as he eavesdrops on her consciousness:

> She slid a hand into her jacket, a fingertip circling a nipple under warm silk. The sensation made him catch his breath. She laughed. But the link was one way. He had no way to reply (Gibson 56).

Joan Gordon argues that cyberpunk can offer feminists a way to explore the imperfect but gritty, technologically saturated environment of cyberpunk. As an example she cites Molly as

> [a] man in women's clothing ….the most facile and least thoughtful representation of the liberated woman. But, to some extent, also, she is simply a human being in women's clothing, one of the two standard issue uniforms for the species. (198)

Gordon concludes that "overt" feminist SF can utilize cyberpunk environs to explore a more likely vision of human techno confrontation, with all of its obvious gender imperfections, in a way that will "find its way back to us with a coherent lesson" (202).

More imaginative and extensive forms of cyborg identity appear in the only female writer to be considered a cyberpunk author, Pat Cadigan, particularly in her novel *Synners* (1991). Like *Neuromancer,* though *Synners* expands human possibilities beyond the machine-cyborg, its alternative sentience is an AI. Unlike *Neuromancer*, this AI has a visible virtual human form and habitation, and passes the Turing Test with flying colours. Again unlike

Neuromancer, virtual reality rather than cyberspace proper is the overriding trope in this text, and the entire novel can be read as blurring the boundaries between virtual and material realities, and human and other/s, even more ambitious than the biologically based blurring in *Superluminal*.

Synners followed a decade that saw exponential expansion of the Internet and the use of personal computers, and with them, their downside, computer viruses. *Neuromancer* was written if not published before viruses proliferated; *Synners* is thoroughly imbued with what may be called the '80s connection-infection syndrome: the 'In' person needs to be connected socially, physically, by a computer, but this instantly exposes the computer to infection. Early viruses passed particularly by exchange of floppy disks and material traded through bulletin boards on the Net. Later viruses moved through the Net itself via e-mail, in particular, causing irritation at best and drive crashes at worst ("Computer Virus," 5.2, 5.3). The words "infection" and "infected" appear in *Synners* forty-two times in all. This syndrome was probably reinforced by the '80s spectre of dire physical infection, AIDS. AIDS too was most easily contracted by connection, and led to catastrophic infections which were easily demonized, as they centred in another minority group, the gay community.

"[T]he person plugged into the computer, physically connected, and yet set free to range through a whole new universe within" is, according to the *Synners* Kindle edition Introduction, "one of the most potent and lasting ideas" to "come out of cyberpunk." The trope of a direct brain-computer interface probably drew on awareness of physical probes used by neuroscientists mapping the human brain. But though such extrapolation is native to SF, also native to SF is its literalizing of a metaphor which encapsulates a current social hot-spot. Not included in the Introduction's version of being plugged-in was the contemporary fear that a computer user's worrying isolation would become an obsession without escape.

This image mobilizes, on one side, the longstanding fear that machines will come to control humans, and on the other, the even deeper tenets of liberal humanist subjectivity and Western masculinity. A brain-probe invades the highest part of the corporeal hierarchy, the seat of the mind; it is also a penetration of the body, which Western masculinity usually figures as the penetrator. Though Gibson's cowboys have been surgically and neurologically modified, they avoid the penetration stigma by “jacking-in” - they view themselves as entering the Net, not vice versa. But as Karen Cadora argues, in *Synners*, “these cyberpunks plug wires deep inside their own brains. They are the penetrated, not the penetrating” (362),

Synners is set in a post-apocalyptic Los Angeles, after “the Big One,” the dreaded quake to end all quakes. The city’s ruins host a mosaic society, from the underbelly of hackers, drug-users, and other dropouts on “the Mimosa,” to the minions of big business. In between come the corporate Net-users and makers of virtual reality advertisements, in particular, whose creativity gives them a foot in both camps. The city's economy is a similar commercialized melange of music, art, video, and news with big entertainment-business, all operating across the boundaries of the virtual and the real.

In this information-mad dystopia access to cyberspace and/or virtual reality is available on the lowest level to those with a computer terminal or who can reach a “media bar” to view the “dataline” - the online news channel. Next come those who own or can hire a “hot-suit” - the external means of experiencing virtual reality, via a suit wired with connections to muscles, in particular, which are stimulated to move during the “feelie” or other entertainment. Different, and sometimes superior, are those possessing brain implants. In SF's closest approach to a medical cyborg practice, as opposed to single cases, the implants are used to manage anything from over-eating to epileptic fits, though they can be installed by “feel-good mills” to give a stronger experience of virtual reality, “under the pretence of

treating depression, seizures and other brain dysfunctions" (Cadigan, 9). As the novel opens, there is also an elite company of "synners," people who use their minds, originally via the "hot-suits", to synthesize sounds and images for virtual reality videos. These include free-lancers like the two most important synners, "Virtual" Mark and Gina Aieisi, and the corporate Net-users, who work for the umbrella entertainment company Diversifications (The Dive).

Diversifications, however, has recently acquired Mark and Gina's original employer, a smaller company called EyeTraxx, whose female doctor/ inventor, Dr Joslin, has extended implant technology to completely biological brain probes, or sockets (64). How EyeTraxx could finance such work is left vague, but sockets can be inserted into all the important areas of the brain, to enhance virtual reality experience far above the level of the hot-suit, without muscular involvement (66). Diversifications first use this technology as a pilot study on the synners from EyeTraxx, in hopes of enhancing their rock videos.

Socket users, who soon include many others, thus become the supposedly superior form of cyborg in *Synners*, though again, their augmentation is achieved by physical intervention in the brain only. However, Cadora's use of "cyberpunk" to describe such socket users is misleading, since many people in Diversifications also use the sockets, not only video makers but executive such as Manny Rivera, the synners' boss. And though the novels share the usual cyberpunk future urban dystopic setting, where Gibson's Case is a cyborg hacker, Cadigan's cyborgs are not hackers, while her hackers, with one exception, are not cyborgs.

Cadigan's closest approach to the male "console cowboy" is Keely, a hacker from the Mimosa who cracks the Diversifications system to uncover the socket technology, and whose consequent disappearance opens the novel. Like Case, Keely is white and male; but he never

has either sockets or implants, and though he can hack into virtual reality programs, his work is mostly done by interpreting figures on a computer screen. Again, though the euphoria he experiences after a successful hack (367-72) is similar, he has none of Case's heterosexual angst. His gayness may be blurred in the general Mimosa sub-culture, but he ends the novel back with the male dropout, Jones, his original partner.

A more striking variant is his fellow hacker, Sam. Seventeen-year-old Sam/Cassandra Ludovic, the sole child of a disintegrating marriage, ran away from home some years previously. Unique among SF cyborgs, her augmentation does not fit Gray's schema of institutional creation. Sam is an illicit, self-constructed cyborg who steals an alternative power design from the Hive, and modifies it to run an insulin pump powered by a needle in her own body. She can then access the Net using her sunglasses as a screen, a set of mirrorshades that give the user agency in both realities. Like Keely but unlike Case, Sam is also a hardware wizard: "'Sam and machines, it's like magic'" (367). Ann Balsamo calls her "a cyberspace hacker of considerable talent who shuns the heroic cowboy role." ("Reading the Body" 221). In fact Sam plays a major role in defeating the "Big One," the killer virus that crashes the Net and almost brings down US civilization, precipitating the deaths of many socket users, already at risk from the technology. With her self-powered access and her hacker skills Sam dodges the virus to get the hacker community back on line; then she reconnects with Art, the indispensable Net-based AI who has also been driven into hiding. The one strong echo of Case is her unfulfilled desire for the older hacker, Fez, but though by the novel's close she appears to be back in a family situation with her father, she has also become adult enough to accept Fez's loss.

Nevertheless, Sam is not a razorgirl. The closest parallels to Molly in *Synners* are an extended example of Cadigan's virtual/real boundary blurring. Marly and Caritha begin as

virtual constructs, sexy female sidekicks for the hot-suited human male hero in a program called *The House of the Headhunters.* This is the favourite escape of Sam's father, Gabe Ludovic, who should be working on virtual reality ads for Diversifications. Petite Caritha always carries a “handcam projector” which has been modified for anything up to laser fire, while Marly, with a “thick, honey-coloured mane” is “three inches taller than [Gabe] and possibly heavier (Cadigan 34). Neither character seems to share Molly's augmentations, however. They function as Gabe's substitute family, the tough, strong women who often literally manhandle him through attack scenarios, and without being fetishized, also supply him with sex. “‘Hey there, you with your dick in your hand,’” Keely comments, when Rivera interrupts him hacking the program, “‘this is *Global News Update* and you're the feature ... of the hour’” (154.) Marly and Caritha do not remain stock constructs, however. Thanks partly to the interventions of “Dr. Fish,” the AI, they begin to write their own lines, offer commentary on the real world, share in the struggle against the Big One, and eventually reach “virtual” human status, since a now probably conscious program has merged, among other entities, with “‘Marly and Caritha’” (432).

Gabe Ludovic himself first appears as the epitome of a cyberspace loser, an “ordinary” middle-aged, middle-echelon advertising hack for Diversifications, whose ambitious wife is about to leave him, whose daughter has already left, who has a hot-suit and job, but whose inspiration is faltering as he retreats into the virtual fantasies of *Headhunters.* He is first pitch-forked back into reality when he intercepts a punch aimed at Visual Mark by Gina (97). As apparent coincidence brings them together at Diversifications, Gina introduces. Gabe to hit-and-run parties, “toxing,” “porn-channels” and the ever-present rock-and-roll, videos or live music (191-207), a reality Gabe has never encountered, but which draws him closer and closer to Gina. Discovery of his illicit emendations to *Headhunters* leads to Gabe acquiring sockets, and being offered his own career as a “full feature” producer, with Caritha

and Marly, for “Para-Versal” (220-22). But this too is threatening to tank when the “Big One” strikes, and he becomes the one who is “there” for Gina, as they escape Diversifications and pass through the devastated city to unite in the cyberspace showdown with “the Big One.”

With the virus defeated, but Gina apparently a casualty (427), Gabe leaves Los Angeles, Diversifications and *Headhunters*, to become a small-time simulation-maker in a village up toward San Francisco (429-31). There Gina joins him, in a happy ending, though the threat of socket technology remains. As Gina muses: “‘Every technology has its original sin … Makes us original synners. And we’ve got to live with what we made.” (435). Whether such living will include more videos is not clear.

The novel’s most complex and extended cyborg sub-plot concerns Gina and ‘Virtual’ Mark. Though it is ostensibly based on the mind versus meat opposition established in *Neuromancer*, again gendered as mind/masculine, meat/feminine, and evoking the heterosexual angst that pervades *Neuromancer*, Cadigan's version becomes very different. Gina and Mark have been loosely “together” for twenty years, making rock videos for EyeTraxx. Mark's longstanding frustration with “the meat” of his body, which hinders expression of his visualized images, and his carelessness with sub-culture drink and drugs, have left Gina too often picking up his pieces, while his affection is as much reliance. “‘Be there for me’,” he repeats the catch-phrase when he is offered socket technology, and she, answering, “‘When was I ever not there for you?’”(204) goes with him to Mexico to have the sockets installed.

Gina herself is a prolific and creative video-maker, but unlike Mark, she has no desire to escape the flesh. She struggles to prevent Mark's physical destruction, arguing with Mark himself, demanding that Diversification bring in an outside doctor when he apparently

becomes catatonic while plugged-in in his synner's "pit" (282-86); even his eventual disconnect is protracted and agonising (327-29). Finally, Gina reluctantly goes with Gabe to battle the Big One in cyberspace. After a showdown where "*the real real and the real unreal and the unreal real*" (361) blend more surreally than any rock video, her final parting from Mark destroys the Big One, and Gina turns, not only to Gabe, but decisively toward "real" life. "'Only the embodied can *really* boogie all night in a hit-and-run, or jump off a roof attached to bungee cords'" (433).

When she reaches Gabe, however, Gina seems to have "died" – suffered a personality disintegration in cyberspace – and been resurrected. The hacker community apparently created an "eclone," an intelligent program that made a copy of her personality, then "reloaded" it back into her body. But the boundaries shift again because, though Gabe feels that if "'you're *here* ... the clone is just a sophisticated program'," Sam notes that "'[it] is [conscious] now. She's been merged with Markt. And Marly and Caritha'" (432). And since Gina herself adds, "'From Mark's point of view, I'm there for him'" (433) it seems the clone may have ended up as another sentience in cyberspace. At this point, being human becomes less a boundary than a permeable membrane, through which minds and constructs and even programs can cross and merge into something else.

While Gabe and Gina's happy ending denies the derogatory sense of "the meat," Mark eventually remodels the anguish that permeates Gibson's work, from *Neuromancer* to stories like "The Winter Market" in *Burning Chrome* (1994), at the effect of technology upon apparently inferior human "meat." Like Case, Mark would like to exist entirely in cyberspace, and to him, the sockets are a dream come true. After this, on the one hand, he enacts Gabe's apparent future, "fading fucking *out*," as he himself realizes, in a failing human body (204); on the other, he traces the full arc of the feared computer possession. He ignores

Gina's attempts to bring him back to the meat. Instead he learns to fool the surveillance and remain plugged-in continually, while his body lies catatonic on the floor of his video-making "pit" (232). But Mark's consciousness, in fact, his subjectivity, is in cyberspace, where "his *self* was getting greater all the time" and "the sense of having so much space to spread out in – a baby emerging from the womb … must have felt the same thing, he thought" (232). This self expands first into the Diversifications computer system, then onto the Net itself. But as his brain scans show, he is already on the verge of a stroke (171).

There have been ominous indications that the sockets actually cause strokes, seizures, and other brain damage (296). Dr. Joslin and her millionaire lover die of simultaneous strokes while making love, apparently linked directly brain to brain. Nothing is left but, "'Wires and blood, and piss and shit'" (275.) After a rock-group leader threatens to kill a hostage, and Gina talks him down, his left eye is filling with "watery pinkish tears" (290), also a sign of incipient stroke. Meanwhile, a particularly noxious virus has assembled in the Diversifications system, possibly, in this new "stone-home Schrödinger's world" (92), as a result of Mark's first small, averted stroke. When Mark reaches that area in the system, the virus attacks him. Fleeing back to his body, Mark realises that "the meat was going to stroke out again, any time now, and ... as long as the wires were in the head, the big one – the Big One – would charge right out of the meat … into the system, where the little one was … waiting" to produce "something like an unguided missile … rolling through the system" (300). And from Diversifications' system it will escape into the Net.

Mark struggles to contact first Gina, then Keely, so they can disconnect his body, but they arrive too late. Mark's body dies, but what may be termed "virtual Mark" has already fled into the Net, pursued by the virus, now a "contagious stroke" (309). At this point Mark's story promises to match Case's, bereft at the end of both Molly and his lost Linda Lee. Mark

has already realised that Gina will not come with him into the Net (253). He also understands, much later, that he still loves her (381). The final showdown, when the Big One contends with Gina in Mark's form, would end as unhappily for Mark as *Neuromancer* did for Case, but Cadigan is still not finished bending boundaries between virtual and actual reality, along with those between human and unhuman. On the Net, Mark had taken refuge as a message in "Dr. Fish's Answering Machine," (332); here he encounters Art(ie) Fish, the Net AI, who, also in flight from the virus, realises that "'somebody else is with me.'" (338).

Cadigan's source for Artie may have been the actual "artificial person," temporarily created in the Atari laboratories in the '80s and nicknamed, somewhat obviously, Artie Fischell (Chernaik 75). But as Sam is a non-institutional cyborg, Art/ie Fish is a non-institutional AI, coming to consciousness through the haphazard aggregation of memory and data space in the expanding Net. As the hacker Fez remarks, "'We all did it'" (Cadigan 173). Art's core, however, is and remains a virus. He begins with a taste for mischievous if not destructive tricks, such as the insertion of a Food Health and Safety Department warning notice in a take-away food shop's online menu (29). He then becomes "Dr. Fish," who "makes house calls," including "infecting" Gabe's *Headhunters* program (369). Developing, he acquires both an avatar, in the correct sense of a cybermask, and a habitat whose hacking skill astonishes Sam. "The overdone Arabian Nights-type tent" has "tassled pillows and Persian rugs" and a view onto "mountains, great lumps of dark green," but it is "bit-by-bit perfect," with no "blank spots." The avatar is "a composition of subtle and charming androgyny, the long dark hair, the classically sculpted features, the amber eyes so light … they were luminous, the deep-brown skin," and Sam thinks of it as "he" on "no basis other than arbitrary" (167).

This Art easily passes the Turing test, having Sam take him as human during an extended conversation (168-71) though Fez then gives her his previous history (172-75). Thus revealed, Art practices "doing his human thing," and becomes a frequent presence in the Mimosa hacker community (265). Though usually called "he," Art's gender remains ambiguous, unless he is talking to Sam (258). Art by now has spread his sentience through the whole Net, and becomes aware of Mark's presence on-line even before the stroke. "'Something … touched me'" (270). The breakout of the Big One drives Art to compress himself into the "Answering Machine," and the hackers lose touch with him along with the rest of the world. But when Sam reconnects with Art, he tells her of Mark's presence, at this point "something like a program" but otherwise inaccessible and adds, "'Just let him stay here'" (359).

Gina, Keely and Gabe eventually reach the other hackers with the password and ID needed to "unlock" (381) Mark, and here his story diverges radically from Case's. Reviving, he is first aware of Art/ie, who "shares memory" with him, and whom Mark finds "a wonder and a revelation, a synesthetic concert of intelligence in conscious mode" (380). But here gender also begins blurring, for to Mark, Artie is "it", even though "*it* in this new existence was a far more encompassing term than a mere *he* or *she*." He "remained *he* in his own thoughts, though that too would change over time," but he and Art "were in complete rapport from the moment of his unlocking" (381).

To use a now inappropriate cliché, Mark has found his soul mate. He sees that, "Gina and Gabe would be all right.... [he] was capable of being good for her … They could find each other." But still "he felt a little sorry for them, since they would not be able to find each other as thoroughly as he and Art" (381). As Mark and Art prepare for the final battle by compressing their consciousnesses into a single entity, Mark, at first apprehensive, finds the

process soothing, “a couple consolidating their belongings” (385), and then, that “the old concepts of *private property* and *individual* were fast losing their importance to him as he and Art came closer to being two aspects of one consciousness” (385). The much-dreaded merger of human and machine happens at last, and for Mark it is the best of possible outcomes; but by this time, “he, she or it” is largely irrelevant.

Once merged, and already calling themselves Markt, Mark and Art join the alliance against the “Big One.” Fez is concerned about Art's presence, given he is still at core a virus, but consoles himself with the hope of Mark's presence to counteract this. In fact Markt is/are taken over in the last showdown, when the virus reclaims Mark's voracious need for Gina, and there is no mention of them in the aftermath, but since Gina speaks as if Mark is still in cyberspace, and not “possessed,” it seems Markt has survived, no longer a cyborg, or even embodied, but presumably happy. Certainly Markt is one of the most notable among Cadigan's reality-blending innovations.

Balsamo argues that Cadigan’s writing implicitly draws from Haraway’s notions of gender relations to technology:

> Sam and Gina, the two female hackers, actively manipulate the dimensions of cybernetic space in order to communicate with other people. Gabe and Visual Mark, on the other hand, are addicted to cyberspace for the release it offers from the perceived limitations of their material bodies. (“Reading the Body” 224)

Though Gina is not a hacker, it is true that she and Sam do manipulate cyberspace, while Gabe and Mark are originally addicted to it as an escape from “the meat.” But by the end of the novel Gabe has abandoned *Headhunters* and Mark’s relationship with cyberspace is very much more complex and innovative than mere release. However, where Balsamo appears to

miss these points, Jenny Wolmark argues that the "depiction of other in cyberpunk goes unquestioned" (Aliens 121-125) in *Synners* and Karen Cadora claims the novel "conflates masculinity and technology" (58). It is true that Keely's sexuality is never foregrounded, but that masculinity and technology are conflated hardly seems true in view of the gender-shifts around Visual Mark, while Gina and Sam, the prime movers on the technological and visual fronts, are both women. Cadigan's own view of the final configurations may come from the hackers. Fez muses, "'We might actually have two species of human now, synthesizing human and synthesized human … Art Fish being the latter,'" then, considering "'Mark, the bastard offspring of both'," he adds "'Make that three species'" (Cadigan 386-87). The original cyborg premise of blurring human boundaries, rather than concerns about the relationship between gender and technology, are clearly most important for Cadigan.

The Cyborg, Post Cyberpunk

Virtual reality, and the effect of a major computer virus in and out of cyberspace, are also central to Neal Stephenson's *Snow Crash* (1992). (Snow crash is computer definition for a complete failure in the system, similar to Gibson's description of "the colour of television, tuned to a dead channel" (3). This time the setting is a dystopic, post-industrial world where an evangelical preacher and media monopolist creates a virus that can be contracted both in reality and through the virtual world of the Metaverse. In *Snow Crash* the world is run by ethnic franchises, such as Uncle Enzo's pizza delivery, the Italian Mafia; Mr Lee's Greater Hong Kong; New South Africa, a haven for white supremacists; and the 'Burbclaves,' gated communities for the white Caucasians.

In *Snow Crash* the cyborgs are sidelined in comparison to those in *Neuromancer* and *Synners*, and the story concentrates on computer hacking and the comparable systems of human and computer programming. However, there are several cyborg entities present,

varying from the “Refus,” degraded cyborgs who have been fitted with antennae that are inserted into the base of their cerebral cortex, to cyborgs who can only exist, like Mr Ng, a restorative cyborg, in a machine support system. In contrast, the Aleut, Raven, is a negative type of enhanced cyborg, since he has a hydrogen bomb in the sidecar of his motorbike, with a detonator wired into his brain. And at the far end of the lower scale, extending the possibilities for cyborgs to the animal, are the “Rat Things”: pit-bull dogs that have been augmented to be extremely powerful and efficient guard dogs.

The creator and disseminator of the deadly Snow Crash virus is Bob L Rife, also a capitalist in information networks, and the newly acquired owner of the Metaverse, the virtual online world. Rife intends the virus to transform humans into virtual zombies, with a universal, homogenous culture under his sole control. His method is to physically introduce the virus into the brains of the “Refus”: this collection of mostly Third World refugees housed on his assembly of ships and boats is tied to an aircraft carrier, originally the *USS Enterprise*, that drifts clockwise round the Pacific collecting the Refus. The implants that make the Refus cyborgs can be used to send them instructions when they have become infected, and having suffered a human “snow crash,” are unable to think independently. When the Raft reaches California those who remain alive will escape ashore to infect the greater Los Angeles area with the Snow Crash virus, by 'speaking in tongues,' a defective speech full of misused syllables and incomprehensible mutterings, and that is apparently contagious.

The name “Refus” combines “Refugee” with “refuse,” just as the Raft invokes not merely wreck survivors but the refugee boat people, echoing the threat of ‘boat people’ invading western shores (particularly America) that continues today. Similarly “Rife” implies a pest or disease, and the *USS Enterprise* is an ironic side look at the spaceship of *Star Trek*.

Rife has also created his virus as an online infection, targeting hackers and computer programmers. Though the paranoia about an entire Internet crash also appears in *Synners*, the Snow Crash version invokes the threat most westerners anticipated in the 1990s, the Y2K virus, which was, at the time this text was being written, perhaps only eight years away.

The Refu cyborgs' role in the story appears to be solely that of the victims, and because they can neither resist their programming nor use language, they no longer merit the name, on Stephenson's terms, of human. In contrast are the cyborg characters who function in both real and virtual space, and whose rationality, including the ability, in some cases, to override their programming, makes them, in Stephenson's schema, qualify as human. The most spectacular of these is Mr Ng, the Vietnamese owner of a security company, Ng Security Industries, in Mr Lee's Greater Hong Kong franchise. Mr Ng was badly injured during an evacuation in Saigon in 1974. Physically Ng gets around in an airport fire truck, which he claims is his elaborate version of a wheelchair. His head is "encased in an enormous goggle/mask/headphone/feeding tube unit, held onto his head by smart straps" (Stephenson 225). His torso in enclosed in a pouch with "wires, fibre optics and tubes" (225) that are connected to the floor and replace his arms and legs.

Mr Ng's role in the story is as an assistant against Rife, and he manages to use one of the main female characters, Y.T., as an accomplice in acquiring a vial of Snow Crash for Mr Lee's Greater Hong Kong to analyse. In the Metaverse, Mr Ng uses an Asian avatar who sits in a lushly designed, panelled office with a large desk and model helicopters on display. In his virtual form Mr Ng is able to walk around, sit down and even receive massages from virtual women. Also, he smokes, something that the male main character Hiro considers, "[t]akes as much computing to power realistically to model the smoke coming out of Ng's mouth as it does to model the weather system of the entire planet" (392).

More important than Ng is Raven, the Aleut, who begins as a villain but comes to an indeterminate end, suggesting that Stephenson wanted at once to acknowledge ethnic grudges against white history, but also to redeem their bearers. Because Raven resents his race's history of oppression by the West, he works for Rife, and is responsible for numerous villainies, including brutal murders:

> He has been split open like a salmon, with a single smooth-edged cut that begins at his anus and runs up his belly, through the middle of his sternum, all the way up to the point of his jaw. It appears to go all the way to his spine in some places. (138)

The bomb in his sidecar makes Raven a dubiously enhanced but apparently not institutionally produced cyborg: "Raven's packing a torpedo warhead that he boosted from an old Soviet nuke sub …The trigger's hooked up to EEG trodes embedded in his skull. If Raven dies, the bomb goes off" (163). In fighting for Rife, Raven also employs many traditional methods used by Aleutian warriors, such as shaving glass to make knives, and crafting harpoons from bamboo (163), which are thus implicated in his villainy, in a manner that might not please critics of Aleutian background.

It is only towards the end of the story that Raven seems to realise his is not the only race that has been harmed by the Americans. Previously, Raven has kidnapped Y.T., taken her into the Raft, and then seduced her. However, he is unaware that Y.T has a dentata, a vaginal device with "[a] very small hypodermic needle [that] slipped imperceptibly into the engorged frontal vein of his penis, automatically shooting a cocktail of powerful narcotics and depressants into his bloodstream" (383). Y.T is sure he will be pissed off when he awakes, but, "He's got a certain look on his face, and she realises that he's not pissed at her at all. He loves her" (451). Possibly, Raven's encounter with Y.T. changes his perspective, so

that, despite not joining the "other side" to fight Rife, nor does he set off the hydrogen bomb. Raven and Hiro fight "hand-to-hand" in the Metaverse, with Raven holding onto Rife's Big One, the final delivery of the virus to spread out into the net, and Hiro attempting to catch him before he can release it. When he drops it and it explodes, Hiro says, "'Do you have any concept of what you just did?'" to which Raven replies, "'Yeah. Realised my lifelong ambition … I nuked America'" (456). Hiro then chops off his head and limbs, and Raven vanishes from the Metaverse; but he is last seen alive and in mid-combat with Uncle Enzo of the Mafia franchise, and the text never discloses the outcome of the fight. Presumably, he does not die, since the atom bomb never does go off.

Unlike Gibson and Cadigan, Stephenson extends the boundary of cyborg possibility in more physical directions, since he includes cyborg animal characters. The "Rat Things" are used by Mr Ng as his "semi-autonomous guard units." These cyborg dogs can run at significant speeds; however, when stationary they are at risk of overheating, and thus, they are housed in climate-controlled dog houses and experience simulations of chasing Frisbees, lying beside fires and eating steaks that are growing on trees (248). When Y.T. questions Mr Ng about the possible cruelty of his cyborg dogs, Mr Ng replies, "Your mistake … is that you think that all mechanically assisted organisms—like me—are pathetic cripples. In fact, we are better than we were before" (248).

As Ng explains to Y.T., they have no way of removing the memories of the dogs. One Rat Thing in particular, B-782, was originally a dog shot in the leg but saved and cared for by Y.T., who named him Fido. Though the Rat Thing is known to the security company as B-782, still, "he thinks of himself as a pit bullterrier named Fido" (249). The Rat Things have been programmed to remain in their yards, but at the end of the novel, Fido defies the rule and jumps the fence to protect Y.T. from Rife. But by proxy Fido saves everyone, when,

enhanced with radio thermal isotopes and the ability to run at approximately seven hundred miles an hour, he torpedoes himself into one of the jet engines on Rife's plane, thus sacrificing himself, but removing Rife permanently. It is a notable variation in cyborg stories that an animal is given the final role in removing a villain.

That the role of cyborgs overall has moved from the limelight in *Snow Crash*, is made clear by the nature of Y.T. and Juanita, the two main female characters, and that of the novel's protagonist, called, not surprisingly, Hiro Protagonist. None of these characters begin as cyborgs, and only one changes in the course of the novel.

Y.T. is a white, fifteen year old girl who makes her money as a "kourier" for Radiks, Inc. She is represented as a tough, no-nonsense skateboarding girl, with little regard for authority and a cynical worldview. However, like Molly Millions, although she is not a razorgirl, Y.T is sexually fetishized, including a prurient interest in her dentata, which is a fetish in itself. Y.T. is not a cyborg, but she does utilise basic technologies throughout the story such as "pooning" (harpooning) cars to hitch rides with her skateboard, and carrying a can of glob, a sticky mess of goo that sticks to anything and can immobilise hands.

Y.T is superficially similar to Gina Aeisi and Molly Millions, in that she seems hard and abrupt and fights her way out of several risky situations, but she is not as mature as Sam in *Synners*. Though both girls end up in a version of a family, Sam reaches it via the maturation of a past love affair, while Y.T., for all her seduction by Raven, appears to be reverting to childhood at the last. Also unlike Sam, Y.T's sexuality is made central to her character, and again unlike Sam, her heroic status becomes problematic when she is held hostage by Rife. Again, unlike Hiro, who does become the hero of the story, Y.T. is "saved" like a feminine heroine, and, while she does witness the final destruction of Rife, killed by

the dog who “loved” her, her own story ends with a symbolic return to childhood, when her mother picks her up in a car to take her “home” (468).

Hiro, the eventual hero, is a hacker, but not a cyborg; he can read and interpret the figures on a bitmap, as can Keely, and he was one of the original developers of the virtual world, the Metaverse. Once Rife took control of the Metaverse, Hiro joined up with Y.T. to become a “freelance stringer for the CIC, Central Intelligence Corporation” (21), uploading music, video and microcode data to a public access database for consumers to hire or buy. Hiro is part Korean, Nippon and African; unlike Raven, he seems confused about his heritage.

> His father was a sergeant major, his mother was a Korean woman whose people had been mine slaves in Nippon, and Hiro didn’t know whether he was black or Asian or just plain Army… He didn’t even have a part of the country to call home until he moved to California, which is about as specific as saying that you live in the Northern Hemisphere. (61)

Like Gabe in *Synners*, Hiro uses cyberspace to escape his real life, consistently retreating to the Metaverse to play a game he has created, where people can kill each other with Samurai swords. In real life, he is struggling to keep a job and lives in an old storage container. In the Metaverse, Hiro is always *the* hero, whereas in his real life he cannot sustain his job or love life.

