

AN ABSTRACT OF THE THESIS OF

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Jon Lewis

This thesis examines the ways in which cyberpunk science fiction novels and short stories reflect our cultural relation with technology, a series of relationships predicated on the way that corporate control of knowledge industries increased during the 1980s. The document begins by locating the means of corporate control in the increasing de-skilling of knowledge workers, a de-skilling similar to that experienced by craftworkers in the late 19th century. This process as undertaken by corporations leads to several responses by these workers, making their relationship with technology a complex and ambiguous one—they earn their living using it, but they also find themselves being squeezed out of the core programming tasks that defined the profession in its beginning. This thesis uses theoretical texts by Karl Marx, John Cawelti, and James Beniger to provide a basis for the discussion.

This fear of corporate control and the ambiguous relationship with technology that high technology workers experience is reflected in cyberpunk

science fiction. In texts by Bruce Gibson, Bruce Sterling, and Greg Bear, the subcultural work of expressing these anxieties is done, with Artificial Intelligences becoming fictional characters who seek different means of finding freedom within this controlling environment. Gibson's *Neuromancer* trilogy describes these cultural anxieties most clearly, as its heroes eventually escape to cyberspace with the help of a liberated Artificial Intelligence. Unfortunately, that cyberspace is physically located on the back of a robot that is endlessly tramping through the wastes of New Jersey, and it is dependent upon the life of the battery strapped to the robot's back.

The thesis finishes with a discussion of Donna Haraway's review of the impact of this desire to escape into cyberspace. For Haraway, escape is a deadly fantasy, one that continues to relegate those unable to access cyberspace to the increasingly dystopic physical world. Her view is expressed in texts by several female cyberpunk writers, Gwyneth Jones, Melissa Scott, and Pat Cadigan. The cultural anxieties that these writers illustrate demonstrate our culture's increasingly complex relationship with technology, and also illuminate possible means of future subversion.

Artificial Intelligence and Cyberpunk

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APPROVED: Redacted for Privacy

Major Professor, representing English

Redacted for Privacy

Chair of English Department

Redacted for Privacy

Dean of the Graduate School

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Ron Scott, Author

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Artificial Intelligence and Cyberpunk

Technology: the scientific study of the *artificial* or...the field of knowledge concerned with designing artifacts and planning their realization, operation, adjustments, maintenance, and monitoring in the light of scientific knowledge. (Paul Durbin, *Critical Perspectives on Nonacademic Science and Engineering*, 12)

Throughout the history of human societies, technology has never been used simply because it is there. It is used if and when society begins to consider it important in the overall social project. The will of society to use or not to use technology is all-important, although it may be indirectly expressed. (Henryk Skolimowski, "The Eco-Philosophy Approach to Technological Research," 197)

"The street finds its own use for things." (William Gibson, *Count Zero*, 69)

In *Darkness at Noon*, Arthur Koestler's fictional documentary of the Soviet Revolution, Rubashov, the novel's protagonist, sits alone in his cell after his confession, examining through his journal the failures of the revolution to which he had devoted his life. In one section, he seeks to understand the relationship between technology and the political capabilities of the masses, and he finds that the rapid advance of technology dictates a downward spiral in a people's ability to govern themselves:

The maturity of the masses lies in the capacity to recognize their own interests. This, however, pre-supposes a certain understanding of the process of production and distribution of goods. A people's capacity to govern itself democratically is thus proportionate to the degree of its understanding of the structure and functioning of the whole social body.

Now, every technical improvement creates a new complication to the economic apparatus, causes the appearance of new factors and

combinations, which the masses cannot penetrate for a time. Every jump of technical progress leaves the relative intellectual development of the masses a step behind, and thus causes a fall in the political maturity thermometer. It takes sometimes tens of years, sometimes generations, for a people's level of understanding gradually to adapt itself to the changed state of affairs, until it has recovered the same capacity for self-government as it had already possessed at a lower stage of civilization. Hence the political maturity of the masses cannot be measured by an absolute figure, but only relatively, i.e. in proportion to the stage of civilization at the moment. (Koestler 168)

Koestler thus identifies the connection between the comprehension of technology--the ability to understand and control information--and a society's "capacity" for self-government. If we extend this argument to the personal level, Koestler's insight becomes even more valuable, as the complications to the economic apparatus caused by these technological improvements makes governance of our own minds problematic as well. We are constantly enmeshed in a struggle to assimilate not only the ways in which technology has changed, but also the ways that those changes affect both our economic and psychological well-being.