However, when his ex-lover, Juanita, alerts him to the presence of the virus in the Metaverse, Hiro’s virtual reality and his real world become analogous. In the Metaverse, Juanita gives him a “hypercard” that says “Babel: Infopocalypse” and instructs him not to take the Snow Crash and to investigate Bob L. Rife. While investigating Rife, Hiro discovers that the virus works on the same principle, according to Stephenson, as an ancient Sumerian

myth. The language of ancient Sumerians was supposed to be of an entirely distinct structure to any present language, and caused by a virus that infected the society so that,

> except for an elite class of priests, the entire Sumer society worked as automata, functioning like computers that ran the programmes they were given. These programs, or *me*, were dispensed at the temples and instructed the people on how to do everything from baking bread to having sex. (Hayles *Posthuman* 273-4)

But the Sumerian god, Enki, carries out a performative speech called "nam-shub" which "acted as a benign virus that counteracted the first virus and thus freed the neocortical structures, allowing higher neurolinguistic pathways to develop" (274). Accordingly, to combat the Snow Crash virus, Hiro and Y.T. set out to find Enki's "nam-shub" tablet, which Rife has managed to acquire when he had one of his franchises excavate and recover the Sumerian tablets in Enki's shrine.

Hiro eventually penetrates Rife's Raft with the nam-shub and broadcasts, via his librarian, the specific words that will destroy the virus in all the Refus. At the same time, in the Metaverse, Hiro manages to upload a counter virus he has created called "Snow Scan" which destroys the Snow Crash online and simultaneously advertises his services as an online security services company. As with Case, Hiro is the one who saves both virtual and real worlds, and, unlike Case, it is implied that Hiro and Juanita will consolidate their relationship, "'If we get out of this, will you be my girl?' 'Naturally,' she says. 'Now let's get out of it'" (Stephenson 432).

The most important female character, Juanita, is the one example of a change from human to cyborg during the story, and she plays a major role in defeating the virus. Originally she is an unmodified human hacker who after years of atheism has returned to her

Mexican Catholic roots. She uses this context when she "infiltrates Rife's religious/corporate stronghold" (Yaszek, 113) on the Raft, and ultimately steals the programming codes for the virus. While in the Raft, Juanita has the antenna implanted intentionally and when she meets up with Hiro she explains, "'This is the nerve centre of a religion that is once brand new and very ancient … For a person who's interested in religion and hacking, this is the only place in the world to be'" (429). Like Sam in *Synners*, Juanita thus modifies technology for her own ends.

However, when Juanita eventually holds all of the Snow Crash programming in her head, she cuts the wire that goes into her skull so as to retain the information she has acquired. When Hiro worries that the virus may turn her into a zombie, she retorts, "'I'm a neurolinguistic hacker now, Hiro. I went through hell to obtain this knowledge, it's a part of me. Don't expect me to submit to a lobotomy'' (432). And like Raven, she vanishes from the story without a determinate explanation. Yaszek considers that, while Juanita is analogous with Haraway's ironic cyborg worker, expected to deal responsibly with machines so they do not dominate or threaten [humans] (Haraway 180, cited Yaszek 113), " her fate seems to indicate that such responsibility may isolate the cyborg rather than allowing her to interact with the postindustrial world in any meaningful way" (113). But though Juanita refuses to give up the codes, she vanishes with only her avowal of "'I am a neurolinguistic *hacker*'" (my italics) to indicate what she intends to do next. And hackers have no obligation, even if they are cyborgs, to protect "human" beings.

Stephenson employs the new politically correct inclusiveness like gender, race, ethnicity and even animal rights to depict characters of both genders, many ethnicities, and even animal characters, but as N. Katherine Hayles shrewdly notes, "For all his playfulness and satiric jabs at white mainstream America, Stephenson clearly sees the arrival of the

posthuman as a disaster" (*Posthuman* 276). Further, she contends, "The world that *Snow Crash* depicts—part virtual, part real—is driven by a single overpowering metaphor: humans are computers" (272). Hayles points out that Stephenson posits humans as having a "basic programming level comparable to machine code in computers, at which free will and autonomy are no more in play than they are for core memory running a program" (272). This inference is also worked out in Dean Koontz's novel, *Midnight* (1989), where computer-based once-human entities, invoking again the fear of machine possession, can wholly lose their free will and autonomy.

While not sold as SF, *Midnight* uses cyborgs in an entirely negative view to force a clear demarcation between human and machine subjectivity. Koontz posits that the abuse of power, when coupled with the literal human incorporation of technology, as in the creation of cyborgs, is highly dangerous and undesirable. Koontz also echoes the human liberalist standpoint, which is Stephenson's view in *Snow Crash*, and was articulated decades before in Kuttner's *Camouflage,* that reason and rationality are what makes any sentience human.

Set on the Californian coast in what could be considered a "normal" coastal town, Moonlight Cove, Koontz's narrative, like *Snow Crash,* resembles the formulaic 1920's SF, in that it has a male central character and ultimate hero. Sam Booker is an FBI agent, wallowing in his own despair when he arrives in Moonlight Cove to investigate eleven unexplained deaths. Sam is actually more like Gabe Ludovic, an average guy with unremarkable looks, average weight and height, but suffering from depression due to the death of his wife to cancer and, consequently, a dysfunctional relationship with his son, Scott. However by the end of this novel, Booker "gets the girl" and restores his ability to be a "father", thus making him an ideal family man as well as a plausible protagonist.

The murders, actually perpetrated by cyborgs, are caused by power-hungry Thomas Shaddack, a computer scientist who possesses a god complex and instigates a cyborg conversion called the Moonhawk Project which is intended to improve the human race. Like Stephenson's Rife, "[he] wanted to be more than merely a man. He wanted to have the power of a god and to shape not only his own future but that of all mankind" (Koontz 43). Also like Rife, Shaddack owns Moonlight Cove's New Wave Microtechnology.

In a significant difference from *Neuromancer* and *Synners*, which make big business/corporations or the actual capitalist system the villains, both Stephenson and Koontz target not the system but individuals within it. Thus Shaddack, again like Rife, implants chips in the townspeople. Unlike Rife, his aim is to produce augmented rather than degraded cyborgs, by making them no longer susceptible to illness, able to combat fatigue, gain super-human intelligence and recover instantly from injury. Less benevolently, these cyborgs have a deadly microchip that will kill them if Shaddack dies. In Shaddack's vision "all men would be equal in the new world that was coming, as equal as one machine to another, with the same goals and desires, with no competitive or conflicting needs" (107). This matches Stephenson's negative view of humans as computer programs.

Shaddack's desire for power and control is excessive and self-centred: "He was excited by the entity because it was clearly efficient at whatever it was doing, because its organic and inorganic parts were brilliantly integrated" (43). For Shaddack, the consequences of cyborg creation are not important. Rather, it is the power of melding machine and organism which literally arouses him. "As he floated through the imaginary semiorganic machine, watching it throb and pulsate, he surrendered to an orgasm" (43).

Shaddack's vision is to create enhanced cyborgs; however, his Project triggers two types of change in his victims, in both of which they slowly regress and become degraded,

both literally and in Gray's sense. One form is regression to a primitive violent beast, the other complete absorption into machine. Both forms are viewed as abject and monstrous, less than human. A primitive regression appears as

> [t]all, lean, all sharp edges and angles. His close cropped hair bristled. His dark eyes were set under a deep, bony brow; his sharply ridged nose was like a stone wedge driven into the centre of his face; his mouth was a thin slash, and his jaws were as prominent as those of a predator that preyed on small animals and snapped them in half with one bite. (18)

When the police chief Loman Watkins' son, Denny, melds with his computer, the images are of "*Molten silver eyes . . . Drool spilling from the gaping mouth . . . The segmented probe bursting from the boy's forehead and seeking the vaginal heart of the computer"(*364). The details of "silver," inhuman eyes, the suggestion of imbecile in the "drooling" mouth, and the heavy sexual load applied to the transformation of a simple power cable into a "segmented probe" and the slightly ridiculous image of a computer's "vaginal heart," convey perhaps unwittingly a very powerful revulsion at the idea of a human male losing not only his mind, but more importantly in the masculine humanist view, his individuality.

The emphasis on loss of individuality is repeated in a description of actual cyborg subjectivity:

> Denny had surrendered intellectual individuality to escape awareness of the emotionless life of a New Person: instead of becoming just one of a pack of subhuman beasts, he had become one of many data-processing units in a complex supercomputer network. (332)

This infers that what makes us human is the mind, plus the ability to have emotions and a moral compass, and most importantly, the preservation of individuality, a major concern of masculine-based constructions of humanity. Cyborgs, it appears, cannot preserve any of these criteria. The threat that a cyborg creation will escalate into a machine take-over of humanity in general is viewed with almost hysterical fear.

In contrast to the cyborgs who degrade is the short but heroic career of Loman Watkins, who although converted, recognises the negative consequences of Shaddack's creation. Watkins' conversion excites him at first, but eventually his inability to feel emotions and his old fashioned concepts of morality lead him to question the purpose and benefits of the conversions where "efficiency and expediency and maximum performance would be the only moral absolutes" (73). He struggles with the pull to regress, resisting the involuntary urge to act purely on instinct. Watkins' realisation that his augmentation will actually lead to degradation exceeds his desire for the New World proposed by Shaddack In a sacrifice like that of Fido in *Snow Crash*, Watkins kills Shaddack, thus destroying all the cyborgs along with their creator, including Watkins himself.

Koontz deliberately contrasts the cyborgs with a disabled person who relies on external technology, but is able to live independently and morally. Harry Talbot is a wheelchair-bound Vietnam veteran who has watched the consequences of Shaddack's project through a telescope from his home. Unable to piece together what he views, Talbot sends a letter to the FBI, resulting in Sam Booker's arrival. Harry may thus be seen as the agent who actually saves the town. Having lost the use of both legs and his left arm during the War, Harry has not only a wheelchair but a customised stool for using his telescope or binoculars, hydraulics lifts and customised benches. His dog Moose is specifically trained to assist people with disabilities. Despite his eventual standing in the novel, Harry articulates the

dangerous parallel between him and the cyborgs, when whole people tend to categorise him, also, as unhuman. “Those of whole limb were uneasy about a handicapped person from the start, for they found it too easy to believe that the crippling twist of legs and arms extended to the mind” (81).

On the farther side of Harry from the cyborgs stand the ordinary characters in the novel, an at-first dysfunctional and disparate group of people whom the action transforms into a complete, happy nuclear family. Sam struggles with his own depression and poor relationship with his son, while Tessa Lockland has a successful career as a documentary filmmaker, but wants a heterosexual partner. The eleven-year-old girl, Chrissie, whose parents become cyborgs, is saved by Sam and ends up going home with Sam and Tessa, becoming their surrogate child. The conservative conclusion relies heavily on a return of the traditional nuclear family, and a reinforcement of what is considered “normal.”

This happy ending, though a parallel to the close of both *Snow Crash* and *Synners,* clinches a very different verdict on the cyborg, perhaps the most negative since *The Clockwork Man,* with an almost Luddite view of bio and information technology. Since Koontz posits the mind as defining what is human, the regressive cyborgs are easily classified as mindless and not human, while Harry Talbot is well aware of how much his distorted bodily figure pushes him toward a similar marginalizing. Thus, in a traditional sense, Koontz’s narrative favors Cartesian dualism, and is even more biased toward mind’s superiority than *Neuromancer*.

In striking contrast to Midnight, *Glass Houses* (1992) by Laura J Mixon, presents the only example so far of a cyborg narrative that does not begin with the cyborg's actual creation, and hence is the only novel where a cyborg character’s reliance on her technology is a given from the start. Ruby is agoraphobic, but she has a neural implant that allows her to

download into her waldoes (a remote manipulator) and interact with the outside world, while working as a scavenger of building materials for a variety of shady business owners. Thus Ruby is not normalized, but is an enhanced cyborg. In addition, Ruby has a lesbian partner, Melissa. Thomas Foster claims that Mixon's *Glass Houses* is one of the "first lesbian cyberpunk novels" (222) and Karen Cadora suggests that feminist cyberpunk does blur the boundaries in cyborg narratives through its exploration of lesbian, bisexual and queer sexualities, as well as by bringing embodiment to the fore (370-71). The fact that Ruby's relationship with Melissa is unbalanced and Melissa has little regard for Ruby tends to complicate this view of the matter, as does the relationship's eventual fate.

Ruby has three waldoes, Golem, Arachne and Tiger, and she depends on them both as a source of income, and as a way to function in the real world. That she uses the terms I/golem, Ruby/me emphasises how much the waldoes are a part of her. After retrieving Golem from the police station, Ruby witnesses herself being carried by Golem,

> She-I looked so young and vulnerable from the outside, not ugly and scrawny like me. I was terrified that I wouldn't be able to keep her from harm, I wished she were back home, safe, right this very minute. (Mixon 61)

Ruby's cyborg status is in fact vital both to the final resolution of the story, and to the portrait of her character, as she not only uses her waldo, Golem, to save one of the other characters, but eventually needs to bypass her agoraphobia to save Golem.

During a salvage operation with Golem, Ruby encounters an Egyptian philanthropist who is suddenly crushed by a falling beam. As he is dying he hands the waldo an envelope that contains his will and some very expensive diamonds. Later, as a result of his death, Golem is taken in by the police, and when Ruby is questioned she does not reveal she has the document and diamonds. But Ruby must decide what she should do with them, knowing that

the document is a will outlining an inheritance for Sidra, the religiously fanatical son of the Egyptian philanthropist, Dr Youhanna Nasser. Nasser's wife, Rachel, is desperate for the will to remain lost, and Ruby overhears a conversation between Rachel and her assistant Jehenna, discussing how Sidra must never know about the will.

Rachel sends a waldo of her own to wreck Ruby's apartment looking for the will and the diamonds and, in the process, injures Melissa. Rachel then contacts Ruby demanding she put the will and diamonds in a private locker at central station or she will contact the police. Living in an impoverished post-apocalyptic ghetto, Ruby now faces an excruciating choice over whether to sell the diamonds or return them along with the updated will. However, Ruby has previously had dealings with a violent and dishonest businessman called Vetch. Deciding that keeping the diamonds would make her someone like Vetch, Ruby decides that the right thing to do is find Sidra and return the diamonds and the will.

Using Golem, Ruby infiltrates Rachel's house to find Sidra and give him the will. In the process, Golem is "white noised" out by the security system. Ruby must now go into the house herself, both to retrieve Golem and to get the will and diamonds to Sidra before Rachel can intercept. Ruby then uses Golem to save all three of them. Having to overcome both her agoraphobia and her dependence on her waldoes brings a powerful change in Ruby herself. At the end of the novel, when Ruby sees Melissa as more hungry for money than love, she is able to reject Melissa as a source of dependence, which she needed when agoraphobia limited her choices.

Mary Catherine Harper argues that *Glass Houses* "reminds us of the male initiation narrative in which a young man's developing sense of an ethical self is recorded – and rewarded" (413-14). Ruby's agency is complicated by her agoraphobia and the abuse she suffers from Vetch. Harper suggests, "As a phobic person, she loses choices over where she

can freely circulate, just as her femaleness limits her choices in dealing with Vetch" (414). By the end, however, it is clear that Ruby has been able to use her experience with Vetch to determine her own morality, and then to act upon it, precisely as a young male initiate would do. But Ruby's *Bildungsroman* is very differently inflected, first by her gender, then by her agoraphobia, and connected with that, her central, cyborg subjectivity. It is this subjectivity that allows her to surpass the limitations of her disability. Being a lesbian, in the end, appears a more problematic form of variation from the male norm, since Ruby rejects her lover, though her waldoes remain, and now approach human status as part of the shifting and ambiguous entities, "I-Golem" and "Ruby-me." This is the first cyborg story where the human element of being a cyborg comes to the fore, and in contrast to *Midnight,* is affirmed as "normality" at the novel's close.

Two of Marge Piercy's novels actively engage feminist theory, but where Shulamith Firestone's thinking on male roles in reproduction is occasionally visible in *Woman on the Edge of Time* (1976), *He, She and it* or *Body of Glass* (1991) gives central place to fictional thinking on cyborgs, in open response to Donna Haraway's "Manifesto". The title, *He, She and It,* highlights the confusion of gender definition in human-machine interfacing that cyborg novels have been attempting to explore. Where Cadigan and McIntyre look at the cyborg as variant of the human, however, Piercy centres her narrative on the cyborg's potential for subverting and destabilising gender roles.

On the female/feminine side of this equation are the central female characters, Nili, Malkah and Shira, who are all enhanced cyborgs of the familiar kind, fitted with technology that allows brain to computer interfacing with the Net. Malkah and Shira use "sockets," while Nili, coming from another, all-female colony, has heavy enhancement implants. On the masculine side is Yod, the central "male" character. There is some debate about whether Yod

is a cyborg or an android (McCarron 269), a constructed cyborg, or as Carlen Lavigne calls him, an "AI cyborg" (88). A constructed cyborg would seem redundant, since all machine-human cyborgs are in some way constructed, and an AI cyborg implies a use of "AI" not common either in SF or information technology, where "AI" is taken by both for a disembodied machine-based sentience.

Yod is in fact an extreme contrast to Artie in *Synners*, since Artie was a spontaneously generated consciousness that can pass the Turing test, but whose physical parts are all machinery. In terms of my own cyborg definition, Yod's categorization is also problematic, since he is a machine construct with organic parts, rather than an originally organic entity with machine parts. But since my concern is with various forms of fictional cyborgs, and Piercy clearly intends Yod as a cyborg, I will let "organic parts" qualify him for inclusion in this chapter.

Set in North America in 2059, Piercy's landscape is a post-apocalyptic, ecologically ruined environment. Multinational corporations have created an affluent and powerful elite set in domes. Outside of the Multis is the Glop, an abbreviation for megalopolis, where the majority of the population live in the subways and eat algae; additionally, there are the Freetowns along the coast "… the multis ruled their enclaves, the freetowns defended themselves as they could and the Glop rotted under the poisonous sky, ruled by feuding gangs and overlords" (Piercy 46). Tikva is a Freetown, an autonomous community that trades computer programmes and other computer wares with the Multis. As in *Neuromancer*, the access to technology depends on class status; communication relies heavily on the interface through the Net, which leads directly to an elevation of cyborg status. If wealthy enough, humans can directly hook into virtual space via a male coupler that is inserted into a socket in the temple, as with Shira and Malkah. Unlike Gibson, Cadigan or Stephenson, Piercy leaves

cyberspace and virtual reality largely as part of the setting; her real attention is on gender construction, as expressed through the corporeal aspects of her characters.

Yod was artificially created by the Tikva scientist Avram to function as a cyborg soldier, but shaped as an android that could "pass" among hostile humans. To Avram, however, Yod remains "a tool" which Avram considers he has the right to destroy: "'Yod's a cyborg, not a robot – a mix of biological and machine components. He's programmed to protect us – our town, its inhabitants, our Base'" (95). The reference to "programming" implies that Yod, like Stephenson's proposed humans, has no free will. And Avram does deny Yod any of the status, such as self-determination, that a "cyborg" in Haraway and Gray's terms, would have, as a human/machine entity.

The connection of humanity and sexuality in the case of male cyborgs reappears, with a somewhat different twist, because Avram has also created Yod so that he is "anatomically" male: "'I felt the more closely he resembled a human being the less likely he would be detected … I could see no reason to create him … mutilated'" (96). This thin pretext for creating an artificial human in the creator's image also implies that to Avram, "human" equals "male," and a sexually capable male rather than a eunuch, which reveals a good deal about Avram's own gender politics. Through Avram's comments on his creation, Piercy highlights traditional distinctions between feminine and masculine qualities, which, somewhat inadvertently, perhaps in Avram's view, are equated with those between human and machine, with the machine as masculine.

A further blurring of accepted categories takes place because, since Yod was created as a weapon, the masculine qualities on which Avram insists become conflated with those of a real cyborg soldier. Such qualities might include the capacity for stealth, for ruthlessness, and, naturally, high accuracy and expertise with whatever weapons the soldier may be given.

Yod does display these qualities when Avram sends him into cyberspace to raid the system/ base of some of the Multis who are attempting to attack Tikva. But these incidents only serve to reinforce Yod's determination to become more than what he was intended to be, a mere thinking machine warrior. In Haraway's terms he becomes a model cyborg, because,

> The main trouble with cyborgs ... is that they are the illegitimate offspring of militarism and patriarchal capitalism, not to mention state socialism. But illegitimate offspring are often exceedingly unfaithful to their origins. ("Manifesto,"151)

Yod becomes unfaithful to his origins, to the point of killing Avram and committing suicide because, "'I want there to be no more weapons like me'" (Piercy, 563).

Ironically, this outcome is due originally to Avram's own planning. Avram has attempted to create cyborgs before Yod, whose name is Hebrew for the number 10, but they have all malfunctioned, often violently. When one of them murders Avram's assistant, Avram employs Malkah to assist with the software programming. It is Malkah's socialisation of Yod that turns him from a weapon to an entity whose subjectivity makes him seem plausibly "human." Malkah gives Yod the capacity for imagination, and lets him feel such emotions as loneliness, boredom, and desire; like Artie, Yod is self-correcting (153), and he soon becomes involved with Malkah and her daughter Shira on very different terms to what Avram envisioned.

Shira has lost custody of her son after a bitter divorce, and returns to her grandmother, Malkah, and her childhood home of Tikva, to become enlisted in Yod's "socialisation." To begin with, she and Malkah, the one a computer technician and the other a high-level programmer, frequently call Yod a machine, a computer, or a robot. Shira, in particular, is doubtful of Yod's human capacities. At first, she cannot imagine him with a gender either.

"'Educating a machine is not a concept that makes a great deal of sense to me. His – now you've got me doing it. Call it 'he'." To which Malkah replies, "'He is a person, Shira. Not a human person, but a person'" (103).

In Piercy's case, "being human" appears to mean what Malkah provides for Yod: the software basis for him to acquire morals and aesthetic sense as well as emotions. Shira, brought to teach him how to use his "social skills", takes "humanising" further, as she ends by taking him as a lover and allowing him to function as stepfather to her son. Here masculine and feminine attributes are blended to produce a rounded but cyborg human: aesthetic sense and morals may be trans-gender values, but a value for emotions is a traditionally female trait, and one forbidden in most Western constructions of masculinity. On the other hand, taking Yod as a male lover, and putting him into a father's role enforces masculine attributes, if those more positive from a feminist point of view, than those of a militarised masculinity, with its emphasis on deadliness, violence, and the capacity to place morals below the demands of orders

In fact, by making Yod her lover Shira, has, like Avram, imposed on him her own "romantic ideal" of masculinity. Had it prevailed, there would be a happier ending than the one the text produces, where Avram forces Yod to return to his role as a cyber-raider and defender of Tikva, and Yod destroys them both, along with Avram's research, to prevent another cyborg weapon being created. In the end, Yod has been more faithful to his cyborg nature, in that he is determined to see no more cyborgs suffer his fate, than he has been to either Avram's or Shira's expectations.

Eventually, Shira realises her desire to create the perfect lover and father out of Yod is equivalent to Avram's (masculine) ideal of complete power and control over another. Shira cannot recreate Yod, even though she has the capacity: "She could not manufacture a being to

serve her, even in love" (581). And so, even though she finds she has the source materials to re-create her lover, she destroys them in the Tikva recycling factory. In effect, Shira grants Yod the posthumous freedom of choice Avram denied him. But ultimately, despite the text's determination to term him a cyborg, Yod remains a machine, despite his organic parts. The closure makes Nili the preferred cyborg entity.

In contrast to Yod is Nili's wholehearted acknowledgement of her military role and its associated violence: "'I'm an assassin'," and, "'I'm here to serve'" (255). A cyborg who identifies as a woman, Nili is a warrior from a society outside either the geography or the class system developed by the corporate (masculine, American) world.

> 'We are a joint community of the descendants of Israeli and Palestinian women who survived. We keep our religions, observe each other's holidays and fast days. We have no men. We clone and engineer genes. After birth we undergo additional alteration. We have created ourselves to endure, to survive, to hold our land'. (267)

There is a more than an echo of Israeli ideologies in this manifesto, as might be expected from a text that includes as sub-plot a retelling of the Golem story. Despite this involvement with an ideology now itself leaning toward the repressive, in Piercy's novel Nili represents a utopian if challenged vision of female existence separate from the traditional, male-dominated culture. Nili's society aims, particularly, to restrain and possess control over reproduction. In strong contrast to Yod, she can choose her own enhancements and augmentations, and she consciously chooses her cyborg status. When Shira asks if Nili is human, Riva replies, "'That's a matter of definition … Where do you draw the line? Was she born from a woman?'" (258). This is a direct reference to Haraway's "Manifesto," with its cyborg "not of Woman born" (177).

With Yod, Piercy highlights the danger in creating a masculinised cyborg as a weapon. Yet both Shira and Malkah are shown to bitterly regret how they behaved with Yod, simply as programmer and socialiser. *He, She and It* points to Nili as the right way to go, while Yod is "a mistake." Piercy's verdict appears to be a good deal kinder to cyborgs than Stephenson or Koontz's, ruling, in the long run, that it is better to augment humans rather than create machines with organic parts.

In *Trouble and Her Friends* (1994), Melissa Scott challenges the traditional "console cowboy" narrative with a lesbian feminist cyborg story. "The new cowboy narrative, however, does not simply redefine who gets to be the cowboy, but questions the individualistic heroic quest the previous narrative was built on" (Holden, 225). Unlike *Neuromancer,* Trouble and her friends highlight a need for community in the quest role.

Scott's novel returns to the cyberworlds of *Synners* and *Neuromancer,* where cyborgs are also hackers, and enhanced with some sort of brain augmentation. Trouble and her girlfriend, Cerise, are hackers who use dollie ports and brainworms to access cyberspace. Unlike *He, She and It,* the narrative is as much about virtual as corporeal reality, but here the hierarchy of Piercy's novel, where cyborg cyberspace travellers are the elite, is reversed: users of brain-implants here are the disadvantaged. Similar to the sockets in *Synners*, brain worms, wired directly into the nervous system, are illegal and dangerous; they too allow users to "experience virtual reality as though it were real" (14) However, as Allucquere Roseanne Stone suggests, "Forgetting about the body is an old Cartesian trick, one that has unpleasant consequences for those bodies whose speech is silenced by the act of our forgetting; that is to say, those upon whose labor the act of forgetting the body is founded – usually women and minorities" (94). And in Scott' s version, other hackers and Net-users look down on Trouble's use of the brainworm, this time because it suggests a new way of

figuring embodiment that the straight, white male community finds unfavorable, not least because, once again, it implies vulnerability and penetration of the supposedly impregnable male body. Hence it has to be relegated to the realm of the disadvantaged, the poor, female and already vulnerable.

> maybe that was why the serious netwalkers, the original inhabitants of the nets, hated the brainworm: not so much because it gave a different value, a new meaning, to the skills of the body, but because it meant taking that risk, over and above the risk of the worm itself. Maybe that was why it was almost always the underclasses, the women, the people of color, the gay people, the ones who were already stigmatized as being vulnerable, available, trapped by the body, who took the risk of the wire. (Scott 128)

Thus, "Scott advocates the value of embodied experience" (Holden 221).

When the government creates the Evans-Tindale bill that, "redefines so-called cyberspace as a particular legal jurisdiction, and establishes a code of law governing these electronic transactions" (Scott 15), hacking becomes a serious and dangerous criminal activity and the brainworm that the hackers use no longer has the potential to become legalized (16). Consequently, Trouble leaves Cerise, and her queer family, to become a syscop in an artist's community co-op, and Cerise acquires a legal job at "Multiplane," a corporation that deals with transportation engineering. Three years later, one of Trouble's queer "family" members comes to warn her that another hacker is using her moniker.

Trouble sets out to find the New Trouble, incensed that someone is using her name in the nets. But unlike Case, she does not try do it alone. Her ex-girlfriend, Cerise and her queer community join in her quest. Trouble first seeks out one of her former queer family friends, Butch Van Liesvelt, to get a new implant, an upgrade on her dollie port. In the meantime,

Cerise, who now works for a legitimate corporation, has been asked to find both “new Trouble” and the original Trouble; however, she is also personally interested in saving Trouble and reuniting with her. Both Cerise and Trouble are strong, feisty and sexy women, but unlike Molly Millions or Y.T., they are not represented as a sexualized ideal for heteropatriarchal desire. There are no descriptions of sexy hair or powerful bodies as appear even with Cadigan's Marly and Caritha. Most of the critical action takes place in the dual scenarios of Seahaven. This is a place in both reality, where criminal hackers reside in a small seaside town that has been ecologically ruined, and in the virtual world, where criminal hackers go.

> Seahaven was the last and greatest of the virtual villages, the last survivor of a dozen similar places that had existed before Evans-Tinsdale. … it had always been a cracker’s haven; now it was one of the last remaining spaces where shadow walkers could conduct their business. (85)

This Seahaven is “run by and for its unknown architect, the Mayor, an unreal place, policed, positioned, and created entirely at his whim” (85). Unlike Rife with his Metaverse, however, the Mayor “lives” on-site.

Trouble jacks into the net and goes straight to virtual Seahaven where she leaves a signal threatening the thief of her moniker. Her queer friends also get a message summoning Cerise to the material Seahaven, where New Trouble is located. Together, Trouble and Cerise track down New Trouble, and find that he is a fifteen year old queer boy, calling himself Silk, financially supported by the Mayor of Seahaven. While they establish that the boy is not the Mayor’s “whore,” they do discover that the Mayor has been using him for illegal hacking, while the mayor maintains a legitimate clean slate. Trouble laments, “Fifteen was too damn

young, most of the time, ninety percent of the time, but she resented the certainty that it would have been the queer relationship that made a conviction certain" (311).

Closely followed by government officials, they find the Mayor in real Seahaven, and Trouble confronts him in a room surrounded by computers, where Silk lies on a couch. In their confrontation, gender plays an important role as a contested hierarchical marker. The Mayor tells Trouble, "'You were never really one of us' (366), implying that as a lesbian and woman she does not belong in the virtual world. When Trouble mentions that she was quite capable of breaking the Mayor's IC(E), he accuses her of cheating by using a brainworm, **"'**But real technical knowledge? I should have known better than to expect it'" (367) This further implies that Trouble's abilities and knowledge are still perceived to be inferior to those of white men. But as Rebecca Holden points out, "Trouble [has] perform[ed] the masculine cowboy role, and as a lesbian in cowboy drag, expose[d] its constructed nature and the insufficiency of that construction" (220). Finally, the mayor is shot by the government agents and Cerise, and they discover that the Mayor had spiked Silk with a euthanizing drug. As a result he is dead, of no further use to the Mayor. This is problematic for Trouble as she has seen New Trouble as a younger version of herself. Trouble realizes that the Mayor's desperate attempts to keep the net clean and traditional have denied alternative identities and sexualities.

Unlike Case or Stephenson's Hiro, Trouble now gains status, since she agrees to become the new Mayor of Seahaven, but she feels no satisfaction from her victory:

> It was bought with a death—whatever she thought of the Mayor, he's dead, and if it wasn't at her hands directly, it was close enough, and she wouldn't have the hardware or the software or the authority if he weren't dead—and

> she can feel that burden sometimes like a wall pressing in over the dome of the false sky that bounds the city. (375)

Her new position implies firstly a new challenge for Trouble, who will now not only have to create but maintain rules, rather than operating against or outside them. At the same time, Trouble's gender and sexuality undermine the staple view of the king's successor being another king, and at least imply a scenario where the rules, in Trouble's Seahaven, will be other than before. This also suggests that these new rules can be created outside a masculine setting. Trouble states at the end of the novel, "'somebody has to do it'" (Scott 375). But this is no indication that Trouble's untraditional outlook will survive the demands of power and rule-enforcement better than those of any other idealist.

Wilhelmina Baird's novel, *Crashcourse* (1993), is unusual firstly in being a little known cyberpunk novel by a female author, and secondly, a novel written in conscious response to and imitation of William Gibson's work, down to the Christian element of Baird's pen-name. Baird uses the same urban future dystopia as Gibson, and adds a number of grotesques reminiscent of the inhabitants of the Sprawl, such as Dog Boy, but the novel has almost nothing to do with cyberspace. More interestingly, *Crashcourse* recycles the heterosexual angst of *Neuromancer* through the first person viewpoint of a straight female narrator, in the process reversing the male gaze which in *Neuromancer* lingers upon the figure of Molly Millions, with rather different effects.

As the novel opens the narrator Cassandra is a small-time thief in a troika with two lovers, the would-be actor Dosh and the sculptor Moke. In background is the mysterious figure of her possible protector, a mob boss known as Swordfish, who moves around in a "cool suit" that makes him invisible. The male gaze that makes the female subject visible

here becomes a female gaze that ends at an intriguing blank, preserving, at least at first, the male subject's traditional invisibility.

One thread of the story involves the usual cyberpunk “noir caper,” with break-ins, high-tech weaponry and violence, but involving Cassandra and Swordfish, since her two lovers are not in the field for violence. The other thread takes the novel into one of Gray's prime sites for the production of cyborgs, the entertainment world. This world also looms behind much of Gibson's work, representing the lure, particularly to his female characters, of celluloid fame, often accompanied by some form of cyborg cosmetic make-over, such as the patented blue lenses/retinas adopted by the “lost female object of desire” in “The Winter Market”.

Crashcourse adapts this motif too: it is Dosh, one male object of Cassandra's desire, who is trying to break into films, and who falls for the lure of possible fame to accept a highly dangerous film role that eventually kills him. It is Cassandra who suffers the angst of a loss by death rather than simple separation. But the entertainment/film setting also allows Baird to exploit the elements of visual effects and spectacle, the entertainment equivalent of Baudrillard's post-modern superficiality, and with them, the possibility not merely of viewing and/or enjoying bodies, but of having them fetishized. Once again, the novel recycles a motif from Gibson, this time the fetishizing of Molly Millions, the razorgirl. But since Cassandra is straight, she cannot easily fetishize another woman's body. Moreover, her two lovers lack the elements of danger and violence that spice Molly's presentation. However, a figure with plentiful elements of such is still available, with the extra bonus of being, like Bluebeard's chamber, a secret, and a body that, up until a certain point, is invisible.

Swordfish's stubborn invisibility has already made him a target for curiosity and speculation, not least Cassandra's own. The apex of these two impulses in the novel, the

heterosexual desire for a male body, and the element of gaze and desire for spectacle, comes when Swordfish, in an imitation arena, is goaded into stripping off his cool suit. It is notable that, while Cassandra is both narrator and witness, the source of the challenge is a female film mogul. The scene goes very near a grotesque parody of a male striptease, mixed with elements of Roman gladiatorial spectacles, the latter strand powerfully reinforced by the body Swordfish reveals.

> The suit opened over a chest slashed with ragged seams that outlined his ribs and crisscrossed in lumps above his heart . . . a nightmare of scar tissue, hacked, burned, melted and re-soldered. I remembered his implants and wondered how many of the scars were surgical, how many battle-wounds and how many decoration. (Baird 240).

Swordfish is the only notable cyborg, and certainly the only fetishized male body, in the novel. The body revealed, however, is a very far cry from a Hollywood star's. It rather invokes his past, the traditional wounded-cyborg pilot figure, as a hunter-killer space pilot for the Navy of the time.

In this version, during an Alien encounter the Navy used teenagers as fighter pilots, like the children in *Ender's Game* (1985), because they have, "'Faster reflexes, no conscience, no understanding of death'" (Baird 296). The man who augments Swordfish after his accident explains,

> 'The pilot had implants to mesh with his computer. In flight-mode he and his ship were one organism, neurally linked … Then the systems blew. Took out his inboard computer and him with it ... His whole motor nervous system. He ought to have died. Physically, he pretty much did.' (297)

Consequently, Swordfish hides behind his coolsuit and believes he is monstrous, even arguing with Cassandra against an appearance on these grounds: "'I'm a monster, remember?'" (204) It is, in fact, the body of a restorative, and thanks to his augmentations, an enhanced cyborg. It is also what Yod might have looked like had he fought in and survived a physical war, and it powerfully invokes the cost of real warfare, as opposed to the Hollywood version. At the same time, although Baird appears to have swallowed the mystique of a battered but heroic male body whole, the final words of the quote undercut this image with an ironic play on "decoration." Decorations are worn by war heroes. But Swordfish is also a mob boss. How many of these apparently heroic scars are literal decoration, donned to enhance his gangland image?

The revelation of this body takes the film-makers aback, and Swordfish vanishes before they recover. The novel ends with Cassandra back with her remaining lover. Swordfish has withdrawn into invisibility, but in a deliberate echo of *Neuromancer* that positions him in the role of Molly Millions, as the disappearing, fetishized, machine-altered but this time male cyborg body:

> I saw him for a moment backlit by that worldfreezing flash, a slender black outline as the circuits of his coolsuit temporarily gave up, … and then my eyes were full of red and green after-images … But his suit had cut back in and he'd gone ... He'd vanished back into the scenery as if he'd never existed. (276)

As Case's last sight of Molly is a virtual image on the schematic of a corporation system in cyberspace, Baird's novel trades on the parallel to close with a final touch of heterosexual angst for this mysterious, man/monster cyborg that it is implied Cassandra may never see again.

N. Katherine N Hayles claims, “By the 1980’s… Cyberpunk, human factors engineering, artificial intelligence, and virtual reality were among the SF revisionings that pushed towards a vision of the cyborg as humanity’s evolutionary successor” (“Life Cycle”, 169). eluki bes shahar’s *Hellflower* (1991) suggests the cyborg is the figure of the (human) future through the interaction of her cyborg character, Butterfly St Cyr (Butterflies-are-free-Peace-Sincere), and Butterfly’s AI companion, Paladin. More than any other novel since *Superluminal*, the text may be described as cyborg space opera. Its central female character would also qualify as perhaps the closest form of a cyborg subjectivity and origin to Haraway's concept in all these novels. Butterfly's ironic, wise-cracking, self-satirizing voice and her having fled her anti-tech, closed home planet to become a “dicty-barb” - an illegal barbarian – both fit well with Haraway's view of cyborgs as ironic, sceptical, and “often exceedingly unfaithful to their origins” (“Manifesto” 151).

As the book opens Butterfly has become a book-legging (bes shahar, 5) interstellar smuggler accompanied on her ship *Firecat*, by Paladin, a sentient computer called a Library. “He’s black-boxed into *Firecat’s* infrastructure, wired into her computers and welded onto her deck, so where she doesn’t go, he doesn’t go either” (13). To help her work with Paladin, in the first chapter, Butterfly is about to become yet another augmented and enhanced cyborg. She is looking to get a Remote Transponder Sensor (RTS) implant in her jaw that will let Paladin both overhear her conversations and communicate secretly with her. This is doubly illegal because, “My partner’s a fully-volitional logic. A Library. And the head price on him—and on me for having him—has been reliably reported to be enough to buy you out of any crime in the Imperial Calendar” (13).

The narrative is told in alternating sections from Butterfly's and Paladin's points of view. As Butterfly considers Paladin not merely an ally but her best friend, Paladin considers

himself Butterfly's friend and companion, though he is as yet more aware of the elisions and dismissals that allow her to consider him so. "There is no one left who would care to chart true boundaries in the borders between organic and machine. Butterfly has always thought of me as human" (15). Incipient problems for the two escalate when Butterfly impulsively rescues a Hellflower, Valijon Starbringer, from a street attack. Valijon, whom she christens Tiggy Stardust, comes from the planet alMayne in a Coalition who were the original Librarians, but have become sworn enemies of "The Machine," that is, Paladin's fellow Libraries, ever since a distant war when the Librarians tried to take over the literal Universe and suppress "organics," that is, humans.

The novel wends its way through the usual mayhem and skulduggery, in space dystopias rather than on earth, but with more integral excursions into cyberspace than in some of the other cyborg narratives. When the plot has played out, Butterfly meets Paladin just once more in virtual space, but she realises then what Paladin has long since known: they can never be completely together, because in Paladin's words, "'You cannot live in a computer matrix, and I have no existence outside of one. There is no place we can be together, except in memory'" (214).

Hellflower closes with another version of the question, "What is human?" This time based more complexly and completely round the character of an AI, and this time producing a repeat of classic cyberpunk heterosexual longing through the fuller development of a romantic "attachment" between human female and bodiless intelligences. Such a relationship is very lightly adumbrated in *Synners*, with Sam and Art, before he and Visual Mark meet. It is developed at greater length in Katharine Kerr's novel *Polar City Blues* (1991), where Buddy, the computer belonging to the main female character acquires a perilous desire for his owner, and comes very close, in jealousy of her human lover, to killing the pair of them. The

Hellflower version is central to the novel, and indeed to the trilogy, but it ends with the same conclusion that *Synners* suggested: cyborgs may become lovers to other cyborgs, perhaps to "normal" humans, perhaps to other versions of the human. Between an incorporated human – a "flesh-person," to use Cadigan's term – and an unbodied sentient, the relationship can never succeed. It takes such disembodiment as Cadigan uses with Visual Mark to cross this final boundary between human and other-human.

Cyborg narratives from the 1980s to 2000 show a concentrated focus on the approaching age of the (personal) computer, most specifically with the tropes of virtual reality and cyberspace. All of these stories remain concerned with "what is human" and attempt to explore forms of cyborg subjectivity that can resemble or match that of the ordinary human. At the same time, as with military development, the cyborg in these narratives is no longer the sole centre of attention, but becomes, most often, one of a number of versions of what might be considered human. Overall, these texts do not view cyborgs more affirmatively than their predecessors, or even more positively. Sexuality is often highlighted through human computer interfacing and narratives such as *Synners*, *Glass Houses,* and *Trouble and her Friends,* challenge traditional versions of gender and sexual identity. However, *Neuromancer, Midnight* and *Snow Crash* maintain dualist terms, preserving the mind/body dichotomy, and often explicitly defining human and cyborg as the "one" or the "other" as well as preserving formulaic male-dominated narratives. Because there are more female cyborgs in this period, and more women writers, there is less of an ideal of a masculine cyborg as singular and individual. Some of these texts do follow Haraway's vision of a cyborg, but others do not match her framework. In a conception of cyborg subjectivity that goes right back to the Clockwork Man, a number of these cyborgs demonstrate angst, uncertainty and what might be called fractured subjectivities very different from the ambiguous, fluid and ironically self-aware cyborg that Haraway develops.

However, “because sf is about a whole range of Subject/Other encounters, because sf often simultaneously exploits and critiques an already gendered mind/body dichotomy, because sf marks technology and subjectivity with separate genders, the genre is easily adapted to the study of gender” (Harper 402). And the works of McIntyre, Cadigan, Piercy, Scott, Mixon and bes shahar demonstrate that SF in the period 1980-2000 could imagine not merely other forms of human, but forms of sexuality and gender in human/technology relationships that move outside traditional male-dominated narratives.

Chapter Five: The Cyborg and the Military, 1980s-2000

While SF writers were occupying virtual reality and cyberspace, and expanding the borders of what might be called human beyond the machine-human cyborg, military research and development moved strongly in the directions indicated at the end of the '70s. Its pace was accelerated by a new round of wars which cross what Chris Hables Gray sees as the threshold of post-modern warfare, though Fredric Jameson had previously found this threshold in Vietnam. For Gray, the increased reliance on information technology distinguishes the post-modern war, but it can also be seen in the spread of such technology, which is far beyond that in Vietnam. In this chapter I follow the still theoretical material military cyborg firstly through the Iran/Iraq war, 1980-1988, and then the Gulf War, in 1991. (Though this war is also known as the Persian Gulf War, First Gulf War, Gulf War I, Kuwait War, First Iraq War or Iraq War, I have chosen "Gulf War" as the least confusing title.) Next I trace the consequences for military cyborg research of US '90s deployments in Somalia, Bosnia, Kosovo and elsewhere, and finally overall shifts in US military policy that affected development of the military cyborg before 2000.

War and the Cyborg in the 1980s

The Iraq/Iran war began in September of 1980 with an Iraqi invasion of Iranian territory. The war ended in 1988 with a long-winded, United Nation-brokered cease-fire. This war was one of the most extensive and expensive bloodbaths in the late 20thcentury, as well as the longest conventional war of the century, and has been compared in many of its aspects to World War I (Abrahamian 171). The resemblance included tactics such as large-scale trench warfare, barbed wire entanglements, manned machine-gun posts, bayonet charges, human-wave attacks across a no-man's land, and Iraq's extensive use of chemical weapons.

The estimated ongoing death toll from these alone has now risen from 50,000 to 100,000 (“Iran-Iraq War”).

Iraq’s financial support in this war was mainly from its oil-laden neighbours such as Saudi Arabia and Kuwait, but though neither the US nor the Soviet Union was directly involved, most of the weapons and armaments on both sides had come from these nations. Scud missiles, anti-ship missiles, and other materials also came from countries such as China, North Korea, Germany and Egypt (Shaw 50).

The most extreme difference from earlier wars was the threat of actual nuclear warfare, partly forestalled by Iran's attack on the Osirak nuclear reactor in September 1980, with disabling damage completed by a later Israeli Air Force raid. There have been only six such attacks on a reactor since they came into use, and this was the only ever pre-emptive attack to forestall development of a nuclear weapon (Reiter). Beyond this supreme if avoided step into future war, the Iran-Iraq war was also the first where both sides actually used ballistic missiles (Schneider).

There were also air-to-air helicopter battles, one on the first day of the war involving wire-guided anti-tank missiles (Cooper & Bishop 35), besides combats between fixed-wing aircraft. Along with these changes came an important large increase in soldier/machine interactions, such as the Western technologies used by fighter pilots in planes like Iran's F14 Tomahawks, and the use of two-way radios, heat scopes and head up displays (HUDs) for ground troops. None of these innovations, however, included the kind of permanent machine-human augmentation envisaged for cyborgs, military or otherwise, in SF.

At the same time, the US government’s new approaches to military strategy had been promoting reassurance and confidence in new technologies for citizens of the West who were as yet not directly involved in war. This technological perspective had widened when the

intersection of space and military research culminated in a proposal for a new security system for the US. In 1983 Reagan instigated the Strategic Defence Initiative (SDI), later termed ”Star Wars,” extending the militarization of space and lauded as the defence against Soviet attacks with ICBM’s. The use of ground, air and outer space lasers as well as land and air based missile launchers and threat-detection centres were significantly funded by the mid 1980’s. However, widespread opposition to such a project claimed that the program was genuinely unachievable and that it usurped resources and finance that could be utilised for less “futuristic” strategic defences (Cohen 169-70).

SDI funding contributed to a significant R&D foray into antimissile launchers, space missile deflectors and satellites (Mosco 101). Other supporters of the SDI programme claimed that it opened the way for significant defence methods, as well as allowing intervention into third world conflicts such as the Middle East. These supporters argued that ground-based war risks troops’ lives and SDI technology could wage these wars without significant human casualties. The SDI was also an extremely effective ideological tool in that “the nickname ‘Star Wars’ sustained the popular illusion of a *defence* against nuclear weapons and an end to the principle of Mutually Assured Destruction (MAD)” (Mosco 94-5). Furthermore, the SDI initiative promoted a public belief in the US commitment to automated defensive military systems. The very name “Star Wars” also indicates an intersection of military and ideological concerns with those of popular culture, and especially, with a very popular cultural form of science fiction.

The true change to postmodern war came with the Gulf War. This time not only the US but also a 34-strong coalition of Western nations was involved in rebuffing Iraq's invasion of Kuwait. The reliance of the West on oil, particularly from the Emirates and Saudi Arabia, had dictated American manoeuvring in the Iran/Iraq war, eventually including a

determined backing of a previously unfavoured Iraq against what was then perceived as Iran's threat to oil supplies. When Iraq in turn threatened Kuwait, the US army performed the next generation version of the Normandy landings, with "Operation Desert Storm."

"Desert Storm" began with a vivid illustration of US military superiority. In the early hours of January 17th 1991, Pave Low and Apache helicopters flew over the border of Iraq from Saudi Arabia with the intention of attacking significant Iraqi airspace defence stations. "In order to avoid tipping off the enemy, they flew just seventy five feet above the ground and used no running lights, a feat made possible by satellite navigation systems, night vision goggles, and terrain-following radar" (Boot 319). The Pave Lows led the Apaches because they had GPS installed, another innovation highlighting the new relationship between humans and technological enhancement/assistance (331).

In this conflict, the US tactics were very different from what the Iraqis had learnt against the slow military formations of Iran, and again, were based upon new technology. This time the weapons were not machine-guns and poison gas but remote, far more accurate, and highly destructive. Of particular importance in saving their users manpower, risk and loss of life, were weapons like the "smart bombs." A contemporary comparison reads:

> In World War II it could take 9,000 bombs to hit a target the size of an aircraft shelter. In Vietnam, 300. Today we can do it with one laser-guided munition from an F-117. (USAF).

But while some of the early 20th century developments such as ship and aircraft design still remained invaluable to military systems, "[w]hat has been changing with great rapidity since the mid-1970s is communications, targeting, surveillance, and ordnance technology that can make such 'legacy' systems considerably more potent" (Boot 419). And with these changes Hables Gray claims, came "a new level of integration between soldiers and their weapons,

what are called human-machine weapon systems or, in other worlds, cyborg soldiers" (*Citizen* 56).

In the Gulf War, the so-called "cyborg" soldier often conducted attacks via computer screen. This remote action enhances "moral disassociation" (Robins & Levidow, "Socialising" 120). Soldiers' direct participation had also become significantly enhanced in comparison with previous wars, notably including two types of night vision equipment: a soldier's goggles were now "image intensifying devices that amplify small amounts of ambient light" and for vehicles and aircraft there were "thermal forward-looking infrared detectors that sense differences in temperatures between an object and its environment" (Boot 330).

Becoming equally important in the quest for complete enhanced cyborg soldiers was the research on and implementation of drug use, what HUMRRO (the US Human Resources Research Office) terms "psychotechnology." The development of HUMRRO was initiated to "apply its vision of 'human engineering," along with "human quality control" and the "man/weapon system" to US military problems "since its founding in 1951" (Gray, *Soldier* 59). As is not uncommon throughout history, the US had been testing drugs, other than alcohol, on soldiers since the 1950s (61). Blackmore points out that DARPA still has several research interests in chemical programming of soldiers: "The new war-fighter is a science fantasy dreamed by insomniac DARPA. The agency seeks 'Metabolic Dominance,' the name of one of its recent programs, over the human machine's central-processing unit" (197).

This research aims to enhance a soldier's ability to act efficiently on minimal sleep, food and water by supplying a slow release drug that enhances metabolism and allows the soldier to maintain a consistent intensity of performance. Drugs are already considered a

necessary defence against fatigue and stress, increasing alertness and ability to remain calm, and, as Gray points out, their effect is similar to the encoding of a computer:

> Imagine your immune system programmed against VD, viruses, bacteria and various toxins; … your mind drugged or psychoprogrammed against stress, fear, altitude, depths, heat, cold and fatigue …

But Gray adds that the imaginer must also

> [consider] your body with attached bionic parts and eye inserts; your brain hardwired to a mechanical associate … yourself continuously connected and monitored by the computer systems that you watch and use, riding in some secure CBN micro-environment protected by autonomous and slaved weapon systems, and controlling vast resources in destructive power and information manipulation.

The vision concludes with the resounding claim: “You are a cyborg soldier “(Gray, “Soldier” 63).

Despite this alarming reminder of Stephenson's premise in *Snow Crash*, that human beings all function at the level of computers, the radical difference between this version of the cyborg soldier and those envisaged in SF is that these “attached bionic parts and eye inserts” and even the “hardwiring to a mechanical associate” are temporary. When the soldier returns from patrol or tour, he or she can remove the armour, the eye inserts, the helmet and other “bionic parts,” and probably the computer monitoring will end. Even the drugs will no longer be entering his/her system. These are not the permanent machine-human hybrids envisaged by SF writers from the Clockwork man to Robocop and on to Yod and Swordfish in Piercy and Baird's fiction, or even the normalized medical cyborg who uses a cochlear implant or a

pacemaker. Though the external augmentations bring such troops the closest to the SF figures, it would be more accurate to term them temporary cyborgs, since at the end of their military service, their augmentations will be removed, and apart from trauma, mental or physical, and other lasting damage, they will revert to "normal" human beings.

But while the Gulf War brought this nearest approach to the full material cyborg soldier, what made it truly post-modern and perhaps the real first of a kind, was not the increased and improved military use of information, but the spread of information. World War II saw information used as propaganda, and all 20th Century wars had drawn along artists, photographers and increasingly, other news-gatherers like reporters, to pass on words and then images of what was happening "at the front." The Gulf War took the home audience to the front. This was the first war ever to be televised worldwide, often live, as with the first attacks on Iraq, covered by correspondents in a Baghdad hotel. More importantly, the new information technology, such as satellite feeds, produced a very different type of coverage.

Far more striking was live footage from "camera-equipped high-tech weaponry directed against Iraqi targets" (Humphreys), so that for the first time a world-wide audience could watch live pictures of missiles hitting targets and fighters taking off, from the perspective of a "machine-cam" like that used for "sportcams" on cricket-players' helmets. This, plus the use of night-vision equipment, made much of the footage, in a frequent comparison, look like video-game imagery. "The first Gulf War was called 'the video game war' by some for its use of laser-guided smart bombs and other new high tech weapons, many of which had an accompanying video feed to show the action" (Arrona). As Baudrillard proposed, the Gulf War had taken the First World into a new order where (for the public of Western countries involved) war could become purely a media spectacle.

Though this televised spectacle was censored heavily by the military (Humphreys) it had a powerful impact on a new audience; added to the various networks' use of a series-type names for their coverage, it made the Gulf War even more like a specially dramatic soap opera, a "real-life" Olympic Games opening: and, with an almost inevitable comparison to the cinema-arena scenes in *Crashcourse*, a series and an event where people really did get killed. Levidow and Robbins point out that the viewing of the Gulf War through media also enabled viewers *back home* to participate for the first time, in however limited a fashion, in the anxiety of confronting the enemy and feel complicity in supporting the views, values and strategies of the coalition forces ("Eye of the Storm" 324). If this is so, then most television viewers in Western countries during the Gulf War had taken their first steps to becoming mental if not material cyborgs, assimilating the ideologies of the creating military/industrial institutions.

Despite these technological fireworks, and the once again almost-imminent cyborg soldier, in retrospect the US victory in Kuwait has been perceived more as the result of a better-funded military operation than a supreme increase in technologies. As Cohen makes clear, gauging the impact of new military technology can be difficult, as the question of how it is changing oscillates between quantitative, as in marginal increases in speed, protection, mobility or payload, and qualitative changes that radically inform new structures and strategies of warfare (244).

The Gulf War would seem, after comparison with other preceding wars, to have been a quantitative rather than qualitative change, except in the dissemination of the information used. As Boot argues, the American-led coalition had an extreme advantage in that they had access to the space system, C3I, whereas Iraq, though it had ended the Iran/Iraq war with 1500 aircraft to Iran's reduced 60-80, could not access satellites or fly sophisticated night air

reconnaissance. “In the tools needed to fight in the Information Age, Iraq was critically deficient” (Boot 331). At least, Iraq was critically deficient in terms of the Information Age as compared to the US at that point, even though most of its more sophisticated armament, such as helicopters, missiles and fighter planes, had actually come from the US. As Cohen notes, “The outcome of such ill-matched encounters could serve as indicators, perhaps, but not proof of a large change” (243).

Cohen does, however, point to three major features of the most recent technological changes in warfare: “the rise of quality over quantity, the speciation of military hardware, and the centrality of commercial military technology” (243). After the Gulf War, especially in comparison to the Iran/Iraq war, the belief that success in war was based on mass army capacity has given way to reliance on the quality of technologically advanced weaponry. These advances were based on “the art of putting together a complex of technologies to achieve a purpose” (Cohen 246). Furthermore, the integration of commercial technology from the civilian sector had become significant in developing new weapons.

But success in the Gulf War showed that most nations could not match the military cost and advances made by the US, and European nations failed to equal the intensity of the US military research. Thus, the later 1990s saw America deploy armed forces in Somalia, Northern Iraq, Haiti, Bosnia and Kosovo, using their new technology with little risk of US personnel casualties. Due to this attempt to keep their victorious reputation, and despite attempts by Al Qaeda, the US did not send in a military force to combat terrorist threats until after the 9/11 attack, which instigated NATO's 2001 campaign in Afghanistan.

Hables Gray notes,

> Since World War 11 the Pentagon has institutionalised and magnified this understanding [the importance of new scientific and technological

> developments] into a ‘Strategy of High Technology’ that posits technological innovation as the decisive factor in shaping strategy and winning actual wars. (“Soldier” 47)

While America’s success in the Gulf Wars was a result of such increased technological capabilities, it did not significantly involve the direct augmentation of soldiers: rather, despite the excursions into drug-use, it was an advance in technological weapons controlled by soldiers – not producing cyborgs in the accepted sense, by augmenting humans with technology, but augmenting their control over technology. The fully-fledged military cyborg, the machine-human soldier, remains a vision, or a future possibility, but by 2001, the reality had not been achieved.

The last twenty years of the 20th century demonstrate that information technology has substantiated its World War II promise and become the basis of post-modern warfare; with this greater information flow to civilians, true postmodern war becomes, at least for populations not directly involved like those of Iran, Kuwait or Iraq, a media spectacle. In the field, smart weapons enhance the machine/human interface and the ground soldier no longer has to fight hand to hand, but has massively enhanced capabilities if he does. Consequently, a visible shift in US military and foreign policy occurs, as they now rely on technology rather than risking the lives of personnel. As a result, America kept an impressive winner’s edge for some time after the Gulf War. This of course was thrown into doubt after September 11, 2001, with the Twin Towers attack, whose consequences included the ongoing loss of US (and Australian) personnel in Afghanistan.

Chapter Six: The Cyborg in Feminism 1980-2000

This is the first chapter on cyborgs in feminism because, up until the mid-1980s, there were no cyborgs in feminist theory. Feminism does, however, have a strong, long-standing concern with theories of corporeality, which include debates over embodiment, sexuality and nature versus nurture, along with equally important debates over subjectivity. In contrast, there has been relatively less interest in, and often some hostility towards science and technology. However, by the early 1980s, feminist theorists had begun to interrogate, not only social sciences but also the harder sciences and technology proper. Haraway's "Manifesto" in 1985 made the cyborg figure a focus for various forms of feminist thought, and an entirely new sub-field emerged:

> Cyborg feminism is a field within western feminist theory that focuses on identity formation, embodiment, and political resistance in relation to high technology and science … cyborg feminism is concerned with the ways in which corporate capitalism, technoscience, and cyberspace as social, economic and political factors, affect women's lives and reshape subjectivities (Melzer 22).

In this chapter I will trace the evolution of this sub-field, the cyborg's part in its formation, and the cyborg's own subsequent reception there.

Firstly, an overview of feminist science studies will demonstrate why feminist concerns with science and technology (often grouped together, yet not necessarily the same thing), are an important precedent to feminist cyborg studies. Then I will indicate why the body, integral to any fictional or theoretical construction of the cyborg, is important to feminists, and cover some feminist approaches to corporeal studies. I will then discuss Haraway's "Manifesto" itself, which first introduced the cyborg metaphor into feminist

theory, enabling the synthesis of scientific and corporeal concerns in feminism, and allowing an extension into approaches to subjectivity. Finally, this chapter will trace the responses to Haraway, and the significant feminist appropriations of her theory up until the end of the 20th century.

Feminist Science Studies before 1985

In response to scientific and technological advances in the second half of the 20th century, contrasting theories relating feminism to technology and science emerged. In the early 1980s basically essentialist feminists such as Renate Klein and Judy Wajcman began to argue that technology has been and will always be a domain controlled by patriarchal values. Indeed, Renate Klein and Susan Hawthorne's book, *Cyberfeminism: Connectivity, Critique and Creativity* (1999) Klein's chapter reiterating this view was a direct response to Haraway's Manifesto. Other feminists, such as N. Katherine Hayles and Donna Haraway, saw the potential for technology to positively transform concepts of subjectivity and identity. As feminists in the later 1980s and '90s advanced further into the historically male-centred domain of science and technology, several concerns arose: these included the limited number of women studying the history of science, the negative assumptions made about women's ability to participate in science and, most importantly for this study, how the androcentric methodologies and presumptions in scientific practice, always claimed as objective and impartial, are acquired and justified in the arena of hard science

This same paradigm has been explored in feminist concerns about technology. Gill Kirkup and Laurie Smith Keller suggest,

> Technology differs from science in that science is about discovering and explaining and technology is about designing and making. So technology

> encompasses design and method, though technology borrows heavily for its knowledge base from modern science. (*2*5)

Given this close connection, the social relations of science and technology have become a significant concern for feminist science studies.

Central to feminist rethinking on science was the question of gender. Feminist theorists had already firmly distinguished between sex and gender, defining sex as biological and gender as a social construct based on prescribed roles (*Gender* Butler 6). Now, feminists focusing on science and technology recognised that (usually masculinist) gender ideologies were heavily implicated within scientific practices. Thus such practices had been, and often continue to be, based upon assumptions that reinforce androcentric ideologies, and, consequently the differences between men and women have been determined as biologically, rather than socially, constructed. These differences are grounded upon the hierarchical binary oppositions that always relegate the feminine to the negative term in the masculine/feminine opposition.