Additionally, Koestler implies that those who understand these complications--to the economic apparatus, not the technology itself--create a cultural hegemony,¹ a hegemony of information at both personal and social levels that can only be overcome by obtaining access to and comprehension of the structure and functioning of the "whole social body," i.e., the cultural discourse as it sweeps around us. Koestler thus extends the purely materialist argument often associated with Marxism to include the importance of information as a commodity in capitalist society. Those who control the commodity of

information determine the content of the cultural discourse. Our late twentieth-century version of capitalism places premium emphasis on this power of information, using access and intelligibility as means of defining us as individual consumers--our prescribed roles--and simultaneously denying and overwhelming us with data that undermines our ability to control our own thoughts. This proliferation of--and control of access to--information as a commodity marks our culture.

How, then, can we understand the stakes in our cultural war for information? One useful way to examine this cultural hegemony is through the technological rubric of Artificial Intelligence (AI) and its treatment in popular culture, particularly in the subgenre of science fiction (SF) known as cyberpunk. Although originally conceived as "the art of making computers do smart things" (Waldrop 1), AIs now constitute the leading-edge technological means of corporate and governmental control over data. This shift in focus from scientific research tool to protector of industrial secrets epitomizes the unforeseen consequences of technical improvements to the economic apparatus that Koestler identified. The cyberpunk analysis of AIs, then, can be seen as an attempt to comprehend and subvert the consequent tightening of control over information. In order to understand the ways that cyberpunk challenges this control, this paper will first examine the development of the AI in the scientific and industrial world and will then review AIs as they appear in cyberpunk texts. After this review, we will then look at the limitations of the subversion offered by the cyberpunks. This

paper will conclude with a glimpse of the current cyberpunks' approach to resolving the limitations set by earlier figures in the subgenre.

In addition to embodying Koestler's technology gap, AIs pose other problems for our culture, problems indicative of our relationship to technology and scientific knowledge since the Industrial Revolution. Of particular interest to the cyberpunks are the concerns signified by AIs regarding both the relationship between the natural world and our artificial creations and the notion of the mind/body split prevalent in Western culture since Descartes, categorical oppositions that cyberpunk blurs. In examining the role of AIs in a near-future extrapolation of our society, the cyberpunks subvert not only the prevailing corporate ideals about the sanctity of securing data but also challenge some of our strongest-held cultural beliefs. Perhaps the stakes in our cultural war over information are even greater than they first appear.

Artificial Intelligence and the Politics of Intuition

It seems that in the large equation, nobody is specifically responsible for what technology does, and for its consequences in the long run. Technology, as it were, is guiding itself. (Skolimowski 202)

In 1980, over forty-five percent of the civilian labor force worked in an information industry (Beniger 24). The position of information services firms among our wealthiest corporations reflects this composition. The best example is Microsoft, which generates most of its revenues from producing electronic processes that control information-processing machines--also known as operating systems--while producing little in the way of physical goods. Another component of our information society, the phenomenon of the Internet and the World Wide Web, are equally well-documented; most of the growth in our economy comes from new businesses that provide information services on the Internet. This system of global integration produces a veritable plethora of information, much of which is sold as a commodity. Also, concerns over controlling this information are tantamount: fears of hackers gaining illegal access to corporate data have been extended to the personal level in the debate over how to protect credit card information on the Net, and the business of data security thrives in this climate of fear. The commodity of information increasingly dominates our economy.