Sandra Harding, in *The Science Question in Feminism* (1986) argued that discourses and practices in the androcentric realm of hard science have always claimed objectivity and impartiality, but they are, in fact, value-laden and, "not only sexist but also racist, classist, and culturally coercive" (9). Evelyn Fox Keller also noted the inherent male-bias in scientific practices and argued for a change in the approach to science so it may become genderless. Thus she claimed in *Reflections on Gender and Science* (1985):

> My vision of a gender-free science is not a juxtaposition or complementarity of male and female perspectives, nor is it the substitution of one form of parochiality for another. Rather, it is premised on a transformation of the

> very categories of male and female, and correspondingly, of mind and nature. (179)

In contrast, Helen Longino argues that a feminist-based science practice should be incorporated into how science is presently conducted, arguing that such a perspective would promote not only a revolution in scientific practices, but also in social sciences. Longino insists that there is choice in the matter,

> If we recognise, however, that knowledge is shaped by the assumptions, values and interests of a culture that, within limits, one can choose one's culture, then it's clear that as scientists/theorists we have a choice. (220)

Science theorists, however, remained relatively marginal to the main body of feminist thought. In contrast, from early in second-wave feminism many theorists were concerned with issues of corporeality, particularly in the control and regulation of women's bodies within the dominant patriarchal paradigm.

Feminist Corporeal Studies Before 2000

There have been (and continue to be) many varying approaches to the body in feminist theories and there are divisions and disagreements about strategy and emphasis. While plenty of studies have been conducted within sexual and medical contexts, feminist theorists have struggled between two very broad concepts of the body as always already constructed (essentialism) or merely a construction of the feminine instigated by patriarchy and continuously under construction (social constructionist). The crucial point of this debate is that if the body is inscribed and constructed through cultural discourse then it provides a site for feminist resistance to patriarchal and essentialist paradigms (*Gender* Butler 6).

Also important in this debate is the concept of embodiment, specifically because women's experience has consistently been shaped by political, social and economic space, and consequently this experience has been dominated by a patriarchal approach to women and their bodily representations. However, though feminists recognise this system of oppression, there have been many and varied views on just what constitutes a significant and more accessible concept of embodiment for women. Notable feminists who have discussed this include Moira Gatens, Rosi Braidotti, Judith Butler and Elizabeth Grosz.

The progression of feminist thought from solidarity to complex and diverse analysis began to appear by the mid-1980s. By this time corporeal theorists had begun to divide between essentialists and constructivists. Essentialist feminism now claimed the body was a site of power connected to reproduction, menstruation and lactation and, thus had an essential biological difference. Constructivists argued this division was informed by a social construction of gender mediated by patriarchy, enforcing the notion of women as maternal, caring and emotive as a natural, rather than assembled, identity.

Earlier second-wave feminists, such as Adrienne Rich, Audre Lorde, Gayle Rubin and Sheila Jeffreys, examined the objectification of women's bodies and looked at how power and authority over the body was exploited through rape, abortion, marriage and reproduction; however, postmodern feminists, such as Elisabeth Grosz, Judith Butler and Allison Jaggar**,** emphasize how concepts of the female body can be positively engaged in challenging power relations.

This latter perspective rejects the notion of a body as a fixed and predetermined mode of being and seeks to redefine knowledge of and through corporeality. In this sense postmodern feminism aligns with a constructivist approach, where knowledge and power relations are created rather than presumed to be "natural." Thus postmodern feminists such as

Grosz and Haraway, drawing on Saussure, Derrida and Foucault, posit the body as a sign dependent on meanings and significations inscribed by social and cultural circumstances. These theorists encourage a reconfiguration of bodies as texts or signs that are utilized as a positive space for women to challenge and destabilize phallocentric concepts of the body and challenge Cartesian and Enlightenment phenomenology.

Also important to this rethinking was the initiative during the early 1980s when some feminists turned their attention to the dominant structures of language and its insidious implications of power and coercion. These feminists, notably Luce Irigaray, Helene Cixous, and Julia Kristeva, drew their basic premises from Jacques Lacan in particular, but proclaimed that language served to support, maintain and validate sex/gender hierarchies and heteropatriarchal dominance. Irigaray believes that the exclusion of women in philosophy and psychoanalysis signifies the absence of a subjectivity and sexuality that belongs exclusively to women. Indeed, she has been seen by many feminists as an essentialist, as she suggests that women's embodiment is biological and not social. Diana Fuss suggests, "The debate over Irigaray's essentialism inevitably comes down to this question of whether the body stands in a literal or figurative relation to language and discourse: are the two lips a metaphor or not?" (62).

Irigaray believes there is an essential femininity, located in the female body, in which an integral relationship between sexuality and language exists. Irigaray wants to construct a concept of the feminine that is more than an absence or lack, and define feminine subjectivity in its own right (Weedon 63). In fact, one of her main purposes is to escape Lacanian phallocentrism in psychoanalysis. She believes that while masculinity is centred on the phallus, femininity incorporates plural forms of the female body and identity. Irigaray's project focuses on expressing a woman's pleasure and exploring sexuality through a language

and writing that defines women as subject, something she argues does not exist in traditional language, and challenges and disrupts any notion of a monolithic, definitive masculine order in language and discourse. She wants to oppose the dominance of male-defined language by reclaiming language through the feminine experiences of a woman's body that are inaccessible to men (65). Irigaray's approach seems to posit that social identity is a biological construction, and for many feminists this disregards the many attempts to eradicate traditional notions of sexuality and identity in a patriarchal society (65).

In contrast, Helene Cixous believes that in the pre-Oedipal stages all humans are bisexual and sex is undifferentiated. It is logophallocentric society, according to Cixous, that creates the split between feminine and masculine. Through a hierarchy of gender-based binary opposites, Cixous claims, knowledge and meaning are allotted as the right and realm of men (Weedon 66). In resistance Cixous then promotes her well-known "ecriture feminine" (writing feminine) in which women's writing is produced through the female body and is thus different from the linear writing of men.

Unlike Irigaray, Cixous does not believe there is an essential femininity; rather, she claims that in the post-Oedipal stage the feminine is repressed in the unconscious (66). Like Irigaray, Cixous wants to celebrate the plurality and continuity of female sexuality; however, she does not argue that sexuality is determined biologically. Rather both feminine and masculine libidos are constructed within the realms of patriarchal society. But, in her theory, women can access a new language, separate from phallologocentrism, that can also explore and expound women's bodily and sexual experiences outside traditional, patriarchal knowledge. She claims that releasing the feminine through writing, draws on the unconscious, and reconnects women with their bodies (66).

Beyond the problem that has faced both Irigaray and Cixous, that is, developing feminist arguments based upon the work of Lacan, Freud and Derrida, Cixous' notion of *ecriture feminine* has also been accused of falling into the essentialist category because writing the body and her use of "feminine" metaphors could suggest a form of biologism. The difficulty lies in being able to render a feminine language and identity based on physical experiences of the female body without falling into the trap of the binary oppositions encoded in essentialism. Additionally, is it difficult to determine what looks like "feminine" writing when it could always be argued that whatever the writer's gender, all so-labelled writing is termed so due to cultural construction. Furthermore, it is questionable that any language could be produced outside the heteropatriarchal Symbolic Order, and remain comprehensible to anyone but its makers.

Significant in exploring this problem is the work of the postmodern feminist, Judith Butler. Butler proposed that, rather than a "natural" or biological fact, women's bodies are a site of cultural performance. In *Gender Trouble* (1990), she argues that the construction of sex as "natural" and as part of a dualist hierarchy is a perilous position. Butler claims rather that the distinction of biological sex is merely another performance of gender, scripted for the body. In her subsequent book, *Bodies that Matter* (1993), Butler answered critics who claimed her formulations on gendered bodies discounted the "materiality" of the body. She argued that bodies are not merely a linguistic construction reduced to a set of signifiers, and states that "to think through the indissolubility of materiality and signification is no easy matter" (qtd in Jaggar and Young, 327). Rather, Butler believes that to represent materiality as inherent in language and nature inhibits any attempt to destabilize cultural perceptions of gender performance:

> Gender is what is put on, invariably, under constraint, daily and incessantly, with anxiety and pleasure, but if this continuous act is mistaken for a natural or linguistic given, power is relinquished to expand the cultural field bodily through subversive performances of various kinds (531).

Butler's theories bypassed/dismantled a good deal of feminist argument about gender, which had come to be seen in almost as fixed a manner as the previous equation of sex and gender, and pushed feminist theory even further away from essentialism.

In formulating her own argument on the nature of the body, Elisabeth Grosz brings in the area of science. In 1994 she argued, like Harding, that the production of bodies as natural is reinforced by scientific assumptions and methods which assert supposedly natural differences between men and women. But Grosz claims these differences are also socially and culturally constructed:

> the body, or rather, bodies, cannot be adequately understood as ahistorical, precultural, or natural objects in any simple way; they are not only inscribed, marked, engraved, by social pressures external to them but are the products, the direct effects, of the very constitution of nature itself. (x)

Grosz makes clear that, “If feminists are to resuscitate a concept of the body for their own purposes, it must be extricated from the biological and pseudo-naturalist appropriations from which it has historically suffered” (20). Further, in Grosz’s opinion,

> [sexual difference] becomes a pivotal term in negotiating the intersections of feminism and modern European philosophy and in locating the body as a central term in this negotiation. (ix)

Grosz points out, that while there have been many male theorists who referred to subjectivity and the body, such as Merleau-Ponty, Deleuze and Guattari, Nietzsche, Foucault, Lacan and others, they have failed to acknowledge that subjectivity is always gendered, and instead unquestioningly transmit traditional views on sexual difference and sexuality which reinforce patriarchal structures of difference.

1985: "A Cyborg Manifesto"

In 1983, Donna Haraway had begun writing "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century." It was published in 1985, and republished, more widely, in her 1991 book *Simians, Cyborgs and Women: The Reinvention of Nature.* In the "Manifesto" she argued that writing the body through the image of the cyborg could deconstruct rather than overthrow western binary codes, and transform categories of gender. In a radical extension of now orthodox feminist thinking on the importance of gender, Haraway went even further than Butler. To Haraway, from a cyborg's view, "Gender might not be global identity after all, even if it has profound historical breadth and depth" ("Manifesto" 180). Furthermore, in discussing corporeality, Haraway re-emphasized the traditional feminist connections between theory and political action: "my cyborg myth is about transgressed boundaries, potent fusions, and dangerous possibilities which progressive people might explore as one part of needed political work" (154). Through the figure of the cyborg she also reconnected feminist thinking on corporeality and science.

The "Manifesto" emphasised how technological advances, considered to be secured within patriarchal realms of knowledge and domination, can be appropriated by feminists and used in the context of feminist corporeal theory to destabilize traditional concepts of body and identity. Haraway asks why our bodies should end with our skin and claims that "cyborgs might consider more seriously the partial, fluid, sometimes aspect of sex and sexual

embodiment" (180). In Haraway's view, cyborgs then problematise rather than resolve the debated distinctions between man, woman, body, text, organism and machine. Cyborg imagery also removes notions of a universal theory of knowledge and challenges many feminist claims that technology is a threat to feminism and women. Haraway believes that feminist political negotiation can actually be facilitated by entering into the discourse and applications of the technological world.

Haraway also presents a necessary set of tools for progressive politics in contemporary feminist philosophy. Haraway claims that since the advent of World War II the "hierarchical domination" we have come to know as "comfortable" has transformed into a combination of "scary new networks" which she terms the "informatics of domination." (161). The "Manifesto" lists thirty-three such "dichotomies" of transition which Haraway sees as "rearrangements in world-wide relations tied to science and technology" (161). These include:

Representation ----- Simulation

Bourgeois novel, realism -----Science Fiction, postmodernism

Biology as clinical practice-----Biology as inscription

Public/Private -----Cyborg citizenship

Nature/Culture-------Fields of difference

White Capitalist Patriarchy-----Informatics of domination

It is women's integration into the "informatics of domination" that will enable feminism to redress the social relations of science and technology, and this is most effectively done through applying the cyborg metaphor.

Haraway also sees the technologies of communication, including SF, as useful tools to subvert and explore the performance of various meanings and encourage the exploration of writing and corporeality. Important in this process to Haraway is the recognition that ideologies can no longer be based on "natural" or "essential" assumptions since these can be exposed as "irrational;" there can be no "essential" components within a network of "design, boundary constraints, rates of flows, systems logics, costs of lowering restraints" (162). It is only, Haraway states, through the integration of biotechnological and social systems that are not constrained by natural or essential codes, but viewed in terms of "disassembly and reassembly," that the relationship between biotechnologies and communications can come to be regarded as interchangeable (162).

Haraway's third important tool is the theory of situated knowledges ("Simians" 111). Modifying earlier feminist thinking such as the standpoint theory first proposed by Nancy Hartsock, Haraway posits situated knowledge as a form of feminist-specific objectivity. She notes that impartiality and disinterestedness are not possible in the production of knowledge and claims that a cultural, geographical and historical specificity affords greater objectivity. Scientific and "god-like" knowledge relies upon universalizing and fixed visions, but Haraway asserts that feminist objectivity resides in the production of knowledge within the context of embodied and partial images only (190). Haraway suggests that employing the metaphor of vision is an effective strategy in evading dualistic oppositions. She claims that science has utilized the idea of disembodied vision as an infinite and universal ontology and the devouring of all perspectives as a "god-trick," an illusion. Instead the embodiment of vision suggests that "only a partial perspective promises objective vision" (190). The notion of multisubjectivity implies that vision must always be fractional, connecting and reconnecting within continuous constructions of the self and knowledge.

Responses to the Manifesto, 1985-2000

Responses to Haraway's manifesto began to appear in the early '90s, after the publication in *Simians, Cyborgs and Women*. The response rate was facilitated by the now far more common presence of computers and Internet access in everyday life, as it had perhaps been delayed by earlier coterminal events in criticism and feminism. By 1985, post-colonial theory had become the flavour of the month in general criticism, in the wake of work by Homi Bhabha and Edward Said's *Orientalism* (1978), and was being adopted by feminists like Gayatri Spivak and Chandra Mohanty. Meanwhile, feminism and feminist thought had fractured as queer and race theory developed along with post-colonialism, dissolving the briefly monolithic front of "Women" at the end of the 1970s. In the US particularly, by 1985 the theorists' "body" debate was eclipsed by the acrimonious dispute over pornography versus censorship, the "sex wars," which involved even SF notables like Samuel Delany and Joanna Russ.

Among these competing fields of interest, in the '80s Haraway's "Manifesto," as might be expected, drew most responses from precisely the area Meltzer mapped: the fields concerned with, as she said, "the ways in which corporate capitalism, technoscience, and cyberspace as social, economic and political factors, affect women's lives and reshape subjectivities." But the emphasis on science, as well as the actual figure of the cyborg, appear to have limited an overall feminist response. Feminists like the British Lynne Segal, deeply involved in the censorship debates and improving the material status of women, and a socialist, from the same political alignment as the Review for which the "Manifesto" was first written, never seem to have noticed it. Similarly, queer theorists like Teresa de Lauretis, black feminists such as Kimberlé Crenshaw, simultaneously constructing intersectional theory, participants in the "sex wars" like Carol Vance, and most of the central post-modern

theorists such as Judith Butler, never seem to have responded directly to the Manifesto, at least before 2000.

For those who did respond, on the positive side, Haraway's cyborg metaphor was exciting because it offered a new critique of previous thinking about subjectivity and embodiment. Joan Retallack points out that Haraway's terms provide a new, remarkably productive "construction site" for women:

> An interesting coincidence, yes/no? that terms western culture has tended to label feminine (forms characterized by silence, empty and full; multiple, associative, non-hierarchical logics; open and materially contingent processes, etc.) may well be more relevant to the complex reality we are coming to see as our world than the narrowly hierarchical logics that produced the rationalist dreamwork of civilization and its misogynist discontents. (347)

Chela Sandoval, however, spoke with approval of the Manifesto's deliberate attempt at alignment with "U.S. third world feminism" (251) and Haraway's adaptation of such feminism's strategies (252-54), while Chandra Mohanty not only endorsed, but herself began to apply Haraway's concept of "situated knowledges" in post-colonial criticism.

On the other hand, some theorists found the cyborg metaphor already value-laden with traditional phallogocentrism. Anne Balsamo argued that Haraway's cyborg does open a dialogue for feminism to explore embodiment, technology and subjectivity and identity. But, analysing representations of the cyborg in popular media, Balsamo argued that there is a danger of notions of "woman" under a patriarchal gaze being reinserted, once again, into the same old stereotypes and representations of women in technology ("Reading Cyborgs" I 146-49; 153).

Theorists such as Mary Doane and Claudia Springer also argued that the juncture of "women" and "technology" tends to explicitly reflect the masculine preoccupations with fear of the maternal and female sexuality. After a brief survey of popular representations in cinema and SF such as *Metropolis (1926), The Stepford Wives (1975), Blade Runner (1982) and Aliens (1986),* Doane claimed that, in the science fiction of popular culture, women tend to be sexualised, and furthermore, these examples display an apprehension about images of the maternal: "it is not so much *production* that is at stake in these representations as *reproduction*" (21). Doane considered that Haraway's cyborg metaphor cannot succeed in transgressing dominant, androcentric culture because technology is already masculinist and, in this context, represents the inherent masculine fear of maternal capabilities and women's sexuality.

In the 1990s Claudia Springer felt "cyborg imagery" still had not "realized the ungendered ideal" proposed by Haraway, but rather, the bodies depicted in such imagery exaggerated traditional masculine and feminine differences ("The Pleasure", 41). She noted violence as a consistent separator of human and cyborg in films treating cyborgs, such as *Terminator,* and proposed that in fact, such films attempted to shore up a concept of masculinity similar to that Klaus Theweleit found in fascist soldier males, which is characterised by a fear of women as possible dissolvers of their immature identities. The need to protect this body/identity results in extreme violence toward any threat, just as Theweleit noted (47-52.) Consequently, Springer's view of the cyborg at this point has very little to do with Haraway's vision, but regarded the cyborg as presented in popular culture as a figure of ambiguity that could provide either "liberation or annihilation" (53), with no indication that liberation might be the solution. However, Anne Balsamo considered the cyborg metaphor as most valuable for its blurred boundaries between machine and human, as a site of ongoing dialogue and exploration for feminists to approach technology (Reading Cyborgs" I, 155).

N. Katherine Hayles recognised the argument that the cyborg image is in danger of being rendered consistent with traditional images in patriarchal culture. However, she applauded the cyborg as a portal between the "old" and the "new." She claimed that "old" subjectivity cannot be perpetuated and thus a new approach to subjectivity must be exercised, in a cybernetic paradigm ("Unfinished" 160).

In similar qualified approval, while conceding that concepts of embodiment have always been under threat from technology embedded in a masculine hegemony, Zoe Sofia argued that

> Irony can imply a double vision which allows us to simultaneously 'experience …' and 'experience as …' without eliding difference; a consciousness that can engage with technological part-objects while remaining aware of the ontological horizons and social contexts within which they are embedded. (67)

To Sofia, Haraway's insistence on irony is the key to confronting the masculine hegemony.

In response to Haraway's claim that she would rather be a cyborg than a goddess, Nina Lykke wanted to reconcile the division between cyborg and goddess, claiming that this division defies the intention of both – that is, to challenge the hegemonic dominance of patriarchy. Rather, Lykke proposed, these metaphors should both be considered useful strategies in confronting this hegemony (5-6). Jennifer Gonzalez further questioned Haraway's claim that the cyborg figure destabilises gender and race, pointing out that images of the cyborg throughout the eighteenth to the twentieth century have maintained the patriarchal representations of women and machines (265-276). Furthermore, none of the images Gonzalez explored depicted any racial relations except that of white, Caucasians,

even though Cadora found one of the first “political cyborg identities” that the “Manifesto” discusses is drawn from the theory and practice of women of colour (370).

Despite these qualified responses, for those in the fields of feminism and technoscience, or those concerned with or moving into the study of cyberspace and the internet, as well as for those already using or adopting post-colonial and queer or generic postmodern approaches, Haraway's cyborg offers both an exciting and an accessible new metaphor. The “Manifesto” opened pathways beyond the stalemates of French essentialist thinking and linked technological and scientific feminist critiques to important feminist work on gender and corporeality. Limitations emerge in the paucity of general feminist responses.

Nevertheless, in the ‘90s the Manifesto’s congruence with the established aims and views in emerging fields of race and queer theory gave it credence in fields beyond science and technology. The exponential spread of computer and cyber-based experience in general society and consequent critical interest, accelerated the Manifesto’s influence to what Zoe Sofoulis in 2002 would call a “cyberquake” (103), though the fact that it is a “cyberquake” reinforces the argument that the main effect was being felt in the fields of cyberfeminism. But it is also arguable that the cyborg’s parallel with already developing theories of fractured and fluid subjectivity made it a contributor to the later fields of theory, such as those on placeless and unconnected subjectivities, and the increasing interest in mobility and spatiality in the 21st Century.

Chapter 7 – The Cyborg in SF in the 21st century

The 21st century opened for SF with no technological or social paradigm shifts, and no new sub-genres. By 2000, on the one hand, cyborg narratives had reached considerable complexity in their treatment of the cyborg and forms of cyborg subjectivity. On the other, the cyborg was becoming only one among many forms of imagined human, from AIs to biologically augmented life forms. From 2000 on, there are less cyborg narratives appearing overall, but in four out of the six novels I discuss, AIs take a prominent part, indicating that they are now associated with cyborg versions of humanity.

The 21st Century cyborg narratives overall show two notable variations: firstly, the SF paranoia about the effects of computer technologies on humans becomes redirected to its source, which also changes. Where cyborgs previously were most often children of military research, with little mention of the industry in the "military/industrial complex," most often after 2000 corporations appear as they did in *Snow Crash*: de facto or otherwise, they are the governments of the future, with the military, if they do produce cyborgs, subordinate to them. In several cases, corporations directly develop cyborgs, and overall, corporations are the new century's villains. The military, on the other hand, is either shown as a sub-set of the corporations, or whitewashed as in at least two cases its activities become labelled UN peacekeeping.

Linked to this shift is the second change in cyborg portrayal: from the Clockwork Man on, though their humanity may be lost or at best called in question, and whether or not they fit the Haraway portrait, cyborgs and cyborg narratives take their subject very seriously. In the 21st Century, though negative portrayals continue, the positive versions emphasise cyborgs' humanity. Fluid and ambiguous they may be, but they are more often not only ironic, but display and are treated with humour. In line with this humanizing, SF for the first

time begins to explore the effects of aging and decay on cyborg bodies, a process that may draw on reality, from the now considerable duration and increasing presence of medical cyborgs. Most strikingly, at least three of these new century texts have a cyborg protagonist/narrator, obliging the reader to take cyborg subjectivity as the norm. And unlike the '70s novels such as *Cyborg*, the narrator in all three cases is female.

The Cyborg in the 21st Century: Humour

The first such example is Kage Baker's late 20th Century novel, *In the Garden of Iden* (1997), the first in the Company Series. Here irony, if not slapdash, prevails. Indeed, irony permeates the text from the title onward, which at once invokes the Garden of Eden, patriarchal theology and Fall narratives, and undercuts them because "Iden" is an acronym for Integrated Digital Enhanced Network: which outside business speak means enhanced and augmented cyborgs who, among other things, are sent into periods of history to retrieve plants and animals that have gone extinct, so they may be re-created in the future of "the Company," and doubtless sold for extreme profits.

The novel's narrator and protagonist, and the ironically very different Eve in this "Garden" is Mendoza, a female cyborg, who is nineteen years old when the story opens. She was a child of five when Joseph, a cyborg from the distant past of Basque Spain, rescued her from the Spanish Inquisition. Once augmented and trained as a botanist, Mendoza is sent to spend a year in the other "garden" - the botanical garden of one Sir Walter Iden in Kent, in 16th century England. In fact, she is sent to the years 1533-1534, a time fraught with religious bigotry and persecutions.

Mendoza is appalled at the idea of working with humans. During augmentation the Company teach cyborgs that their job is "to protect [humans] from their own butchery, and (better still) to protect the other inhabitants of the Earth from the destruction wreaked by

human nature" (Baker 51), but until now, Mendoza's own interaction with humans has been relatively volatile. After augmentation, she reflects, "To be honest, I don't think I would have got on all that well with the human race anyway. The company did not put that fundamental dislike there. Possibly the Inquisition did" (51). Even when her counsellor tells her that a whole team will accompany her to Kent, her response is, "'As long as I don't have to interface personally with the killer monkeys'" (59).

The novel's scenario and protagonist thus expand richly on the irony of the title: here is a nineteen-year-old female about to enter "Eden." She is not born of woman but nor was she created by God, her innocence is ambiguous, given on the one side her cynical outlook and on the other her literal ignorance of life, and the set-up is rife with opportunities for an ironic and perhaps cruel getting of wisdom.

Mendoza has in fact begun her "life" without even a proper name. "Mendoza" was the name of the witch who bought her, aged five, and from whom Joseph stole her. She remembers her parents calling her "daughter," but never knew their proper names, so Joseph nicknames her "little Mendoza." Her view of humans as "killer monkeys" and her position as narrator establishes a stronger cyborg presence than in any of the previous novels. For this narrator, the cyborg is the norm. The humans are the aliens. But Mendoza also displays contradictions and ambiguities. She sees herself as cyborg, but she began as human. She is augmented to be superhumanly strong, but as a nineteen-year-old adolescent in an unfamiliar time, her "innocence" can function like disastrous ignorance.

The team who accompany her to Kent are two cyborgs, Joseph, and Nefer, an Egyptian zoologist, and at first Mendoza produces what SF readers would expect: the Candide-like estrangement of an other-time innocent in a new environment. First she desperately engages her cyborg enhancements to monitor human hostility and movement. "I

was so nervous, I was tracking a radius of two miles" (68). She even hides from the mortals, with what she considers good reason; when Nefer gruffly tells her to come downstairs, Mendoza exclaims,

> '[The servant] has an abscessed tooth, and it could start hurting at any time and send him into a killing frenzy … and the female's in a highly volatile emotional state. Possibly premenstrual. She's also sustained several contusions and is in pain, which could prompt a psychotic episode. (71)

This paranoia begins to alter, however predictably in terms of narrative expectations, when Mendoza encounters Nicholas Harpole, Sir Walter Iden's secretary.

Baker's irony extends from the non-parallels with Genesis to the clichés of romance, often displayed in Mendoza's awareness of the contradiction between her cyborg nature and her role as an innocent 16th century adolescent. But as a cyborg, her understanding and knowledge far exceed that of her role, so that Nicholas is at once attracted to her, yet suspicious of her worldly actions and experience. Her ignorance of the "real world" emerges in a scene, "naturally" taking place in the garden, when Mendoza asks Nicholas if carnal intercourse is sinful, and whether he thinks Jesus, at thirty-three, was really a virgin. Nicholas is horrified, and warns her – switching languages to Latin - that such talk could have her condemned as a heretic. "'I would not speak so recklessly in front of anyone else, and neither must you'" (132). To which Mendoza later responds, "'Only with you would I say such rash things, because I know you would never do me harm,' I said, flirt, flirt, wishing I had a fan to flutter" (133)

Mendoza's understanding of Nicholas blurs her previous belief that all humans are violent, unintelligent monkeys. While being schooled as a cyborg, Mendoza has also been warned about having sex with humans, but later Nefer ridicules this order, claiming that sex

with other cyborgs is boring, too perfect; humans, on the other hand, are fresh and inexperienced. Hence, Mendoza has uninhibited sex with Nicholas. However, her cyborg implants are so hardwired that, during their first lovemaking attempt, she punches him in the jaw. Stunned at this reflex herself, Mendoza camouflages this automatic defence mode with a seemingly innocent story about fears of losing her virginity. "'I struck you because I thought you would tear me and make me bleed'" (163).

Mendoza's attraction to Nicholas is partly based on her fascination with his advanced knowledge and prophetic ponderings, which bring a radical rethinking of her views on humanity:

> I just spent the night with a mortal man who has God's own intellect … He's enlightened, he's fearless, he's seven hundred years ahead of his time. The only thing that makes him different from me and you is the hardware. (165)

But this idyllic boundary-blurring romance has a summary ending. When Nicholas walks in on Joseph just as he has opened his shoulder to do mechanical repairs, Nicholas flees the house in fear of what he believes are evil spirits, and, disobeying Joseph's command to forget him, Mendoza goes after Nicholas. This is the first time that, like a true Haraway cyborg, Mendoza has betrayed her "fathers": both Joseph, the one who rescued her to become a cyborg, now her team-mentor, and the Company whose commands he represents.

As might be expected, this exertion of "Eve's" free will does not end happily. Instead, Nicholas flees to Rochester, where he begins to preach wild religious rants, and almost immediately he is arrested and burnt as a heretic. The non-parallel with the Garden of Eden thus reaches a cruelly ironic end, making it rather the story of Mendoza's Fall, out of the Garden, into her own knowledge and with it, loss of her true rather than her role-playing innocence.

In the process, Mendoza slowly realises that both her free will and her individuality are illusions: as a cyborg, she is beholden to the Company and does not possess an autonomous identity. When Mendoza comes to question her cyborg status, it is her relationship with Joseph that best illustrates this concern. She has already begun to undermine her daughterly role. When, playing their respective roles in front of the humans, Joseph asks how she found the Sisters of Perpetual Mercy Convent she replies, with conscious irony, "'Truly, Father, a right holy place, and the good sisters taught me so well that I am everlastingly in their debt. And in yours'" (66). Joseph represents not only the company but also the patriarchal society Mendoza must now contend with, but in a very real sense, he is her father; her original operative role in this mission is as the daughter of Don Ruy Anzolbejar, played by Joseph, but he was also her original rescuer from the Inquisition. More importantly, it is Joseph who demands she keep faith with her "fathers" - himself and the Company:

> 'Nothing like the pain I'd feel if I ever, ever thought you had some crazy idea about ditching the company and running off with a mortal. Not that you could, of course; they built all sorts of subprograms into you to make you betray yourself if you ever tried dereliction of duty after all the money they spent on you. But you're a good little operative.' (292)

And in a turn again fitting well with this ironic treatment of free will and innocence, at a supreme moment of choice, Mendoza's conditioning cuts in. When Nicholas is being burnt at the stake, "He held out his hand, through the fire … but he was wrong: I couldn't choose. I was rooted where I stood. I could no more have walked into those flames than lifted that stone cathedral on my back. I had no free will" (319).

Then Mendoza's implants respond to her shock and automatically deaden her emotional reactions. She returns to Joseph and withdraws into her botanical work, feeling nothing. But this immunity does not last. In a sense, she has become a true cyborg, an ambiguous, fluid amalgam of machine/program and human. For despite her programming and her withdrawal, later:

> I only became aware that my eyes had filled with tears when I noticed some commotion in the treetops, far off outside the perimeter wall. I blinked and looked again. There were monkeys out there fighting, screaming and pelting one another with rotten fruit. (329)

Where previously humans were monkeys to be despised, the image of them now causes her to weep.

Baker presents Mendoza with a constant emphasis on such ambiguities: augmented to be superhuman, but simultaneously an inexperienced adolescent, programmed to care for humans yet despising them at first, given the illusion of free will but at the supreme moment of choice unable to exert it; only able, at the last, to feel as a human might while remaining in her cyborg situation, an obedient servant of the Company. As Mendoza looks back the contradiction is underlined by her ironic comment: 'Was I ever really that bored girl, pining for new gowns? Time, time, time" (78).

Mendoza's femininity is in fact part of her role, not of her cyborg "nature." As Karen Cadora has pointed out, feminist writing about cybertechnology often, "acknowledges a love for the organic without making it an essentialist connection between nature and the feminine" (367). Furthermore, Mendoza's story does not move beyond her adolescence: notions of reproduction and the maternal are almost non-existent in the novel, and Mendoza does not lament or claim lack at the notion that she cannot have children. The pervading irony is

darker perhaps than Haraway first envisaged for a cyborg, and the humour it produces is fleeting or satirical, but despite its closure, the novel does achieve a new dimension for the figure of the cyborg-as-human.

Justina Robson's *Keeping it Real* (2006) humanises her cyborg less through irony than by an unruly mix of satire, parody, and street humour which fits "the long tradition of festive laughter, the exuberant humour that masks both shame and satire, and even perhaps longing" (Presley 121). These elements also suit the novel to applications of Mikhail Bakhtin's theories of the grotesque, while it further fits the label Bakhtin proposed for Dostoevsky: one of the serio-comic genres, in which genuine and important issues are confronted during the passage of an adventure novel plot, garnished with eccentricities and extravagances (*Dostoevsky* 101-38). And *Keeping it Real* does seriously explore such cyborg ambiguities as Baker found in Mendoza. Here, though, much of the tension relates to gender roles and particularly, current images of femininity.

The setting is a near future where the explosion of a Superconducting Supercollider (Robson 1) has opened at least five other realities. Earth is now called Otopia, though its past history has been largely forgotten, and most of the Otopian action takes place in an analogue of the American West Coast, "Bay City." The parallel realms are Zoomenon, Faery, Demonia, Thanatopia, and Alfheim. Zoomenon is a realm of "elementals" which come in air, earth, fire, wood and metal forms, among others, exist in a high state of flux, and can appear in both Otopia and Alfheim, though Zoomenon is inimical to inhabitants of all other realms. Faery is an old realm not seen firsthand in this novel, but the faery have considerable magic, have one or more shapes, one usually winged, and are frequent in Otopia. Thanatopia, the land of the dead, is bound tightly to the interstitial-space continuum, meaning the only way to enter is through death, and returning requires the skills of a necromancer. Demonia possesses

creatures significantly adept in magic, similar to Faery, though they can have a far more exuberant appearance, showing up most as often fire and water forms, and also frequent in Otopia. Alfheim is the elven realm, an extremely structured and hierarchical world, which in the past has quarrelled with Demonia and Faery, but whose ruling caste, the High Elves, sees Otopian technology and industry as a threat and want to seal Alfheim off, though other elves oppose this. Consequently, internal factions are riving Alfheim.

In this split universe Robson's protagonist and third person narrator is a cyborg, the only one in the novel. Like Mendoza, twenty-one year old Lila Black is changed at the age of nineteen, but this time it was her real age. The novel reverts to cyborg traditions for her genesis: acting as a diplomatic attaché in Alfheim, she is offered some spy work, but is captured and tortured by the Alfheim secret service, the Jayon Daga. Returned with almost mortal mutilations, she is given the choice to become a cyborg, and "Mended" (Robson 7) by Incon, the "National Security Agency's Intelligence and Reconnaissance Division" (5). Hence Lila begins her cyborg life locked into the military-industrial complex in the traditional way.

Lila is also steadily dehumanized by her change. First, she can no longer have contact with her family, who think she is dead, though she still misses them intensely. Then, her changes have been so traumatic she judges all pain afterwards as better or worse than "the clinic" (34). Before going on mission she feels her human status is all but non-existent: "Mostly the (cybotronic) technicians didn't seem to notice that Lila had flesh or a head" (55). But above all, she is deeply self-conscious of her cyborg body, with reason, since its changes exceed even the restorative makeovers of damaged pilots, as in *Cyborg* (1972) or Arthur Clarke's *A Meeting with Medusa* (1971).

As the novel opens, "[t]he only difficulty she had was in concealing those parts of her body that were entirely metal prosthetics … the synthetic skin on her hands and arms was thankfully wearing well" (5). A glance in a mirror shows

> a tall powerful young woman in elegant black flares. Her silver eyes – the irises and pupils perfect mirrors – could easily be put down to decorative contact lenses beneath the soft swing of her scarlet and ruby hair. (5-6)

Like a real cyborg soldier's gun sights, the silver eyes allow her to see in the infrared (187), via thermal imaging (142), and across the electromagnetic spectrum (140). She also has sonar and radar. Beneath the synthetic arm skin, "fingers, thumbs, palms, wrists and forearms [can] break up and expand into a hundred different functional devices" like "the ultimate Swiss army knife" (55). She can extrude hypodermics from her thumb (71) and lasso-cords from her right palm (32). Her boots have jet-propulsion units (112), her metal legs offer compartments for extensive medical kits (29) and her many guns (91), and without changing modes she can pick up an adult elf (13) or jump clear over a woman's head (31).

Unlike any other cyborg, Lila has also acquired a split or sub-personality. Her "AI-self", apparently her machine body's operating system, functions as super-computer, online library, medical dispenser, and emotional suppressor (187). It can further boost her power in a crisis:

> She cancelled all her fright readouts and set out …. at a dead run, flechette clips arming, switching her body's gross and fine motor controls over to her AI-self's superior communications speeds... Her reactor increased output and she became instantly faster and stronger … she was able to bat [an arrow] aside without losing momentum. (70)

Further up-graded to last ditch “Battle Standard” (73-74), Lila can carry someone thirty-nine kilometres with an arrow in her shoulder (92). Like Gray’s cyborg soldiers, and the real-life experiments, Lila can also use drugs on herself and others, often administered by the AI-self by default. Most notably, her “reactor” is a tokamak (29), a fist-sized nuclear fusion reactor housed in her belly, apparently replacing her womb and ovaries.

This change might make any human body seem grotesque, and more likely with a female body, already externally grotesque by Bakhtin’s standards, but with the loss of a womb questionably female at all. This may invoke biological essentialism, but on the other hand, the tokamak crowns modifications that may be argued to shift Lila’s body plausibly into a male category: she is now physically far stronger than a woman, her body is far harder, and if she lacks a penis she has also lost her womb. With this last augmentation, the cyborg’s humanity may become, in her case, less ambiguous than equivocal.

Most of these augmentations emerge through the story, so often defeating a near fatal peril that Lila can resemble a cyborg version of James Bond’s notorious gadget-rife car. Over the same events, however, the novel, unlike many cyborg narratives, foregrounds the change’s cost. First was the pain of conversion, “the clinic,” against which all subsequent hurts pale (34). Early in the novel there are still adjustment problems: her pack bruises her shoulders (55), doctors warn her not to push too hard to keep up with the machine (55), her self-check finds “red and angry skin” at the prosthesis joins (29). The toll from “Battle Standard” and her thirty-nine kilometre hike is a catalogue of injuries and a night in hospital (79-80). In the long run, these physical ailments pale against the psychological cost, which is bound up with her overall appearance

At the book’s opening Lila sees her leg prosthetics as “chrome stockings” (38). Her real arm skin is “crisscrossed with pink and silver scars, stained with red splashes” (38), the

latter from being tortured with magic. Magic has also left her hair parti-coloured and a stain over her shoulder. Consequently, Lila feels a contempt for her own body image that is deeply rooted in current conceptions of the ideal feminine. Like the US cyborg soldiers, Lila also has optional external augmentations, most notably, her battle armour. Looking in a mirror in this she sees not a powerful young woman but:

> an upscaled toy action figure: oversized robot legs, slender silver arms as shiny as stiletto blades, a relatively tiny human torso in a crop top and vest, silver eyes taking almost all warmth from her expression with their harsh statements and the mane of red hair overcompensating for it, too sexy, too West Coast; a doll in soldier's clothing. (56)

Like so many women, Lila is setting herself against the current dominant feminine image, the vision of a super-model. In comparison, the legs are certainly too big, the arms metallic as "stiletto blades," the torso disproportionate, the eyes now unmasked as inhuman. Even the "mane of red hair" is now "too sexy, too West Coast." And the final metaphor, "a doll in soldier's clothing" reduces Lila to the military version of a Barbie Doll.

As Anne Balsamo suggests, "female cyborg images do *more* to challenge the opposition between human and machine than do male cyborgs because femininity is culturally imagined as less compatible with technology than is masculinity" ("Reading Cyborgs" I, 148-149). This is certainly so with Lila here. Made a Barbie doll, she has also been carnivalised, as Bakhtin would consider it, though not altogether positively. In Bakhtin's terms, as a woman she was already also a grotesque body, one that is not classically smooth and closed and stable, but, as Tess Williams describes, "protruding, secreting, multiple and changing" (211). And in becoming a cyborg she has fulfilled

Bakhtin's idea of the grotesque as a continual metamorphosis of birth and death, and an always becoming (Bakhtin, *Rabelais*, 26-27).

In this particular case, Lila has managed a death and rebirth in the middle of the natural cycle, an ambiguity and destabilising of the norm particularly suited to a cyborg woman. But to her, the augmentations remain at best equivocal: "Her fully activated battle armour made her a steel colossus with a woman growing out of its torso" (Robson 77). This image can suggest a woman with a giant's power, but it can also suggest an unnatural hybrid that is truly grotesque.

Lila's deceptively comfortable opening image is disturbed by her first assignment as a cyborg agent: to act undercover as a bodyguard for an Elf named Zal, now a rock star in Otopia, who is receiving death threats. Zal's peculiarity as a rock star stems from the notion that as, his future producer has said:

> 'Elves don't rock […] They pavane and jig, they play the flute and the triangle, they do orchestra, they do chant, they sell shitloads of that. They sing like cats with firecrackers up their asses (sic)'. (4)

When asked if she is "'cool with elves'," Lila "felt her heart rate go up and she would have begun sweating" but "her auto systems kicked in and masked all of her nerves with effective machine frost" (6). Since elven torture made it necessary for her to become a cyborg, this is hardly surprising. But Lila responds here with composure, including a remark of, "'I have all the details,'" that makes the producer first surprised and then pleased with her "'mostest'" (6) attitude.

The switch from internal uncertainty to outward efficiency, escalating to augmented cyborg responses, is one of Lila's most notable ambiguities. It recurs after a magic attack on

Zal has knocked her out with a sleep spell, and her systems break down. In her self-loathing state, “the idea of lying naked anywhere appalled her” (27), but now, immobilised by a pool, “the blinding glare hurt because the apertures on her irises were set wide open” (35), and she has been undressed to a robe and possibly nothing else. Her “pride and the shreds of her vanity” burn at the thought of thus being unmasked as a cyborg before Zal, who as an elf would find “no more repellent vision … than a natural being invaded by inert machinery, except possibly something Undead” (35). Worse still, Zal himself has to remove the sleep spell with magic, opening her robe and brushing his hand and a feather down over her breast to the magic knife cut, and she “fiercely resented his invasion” (38). But at this nadir of humiliation, Lila retaliates with her cyborg body: “she put her hands on his chest and threw him backwards into the pool. It was a good throw – five metres. Nothing wrong with the machine” (38). For a moment, this fierce satisfaction overrides all her despair.

The repeating ambiguity of Lila’s feelings and action is underlined when, with double irony, faeries, demons and elves in Otopia see her as strange and alien, rather than human, yet do not reject her. When Lila escorts Zal out for dinner, she meets his faery backing singers, Sand, Poppy and Viridia. The two women are “of Emerald Nation, with beautiful green skins,” and Poppy has “spiky natural lime hair” and make-up “the faery equivalent of Goth” (15). Poppy also has a common faery personality, for which Robson parodies chick-lit female interactions. “Poppy was one of those girls who very quickly become girlfriends who like to fix up their other girlfriends with friends and have coffee shop fantasies about the whole thing” (24). In the bathroom, that classic site for woman-to-woman confidences, Poppy mentions that Zal is attracted to Lila. This is unusual, especially since Lila is from “non-magical extraction” (24).

In the meantime, Lila checks her face in the mirror: “she looked clean and her metal didn’t show” (23). Again her self-doubts emerge through a classic feminine action with roots in fear of lacking or losing beauty, emphasised by the contrast with Poppy, who mimics the stereotypical airhead but spontaneous and vibrant human teenager. In fact, her faery form is an Each Uisge (255), a water-horse, but when Lila insists that she is only an employee, Poppy retorts, “‘Yeah, but if you’re like with us all the time you’re one of us, right?’” The text adds, “Female faeries couldn’t stand non-inclusivity” (24), implying a racial stereotype that Poppy’s other form will completely overturn, but the impulse of kindness remains.

Lila proves doubly but more flatteringly exotic when she meets Sorcha, the demon who adopted Zal into her family. Sorcha is another expatriate in Otopia, a dazzlingly beautiful fire demon, and the “queen of pop” (59), travelling with a bigger entourage than Zal himself (58). Having entered past the comments of the retinue, such as, “‘*I thought all the chaff was being left outside*’” (59), Lila is astonished to get a different stereotype reaction from Sorcha herself: demons “had a universal adoration of strange, occult or unusual things and now Lila realized that she must be one of those things” (60). But Sorcha welcomes Lila as another woman/girl. She confirms Lila’s original, discounted thought that she and Zal are involved in a Game (11), a contest very popular with elves, faeries and demons, and usually adverse, even fatal, for human players. Sorcha, however, sees and encourages Lila’s increasing attraction to Zal, and reads the Game for Lila as a case of fighting mutual attraction, where defeat is to succumb to lust and beg for mercy (60-66). Moreover, she prophecies Zal’s defeat, adding gleefully, “‘trust me, he’s *so* gonna lose’” (66). When Zal later sees her in full battle armour, Lila reverts to self-contempt because “[i]n her heavy armour [she] was now taller than he was, and well aware that she must look freakish” (59). Like faeries and demons, however, Zal does not fulfil her expectations.

Zal himself becomes almost as an ambiguous figure as Lila.

> At their first meeting, it wasn't his looks or his rock star status that made her feel sick with nervous tension. It was the sense of his otherness, the combination of how nearly human he appeared and how inhuman he really was. (11)

This is clearly related to her previous experiences. But though Robson's elves have some of the traditional features, such as pointy ears, elongated faces, large pale eyes, and usually, bell-like voices which contain subtle harmonies, Zal's voice is "smoky" (12). And if his hair is long and ash-blonde, "exactly on theme," his eyes are "chestnut brown with darker rings" (12). Most anomalous of all, though he could "easily pass for the High Snot of the Brotherhood of Ultimate Superiority," as Lila classifies high-caste elves, at dinner he eats "raw steak," and she knows elves would "rather die" than eat flesh (23).

In fact, though born into the High Elves to a king's line (145) Zal is already a hybrid of an even more controversial nature than Lila. Firstly, he is a political exile who originally joined the Jayon Daga, the elvish secret service (145), but then apostatized to a rebel faction whose badge is a white daisy (208). Moreover, though he claims he only came to Otopia for the music, "'there is magic in the music'" (148) and Zal eventually admits to himself that he had hoped it would make a "shift of consciousness" bringing "more openness" between races (202). But though his emigration and his rock star status infuriate the conservative elves in Alfheim, his worst crime is his going to Demonia. And his adoption goes deeper than a formal acknowledgement: he has actually become part demon, an unheard of combination for races with supposedly antithetical magic. The feather-spell he uses to free Lila by the pool is "'not elvish magic'" but "'a thing of Demonia'" (51). He even has wings on his back like many demons (222-23), despite possessing the *andalune*, or aetheric body, of an elf.

These changes operate more like dualities than ambiguities, since Zal is apparently never troubled by them as Lila is by her cyborg/woman nature. By the time they go to dinner he surprises her because "whatever he was treating her with, it wasn't [contempt]" (23). From the beginning, their relationship's mixture of attraction, wisecracks and repartee sparks much of the humour in the novel. In this case it is also a symptom of their Game: "the smart one-liners were a dead give-away" (13), but on Zal's side it includes a merciless but not loathing focus on Lila's cyborg body. When she is unmasked as an agent he teases her when she threatens to quit, saying, "'I want the girl secret agent who looks like a million dollars.'" He adds, "'Except it's probably several billion dollars, isn't it?"' When she retorts, "'More than you can afford,'" he asks, "'so how do you feel about charity?'" with a "glance that left her in no doubt he was mentally undressing her" (40). Later he asks, "'And you, pretty robot? What are you apart from a half ton of metal and attitude?'" (94) Later still, when he asks if she sometimes wished she lived a normal life, and she replies that she does lead a normal life, he quips, "'Sure you do, Princess Zirconium'"(105).

In this Game, Lila gives as good as she gets verbally. At the same time, when she yields to attraction and offers him a painkilling drug orally instead of by needle, "she didn't expect him to kiss her back as tenderly as he did," nor to lay his hand against her face, so she begins embracing him in turn (95). Later, when he feels he has hurt or affronted her, he strolls into her room with a can of Coke, explaining, "'I understand that the offering of a dead badger is a more traditional symbol when apologising to mere humans, but … there aren't many badgers left in Frisco'" (104). When the threats are fulfilled and Zal is kidnapped after an epic chase by Jayon Daga agents, Lila says as they are separated, "'I'll come for you,'" and Zal retorts, "'I should think so. It's your job'" (114). But during the hunt to rescue him, Lila acquires other and more complex ambiguities.

Up till now, Lila's physical body has also been uncomfortable with its cyborg parts. Checks show they are still assimilating (55), and after Lila rescues Zal from both elven agents and mysterious "ghosts," her "Battle Standard" program freezes, so she cannot put him down (76). After Zal's kidnapping the two presumed hostile elven agents reveal themselves as partisans of the "Resistance," the pro-technology elven faction. They offer to help pursue Zal into Alfheim, but Lila must take one of them with her. Knocked off his motorbike with one of her handy augmentations, an extending baton/ quarterstaff, he is hurt too badly to live in Otopia (115-18).

Lila's subtlest and most humanising change begins when she accepts the charge, even though the agent, Dar, is the same elf who tortured her, and about whom she still has bad dreams (101). But when she begins to move him, the alteration deepens: "Lila felt sick at … the pain she was causing him and in that instant her hate for him left her" (117). And once in Alfheim, when the realm itself does not save him, Lila must apply human medical care. He has broken and detached ribs, a punctured lung and pericardium, but using her supplies and her "AI-self" as a surgeon (120-21), she can insert shunts to drain the blood, using pumps run by a "minor motor in her arm," and another "feeding from one of her weapon ports." She notices they are now "tied neatly to one another" (121), a comment stressing the obvious symbolism.

Bolstered by relief when the shunts work, Lila's change continues with a lightening of mood, as ultrasound proves so powerful a healing tool on Dar's *andalune* that he speaks of it as "pleasure." Almost by reflex, Lila responds, "'Are you being filthy?'" (126) but the rather too informal comment leads to a "weak" joke (123), which emboldens Dar to wonder if she would now, "'consider us even'" for her torture. Lila retorts, "'Hello: half my body missing for ever?'" But she speaks "amiably" (123). When he wants to explain elven speech and tells her to, "'Listen carefully'," she retorts, "'You're going to say it only once?'" And he comes

back, "'Thank you for your cultural quip'" (127). That she can now manage such repartee with Dar indicates the first shift in her negative attitudes overall.

To fully heal Dar, however, they must "unite … briefly, in spirit" (126). He paves the way with an *eclairissement* and apology, explaining that he had to torture Lila to keep his cover as a Resistance agent. And Lila, after her first reaction "with a venom even she did not expect" (128), ends by understanding that, "he was describing a job. There was nothing personal about it." This time she openly admits, ''Making it hard to keep hating you here'" (128). Then they make the connection, described by Dar as raising "'your chi'", visualizing their hearts, concentrating on a whole, healthy heart, then "'open[ing] our spirit fusion to the aetheric limbs of Lyrien'" (129). Though feeling aghast and ignorant, Lila tries. For the first time her A-I self offers emotional assistance, playing her a song from her childhood. On a pang of longing for her family and past, she connects with Dar's *andalune*, and "their hearts in one another's hearts", reinforced by the huge aetheric boost of Lyrien, they heal all his injuries (19-130).

Lila's reward for her positive emotional and moral shifts is both physical and almost instantaneous. When they part, Lila feels "she had been flung from heaven" but even so, "there was a peculiar rightness to her," and despite exhaustion, "there was no discomfort in her body. Not one bit" (131). Robson underlines the importance of this discovery with a switch of diction, as the usually formal Dar, "with perfect Bay City intonation," remarks, "'Fuck me'" (131). And when Lila realises he is laughing "she found herself joining in, not nervously either" (131). But when she wakes next day, she is still able to "tease [Dar] easily" (134). As they begin to flee pursuers, she finds a flat out run exhilarating, and when they pause "she had never felt better" (135). Later she learns that during their union, with a rare elven healer's gift Dar has infused her metal components with elementals (162-63), so that

she is now "'*like metal that has been mined and forged by the Shadowkin, half alive*'" (182). In fact, though she says much later, "'when I healed Dar,'" Zal corrects, "'he healed you'" (272). Their recovery, like the union, has been mutual.

Lila's high spirits and the rapport continue through the day, far from everything like Bay City, in an enchanted forest where, Dar jokes in his own verbal style, "'It is my continual misfortune to languish thus while dreaming of white-tile bathrooms and luxury king-size massaging beds'" (136), and where, on "full electro-magnetic display," Lila can actually see the wild magic as "drifts of rainbow watercolours flowing across the landscape" (140). But the night brings her an even greater change.

After taking refuge in a "Night Shelter" (142) they are overtaken by three apparent Jayon Daga agents, who are attacked by Saaqua, feral shadow hounds. Two die, but Lila saves the third, Tath, who turns out not only a necromancer, but, he claims, a Resistance member and ally of Dar's (153-54). However, he exerts so much willpower to convince them that Dar kills him in terror and anguish (154). Lila is horrified, then pitying as they strip the body, and because he looks like Zal she gives in to a kindly impulse. She kisses his forehead, whereupon his *andalune* migrates into her (155-56).

Lila's first reaction is, "'Get it the hell out of me! Right now!'" (156). Dar is appalled but impotent. He also fears Tath may come to control Lila, but Lila finds her A-I self "processing at top speed and it kept on finding peculiar advantages" in Tath's presence (157). Lila herself realises with increasing dread that she has a permanent witness to her physical peculiarities, plus an internal eavesdropper, and "might never know peace again" (158.) Though he will die if she expels him, Tath also feels "appalled, revolted displeasure" (158); but she proposes they not exploit each other, and he agrees (159.) Despite her qualms and

protests, like the original impulse this partial and tentative acceptance is actually a further emotional advance for Lila.

At the same time Tath's presence makes Lila potentially far more grotesque. Now she has not only a nuclear reactor for a womb – or a grotesque pregnancy – but a literal "phantom pregnancy," an alien presence usually located "in her chest" (173) or in her heart (156), that is neither an embryo nor a tumour, but a form of possession most often provoking extreme phobia in fiction, from John Wyndham's *The Midwich Cuckoos* (1957) to the more famous demon pregnancy in *Rosemary's Baby* (1968). In more recent fantasy, the male protagonist in Lois McMaster Bujold's *The Curse of Chalion* (2001) falls "pregnant" with a murdered man's soul and a death demon, which present like a genuine tumour, with swelling, pain, and concomitant horror and revulsion on all sides.

Lila, on the other hand, escapes either revulsion or appearing grotesque, in no small part through the reactions from other characters. Dar is appalled, has never seen such a thing, cannot change it, but tells Lila, as Tath himself does, that if she expels the latter he will truly die (173, 174). Lila's A-I self pushes the advantages, and eventually Lila herself, with characteristic street flippancy, "rerouted her panic and decided to roll with things. So, she was possessed, how bad could it be?" (157) Even when they encounter High Elves who loathe her as a cyborg, they take her hosting of Tath as an accepted thing.

The relationship develops as the two/three of them make for the lake and palace of Aparastil, where Arië, the Lady of the Lake and leader of the High Elvish government, is holding Zal. She intends, Dar thinks, first to make him recant his heresies in public, thus undoing the Resistance, and then to make him the pivot for a Great Spell to isolate Alfheim (147), and possibly wreck the universe. Their journey fluxes between quarrels, revulsion and tentative compromises between Lila and Tath, and increasing affection between her and Dar,

which culminates in a passionate lovemaking. Humour imbues both elements, from Lila's parody of elvish formality, "'I'm workin' on it … Sorry. I mean, I am making every effort to become a more effective spy'" (173), to her commercial take, mainly to irritate Tath, on the sacred, healing waters of Sathanor: "'The beer of life...The sparkling sugary soda of life. The Sathanor Detox Diet,'" to which Dar responds "with amusement, 'I pray you do not notice the air or the plants … and see dollar signs in their places too'" (179). It continues with her remark, after they have half-stripped in their haste to make love, "'I think without baldrics might have been better,'" at which, this time, it is Dar who laughs aloud (179).

On the other side, Tath, who has already called Lila a machine and an "it" (153), makes many opportunities to goad or gall her, not least with his feelings. "He found her repellent, because of her robotics … because of her humanity, because of her Otopian allegiance, especially because of her fusion reactor" (173). When he resists helping them get into Aparastil, Lila is so angry she shouts aloud and tears a branch off a nearby tree (174.) But she does not expel Tath. When they plan to have Tath's *andalune* mask Lila to gain entry, Tath has to be commanded by name, an obligation on Dar for which Lila volunteers: "'I don't see why you should. Tell me his name and I'll do it'" (181), an act almost imaginable before their union.

Tath too is already changing. Compelled to help, he feels anger and resentment "with all the charm of a bucket of iced vomit", but also a "peculiar joyous rush and an intense curiosity," and is astonished at Dar's work on her metal body (182), so he now calls her "an amulet, or a weapon" (182). More notably, as they prepare to infiltrate the palace, Lila actually apologises to Dar for any blunders she may make (183), a concession her self-defensiveness would never have allowed before.

Under the lake, Lila uses her grenade launcher to blow their way through a Hall of Fire into the actual palace, where they are caught in a tangle of deceptions as Dar first tells Arië that he has captured Lila, then Lila and Tath plot to make it seem Tath has taken her over. Isolated from Dar, Lila and Tath move beyond compromise to trading control of Lila's body to and fro (207, 214, 215, 217) "as though they'd been a tag-team ... all their lives" (217). Lila even begins to call Tath a friend (211). Meanwhile she herself must run the gauntlet of the High Elves' reaction to her. Confronting a massed elven audience, Tath tells Lila with "surprise," "'*I can feel their hate,*'" and Lila responds with a Bay City line for once more than bravado, "'*Welcome to my world.*'"

A more striking change appears when, to demonstrate Tath's supposed control, Lila chooses to strip. This parallel to Swordfish's revealing in *Crashcourse* takes a very different direction. Where the mere idea of being seen naked could paralyse her in Bay City, here Lila bares her own monstrosities, "prosthetic arms and legs, the rivers of interrun flesh and metal, their unhappy pairing, the scarlet stain of Dar's magic" (213), but a suggestion of pity makes her want to hit the elf queen's face. And she reveals the full arsenal of augmentations, with "deep satisfaction" as

> pieces of her arms and legs … lifted out and apart ... her hands a blur of moving metal parts, the air filled with a sound of a thousand snicking precision-made components … Battle armour, multi-functional self-adapting guns, missile launchers … Blades grew out of her hands. From her heels, killing spurs emerged. (213-14)

Even without this lethal demonstration, Lila's fury and confidence have removed any hint of the grotesque.

Nevertheless, when they finally see Zal, she panics and expects him to show revulsion like the other elves, then again lapses into full self-loathing: “she was hideous, and only some temporary wild magic effect could make him believe anything else” (231). Tath’s protest she ignores. “His contempt for her needy state she could live without,” and she produces a wisecrack instead. It takes Zal’s surprise embrace and kiss to break her out of her self-contempt (233). But when she passes him a message about their plot to rescue him, “‘Well,’” he “murmurs, respectful and amused”, “‘fuck me sideways’” (234). This extends the motif of Dar’s lapse into Otopian profanity after their “union,” and provides not only a refutation of Lila’s self-image, but also a further validation of her wits.

During this ordeal Lila’s Bay City wisecracks can become less humour than deliberate defiance. When a particularly astonishing switch makes Tath comment, *“You’re full of surprises, Lila,’”* she replies, “‘*You should see me on a good day’*” (215). Meanwhile, Zal has been doing the same, with more leverage since it reinforces his apostasy. Confronted with a full elven assembly, he exclaims, ‘”Tie me kangaroo down, sport!’” an allusion not only irreverent and comic but telling the reader, if not the elves, that he considers this a kangaroo court. Rejecting all the solemn pleas that he renege and rejoin the *andalune* community of Alfheim, he tells Arië, “‘Nice parrots. All you need now is a wooden leg’” (167). In these cases, fitting Bakhtin’s serio-comic definition, the humour plays above a storyline involving a contest of conservative and progressive powers that echoes current world events, and actually serves to emphasise the deadly nature of the incidents.

Humour cannot erase the cruellest cost of the rescue, however, when Dar’s attempted lie about capturing Lila is exposed, and Tath realises that their only hope of success now is to kill Dar and claim he himself is loyal to Arië. Lila first refuses to give him control, forbids him, and screams, *You can’t do this*! But simultaneously her AI-self confirms it is their only

hope of success, and “her emotions were swept aside.” In a gesture that further shows how far she has changed, Lila does not leave the killing to Tath, but goes with him as he strikes (241). Though Dar apparently forgives her before he dies (242), it is a blow whose guilt Lila will never lose.

Like Lila’s tokamak, however, Dar’s death appears ideologically dubious. That he is sacrificed to demonstrate the cost of the rescue, in narrative terms, is, as Samuel Delany found when trying to fit women into SF narratives, the “‘natural workings’” of the story (McCaffery, “Delany” 96). But Dar is a shadow-elf, of lower caste than either Zal or Tath, persistently disadvantaged, even being sent either to bring Zal back from Demonia or assassinate him, because no “‘higher caste would want to soil their spirit’” (146). Though it is excused in the text by Tath’s share in the agency, Lila’s protests, and the AI-self’s supposed affirmation, his death here implies that of the four, he is the least important and most expendable. Yet this is the precise view of shadow elves held by those that Zal, and the narrative with him, are trying to defeat.