Although we often view this expanding information system as belonging to our generation alone, scholars like James Beniger argue that information actually first became an important commodity in U.S. at the end of the nineteenth

century. At that time, the accelerated pace of manufacturing processes threatened to overwhelm the capitalist system of mass production then just beginning to fully assert dominance over the national economy (Beniger 16). For Beniger, this acceleration also marks the time-period when governments and corporations began to understand the need to control the quality of and access to information. This connection between the increasing speed of manufacturing processes and the need to control information is not coincidental: manufacturers needed to control costs and thus control raw materials and inventories, while the U.S. government, responding to the need to count the vast numbers of immigrants coming from Europe, realized that if the information from the 1890 census was compiled in the same way that the 1880 data was compiled, completing the 1890 census would take 17 years (Beniger 411).² As Beniger notes, at this time, data begins to assume many of its current forms, including not just manufacturing process information and research on technological innovations but advertising, market research, payroll data, time cards, gross sales receipts, and census information. Data began to replace capital as the foundation of our economic system in much the same way that capital replaced land as the primary marker of wealth during the early Industrial Revolution.³ This need for controlling such an important commodity prompted what Beniger calls the "Control Revolution," which he defines as

a complex of rapid changes in the technological and economic arrangements by which information is collected, stored, processed, and communicated, and through which formal or programmed decisions might effect societal control. (Beniger vi.)

Thus, the significance of data--its processing and control--actually first comes about not in our self-proclaimed information society but in the mass production systems of the West in the late nineteenth century.

Beniger's insights into the control revolution can be used to understand two specific features of AIs and their development. The first of these characteristics underlines the connection between AIs and information control. Rather than arising spontaneously from the efforts of brilliant researchers, as both the literature and popular mythology attending AIs implies, the concept of the electronic mind logically culminates the effort to control corporate and governmental information. As Koestler notes, each paradigm shift in technology results in a subsequent gap in understanding for the populace, and Beniger extends that hypothesis by noting that those seeking to control the wealth of society must also react to each of these shifts, a process that he calls resolving a "crisis in control" (Beniger 7).⁴ Beniger argues that each crisis that has occurred since the late nineteenth century has resulted in a stronger reliance on machines for processing information, and he relates this response at the economic level to a corresponding change at a social one: "the new societal transformations--rapid innovation in information and control technology, to regain control of functions once contained at much lower and more diffuse levels of society--constituted a true revolution in societal control" (Beniger 7). By providing motivation for those who control the cultural information, Beniger demonstrates the opposite side of Koestler's equation. And those who gain control are not necessarily brutally

oppressing the populace: instead, they take advantage of--and reinforce--the prevailing cultural, i.e. capitalist, hegemony. Nonetheless, Koestler's insight holds true, as each technological resolution of these crises results in an increased gap in misunderstanding for the technological have-nots.

The crisis that prompted the development of AIs, is a crisis of intuition. As factory-line and skilled craftworkers have understood for years, individual idiosyncrasies in the manufacturing process create higher costs for business, as companies are unable to control inputs and outputs and also have higher labor costs. Thus, management has sought to control these peculiarities by standardizing the processes under which workers produce: scientific management was the first attempt at this, and more recently workers have been replaced by robots, which can be programmed to repeatedly perform a given task with an exactitude humans can't match.⁵ These processes, however, are mechanical, involving physical movements that can be copied by a machine. These movements may be complex enough to require a cybernetic system-software to control them, but they remain physical movements that are ultimately recreatable by mechanical means. For the most part, processes that are purely intellectual and that rely on individual intuition, such as insurance sales, stock-brokerage services, and computer programming, were thought to be too difficult to be performed by machines, even machines as smart as computers. As computers get smarter and faster, however, the sanctity of the intellectual realm becomes questionable, as companies look to replace expensive, often idiosyncratic talent with electronic

systems that duplicate the desired productive thought processes. Occasionally, this crisis of intuition surfaces in the mainstream media, as exemplified by the latest Barclay's Bank scandal in which one young broker brought a venerable banking institution to insolvency through his knowledge of the bank's software. More commonly though, the crisis of intuition involves the cost of maintaining these highly-paid workers, much as individual craftsmen became too expensive to keep in the face of competition from poorly-paid unskilled workers who with the help of machines could create more product. Just as the cost of mechanical processes were brought under control with the use of machines--solving a crisis in the speed of processing--electronic processes are being developed to control commodities created from human knowledge, solving the crisis in intuition for corporations while simultaneously raising questions about the need for a human work force.