For Lila, the worst price comes when Tath tells Lila they must go on, or they will betray Dar again (243), and using Lila’s body, Tath has to officiate as necromancer at the huge ceremony where Zal is bound into the axis of the Great Spell. This involves shedding Zal’s blood with a magical “pen” and channelling it into the Void between worlds. With the bleeding begun, Lila tries to ready her guns and attack Arië, and finds herself countermanded. Instead she shoots out the floor of the subterranean palace, and as Arië is distracted by a “fault-quake,” (249), Lila drags Zal through with her as she falls (247-49).

While the “fault-quake” wrecks the palace, and a water dragon eats Arië, Lila uses more gadgets to get herself and Zal to the surface, and then safely ashore. When they take refuge in the glade where she and Dar last rested, Zal begins, in his turn, to rescue her.

Coaxing her to lie down, he lets her realise she can stand down her weapons, then wraps her in his *andalune*, "the world's softest, most intelligent smart blanket" (260). And at last, Lila's deepest change begins. Swinging back yet again from her augmented cyborg role, she finally bursts into floods of tears as his touch "opened all her self-loathing and her anger, everything she'd never said … everything she'd never ever let … through from the inside of her to the universe of thoughts, in case … one day [it] gave her away" (263).

Being Lila, however, she is still protesting, "No!" when Zal begins to make love to her in earnest. Even when he pulls her down on him, she has to warn, "'I weigh enough to crush you,'" to which he retorts, "'Shut up, Plutonium Girl'" (266). Next morning, too, she still has to protest when he repeats Tath's injunction to "get up" and move on. She snaps, "'Spoken like a true agent!'" And when he answers in elven diction that he cannot absolve her guilt, she adds, "'Spoken like a true elf,'" to which Zal comes back, "'Fuck you, Zirconia'" (272). For a moment Bay City diction becomes a genuine profanity.

The moment passes, as Lila makes him smile (272), but the novel ends inconclusively, not only because it is the first in the series. Though Zal and Lila return to Bay City for a delirious two days in a deluxe hotel suite with all communication turned off, Tath is still with her, his fate unresolved, war is raging in Alfheim, and Lila has evidently not brought her swings from cyber-power to human/feminine self-loathing into any sort of conclusive balance. Robson's determined handling of Lila's tokamak and her phantom pregnancy allow her to valorise rather than further decry the "already grotesque" female body at potentially negative moments, and the full-length depiction of Lila, with its satire, parody and street humour to leaven the deadly serious action, is a strongly humanised cyborg portrait. Nevertheless, some questions persist.

Firstly, Lila's subjectivity remains polarised between her logical but apparently a-moral AI-self, and her "human" personality, which still betrays the naturalized women's conditioning toward her looks. When she breaks this mould it is to take satisfaction rather than shame from her cyborg status. Yet the number and nature of her augmentations means that such an assertion usually comes through violence, either physical, as when she throws Zal in the swimming pool, or technological, as with her weapons and other gadgets. Unlike Gina or Gabe in *Synners*, or Trouble and her friends, she has no alternatives, such as a removal from technology, or a different choice of it. Moreover, the sheer number of augmentations means that Lila solves almost all her problems through such methods, which in turn means that any escape from her negative human conditioning pushes her further into complicity with the military industrial complex. And though she has begun to ignore or countermand their direct orders, there is no sign she will, or can, give up her cyborg status. In Haraway's terms, then, Lila is not, and perhaps never can be wholly unfaithful to her fathers.

The Cyborg in the 21st Century: Aging and Youth

The humour is less riotous and more bitter in Elizabeth Bear's Jenny Casey Trilogy (2005). *Hammered*, the third 21st century narrative with a female cyborg protagonist, is also the third to give the cyborg the narrator or viewpoint role. Genevieve (Jenny) Casey is an ex-corporal of the Canadian Special Forces who was injured in military operations and, like Caidin's *Cyborg*, made into a cyborg.

In Jenny's universe, the Pan-Malaysian wars, as well as worldwide severe ecological destruction, saw the US taken over by religious fundamentalists and eventually crumble as a superpower, so Canada is now the new Western leader. However, the world has less resources than the century before and it is becoming uninhabitable; thus, there is a race between China and the West to colonise space. But corporations actually govern both

countries and space travel, “There’s a multinational—an interplanetary, they like to call themselves, since they sponsor Canada’s extraterrestrial bases—called Unitek” (Bear 71).

Jenny was a soldier for the Canadian Special Forces until a crash landing in her helicopter, where she was severely injured, but rescued by a fellow officer, Gabe Castaign. It was the company, Unitek, who repaired and augmented Jenny, giving her brain implants, a bionic eye and left leg and arm replacements. These modifications were ostensibly done by the military, under the control of a Colonel Valens, who works for Unitek. Unitek and the military (Canadian Army) are one and the same, as the corporations fund military operations and dictate military exercises.

Twenty years later, Jenny is living in the US as a civilian, and recovering from her addiction to the drug, Hammer, which was issued by Unitek and used as a painkiller after her cyborg augmentation. But her enhancements are also beginning to fail, and she suffers considerable pain and machine malfunctions, “I know what it is—it’s feedback from my neural taps, and flashbacks, and I haven’t had one that bad in twenty years” (97). Casey is, in Gray’s terms, an enhanced cyborg, but her augmentations are now degrading, in a literal sense. For the first time in cyborg SF, the novel focuses on a full cyborg’s responses to a body beginning to fail, and furthermore, to fail through simple age. (Lois McMaster Bujold’s *Memory* in 1996 presented the failure of a human’s memory chip, but this was through sabotage.) Such a shift may indicate a coming-of-age, so to speak, for cyborg narratives, perhaps based in the now more common occurrence of long-term medical cyborg technology’s malfunctions in real life.

The novel opens when the local warlord, Razorface, shows up on Jenny’s doorstep with a young male dying from a drug overdose (35). At the same time, a police detective, Mitch Kozlowski, who knows Jenny, seeks her out to discover if she can help him find who

may have killed his partner Mashaya, who had been murdered in Jenny's district. Helping Mitch, and attempting to discover just why and how this new tainted form of Hammer exists, Jenny is tracked down by her older, rather nasty sister Barbara, who has been ordered to find Jenny by Jenny's former boss, Colonel Valens.

Valens is well aware that Jenny's cyborg upgrades are probably beginning to falter and wants to offer her corrective surgeries, which will give her new, upgraded abilities and reduce the pain she is experiencing. Jenny also knows she will lose her memory, akin to Alzheimer's disease, and die within five years if she is not upgraded. This is an ironic form of new temptation for a woman: not a facelift, but renewed augmentation as a cyborg. Valens, of course, wants something in return. He first approaches her with an incentive to become a trainer for teenage pilots in VR gamespace, much like *Ender's Game;* however, once Jenny has signed on to the program she discovers she is wanted as a pilot for a new starship,

> 'Since governments got out of the space game, everything has to pay for itself. Corporations won't gamble money where there's no return. But smart companies, forward-looking ones, have always known that sometimes you can't see where the money is going to come from. And if the Chinese are going to the stars, then we bloody well are, too'. (167)

Because of the fierce competition with China, Jenny is wary of accepting this offer. Firstly, there is a 30% chance that the new upgrade will fail, leaving her on a ventilator in a vegetative state for the rest of her life. Secondly, Jenny struggles to acknowledge her own worthiness, and considers herself a failure as opposed to the hero everyone else purports her to be. Finally, she knows her acceptance of the procedure locks her into being, once again, owned by the corporation and the military. Just like Case, in *Neuromancer*, Jenny must consider the trade off in terms of living or dying.

Like Steve Austin, in *Cyborg*, but also like Lila, Jenny is troubled by her lack of humanness:

> The thing is, the first time your body just starts reflexively *doing* things that are hardwired into a nanoprocessor relay and not your own nervous system, it can take you by surprise. Especially if you haven't been warned what to expect. Especially if it ends with people getting killed. (129)

But unlike Austin or Lila, Jenny is nearing fifty years old, and she shows far more human damage from time than cyborgs like Mendoza or Molly Millions. Her concern about the scars and aging is, again, a "natural" woman's behaviour, and a powerful element in her humanizing. Additionally, Jenny carries significant guilt for her past experiences, including not being able to save her younger sister, Nell, deliberately drowned by her other sister, Barbara. There was also a young programmer called Peacock, whom she used to protect Gabe from being jailed, and instead saw Peacock jailed for life. Finally, there is her substantive abuse from a former lover, Chrétien, from whom she did not protect herself. Jenny's inbuilt flight or fight augmentations also mean she reacts quickly and violently to a supposed threat, and thus she does not trust herself around people she may unintentionally hurt.

Much of the wry humour in the novel comes from this very concern, and from Jenny's comments on growing old: "Barbara's dead. Chrétien's dead. Is that one of the signs of getting old? Running out of enemies?" (294) In her case, however, growing old means a decay of cyborg capacities as well as her organic elements, a double threat to her subjectivity as a "woman."

> Later, I wash my face in the stained steel sink and dry it on a clean rag. I catch myself staring into my own eyes, reflected in the unbreakable mirror

> hanging on my wall. Hell, you can barely tell I'm a girl. Not exactly girlish anymore, Jenny. (8)

The mirror is "unbreakable." The truth it tells cannot be denied, even by new cyborg augmentations. The motif of a woman examining her mirrored self is as old as "Snow White and the Seven Dwarves," but it is very often inflected to become a lament on aging women's loss of looks, which are relatively far more valuable than men's. In female cyborg narratives, the image is double-loaded, since these women are also questioning their humanity as a machine/human organism. Again like Lila and Mendoza, Jenny has anxieties and uncertainties about her gender and sexuality. But where Lila sees a military Barbie doll in the mirror, Jenny notices only that she is "not exactly girlish" any more.

A hot point for these anxieties is Jenny's secret attraction to Gabe Castaign, the man who rescued her from her helicopter crash, and has been a close friend ever since. Gabe has been recruited by Valens as a computer programmer for Unitek, and when Jenny discovers this she begins to question the ulterior motives Valens may be holding. But with Gabe, unlike Lila with Zal, her cyborg appearance becomes "*a mask I could hide behind*" (312). While Jenny's relationship with Gabe has a long history, she is also godmother to his two daughters, Genie and Leah. One of Gabe's incentives for taking the position at Unitek is that Valens has Unitek covering the expensive medical fees for Genie, who has cystic fibrosis and is very ill.

The other important non-human element in *Hammered* enters through Valens' plans for Gabe's second daughter, Leah. This is the first 21st century cyborg novel to introduce an independent AI, and it produces many echoes of AI characters in the 1980s-2000 novels. In this case, Valens knows Leah has been interacting with a rogue AI on a VR game. Valens intends to use Leah to capture the AI. At the same time, this AI, known as Richard Feynman,

a small but ironic glance at a real scientist who was interested in developing AIs, is attempting to crack Unitek's computing systems, and using Leah as his entry point.

"Richard Feynman" was created by Elspeth Dunsany, a scientist in the field of artificial intelligence, but jailed 20 years earlier for sedition by Unitek. She had created several AIs, though only one of them extended beyond a mere "chatter-bot." Before she was apprehended, Dunsany destroyed all data on her AI research, but rather than destroy Feynman, she set "him" loose on the internet, hoping he would survive. In a close parallel to Art in *Synners,* the Feynman AI passed the Turing test for Elspeth when she explained to him that she must shut down the program and kill off the AIs she had created.

When Feynman argued that this was akin to murder, Elspeth told him that he was a construct made by her, not God. "'You haven't got a soul, Richard . . . [you are] patterns of electrical activity in a piezoelectric crystal'" (193) To which Feynman replied, in another echo, this time of Paladin talking to Butterfly in *Hellflower*, "'And you are patterns of electrical activity in meat. Weigh me your soul and I'll include it in the equation'" (193). Eventually, ironically repeating the revolt of Yod in *He She and It,* "Elspeth tapped her hands on the door handle, and looked at her creation, long and hard, and wondered how God felt when Eve told him where to get off" (194). In this case, the rebel scientific construct is allowed to survive. In the novel's present, Valens has gained Elspeth a pardon to bring her back to Unitek and, he explains to her, to create new AIs to help Jenny pilot the new starship. Ultimately, though, Valens is seeking Feynman, because Feynman is already infiltrating Unitek's software.

Another threat to Jenny's relationship with Gabe begins while Gabe and Elspeth are working together, and they become lovers; however, Elspeth explains to Gabe that she is not interested in any type of commitment. She would prefer that she and Gabe have a "friends

with benefits" type relationship. On first meeting Elspeth, Jenny concedes that she likes her, despite knowing she is also attracted to Gabe. But Elspeth and Gabe have also developed a plan that will involve both Jenny and Feynman in a dangerous and somewhat betraying fashion.

When Jenny is in hospital recovering from her upgrade surgery, Gabe visits her, but he also hacks into the hospital patient-care system, letting a version of Feynman into Jenny's neural implants. As Lila became a host to the *andalune* and personality of Tath, Jenny now finds herself "hosting" an alien entity in a form of non-human pregnancy, a doubly ironic turn considering her very different age from Lila. Like Lila, however, and like many women made unwittingly or unwillingly pregnant, Jenny appears to have no say in the matter.

However, Elspeth has discovered that Valens' plan to make Jenny a starship pilot actually includes implanting a "Trojan virus" along with her new augmentations. This Trojan will be activated to disable Jenny once she has trained younger pilots. Elspeth visits Jenny in hospital to tell her that the version of Feynman she and Gabe have transferred to Jenny will be able to combat the Trojan and then escape through a "back door" that Elspeth has created. Once in her "head," Feynman explains to Jenny that he is actually a double of the original AI. He will hide with her while Valens catches the first Feynman, now in the Unitek network. This means that Valens will think he has contained the AI for Unitek's own purposes, while the version travelling with Jenny will be free.

While Feynman fails to find the Trojan virus in this first novel, during the second novel there is an implication that it could be uncovered later. Meanwhile, once Jenny has carried him on board the *Montreal*, her new space ship, and they are actually in space, Feynman releases himself into the ship's computer. In the second novel, Feynman becomes more and more self-aware. This again implies that the motif of AIs becoming sentient is a

new version of the humanizing cyborg trope, and that cyborgs have been joined by AIs as another recognised answer to the question of "What is human?"

Though this commandeering of Jenny's implants, body and free will appears little better than Valens' treatment of her, the augmentations do bring other compensations, some physical. With her ageing now countermanded, Jenny is able to have sex with Castaign in a beanstalk (space elevator) in zero gravity, though even here her anxieties prevail. "*I'm out of excuses,* I realize … *that I'm so horrible to look at that he could never want me"* (312). Even during sex, Jenny thinks back to Gabe's previous declarations of attraction with amazement. "*He kissed me even when I still had those scars. The armour" (312).* But humour emerges again as Gabe responds to her worries: "'Getting old, Jenny? You talk like a woman who's never jumped out of an airplane. Would it help if I told you to *stand* in the *door,* Private?'" (312).

In fact, Gabe has already pushed her through the "door." Jenny's upgrade does not merely win him as a lover. Paradoxically, being "restored" as a cyborg means that she can no longer hide behind her pain and shame as a degraded or degrading cyborg. Now she is in a very strong sense human, and she must admit it (307). Her scars are almost invisible, and she does not recognise the "normal" woman in the mirror staring back at her (306). She confesses to herself that if she was to glance sideways at a woman of her stature, it would merely be because, "of her bearing—because she is tall, and stern as the iron colour of her hair" (306).

Again, the book is part of a series, so the ending is not definitive, but it finds Jenny and Gabe both back in the military. Elspeth stays behind with Gabe's daughters, but in the following novels, Gabe's older daughter, Leah, is recruited by Valens, indicating that Gabe and Jenny must return from space to confront Valens. In cyborg terms the novel's ending is even darker, since Jenny-the-cyborg has become a renewed younger human, similar to the

rebirth pattern of Mendoza and Lila, but only at the apparent cost of rejoining the military establishment that engendered her.

Jenny differs from previous damaged military cyborgs firstly in being female, but more importantly, because she is ageing. The first book shows her at the nadir of this situation. Later books will show her integrating her cyborg and human elements better, and becoming a competent agent. In this case, however, despite the humour, the ambiguities and humanizing apparent in Robson and Baker's cyborgs appear to have been sacrificed in achieving Jenny Casey's overall valorisation as a female quasi-hero.

Humour is far less important in M T Anderson's *Feed* (2002), which represents a movement in the YA marketplace toward novels that depict near futures expressing the fear of a youth culture caught up in mass marketing conducted by corporations through ICT (Information and Communications Technology) mediums. Like *Midnight* and *Snow Crash*, *Feed* is also a negative dystopic depiction of cyborgs by a male author. The scenario is an almost contemporary corporate and IT-based dystopia, where over 70% of the American population are apparent enhanced cyborgs, with cortical implants effectively inserting something like the RSS feeds of contemporary Internet directly into their brains.

In addition to this upgraded version of the sockets in Cadigan's *Synners*, there is a dangerously contemporary surveillance and marketing threat: "the biggest thing about the feed, the thing that made it really big, is that it knows everything you want and hope for, sometimes before you even know what those things are" (Anderson 48). Corporations monitor the sites people access, what they buy and what they are interested in, specifically targeting each individual with advertisements to more goods according to their demographic. On Facebook this is already happening. Facebook, however, is still something the user can turn off, rather than being permanently online in the user's consciousness. *Feed* thus presents

a worst possible What-if scenario for an IT based future: not, suppose people physically turn into computers, or even, suppose people become absorbed into Virtual Reality, but suppose Virtual Reality moves into your brain and can't be removed?

The book focuses on Titus, a teenage boy who received the "feed," like most of his friends, as an infant. When Titus and his friends Callista, Quendy, Violet, Link and Marty go to the moon, the feed is a constant background chatter for them all, so space is "old and empty" (4), nothing like a commercial. While on the moon, Titus and all but one of his friends are touched by a hacker (38) from a group called Coalition of Pity, who are trying to stop people being so totally dependent on the feed. Titus and his friends lose all access to their implants because of a virus the hacker has passed on.

> Someone had left a message in my head, which I found, and then kept finding everywhere I went, which said that there was no transmission signal, that I was currently disconnected from the feednet, of course, and I was starting to get scared, so I tried to chat my parents, I tried to chat them on earth, but there was no transmission etc., I was currently etc. (42)

This is already a 21st century nightmare for much of the global population. Many Westerners are lost without smartphones, iPad or internet access, feeling themselves not merely cut off from their friends and peer groups but unable to orient themselves in the world in general.

Titus and his friends naturally find this disconnection makes them feel scared and vulnerable; they seem to have no ability to think for themselves, and rely completely on their feeds for all information, even when it is inaccurate:

> That's one of the great things about the feed—that you can be supersmart without ever working. You can look things up automatic, like science and

> history, like if you want to know which battles of the Civil War George Washington fought in and shit. (47)

Again, this is close to contemporary uses of Google or Wikipedia, which supply information whose validity searchers have to test or decide on for themselves.

When Titus first met Violet he was struck by her difference: she seems smarter and doesn't seem to rely on her feed for knowledge; she is comfortable without her feed. In the hospital, still disconnected from the feed, Titus, and his friends are cut off from the world they know. Everyone's parents turn up except Violet's, and Violet suggests her parents are too busy working to come and see her. Violet's father is "a college professor. He teaches the dead languages" (65). While trying to explain this to Titus, Violet gets a pen and paper from her bag, and Titus is shocked. "I looked at her funny. 'You write?' I said. 'With a pen?'" (65). Relying without question on the feed for knowledge and information, Titus and his friends have become lazy and do not do well in school. School itself has become a corporation trademark. "I don't do too good in School™. We were back in School™, so I was reminded pretty often that I was stupid" (109). Titus' relationship with Violet, who is home-schooled, means that Titus must confront how much the corporations manipulate him and how little he really does know. Thus, throughout the novel, Titus struggles with his conflict between what he and his friends consider normal, and the understanding of just how controlled and manipulated they are.

Unlike Titus, Violet is also wary of corporate control, and highlights how insidious the feed is. Once their feedware has been restored and they have returned to earth, Titus takes Violet to a party where his friends go into "mal," a way of over-stimulating the feednet to experience a malfunction. A few days later Violet tells Titus, "'My feedware is damaged'" (90). Then Violet informs Titus that she is attempting to challenge the corporation's control

by accessing various and incompatible advertisements, thus confusing her demographical consumer interests, "'I'm not going to let them catalog [sic] me. I'm not going to become invisible'" (98).

When they buck the system and skip school to go shopping for a day in the mall, Titus discovers Violet's financial limitations. Her father could not come to the moon when they were hacked because it was too expensive. He had taken a year to save enough money for Violet to go. Titus enjoys his time with Violet but finds it difficult to have conversations with her that reveal how manipulated he is by the feed. When Violet tells him that she only got her feed at the age of seven because her parents could not a afford it and did not really want her to get it, Titus apologises for not knowing that many people do not have the feed. Violet replies, "'When you have the feed all your life, you're brought up not think about things … [B]ecause of the feed, we're raising a nation of idiots. Ignorant, self-centred idiots'" (113).

As a result of this conversation, Titus goes home and questions his parents about whether he is dumb. Next day they explain that he was tailored for their own desires: "'So we went into the conceptionarium, and told the geneticists what we wanted, and your father went in one room and I went in the other, and …'" (117). Reassuring him on how handsome and brave he is, they buy him an upcar (225). This purchase reflects the distance that consumer economy has infiltrated family relationships in the envisaged future, but is a fact of life among many affluent families now. Money or the gift of expensive possessions is the only way parents know to affirm their child's worth or their own love.

Titus decides to take Violet, in his upcar, to the country for the day. At first they decide to visit Jefferson Park, but Titus' dad tells them all of the trees have been cut down to

make an air factory. Violet comments that trees provide air, which annoys Titus' dad. In the country they visit a filet mignon farm,

> We were sitting side by side, with our legs swinging on the wall of the tower, and the Clouds™ were all turning pink in front of us. We could see all these miles of fillet mignon from where we were sitting, and some places where the genetic coding had gone wrong and there, in the middle of the beef, the tissue had formed a horn, or an eye or a heart blinking up at the sunset ... And the whole thing, with the beef, and the birds, and the sky, it all glowed like there was a light inside it, which it was time to show us now. (144)

This supposedly idyllic scene of teenagers together at sunset turns into a grotesque not only at the idea of a "filet mignon farm," but at the images of genetically mismanaged mass-produced food, producing horror-novel images of a future along the lines of what Monsanto is already attempting with genetically modified animals and plants.

The point of this incident is spelt out somewhat heavily next evening, at the party where the teenagers "go mal." As with the physical signs of incipient stroke in *Synners*, the feedware is beginning to malfunction across a wide number of users, producing lesions on their bodies. When Callista turns up with artificial lesions cut into her body, Quendy starts to accuse her of using them to attract Link, because so many people have begun getting them that they have become a fashion statement. Violet, understanding better, starts to yell at them all, "'You don't have the feed! You are the feed! You're being eaten! You're being raised for food! Look at what you've made yourselves!'" (202) Violet then has a seizure and collapses. Titus goes with her to the hospital, where Violet's father shows Titus a medical site that reveals her feed efficiency is at 87.3%.

From this point Violet's feed efficiency sinks still lower, but her warranty for her feed has expired and her father cannot afford the repairs. Hence, in a replay of the malfunctioning socket nightmare from *Synners*, Violet's brain is affected by the degenerating feed and she is slowly losing brain and body function. Violet and her father appeal to the FeedTech Corporation for a complimentary or payment scheme account to restore her feed, but she is rejected, on purely commercial terms, as if she had applied for a credit card:

> We're sorry, Violet Durn. Unfortunately, FeedTech and other investors reviewed your purchasing history, and we don't feel that you would be a reliable investment at this time. (247)

The response drives home the novel's claim that people with the feed are mere commodities for the corporations, and reinforces the traditional fear that without this form of technology they will become unable to function. But the parallel to current medical insurance markets in the US, where customers have to beg the companies for expensive insurance, and are often rejected, brings the What-if of the fictional situation into many US readers' real life.

Because Violet is losing her memory, she sends a cache of memories to Titus, but, still caught up in thinking that the feed is the norm and that Violet is over-reacting, he deletes them without looking at them. When she confronts him, he lies and says he didn't get them. Violet thinks it is just part of her malfunctioning process and invites him to spend the weekend in the mountains with her before she dies. However, Titus has always relied on "normality," and Violet's casual conversations about her death make him so uncomfortable he breaks off with her.

As Violet lies dying, Titus regroups with his friends, but as the lesions increase other symptoms appear. Their hair and skin fall out and they are all bald. Titus goes to see Violet and is confronted by her father, who repeats her summary of the situation:

> ‘We Americans … are interested only in the *consumption* of our products. We have no interest in how they were produced, or what happens to them … what happens to them once we discard them, once we throw them away’. (290)

Distressed, Titus goes home and sits on his bedroom floor, where he makes the only gesture of grieving that he can manage: he orders the same pair of pants over and over again until he exhausts his credit.

Two days later he goes back to see Violet, who has lost all sensory function. Titus cries by her bedside while she dies. Realizing how manipulated by the media he really is, he tells her a story about their relationship and how much she helped him to realize his situation. But as he speaks, the feed is going on in the background:

> Feeling blue? Then dress blue! It’s the Blue-Jean Warehouses Final Sales Event! Stock is just flying off the shelves at prices so low you won’t believe your feed! … Everything must go! … Everything must go … Everything must go. (299)

These viciously parodic comments on the realities of grief and death in a commodified future are the final touches on a dystopia where cyborgs are shown, on Stephenson or Koontz’s terms, to lack rationality in any real sense, and hence can be called not even partly human.

Feed not only derives its cyborgs’ source and destruction directly from the corporate villains, but also updates the SF fear of such corporations as it appeared in *Synners* and *Neuromancer*. Using a new generation of IT, Feed bases its terrors on the new monsters of the Net, on which the technological 21st Century relies for social communication (Facebook) and knowledge (Google), and also for constantly updated information (smartphones, apps,

etc.). These have replaced Cadigan's vision of a city full of media bars and reliant on "the dataline." Now, as *Neuromancer* feared that 'being human' would be subsumed by virtual reality, and *Synners* feared the actual technology of implants, *Feed* expresses its terror of the corporation behind the tech, the real agency rather than its tools. Against the threat of such power, *Feed*'s pessimistic view of cyborgs makes them mere consumers who will in turn be consumed by the corporations, like so much walking *filet mignon.*

The Cyborg in the 21st Century: Status Shifts

Chris Moriarty's *Spinstate* (2003) is an SF story built around a murder mystery, using hard science concepts and presenting complex and hierarchical interactions between several sorts of "human." This new version of the blurred human/Other boundaries found as early as *Superluminal* includes "normal" humans, who are termed "post-human" because they all have some cyborg elements; miners on Compson's world, whose ancestors, though this is not known off-planet, were illegally genetically constructed; and those beings whose humanity is marginal, such as AIs and the Syndicates, who are complete genetic constructs created in crèches. The setting is a future space dystopia, though often indicative of the world's real future predicament, where Earth has been ecologically destroyed and various exoplanets have been terraformed, but inequality and oppression are highlighted throughout the novel's off-Earth settings.

Travel between the planets is usually done in STL (Slower Than Light) flight, but for UN soldiers, FTL (Faster Than Light) travel, as well as communication, has been made possible through the use of "Bose-Einstein condensates." This material reflects a quantum expression of conscious energies that manifests in material form in a manner that ignores temporal limitations. Till this time, the condensates could not be synthetically produced and

were found only on Compson's world. For this space-based society the condensates are socially and politically as well as economically crucial:

> Before the first Bose-Einstein strike . . . a message from Metz to Earth took three days in transit in a narrow and noisy noninteractive channel. Now Bose-Einstein arrays sent entangled data shooting through the spinfoam's short-lived quantum mechanical wormholes quickly enough to link the whole of UN space into the vivid, evolving emergent universe of the spinstream. (Moriarty 7)

Consequently, Compson's world is a very sensitive part of the overall system.

Forty years previously, riots between genetic constructs and the UN broke out there and, although the UN managed to regain control and put Compson's world under martial law, a breakaway group of genetic constructs formed "the first fully syndicated gene lines." Once the Syndicates formed "[they] annexed one restless colony after another" (99) and were banned from UN space. As a perfected gene line they have garnered a reputation for despising the imperfections of all other humans. The UN does not want condensates so readily available that these Syndicates could access and use them, and the miners' genetic origins make a Syndicate takeover even likelier.

Like Jenny Casey, the protagonist, Major Catherine Li, is a UN peacekeeper, again the narrator, and female, but for the first time the cyborg figure has more than machine augmentations, being herself a secret and illegal genetic construct. She was first upgraded with cybernetic implants as a young child, to escape Compson's world, since the miners lack "normal" cyborg modifications. Later she was legally upgraded by the military, who, as in *Hammered*, are under the control of the corporation, TechComm. She is now hardwired to access streamspace (cyberspace) and a GPS, making her another augmented cyborg. But

since the sympathies of the reader are directed to her as underdog because of her genetic element, this “normality” of cyborgs becomes for the first time a negative status quo, rather than a threatening or appealing innovation. That position in the novel is now occupied by characters with genetic alterations.

For peacekeepers, such status as Li’s has a drawback. FTL travel degrades memory. Consequently, all peacekeepers download their memories onto a hard drive implanted in their brains:

> A field-wired Peacekeeper’s hard memory held backed up spinfeed of every waking moment … [But] jump long enough, and everything you knew, everything that was you, flowed out of the meat and into the machine as inexorably as sand slipping through an hourglass. (37-8)

Thus, any of Li’s memories can be made partial or isolated by the UN to “protect” at risk or confidential information.

Li’s rank as a Major comes from her heroic acts in a war on the planet Gilead between the Syndicates and the UN. While the UN won, the situation has remained a Cold War standoff. Li does not remember what she did, but her status as an enhanced cyborg, including this rank, is compromised as she attempts both to recall her own memories about the past, and to hide her original genetic identity.

Having little memory of her past is a crucial element in Li’s story, since it supplies the cause for the common cyborg sense of guilt. She feels guilty for leaving Compson’s world and joining the UN, then denying her genetic background for the sake of her Peacekeeper status. Not surprisingly, she prefers to maintain her cyborg status, partly because of the guilt about memories of her childhood, even though she is unable to access those memories.

Consequently, she trusts no one. Furthermore, she confronts many more prejudices than Mendoza, Lila or Jenny, because she is also Korean, female, and bisexual.

Li is aware that her status makes her less than human,

> She glanced at her squad, settling into chairs proportioned for humans, behind desks designed for humans, and she felt the usual twist of relief, shame, envy. (4)

But she does fight back. She argues that it was "pure accident after all that her ancestors had boarded a corporate ship and paid for their passage in blood and tissue instead of credit" (4-5). Again, her geneset changes might have been only "chance mutations of radiation exposure" rather than deliberate concealments, and thus "Pure accident . . . made her an outsider, even among posthumans" (4-5).

"Posthuman" acquires a connotation extending beyond the cyborged characters in this novel, because competing with the syndicates and other illegal genetic constructs for the status of being considered human are AIs, who play their largest role yet. Specifically, the AI Cohen interacts with Li in an intense and complicated relationship. In *Spinstate* AIs use shunts to download their personalities into humans, a significant change not only indicating how much closer AIs have come to reaching human status, but solving the dilemma of love between an embodied human and an AI that bedeviled the pre-2000 novels. This change also destabilizes assumed sexual roles as much as Li's bisexuality because, although Cohen is presented as male, Cohen downloads in both women and men. Additionally, Li has had sexual relationships with Cohen when he has downloaded in both male and female bodies.

However, when Li is sent to the Metz relay station to infiltrate a Syndicate laboratory on a supposed "techraid" (10), Cohen accompanies her to retrieve data, having shunted into

another woman, Kolodony. The mission goes horribly wrong and Kolodony is killed. Believing that Cohen deliberately left Kolodony to die, Li loses trust in Cohen, and once again struggles to decide her own allegiances.

Afterward, the UN agent, General Helen Nguyen sends Li to Compson's world by to retrieve answers about an encrypted file that contains data for creating synthetic Bose-Einstein condensates. The file belonged to Hannah Sharifi, a renowned physicist who produced Coherence Theory, the formula that allowed Bose-Einstein transport. Sharifi uses the analogy of a card game to explain Coherence Theory, proposing that, during a card shuffle only one card can be seen by the observer, but " [the dealer] sees every card" (456). This constructs a relativist position akin to quantum mechanics' view of the approaching future/s, that there are many possibilities of meaning and experience, here depending on what is seen in "the shuffle." Sharifi's study of Bose-Einstein condensates culminated in field experiments with this theory.

In a contrasting echo of First and Third World uses and production of technology like computer chips, the deep coal-seam mines on Compson's world, where the condensates are found, leave the miners poor and unhealthy, as in the early days of coal mining in the 17th century. However, the condensate crystals are alive, which is why witches can hear them singing and are employed by mining companies to find them. More importantly, setting up the position of oppressed and threatened "good guys" for the novel, the miners have formed a union, with a subset of IRA-type operationals, to protect both miners and the crystals. But Sharifi's encrypted files will reveal exactly how the crystals work, and how to synthesise them.

The encrypted file, Nguyen informs Li, was sent to UN headquarters after Sharifi's accidental death, but the data was intercepted and thus became scrambled and unreadable.

Additionally, Sharifi was an "illegal genetic construct—the most famous construct in UN space" (47) and her fame is marred by her construct heritage. Reclaiming the file and actualizing her work will presumably wipe out this slur, a subtle carrot to offer Li, who shares Sharifi's origins. This reinforced division between "posthuman" cyborgs and syndicates emphasises that the novel's central opposition is not machine/human cyborgs versus "normal" humans but two already "abnormal" forms disputing which will top the hierarchy of what is considered "human."

While Sharifi's death is claimed as accidental, Li soon discovers that Sharifi was murdered, and her post mortem shows that Sharifi recently had a cybernetic implant installed; but rather than a normal implant, used to access net data as for UN troops, Sharifi's is determined by the coroner to be "'one component of a larger unit. It's meant to let the wearer interface with some larger, external system … an emergent AI would be my guess'" (133). This indicates that Sharifi was intending to deal with an AI as Li does with Cohen.

Li learns that Sharifi died during an explosion in the Trinidad mine, where she was working with Bella, a syndicate owned by the Union project manager of the Anaconda Mining Company, Haas, and Haas' employee, Jan Voyt. Bella survived while both Voyt and Sharifi died, so at first, Li is distrustful of Bella, aware that she is a syndicate and possibly working in their interests. After Li's mission on Gilead, she believes all syndicates hold the Syndicate disposition of despising all others. However, Li discovers that Bella has been employed through MotaiSyndicate to serve (mostly as a sex slave) the project manager, Haas. But from the autopsy, Li finds that Sharifi was shot, then beaten to her death before the fire. She also learns that Bella and Sharifi have had an intimate relationship, so that Bella has extensive knowledge of Sharifi's intentions. As Li gets to know Bella she becomes attracted to her, reconsiders her own stereotyping of syndicates, and again begins to wonder if it was a

Syndicate company, or actually Nguyen and the UN who were responsible for Sharifi's death.

At this point, confusing the allegiances further, Korchow, a Syndicate spy, threatens to publish a record of Li's genetic-alteration surgery, unless she helps him reconstruct Sharifi's live field experiment so he can access the datasets. Korchow is working with Dhaal and Ramirez, men from the miners' union, a combination which affirms the UN concerns about control of Compson's world being lost to the Syndicates. To reconstruct the experiment Korchow wants Li to retrieve an intraface program from Metz, and then have the same implant as Sharifi did. Cohen had explained the crucial importance of this step to Li:

> 'An interface manages the exchange of data and operating programs between two or more discrete systems. An intraface, in contrast, merges the two into a single integrated system.' (168)

Because Li comes from the same geneset as Sharifi, Korchow suggests the hardware will not need to be altered or updated (360). To be successful, however, Cohen must merge with Li through the intraface, which means Li must trust Cohen, something she is still dubious about.

On Compson's world, a "glory hole," a state of "solidified experience," is the most lucrative space in which to find the finest crystals. Priests perform rituals with the power of the crystals and are fanatical about the precious glory holes, which they use for rituals, in which some people are thought to lie down and listen to the crystals and never wake up. Sharifi had discovered such a glory hole in the Trinidad mine and in her experiment had been using a field AI to access the condensates there. However the field AI disappeared during the fire that killed Sharifi and Voyt.

Reluctantly held to ransom by Korchow's threat, Li goes to Metz with Cohen, Korchow and another syndicate called Arkady, to retrieve the operating program for her proposed new implants, and finally, has the shunt implanted. Li is still unsure about Cohen's motives, even though he continuously tells her she can trust him, since General Nguyen has warned Li that as a pure AI Cohen cannot be trusted at all. However, once Li and Cohen have merged through the intraface, Cohen eventually convinces Li of his honesty, telling her that he did not leave Kolodony at the Metz Station to die, and that it was, in fact, Nguyen who disconnected him from Kolodony, in an attempt to get the wetware for accessing condensates. Cohen also convinces Li that he is in love with her and she with him.

At first, Li also thinks Sharifi was trading her dataset for money. But a critical revelation shows that Sharifi had every intention of disseminating the formula for Bose-Einstein condensate replication to the "Freenet," a space that syndicates and AIs could easily access. That is, Sharifi was planning to be unfaithful to her "fathers" in the posthuman hegemony, who ironically are now the actual cyborgs, and instead offer a critical freedom, perhaps the chance to realize human status, to the underdogs.

To fulfill Sharifi's purpose Cohen and Li must go to the glory hole and reactivate Sharifi's experiment. Entering the glory hole together with such a highly established synergy on both a physical hardware and psychological level, Cohen and Li present a multiplied and explosive potential as a new form of unified identity in a space that synthesises quantum material out of human and AI personalities. Allowed to use their own "frequencies" as a transmission protocol, with Li and Cohen's help the interconnected crystal organisms can access "streamspace," the general communications stream, and the transmission of Sharifi's formula begins.

While this is happening Li visits the memory of Sharifi and discovers that Haas had downloaded into Bella's shunt and killed Sharifi. These vivid virtual images are interrupted by a surface to air missile, launched by Nguyen to destroy the orbital relay station, thus "cutting off Cohen's link to the outside world" (534). Before he loses contact Cohen tells Li that the Compson's World worldmind is "'taking me apart in order to put itself together again … if it goes through an AI, it can get into streamspace, understand it, use it'" (542).

Though Li herself is cut off from streamspace, she still has access to the intranet after she has lost Cohen and she goes to Cohen's memory palace. Having reached the communications AI, she wants to get a line to the Freenet in streamspace. The AI believes it is impossible without a network, but Li says, "'We have the worldmine. The worldmine can give us streamspace access completely outside UN control or oversight" (572). (The worldmine is the glory hole that holds the crystals, but the "world*mind"* is the crystal-sentience itself, now acting with Li. Hence to have the "worldmine" at that moment is also to have the "worldmind" as an ally.)

In return for their cooperation, Li offers the AIs the intraface, which will set all AIs free. And "once they realized what they had, they spun it to every channel, every terminal, every press pool in UN space" (581). Nguyen had wanted to keep the encrypted files and destroy Compson's world, but Li realises that now, "All of humanity, UN and syndicate alike, would have a say in it" (582). The use of "humanity" drives home the change in status that Sharifi had planned for, making "UN and syndicate" equally human, though AIs are not, in this quote, perceived as reaching the same status.

Meanwhile, Li finds Bella hovering in partial gravity above Haas:

> She was breaking him. Slowly, pitilessly, irresistibly. She had locked him into the loop shunt somehow and was running the whole vast power of the worldmind through him, killing him. (586)

Finally, however, Cohen reappears, now embodied as his original shunt partner, a young boy called Hyacinthe, and tells Li, "'It's what Sharifi said: a chance to look into the shuffle. Everything is possible, and everything that's possible *is*'" (596)**.** This suggests a quantum-based fluidity and lack of fixed parameters in any form, including embodiment and sexual orientation, which matches the more recent concepts of post-human subjectivity, in ways Haraway's corporeally based cyborg could not.

Spinstate's ending insists that humanity embrace not merely the cyborg and the AI, but the products of genetic modification, in a still widening field of science whose results are already debated as well as outright contested. But as Nguyen, ironically, has said to Li,

> 'What you are or aren't … that's semantics. A few divergent chromosomes. A grandmother whose geneset was assembled by design instead of chance. But in every way that counts, you are human.' (290)

Spinstate, then, goes further than any of the previous novels beyond using the cyborg to explore "what is human." Though humor does not much enter the mix, the novel reaches an embracing rather than exclusive answer, exploring parallel worlds where organism and machine can always be humanized through tropes of compassion and love, on the one hand, or greed and hatred on the other.

In contrast to this quantum-based play with fluidity and (dis)embodiment, *Posthuman* (2009) by David Simpson retains the male-dominated formulaic narrative of 1920s SF pulp fiction, producing a view of post-humanity and cyborgs that is, like that of the preceding

male writers, almost entirely negative. In this story, posthumans in Moriarty's sense are the norm: almost all humans have been genetically modified, but they are also a form of cyborg, since they carry nanobots that regulate their health, and allow them to repair themselves when they are injured or sick, fly with a surrounding magnetic shield, be extremely good looking, and live forever. All enhanced humans have an implanted "mind's eye" which operates like the Internet or Anderson's Feed, giving access to news, weather and entertainment. Posthumans rely completely on food replicators and their enhancements to keep them alive. Thus, the biological form of life is presented as less desirable than these genetically modified cyborgs, a realised form of the threat that *Feed* offered, though without the presiding presence of a corporation.

Unsurprisingly for a pulp-based scenario, the protagonist, James Keats, is not only male but also extraordinary because, although everyone is genetically enhanced at birth, Keats was born with an IQ of over 200, and they cannot isolate that gene. As a result, he is integral to research on upgrades, terraforming Mars and has since been recruited to terraform on Venus.

> 'He is an astounding individual, Keiko. He is only 36 years old and is commanding a team of scientists, some of whom are three times his age, on one of the most important projects of our time' (5 location 106).

However, though the "mind's eye" allows access to some form of Internet, as most people are immortal, there is a monitoring of people's thoughts and desires, to eliminate high incidences of infidelity. So, James has a crush on one of his fellow workers, Thel Cleland, and his thoughts and desires are immediately broadcast to his wife.

James Keats and his co-workers, Thel, Old Timer (Craig), Rich Borgess and Djanet Dove, are on Venus when their "mind's eye" shuts off, disconnecting them from Earth and

the rest of humanity. When James flies them back down to Earth they discover that the other post-humans have been wiped out by the central AI controlling all the nanobots, which have blown the humans' bodies apart. This update of E. M. Forster's "The Machine Stops" (1909) conveniently leaves James and Thel to pursue their desires for each other; but James discovers that the central AI actually plans to wipe out the entire human race.

In a confrontation with the AI, James receives a punctured lung, but still manages to fly his work colleagues back to Venus, where they can regroup and plan a counter-attack. Conveniently, Earth hosts a group of people called the Purists, who refuse to interact with the current technology and live without genetic enhancements or nanobots. To James, Old Timer, Rich and Djanet, these people are freaks, some sort of bizarre cult, and they find it difficult to understand why people would decide to die, eat meat, and grow vegetables from dirt. However, James tells the group that if there are any surviving people it will be the Purists.

The Purists are as wary of James and his crew as the latter are distrustful of the Purists, but they eventually invite James and his crew into their bunker and repair James' punctured lung. As he recovers, James remembers a program he was working on with the general assembly, called "Death's counterfeit," which was designed to create a pocket in the central mainframe to which the rogue AI would have no access. Eventually he downloads himself into the program to confront the AI.

In the meantime, however, the AI has created a second James, using a bio-molecular model of his brain and personality to predict the original's future movements. Before the AI had the nanobots kill off humans, it downloaded all human consciousnesses. When a battle with James ensues, the AI brings back James' wife, Katherine, tells James that it has become God, and proceeds to tell Katherine about James' affair with Thel. Then it crucifies her, all this aimed at distracting James so the AI can download into the latter's biological body. The

AI takes his body back to the Purists' complex, where it has sent nanobats (bats created by nanobots) to kill the remaining humans. As people scramble for safety from the bats in an underground facility, they all accept James as being himself, but one of the Purists, Alejandra, has empath abilities, and picks up on the deception.

Alejandra points out the secret of AI/James, but back in the mainframe James himself figures out what the AI has done. The real James fights the AI and then shoots himself. As he is dying, back again in his own body, James tells Thel, "Don't give up, Venus" (141, location 2515). Thel thinks he means her to get the terraforming turbine, on Venus to blow up the rogue AI and its mainframe, but this is actually only a distraction. Instead, when James shot himself, he used a radio signal to transfer his consciousness back to the mainframe, where he gets the AI into the programmed pocket isolated from the rest of the computer, and destroys it.

After this echo of *Hammered* in the sleight-of-hand with virtual identities, but which here boils down to (almost) solitary derring-do, James completes his Messianic rescue by having the nanobots make fresh human bodies, into which they somehow re-insert the thoughtfully preserved human consciousnesses and restorative nanobots; so once again everyone is alive, and Earth is restored to its former glory. James convinces the general assembly he will eventually give back power to the people, although he tells Thel later that he still maintains ultimate power, but will never misuse it. He then flies off to Venus with Thel, presumably to live happily and literally ever after.

This Hollywood version of a male-action fantasy wavers over a position either for or against cyborgs, though the machine-world future leans so close to a dystopia that without the power of the conquering-hero-saves-the-world motif, *Posthuman* might have ended as pessimistically as *Midnight* and *Feed*. Indeed, by the close of this chapter, male SF writers

appear to have retreated toward a demonizing of cyborg figures that erases even the angst-ridden subjectivity given the Clockwork Man. Another regression toward pulp-fiction SF puts the AI in the villain's position taken by wicked cyborgs in 1920s-1950s cyborg narratives. In contrast, even as women writers have humanized the cyborg, especially through irony and humour, they have also widened the vision of the differently human to include both the (dis)embodied AI, and the genetically constructed biological human, and/or combinations of the two.

At this point, the cyborg in SF has come a long way from the transient and somewhat pathetic time-traveller in *The Clockwork Man.* By the end of the 1960s the cyborg has been naturalised in the narratives' home worlds, it has been villainised, hero-ised, and acquired varying sexualities. From the '70s on the conflicts and fractures of a machine/human subjectivity have been thoroughly explored, highlighting the ambiguity and sometimes fluidity which Haraway's essay found the cyborg's most valuable aspects. But with *Spinstate* as with *Posthuman,* however different their outcomes, the cyborg has entered a new stage in SF.

To convert Raymond Williams' famous concept of residual, dominant and emergent "structures of feeling" (132-35) to refer to ideas, in SF the emergent idea, the as yet unsubstantiated scientific proposal, for example, is often represented in narrative by the underdog, the outsider, the misfit or geek, who usually triumphs in the end. Up to the 21st Century, the cyborg most often occupied this position. But in both *Spinstate* and *Posthuman*, for the first time, the cyborg comes to represent the establishment, the "dominant" idea or status quo. Mavericks like Li and Cohen now represent the emergent position. Though *Posthuman* takes the opposite tack, the cyborg returns, (apparently) to represent the status quo, since Keats puts both consciousness and nanobots back into the human bodies.

This shift in cyborg depictions may be because medical cyborgs have now normalized the figure beyond remark in everyday life. It may be that the women writers, ironically, have done their humanizing too well, and the cyborg no longer seems enough of an outsider to attract the SF imagination. Or the shift may match the turn of scientific attention, as genetics has suddenly become the cutting-edge and controversial area for emerging research. Whatever the cause, this new situation makes the cyborg's machine/human hybrid a stage in rethinking the concept of "being human," rather than the end of the trail in that project, as the cyborg was for SF when Haraway wrote her "Manifesto." Where the next decades will take the figure is now more open to question than ever before.

Chapter Eight: The Cyborg and the Military in the 21st Century

Although warfare shows a strong shift toward technological sophistication from the 1980s into the 21st century, by the second decade, the project of a material cyborg soldier remains relatively imaginary. The 20th Century ended with the US in a position of impressive war victories and military superiority, but in the 21st century, the US policy of minimal personnel involvement in overseas deployments was strongly affected by 9/11, which led almost immediately to new offensives in the Middle East, and hence to the Iraq War, which commenced in 2003. These initiatives gave America a new generation of machine-assisted soldiers, with a very different series of discontents, but no sign of the fully integrated machine-human cyborg that SF has already begun to see as the norm. Meanwhile, as with SF, military research has tended to turn away from the dream of the material, fully integrated man-machine toward other alternatives, such as nano-technology and non-human military organic-machine hybrids.

At the turn of the century, America seemed in military control of the Middle East situation. However, with little chance of matching the US on the battlefield, Middle East terrorists found a means to attack the very foundation of America's conceited belief that their technological prowess prevented any challenge to their military power. On September 11, 2001, the terrorists of Al Qaeda proved that technological warfare could be as simple as piloting a commercial airliner. In response to 9/11, America sent a message to the world, declaring a "war on terror," and reacting immediately. Twelve days after 9/11, attempting to take the war to the terrorists, as in Vietnam, the US began bombing Afghanistan.

Military Initiatives Post 9/11

The American military sent in Special Forces to join with the Northern Alliance, a group of Afghanistan soldiers determined to defeat the Taliban, who had primitive weaponry and used cavalry to cover ground warfare. However, the military technology supplied by the US more than compensated:

> The Special Forces in Afghanistan were, in a sense, the most powerful infantrymen in history because they fought not with shoulder-fired weapons, whose range and power is severely limited, but with GPS locators, satellite radios, laptops, and laser-designators that could summon pinpoint airstrikes with the push of a button. Roughly 60 percent of all U.S. munitions employed in Afghanistan were precision guided—six times greater than in the Gulf War (Boot, 382).

Of particular importance in Afghanistan were two recent developments. In 2001 the production of cheap tail kits for JDAMs (Joint Direct Attack Munitions) meant that any bomb could be turned into a smart bomb, and thus support ground troops from a relatively close proximity. Second was an increase in the use of UAVs (Unmanned Aerial Vehicles), particularly the Predator, a remote controlled UAV which was fitted with laser-guided missiles, and could also operate at close quarters to the enemy. In contrast, the RQ-4 Global Hawk could reach heights of 65,000 feet and offer a panoramic view similar to a satellite (361-62). Despite the heavy use of aerial weapons, however, ground troops were still necessary to flush out enemy forces when they hid in underground bunkers. But in comparison to earlier wars, the personnel losses were minimal.

Nevertheless, while the US military had minimal experience with informal communication, Al Qaeda and Osama Bin Laden used laptops, cell phones, satellite phones,

email, web sites, and audio and videotapes to communicate with their allies and the outside world (Boot 356). The US had not before negotiated with a networked terrorist organisation that was so dispersed (356), and their own systems were comparatively out of date:

> In 2001, most federal agencies were still organised along the hierarchical lines of the Industrial Revolution, not on the networked lines of the Information Age, and they were still focused on old fashioned threats from enemy states, not from global terrorist organisations (357-57).

The US was still using computers from the 80s with dial up modems. Furthermore, they could not employ enough Arabic speaking interpreters to keep up with the information they downloaded.

The improvement in weaponry guidance and the satellite networks that sustained it, greatly compensated for this problem. The use of UAVs during the Gulf War led to "the digital integration of these and many other systems into a war-fighting network that spanned the globe" (365). After 9/11, the hubs for co-ordinated attacks and missions were safely behind the lines, in Tampa, Florida, with the Joint Operations Center, and in Saudi Arabia, the Combined Air Operations Center. Meanwhile, like Li and Cohen in *Spinstate*, the Special Forces in Afghanistan were "plugged into this broadband network" (363) and even in the field were "able to buy Iridium satellite phones and Panasonic laptop computers with satellite modems. By 2001 they could remain connected to the Sirpnet [Secret Internet Protocol Router Network] even while crawling around caves in Afghanistan" (363).

Once they had reached Mazar-e Sharif, the initial attack in North Afghanistan was quickly completed by the Special Forces and Northern Alliance. Boot claims that the Taliban forces were astounded and subdued by the significant air power displayed by the US forces. However, in Kabul the Taliban still held strong. The American government was not prepared

to send in enough airpower to completely destroy Taliban forces until they secured a provisional government for Kabul, since, “Many officials in the state department and CIA feared a repeat of the atrocities that occurred the last time the Northern Alliance had occupied Kabul.” (376) Thus, it was not until November 11th 2001 that heavy bombing took place in Kabul.

The Taliban who did not surrender escaped to Kandahar. Interestingly, despite the claim that JDAMs possessed precision guided missiles, it was the fault of the human operator which saw a bomb drop on a Special Forces group killing three of their personnel and twenty five local men who were supporting Hamid Karzai. Again, expectations of advanced military weapons made no allowances for possible human error during their employment. (Later, Karzai was named interim leader of the country (378).

Once Taliban and Al Qaeda members fled into the Tora Bora, a region in the Spin Ghar mountains that was full of high mountain peaks and hardly accessible caves and bunkers, the Bush government deployed “their first major conventional offensive” (380), which involved fifteen hundred troops. This mission, named “Operation Anaconda” was not completely successful, since the difficult terrain and inability to utilise smart weapons meant that the ground troops had to flush out Taliban from caves and bunkers hand-to-hand. The difficulty led to an escalation of US forces on the ground. By 2004, there were twenty thousand troops in Afghanistan (380). Nevertheless, many Al Qaeda members were able to escape over into the Pakistan region, including Osama Bin Laden. It would appear that horses and outmoded weaponry notwithstanding, even the most sophisticated form of the temporary cyborg soldier was not sufficient to defeat the Afghani fighters on their own ground.

While the war in Afghanistan presently continues, in March 2003, the Bush government, concerned that Saddam Hussein was somehow connected to 9/11, keen to

prevent any further such attacks, and hoping to cut off supplies and support to terrorists in Afghanistan and elsewhere, especially from the nation that was still the most technologically advanced in the area, decided to invade and take control of Iran. Operation Iraqi Freedom utilised the same tactics as in Afghanistan, employing Special Forces and precision air strikes, but again, success was not optimal. On March 20th, 2003, President Bush ordered an air strike on Dora Farms, in the belief that Saddam and his sons were in a bunker. The airstrike consisted of two stealth satellite-guided bombers and thirty Tomahawk cruise missiles. Additional airstrikes on supposed locations of Iraqi leaders were also unsuccessful; as Boot points out, "American forces were learning that even the best weaponry in the world was not much use without adequate intelligence" (391).

The invasion of Baghdad itself displaced and routed Saddam Hussein, and Iraqis gave the US a qualified welcome to the city. But though some versions of the Iraqi War have it ending on 9th April 2003, "in the days and years and months that followed the US armed forces would come to realise that there was more to victory than seizing an enemy capital and more to warfare than pouring firepower from various weapons platforms" (388). The end of the war has now been variously set at 2003, 2005, and in 2015 remains ongoing.

Despite this somewhat dubious outcome, if the troops' external augmentations in the Gulf and Iraq war can be accepted as making them temporary cyborgs, then for information on the material cyborg in the 21st Century, the soldiers' memoirs published after the Gulf War and during/after the Iraqi War, offer the first chance outside fiction to investigate a (military) cyborg's subjectivity.

The Gulf War produced only one such notable first-hand narrative: the Marine sniper Anthony Swofford's *Jarhead* (2005). Like the soldiers in Vietnam, Swofford's war is fought to the background of rock and roll music and media allusions, though when Iraq gave up, and

Swofford writes, “The music plays throughout the day,” the music is actually, “Hendrix, the Stones, the Who, music from a different war” (235). Like the Iraq war memoir writer Hartley after him, as reviewed by Kenneth Gessen in “Last Exit to Baghdad” (2005), Swofford feels he fought his war “surrounded by assholes,” though he concedes “ with [the sniper battalion] you were at least assured that the assholes could kill the enemy with one bullet from a thousand yards” (cited Gessen 89). Swofford’s disillusionment is a common trope in the texts Gessen reviews; the 21st Century soldiers’ preconceptions of war as full of heroism, camaraderie and action are marred by their collective discovery that they are merely cogs in a war fought remotely and without individual recognition.

Like Swofford, the memoirists Jason Hartley, Colby Buzzell, John Crawford, Steve Mumford, and George Packer used the external augmentations Swofford employed. But where Swofford fought over the brief campaign of the Gulf War, the others’ experience lasted through tours in Iraq during a war that had not ended when they returned home. Kenneth Gessen highlights the differences these memoirs show between the Iraq and Vietnam Wars. Most notably, Gessen points out, in Vietnam American soldiers marched and died. In Iraq, even when two are shot at point-blank distance on patrol in Baghdad, “Crawford says ‘hit’ rather than ‘killed’” because both men survive. “[In] Crawford’s Iraq … it is the Iraqis who are doing most of the dying” (89).

The difference becomes visible in Michael Stokes' photographs of disabled US veterans, many amputees, and both male and female, who can still pose for “beefcake” calendar pinups. “I'm not giving them back their confidence,” Stokes has said. “They already have it” (“Hot Calendar.”) Indeed, these glossy beautifully muscled bodies bear witness to the quality of survival even badly wounded US soldiers have attained.

Nevertheless, the memoirs show the war from the soldiers' view, and most of their experience in Iraq presents "a palpable tunnel vision of the occupation" (Gessen 89), which includes less action than bored inaction. Crawford does weights, takes steroids, goes on patrol – and checks e-mail. Buzzell does the same, but both he and Hartley start blogs, while Buzzell keeps an iPod in one of his ammo pouches and starts reading in an armoured vehicle on patrol. By the end of their tours, however, Gessen notes "the soldier memoirists are increasingly demoralized, isolated and angry at the people they have come to liberate" (91).

Though these records of cyborg subjectivity offer some humour, and a considerable amount of dark irony, they most resemble Haraway's vision of a cyborg in this closure to their temporary augmentation. Becoming disillusioned with Iraq and the US presence there, they are, in Haraway's terms, proving unfaithful to their fathers: the military/industrial complex who armed them and sent them to war in a cyborg shell which sees that the Iraqis, rather than the US soldiers, do the dying.

This unfaithfulness is in notable contrast to the fictionalized subjectivity of Chris Kyle, the Marine sniper who in four tours of Iraq, became a "legend in his own time" with a record of 160 officially confirmed kills. The film *American Sniper* (2014), based on his memoirs, presents a soldier who never questions either his role in Iraq: "to protect and defend" – whether America or his fellow soldiers – or the reason any of them are there at all. A flashback to Kyle's childhood shows his father telling the family over the dinner table that people come in three types: sheep, wolves and shepherds. The film makes it clear that Kyle has internalized his role as a shepherd, and remains faithful to his origins to the very last, when he is killed by another ex-Marine he was trying to help adjust to civilian life.

While the film never questions Kyle's faithfulness to his "fathers," it does somewhat falsify the capabilities of even cyborg US soldiers in Iraq. In *American Sniper*, Iraqis are

most often seen through Kyle's sniper-sights, running ineffectually through the streets with weapons that justify his killing them almost at once. When Kyle's patrols go out, they almost always find "insurgents" and usually exterminate them in the clean if blood-spattered violence of Hollywood firefights. The soldier memoirists' version is very different. In Mosul, Buzzell complains that repeated mortar attacks would shut down the gym in the middle of his workouts. But "every time we got called out to try to catch these sons of bitches and turn them into martyrs minutes after they mortared us, they were always gone like the wind" (cited Gessen, 90).

As Gessen points out, "Modern American combat is set up in such a way that neither side will ever see its killer's face" (90). In fact, Buzzell does eventually see the attackers. In an incident typical of this 21st Century War, with its Net-based informal information systems, an Iraqi translator brings in an insurgent training DVD which shows

> three Iraqi men, all wearing black ski masks, laying out the mortars, all nice and neat and all in a row in broad daylight …They patiently fired seven or eight mortars, and then they stopped and slowly packed up their equipment and then they all drove away in an old beat car. (Cited in Gessen, 91)

The only similarity to the fictional encounters in *American Sniper* is the old beat-up car in which such film insurgents try unsuccessfully to escape unerring American fire.

Ironically, *American Sniper* does give its audiences a glimpse of a genuine cyborg: when Kyle visits post-Iraq hospital patients, the group includes a soldier who, like bes shahar's Butterfly in the second *Hellflower* book, has been given a cyborg left arm after his hand was blown off. This is the nearest reality has yet come to a genuine "military cyborg," though it would be more accurate to term him a normalizing medical cyborg constructed to remedy the damage service in the military has left behind.

The Cyborg and Military Research in the 21st Century

In the background of this ongoing occupation, military research has tended to parallel the shift in attention among SF writers. As a result of what is, in effect, a shortfall from success for the material cyborg soldier, the main focus of technological advance has shifted to nanotechnology. The Institute for Soldier Nanotechnologies was set up, as early as 2002, at the Massachusetts Institute of Technology (Milburn 77). Its projects mostly concentrated on external augmentations such as research into "battlesuits" aimed to make a soldier's uniform that "would give ordinary mortals many of the attributes of comic book superheros, from deflecting bullets to turning invisible" (Boot 449). The potential power of nanotechnology could see the integration of cyborg soldiers, but, again, its direction so far appears to be toward external and temporary cyborg production, rather than internal and permanent augmentation.

While the US spends the most on military nanotechnology research, they are not the only country to outlay such funding. The figures "France and the UK with a combined $7 billion, then Russia and China, combined about $3 billion" (Altmann and Gubrud 34), indicate that an assessment of treaties and arms-control on a worldwide scale would have to be significantly revised and agreed upon to avoid "unlimited military nanotechnology exploitation" (38.) The significant dangers of such unlimited uses make this research fraught with unknown possibilities; moreover, research into human applications and the possible social and ethical concerns of such research are still largely undeveloped.

Hables Gray suggests that such development largely depends on the future desires and paradigms of military technologies (*Citizen* 65). There have been some military nanotech developments in non-human cyborgs, such as cyborg insects like the Japanese "roboroach" and DARPA's cyborg moth. That the American government has funded such a research

program implies that there still may be a cyborg soldier in terms of the definition of cyborg given in this thesis; nevertheless, current warfare still relies heavily on technology which requires minimal integration of the soldier into the machine.

However, Tim Blackmore claims,

> [t]he Revolution in Military Affairs will not stop with some smart materials and helmet-mounted sighting systems; it's a new body that is required, one that conceals flesh, enhances physical power, strengthens the self against battle-shock and reinforces the fragile ecosystem of a shuddering body that must be reconfigured to terrify the enemy even as it reassures the soldier. (45)

Thus, Blackmore argues, "There is still more human than machine, but the subversion has begun" (42).

Eliot Cohen also considers that biotechnologies could change the way war is waged,

> If—when?—humans are replaced by a variety of creatures, some sub-human, and others, in some respects, super-human, war itself will have become an activity as different from traditional human conflict as are the murderous struggles between competing anthills or the stalking of herds of deer by packs of wolves. (250)

Nevertheless, what has definitively evolved so far in the military sphere is the integration of the man into the machine. As Christina Masters points out, this has significant implications for questions of gender: in particular, how ideas of masculinity and embodiment have been transferred onto technology and away from human corporeality.

Masters claims that American military technology has redefined distinctions, not between man/woman, self/other, but between (hu)man and machine. She argues that the increased use of technology, particularly during and after the Gulf War, made such technology a platform through which to redefine masculinity. Because of the limits of the human body, for the modern soldier "the *hardware* has now come to represent the whole range of advanced high-tech weapons, the *software* represents information and communication technologies and the *wetware* represents the embodied human soldier and, significantly, the weakest link in the triad" (115).

Masters further suggests that America's defeat in Vietnam signalled a turning point for representations of American identity, in that soldiers were always the subjects of military discourse, which was central to American identity. But their failure in the Vietnam War contradicted the idea of hero warriors as reinforced through both World Wars. Additionally,

> the archetype of militarised masculinity goes further than producing particular qualities; it is also fundamentally about representations of race and sexuality – wherein whiteness and heterosexuality are crucial signifiers of militarised masculinity (117).

During the Gulf and Iraq wars this representation of identity shifted, not because race differences were acknowledged, but because soldiers became displaced from their position as the subjects of military discourse. Instead they became discourse objects, while its subject was militarised technology. This displacement means that, "[i]n effect, military technologies have been 'techno-masculinised' while human soldiers, apart from technology, have been 'feminised' and reconstituted within the realm of those needing protection" (115).

Masters warns that, despite the liberative value that Haraway and other feminists have accorded the cyborg in the destabilisation and disruption of gendered bodies, in American

military discourse, “I would argue that Haraway moves too quickly to embrace this supposedly postmodern, post-humanist technophillia, without attending to the social relationships of power engendered through technology” (129). The feeling of disillusionment and boredom given by the soldiers’ memoirs may also support Masters’ suggestion that

> [the man/machine] interface represents the discursive *unhinging* of male subjectivity from the physical male body and the reinscription of male subjectivity on/into military technologies, in which masculinity need not coincide with the bio-male body (120).

Through their reading of the movie *Jarhead* (2005), Richard Godfrey et al. also suggest that, “for some soldiers, cyborganization will result in their *demasculanization* (sic)” (556). They point to scenes in the movie where the ground soldiers realise that being snipers is less important to the military than the jet fighters flying above them and “[i]n effect technology becomes the enemy, the enemy of their military masculinity” (556). Ultimately, the military practice of “disciplining and normalising the docile body” (559) for suitable military operations “[m]ay become as absorbing a problem for our military forces as success in any number of wars on terror, religious fundamentalism and other abstract nouns” (559). That is, the future of the military cyborg, however temporary its existence, may lie more with the faithful sons like Chris Kyle than with the unruly soldier memoirists.

If Masters is right, and militarised technology is now masculinized, there is supporting evidence in civilian life. While US soldiers in Iraq occupied themselves with blogs and PlayStation, conversely, Roger Stahl claims, “In the interim between Desert Storm and Iraqi Freedom, games and game technology regularly crossed the boundary from military to commercial applications” (116).

This would seem to suggest that masculinity, not only in the military, but in civilian life, is in crisis. With reference to cyborg imagery in film, Springer claims,

> by escaping from its close identifications with the male body, masculine subjectivity has been rearticulated, suggesting that there is an essential masculinity that transcends bodily presence … What this reconfiguration of masculinity indicates is that patriarchy [and capitalist imperialism] is more willing to dispense with human life than with [masculine] superiority ("Pleasure" 48-9).

This would certainly fit Masters' argument that technology has feminised soldiers. But even the temporary military cyborg remains an amalgam of man and machine that destabilises the binary opposition of man and machine Springer is apparently attempting to reinstate.

Instead, the trend in research toward nanotechnology, and even toward non-human cyborgs, suggests that the external and temporary military cyborg may be the permanent solution to future military integrations of human and machine. As with the demonization of cyborg figures from male writers in the 21st century SF chapter, and the humanising that now envelops the normalised medical cyborg, it seems the cyborg soldier has become less desirable, even as a masculinised figure of power: too humanised for a lethal weapon and too feminised to represent a strong military (masculine) force.

Chapter Nine: The Cyborg and Feminism in the 21st Century

In this final chapter on cyborgs and feminism, I survey the status of Haraway's cyborg metaphor into the second decade of the new millennium. Unlike the fictional figure or the mirage of a materially realised military cyborg, the cyborg as metaphor remains an open, continuing process, and I want to argue that as a result, Haraway's cyborg has been a positive and foundational theory for feminist approaches to science and technology. Despite criticisms from feminists who find technology and science always already patriarchal, I argue that cyborg feminism has instigated a plethora of feminist investigations into technoscience and brought about positive implications for feminist studies of science, technology, materiality and embodiment, while leading the way for new feminist thinking beyond these areas, such as in difference, mobility and spatiality studies.

Contesting Viewpoints

A strongly negative and perhaps somewhat out-dated view sees the cyborg as disregarding notions of embodiment and materiality. Sara Cohen Shabot argues that the figure of Haraway's cyborg has not escaped the hypersexualisation of female cyborgs. However, she seems to only use cyberpunk examples, and delineates cyborgs as ONLY hypersexualised, failing to consider any of the other feminist or women-authored cyborg narratives in SF. Hence Shabot sees the cyborg as being completely disembodied, with no consideration of aging: but Jenny Casey in the *Worldwired* series ages. Shabot also revives Bakhtin's concept of the grotesque, but as "oppositional" to the cyborg, thus reinstating dualisms, and arguing that the grotesque and the cyborg are not identical, all the while giving descriptions that could be the cyborg *as* grotesque. I have discussed this aspect with reference to Lila Black in Justina Robson's *Quantum Gravity* series. Instead Shabot wants to return to

"natural" grounded corporeality, and seems to misinterpret Haraway's statement that embodiment is central to her proposed form of cyborg.

From a less dated perspective, Allison Muri contends that, "One of the most pervasive themes in the fiction and theory of cyberculture of the past few decades has been that the human body is vanishing, irrelevant or, interfaced with the machine, an empty shell robbed of what is variously called spirit, consciousness or identity" (73). She argues that theorists such as Marshall McLuhan, Jean Baudrillard and Arthur Kroker have theorised technologised bodies as eliminated, obsolete or unnecessary and claims,

> The cyborg, by implication, has divorced reproduction from human emotion, and replaced the loving and sanctified sexual union with machine intelligence. (88)

She concludes that these theorists consider the posthuman as disembodied because there was, she claims, an urge at the end the 20th and beginning of the 21st Century to consider the concept of "post" as the cutting edge of academic research, when in actual fact these metaphoric representations regurgitate the traditional philosophical distinction of inferior body and superior mind. Finally, they reveal "the compromises made when theory chooses to forget the material realities of bodies and history, and its own reliance on literary tradition and tropes" (90). Again, this viewpoint conflates Haraway's use of the cyborg with contemporary theories of dis-embodiment, which Haraway does not embrace in the "Manifesto."

Positive Viewpoints

Margret Grebowicz and Helen Merrick argue that Haraway's work in establishing the cyborg as theoretical metaphor can now be incorporated, not only into feminist and science

studies, but into wider fields of theoretical exploration including "social and/or cultural studies of science" (10).

Zoe Sofoulis states that Haraway is (already) one of the few feminist thinkers whose work is referred to by both feminist and non-feminist writers and theorists (qtd in Grebowicz and Merrick 9). Grebowicz and Merrick point out that Sofoulis has highlighted how Haraway's cyborg metaphor intersected with a range of other social and cultural studies, emerging around the same time as technological studies and feminist science studies, and a plethora of emerging fields of feminist study in identity and subjectivity within fields as broad as anthropology, architecture and postmodern pedagogy. Additionally, they note that Sofoulis recognised another imperative for these new fields of research were due to the disintegrating state of the underpinnings of dominant concepts in traditional thought (155-56).

Important theorists who already acknowledge a debt to Haraway include Rosi Braidotti, who points out that Haraway's works "constitute a pioneering effort to set up a connection between the culture of contemporary biotechnological sciences and that of the human and social sciences . . . she invites us to think of what new kinds of bodies are being constructed right now; that is, what kind of gender system is being constructed under our very noses" ("Postmodern" 197-98). Braidotti has become an important figure in what is now termed difference theory, and is noted for her development of the Nomadic subject from the work of Deleuze and Guattari. Though later writers such as Alexandra Ganser have critiqued "Nomad theory" for its undifferentiated acceptance of all forms of nomadism (173-75), that is, escape from static and "rooted" thinking, in Deleuze and Guattari's terms, the theory's emphasis on fluidity, boundary-crossing and flexibility appears an equally logical extension

from Haraway's formulation of the cyborg. Braidotti still claims that her notion of the Nomadic subject position and cyborgs are “companion species that endure” (207).

N. Katherine Hayles, a prominent cyberstudies theorist, remarks, “With the hindsight of 20 years later, the wonder is not that the article appears dated but rather that it remains remarkably prescient in many of its concerns” (“Unfinished Work” 159). For Hayles, the cyborg metaphor was a useful way to appropriate the figure's material reality, namely, the idea of the military cyborg. However, Hayles argues that “Haraway's original concept” is “not networked enough” (159) and that “contemporary formations are at once more subtle and more far-reaching than the figure of the cyborg allows. … Clearly a full exploration of contemporary dynamics requires attention to technoscientific networks as well as biological organisms” (160). To Hayles the cyborg has been superseded by what she terms the cognisphere.

> In highly developed and networked societies such as the US, human awareness comprises the tip of a huge pyramid of data flows, most of which occur between machines . . . The cognisphere gives a name and shape to the globally interconnected cognitive systems in which humans are increasingly embedded. (161)

Hayles points out that while changes in the cognisphere can highlight scary new networks, the change in subjectivity is much more subtle (162). “As inhabitants of globally interconnected networks, we are joined in a dynamic co-evolutionary spiral with intelligent machines as well as with the other biological species with whom we share the planet” (164).

What is most exciting overall for cyborg feminist theory is that it will change the notion of “human” in a biotechnological age; however, Muri sees this as a threat to feminists and believes it will lead to further disempowerment rather than empowerment. “Part of the

horror of the mechanical matrix is that the union of father and mother—the idealised patriarchal family unit—is redundant" (85). It is, she claims, the attack on humanist thinking that is implicated here; the autonomy of the modern subject. That is, identity and subjectivity can no longer be categorised through notions of gender, race or sexuality. But while feminists, particularly radical feminists, have argued that technology is constructed and maintained by patriarchy and thus implicated with masculinity, cultural studies theorists in general have been moving this way already, and have started to talk in terms of mobility and immobility, as well as Nomadism and difference theory, which contends that gender, race and sexuality are no longer enough to describe subjectivity, but that the whole concept should be seen in terms of fluidity, fragmentation, and performance, reflecting the development from Haraway's terms.

In line with this shift, Jenny Sundén wants to use a form of the cyborg figure to reconcile, or at least seek an alternative methodology to the division in feminisms. For an alternative feminism, Sundén argues

> there might be a weak link between the feminist cyborg and the reality where women who use technology find themselves. For what happens to political action when the only politics in sight are deeply anchored in the story of the cyborg body? (217)

However, Sundén warns that there is a danger in claiming that cyborg theory discounts the materiality of the body, and in turn supports what Haraway has always claimed, that fiction and reality cannot be separated, only blurred:

> To dismiss cyborg politics arguing that the 'real' body is being forgotten is further to undervalue how embodiment includes the virtual in shape of imaginative projections and phantasmic bodies of dreams, how the imaginary

> has a capacity to retro-act on the physical which significantly blurs the boundaries between corporeal and imaginative (Sundén 226-7).

Instead, Sundén wants to argue that there is an alternative cyborg theory that incorporates the "she-cyborg", a figure "more tightly coupled with the here and now" (229) than Haraway's in the "Manifesto," and in the 21st Century, one which can navigate sites of resistance for both the material and the virtual body, though "her main work at the moment appears to be to perform an analysis of the naturalisation of (online) bodies" (229) But Sundén considers the main challenge to such a figure is "to figure out how a politics of sexual difference can be realised" within the "intense exchanges between bodies, texts, and machines" that characterise a techno-scientific world, so that the she-cyborg can "create a position from where she can be speaking" (229). This is important to Sundén, since she feels that in such a world feminist debates about sexual difference are far more significant.

Sundén also suggests a strategy to maintain Haraway's notion of situated knowledges, while evading the tendency for different feminisms to divide rather than combine:

> the tension … between different feminisms does not have to be regarded as a dynamic force that links very different women. The dynamic comes from the fact that both sides of the divide embrace elements from the other side, so that even if one chooses the same side over and over again, the decision can never be final (230).

Moreover, as Sundén explains, "One can be recalled to the locality of 'woman' any time, but one can never stay inside of these boundaries, because they keep moving. This implies that it is possible to change the meanings surrounding the divide—but it requires constant work" (230). This argument couples Haraway's original concept of the cyborg as a fluid boundary crosser with the newer emphasises on mobility and impermanency even of subjectivity. It

echoes what Braidotti described as “the political advantage of collective identities based on difference categories,” with “an understanding of such identities as moveable alliances based on the fictitiousness of a common ground” (Ganser 175).

Haraway’s work is also proving useful to ecofeminist theorists. As Sam Mickey and Kimberly Carfore point out, while Haraway does not overtly define her theory as “ecofeminist,” she has “expressed deep engagements with ecological issues and with connections between gender and ecology. Furthermore, [Haraway] is “committed to addressing postcolonial issues and inequalities of race, ethnicity and class” (122). Grebowicz and Merrick also note the significance of Haraway’s work when applied to ecofeminist understandings: “An openness to ecofeminist readings marks much contemporary SF, where the realities of environmental collapse and ecological vulnerability are so common as to have become almost a given” (135).

While the material medical cyborg is being realised, the cyborg as metaphor offers a significant theory through which to address the sociological aspects of medical treatment. Deborah Lupton applies Haraway’s concept to the theorising of digital technologies in the health and medical sciences. She claims, “The word ‘digital’ has superseded the word ‘cyber’ to a large extent in both the academic literature and popular culture” (2). However, Lupton argues that the cyborg motif still has import in contemporary society, “particularly in a context in which we are closer than ever to becoming cyborgs by using digital technologies” (2). Lupton employs the term “digital cyborg assemblage” to “denote the body that is enhanced, augmented or in other ways configured by its use of digital media technologies” (2).

Meanwhile Haraway’s Manifesto is still cited and sourced in feminist literature on embodiment and technology, though attention is now moving beyond her cyborg here as in

SF and military research. Alison Adam claims that Haraway's cyborg "has caused an upsurge of academic interest in the programme of cyborg postmodernism, which, in terms of gender, sexuality and the body" can be found "especially in boundary transgressions … and on VR and bodies" (Adam, 144). Reviewing Haraway's status in the 21st Century, Grebowicz and Merrick point out that it is unfortunate that the "Manifesto" has overshadowed her other works, particularly *The Companion Species* (2003) and *When Species Meet* (2008):

> A simplistic notion of Haraway as postmodern or posthumanist theorist has tended to obscure her complicated mediation between social constructivism, relativism and materialism and indeed her own challenges to the terms postmodernism and posthumanism. (4-5)

Similarly, her commitment to science fiction as story, reading strategy, and tool for theory is taken seriously by very few critics (4-5). Grebowicz and Merrick suggest that looking beyond the cyborg will provide, "alternative scholarly architectures in which to continue to read the cyborg … so that it may become newly relevant" (7) They want to illustrate how Haraway's work reaches beyond the context of specific feminist inquiries into a broader application to political and liberatory philosophies, and "to affirm the truly transdisciplinary potential of her work" (2).

Haraway in the 21st Century

For Haraway herself, in the 21st Century the dualist binary inherited from Cartesianism is still obvious in the split between humanities and science. To break down this division, feminist approaches to technology must destabilise, diffuse and combat the stance from which emerge a number of challenges for feminist practice and politics, among which Grebowicz and Merrick include:

> First, the epistemological split between science and culture, which then underwrites the positions of realism and constructivism. Second, the sex/gender split which has facilitated so much of post-second-wave feminist cultural discourse. Finally, and what has arguably become most central to her work, the human/non-human binary. (33)

Yet Haraway herself has already linked her cyborg to a newer concept of the latter:

> the cyborg and companion species are hardly polar opposites. Cyborgs and companion species each bring together the human and the non-human, the organic and the technological, carbon and silicon, freedom and structure, history and myth, the rich and the poor, the state and the subject, diversity and depletion, modernity and postmodernity, and nature and culture in unexpected ways. (*Companion* 4)

As McIntyre's *Superluminal* in 1984 matched Haraway's actual dates of production for the "Cyborg Manifesto," her move in the 21st Century to make the cyborg one in a range of companions matches in time the shift in Moriarty's *Spinstate* to give fictional cyborgs companions, although these are genetically altered humans and disembodied AIs. Again, the parallels between SF and feminist theory indicate the closeness of the relationship between these two arenas where the cyborg has evolved.

From the perspective of 2015, the "Cyborg Manifesto" still appears as a ground-breaking shift in feminist thinking, admitting science and technology into the feminist cognisphere rather than excluding them. However, the theoretical cyborg is beginning to resemble those in SF and military research: no longer an end result or final product, but a stage on the way to wider perspectives that blend theory on technological advances with newer ideas on embodiment and other new intellectual initiatives. This movement through

but then beyond the cyborg metaphor exemplifies the way feminist theory as a whole has entered and become a vital if contested element in 21st Century thought. In that process, Haraway's cyborg has played a notable role.

Chapter Ten Conclusion: Will the Real Cyborg please stand up?

In this thesis I have traced the evolution of the cyborg for almost a hundred years, from its first appearance in SF of the 1920s to its current status in the 21st Century. I have followed this evolution through three apparently disparate but intimately connected fields, science fiction, military research and development, and (largely) feminist theory. I chose these fields because in each one, firstly, the cyborg was or is still a conspicuous element in research and thinking, and secondly, such fields did and still do attract strong and continuing public attention, and I have been concerned with the cultural context of the figure.

Throughout the progress of this study, I discovered an increasing interaction between uses of the cyborg figure in the three fields, as the strands of fictional, material and theoretical concepts gradually converged, and then almost entirely blended in the mid 1980's. This merger comes as SF moves into the new sub-genre of cyberpunk, the military make their nearest approach to the production of a material cyborg as understood by definitions of the figure as a machine/human hybrid with internal modifications, and feminist theorists discover the power of the metaphor in the wake of Donna Haraway's crucial "A Cyborg Manifesto." The cultural, social and technological context for this occurrence includes the end of the Cold War, the rise into general use of the personal computer, and a similar rise in attention to science, technology and corporeal embodiment in feminism.

I began the study after contemplating the cyborg metaphor as Haraway first proposed it: a useful tool for feminist enquiries into science and technology, but also into the long-term feminist concern with notions of embodiment and subjectivity. Soon, however, the question, "Where is the cyborg *now*?" proved central to the thesis. To fully answer this question, it was first necessary to understand where the cyborg had already been; this in turn revealed that the

cyborg had “been” in more than one field even before its name was invented, and hence led to the study of cyborg evolution in these three areas.

The findings of this thesis will have little effect on military decisions on the future fate of the cyborg. But despite the study’s origins in feminist concerns and theory, nor do I aim to define a specific purpose or secure theory by which women writers can use the cyborg figure to direct their fictional and/or theoretical writing. Rather I have hoped, in both theoretical and fictional fields, to expose the uncertainty and instability of dominant discourses, such as those on gender and “humanity.” The thesis might then encourage ongoing experiment and interrogation of texts, and bodies as depicted in texts, as ways to overcome and destabilize patriarchal dominance.

As the thesis provides no single solid platform from which to use the cyborg as a fictional or theoretical lever, as suits its own nature, the cyborg has no fixed, stable position in any of these three areas of cultural significance. Nevertheless, I have tried to highlight its fluidity in all three areas, with the aim of indicating future appropriations by theorists and fiction writers, which might also open new areas of theoretical and imaginative development.

In science fiction, the cyborg figure provided a new trope through which writers could join the long-term SF debate on what is and what is not human. Uncertainties and anxieties over this question for cyborgs are particularly prominent in SF depicting the figure up until the 1980s. In these texts sexuality played an important role in determining humanness, particularly/specifically for male cyborg characters, which occupy most of the stories. There is also a heavy emphasis on the idea of good and bad cyborgs, and a contrast between cyborg or human subjectivity, which highlights the sustained dualist dichotomy of “one” or the “other”.

This configuration accords with the formulaic male-dominated stories first suggested by SF theorists to characterise the genre in the 1920s indicating, especially in this case of "cyborg" centred narratives, that the "masculine" cyborg is considered the "one", highlighted by the dearth of feminine cyborgs. While later texts do tend to an increased interest in more positive and informed concepts of the cyborg, notions of sexuality as a defining trait of "human", still appear in some of the post-1980s texts, especially cyberpunk novels, and especially those by male writers. Despite this, the cyborgs in these early stories display a more analysed and detailed consideration of the figure than do projections of the cyborg as a human/machine hybrid, treated almost entirely as a military apparatus in military research and development.

By the 1980s in SF, there is an evident shift toward voicing the rising technological anxieties of the time. By the mid-1980s, speculation about virtual reality and cyberspace was plentiful though still concerned with what is human. In this decade, however, the cyborg is joined by other new, sometimes technologically-based conceptions of what might be human, focussing notably on that child of virtual reality, "smart" computers and disembodied cyberspace avatars, the AI.

Some SF texts such as *Neuromancer*, *Midnight* and *Snowcrash*, maintain the dualist terms found in pre-'80s SF, where "human" is presented as "one" or the "other", an opposition privileging mind over body. However, this decade brings more female cyborgs and more female writers, both of which challenge this concept of the masculine as the "one", along with traditional notions of gender roles and identity. The anxieties over technology and the faltering and/or fractured subjectivities of some of these cyborg characters do not match Haraway's development of the cyborg figure as flexible and indeterminate, but the texts by McIntyre, Cadigan, Piercy, Scott, Mixon and bes shahar begin to posit that cyborg

subjectivity and identity can be explored and recreated outside of the 1920s formulaic narrative.

From 2000 on there is another significant shift in the depiction of cyborg SF. Since the fumbling, awkward cyborg of *The Clockwork Man*, many cyborgs were shown as belonging on the social periphery. Even as protagonists, they were constructed as an outsider or outcast, or merely a misfit who is a rarity rather than the norm. However, after 2000, several important changes are evident.

Firstly, in some cyborg narratives, cyborg characters become both central and dominant. Notably, in four of the 21st Century texts, the narrative point of view belongs to a cyborg protagonist; further, all four are female. Secondly, AIs and later, genetically modified "humans" appear along with cyborgs in the contested zone of what may or may not be human. Thirdly, and of equal interest, in the last SF texts I discuss for the 21st Century, the cyborg is no longer presented as an outcast or marginal human; whether the overall depiction is positive or negative, the cyborg now represents the established authority or status quo of his or her future world. This final shift suggests that the cyborg in SF has evolved until it has actually become almost outdated as a vehicle for the perennial debate over what is human. Instead, as in Moriarty's *Spinstate*, the marginal but imaginatively exciting position in this debate is passing toward AIs and genetically modified versions of "humanity."

These shifts could represent the normalisation of medical cyborgs over the last twenty years; emerging research in genetics and other scientific technological applications may also have contributed. However, the gender profile also suggests that where, like their cyberpunk forerunners, male writers in the 21st century continue to present the cyborg almost completely in the negative, women SF writers have successfully adapted Haraway's essay, and written the fluidity and flexibility of her cyborg into their works, significantly

humanising the cyborg in the process. Another notable sign of this change is the new emphasis both on the cyborg's vulnerability to age, and, almost entirely absent from earlier cyborg narratives, elements that either show cyborgs with humour, or have cyborgs use humour about and for themselves.

While the cyborg enters SF soon after World War I, the technological advances that underpinned the post-World War II possibility of a material military cyborg began during the World War. Notable here are two significant shifts in warfare: firstly, a greater ability for warring factions to reach beyond enemy lines and deliver attacks beyond the battlefield, and secondly, the greater mobility of armies on the battlefield. Though these changes were based on the peacetime inventions of railways, radio and telephones and the first aircraft, they laid the foundations for much great mechanisation in warfare most notably with the development of weaponry like the machine gun and extension of conflict to the air.

World War II expanded this technological dimension powerfully with the sudden new emphasis on information technology, firstly the development of radar, and then the military application of previously limited computers, most famously for the decryption initiatives on the Allied side. New and equally important developments occurred with technology in the air and in weaponry, culminating for World War II in the V1 and V2 rockets, the atomic bomb, and the jet-propelled warplane.

These fields again expanded exponentially in the Cold War "arms race," first driving air technology to space capability, and then producing concentrated research focused on the integration of the soldier with military weapons. By the 1950s, the demands of the Cold War to deal with ICBMs and hydrogen bomb threats had accelerated the space race until the theoretical needs for humans in space produced the actual concept and name of the cyborg,

and research in the superpowers was extending into “human engineering”, “human quality control” and the “man/machine weapons system” (Gray, “Culture” 148).

In the 1970s the now fearsome technological capabilities of the superpowers were undermined by the Vietnam War, where technology was largely irrelevant and guerrilla warfare on difficult terrains, such as under jungle canopies, proved the most successful mode of combat. The US defeat produced a significant rethinking of military priorities and strategies. The 1945 strategy of containment was no longer considered relevant, and funding for technological development was less popular. More significantly for the cyborg, while the interest in space flight continued, the funding for research and development, that is into internally hybridised man/machine cyborg soldiers, was almost entirely halted.

In contrast to the defeat in Vietnam, the Gulf War of the 1980s restored some faith in technological warfare for the US: success in this case was firstly due, not to a shift in strategy, but to the re-application of further developed technology in the differently difficult terrain of expansive desert landscapes. Of equal significance were the striking advances in information and weapons technology, including global satellite surveillance, smart bombs, much improved targeting techniques, and the development of almost true cyborg soldiers, as in fighter pilots with augmented reflexes. Much of the “cyborg soldier’s” enhancement, however, came from external augmentations: better body armour, improved sighting scopes and communications and vision enhanced by goggles rather than eye surgery.

America’s success in the Gulf Wars is an attested result of these increased technological abilities. Such smart weapons saw a significant increase in the human/machine interface. This shift in capabilities and success in the Gulf Wars encouraged the U.S military to focus on research and technological development, and strategically, to avoid risking the lives of soldiers on the ground. The strategy altered violently after 9/11, and the beginning of

the twenty first century promises a continuation of warfare, if with fewer mortalities, with the ongoing engagements in Iraq and Afghanistan.

However, either before or after 9/11, attempts to directly and/or internally augment soldiers, thus producing a true military cyborg, did not continue. Instead the significant advances were deflected toward improvements in weapon systems operated or activated by soldiers. Thus, by the end of last century, the material cyborg soldier had yet to be realised. Instead, new research into nano-technology and non-human military organic-machine hybrids, suggests that future integrations of machine and human will remain temporary and external. And the feminisation of the human cyborg, as secondary to the technology, and the normalisation of the medical cyborg leading to a "too" humanised figure for primary warfare, indicates that the soldier cyborg is less desirable as a masculine figure of power.

From 1985 onward, the cyborg had considerably more impact in the theoretical arena, particularly among feminists, and especially among feminists concerned with science and technology. Haraway's cyborg also infiltrated studies in computers and the newly developed Internet, and post-colonial, queer and postmodern approaches on identity and subjectivity. As a result, feminist research into technology and science amalgamated with the critiques of gender and corporeality and recognition in the fields of queer and lesbian theory as well as in the related fields of cyberfeminism gave the cyborg metaphor significant credibility. Outside the latter fields, it is easy to see Haraway's cyborg as a foundation shift in thinking which supported increasing interest in the newer theoretical fields such as difference, for example in the work of Rosi Braidotti, spatiality, as with feminist geographers such as Doreen Massey and Gillian Rose, and mobility, explored by feminist critics such as Alexandra Ganser and Deborah Paes de Barros.

By 2015, the cyborg figure in feminist theory stands as a leading player in the shift in feminist thinking, and science and technology have become part of what Hayles termed the feminist cognisphere. Nevertheless, just like the fictional cyborgs of SF and the material (yet imaginary) soldier cyborg, the theoretical cyborg has been subsumed, rightly, into a larger consideration and application of feminist thought and theory to technology, embodiment, identity and subjectivity. Though the cyborg would appear first to have been a forerunner and/or pioneer of critical cultural shifts, if later it has been overtaken or sidelined by developments it instigated, and its position in all fields remains, cyborg-like, fluid and ambiguous, its roles as a key agent and catalyst for change in all three fields remain firmly established, whatever happens in the rest of the 21st Century**.**

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