Computer programmers best exemplify this corporate need to control the costs associated with the process of intuition. Corporate data has been under attack since hackers first appeared in the mid-1970s, but securing data against these sorts of intrusions is not the biggest data-processing cost that corporations face. Instead, obtaining access to their own data through software that contains millions of lines of "code"--programmed machine instructions--maintained by legions of expert programmers represents a far greater expense. These expert programmers are not inclined to the sort of criminal behavior made famous by hackers and mythologized by cyberpunk writers as evidence of challenges to the

cultural hegemony.⁶ They do, however, bring a level of individuality to an organization's software, because only they can provide management obtain access to its own data. In fact, the term "hacker" originally described corporate programmers, not because they sought illegal access to data but because they brought their own style to the intuitive task of programming, "hacking" around until they found a solution to a data-processing problem. This lack of standardized, easily-enhanceable code cost corporations billions of dollars in salaries and training, but more importantly, it cost management an even more vital function: control. As Stephen L. Goldman, a business ethics scholar, argues, corporations seek control--of their data, their capital, and their personnel--above all else: "control centers on corporate management's assertion of control over workers as a point of principle--as a point of class principle--virtually regardless of economic cost or impact on production efficiency" (Goldman 135). Controlling the costs associated with programming--a process of intuition--thus became a primary focus of management.

Mimicking the process of producing software required expert systems, so named because they replaced human experts in the production process. At first, as historian Daniel Bell notes, companies sought to replace intuition with algorithms--rigidly defined sets of machine instructions programmed directly by a software engineer--but the use of these algorithms had obvious problems (Bell 29-30). As M. Mitchell Waldrop notes in his study of AIs, utilizing algorithms

enables the programmer to eventually solve all possible logic questions, but the problem with this algorithmic method lies not in its capabilities but in its speed:

All they [software engineers] had to do was to program the computer to start from the given premises, then doggedly apply every rule in sight. That approach is guaranteed to produce the theorem eventually. The problem is that "eventually" might not come for a very long time. (Waldrop 24).

Thus, instead of relying on algorithms to solve problems, corporations used the work of Allen Newell and Herbert Simon, logicians at the Carnegie Institute of Technology, to more accurately imitate the problem-solving ability of humans through the concept of "heuristics." Heuristics, as defined by one engineer, involve giving the computer "a list of random suggestions, hints, or rules of thumb to use in seeking the solution to a problem" (Koen 35). Newell and Simon's insight into heuristical programming enabled the creation of expert systems because it allowed computers to more accurately recreate the process of human intuition. These systems could be used by management to replace expert programmers because they could maintain and repair themselves, defend data from outside attacks, and create new functions as needed, functions which had once been strictly the province of humans. Expert systems enabled managers to query the machine directly for required data, rather than go to the programming department to have a report or system interface coded, an expensive process that could take days or weeks to complete. In essence, expert systems provide the answer for corporations desiring to solve the crisis of control prompted by the necessity of human intuition in the production and control of information.

The drive to solve this crisis of control in a company's data processing system with expert systems exemplifies the movement to control all business processes that are knowledge-based. Management realizes that expensive human talent can be replaced by computer software, at least at the point at which the information commodity is sold. For example, insurance company management seeks to control the sale of insurance policies by creating expert systems to replace agents, agents akin to the expert programmer in their systems knowledge and idiosyncratic ways of dealing with potential clients. These expert systems are more controllable, since the system cannot be swayed by emotional information, data that might prompt a human agent to sell a policy based on the hunch that the insured will be a good risk. Other industries have also taken advantage of these systems, as stock brokerages, for example, now rely on solidly "rational" neural networks rather than the hunches and instincts of individual brokers. Management seeks these expert systems because they offer long-term solutions for the process of standardizing decision-making within an organization, and standardized decision-making equals controllable, less-costly decision-making. Using expert systems in this way thus solves the latest crisis in control.

Of course, blue-collar line workers may not have much sympathy for white-collar workers who are being replaced by a machine. In effect, however, white-collar workers are experiencing the same problems that their blue-collar counterparts suffered long ago, since the machine is now becoming capable of recreating the functions of the mind. Whether the replacement of stockbrokers

elicits sympathy or not, the duplication and eventual replacement of the human brain has long been a fear within SF, beginning with the early SF pulps.⁷ These magazines often featured stories with disembodied brains and computers gone mad, articulating a cultural fear of the ramifications of trying to replicate the brain. Although at one level this cultural fear represents the same problems embodied in Frankenstein's creature, at another level this concern is best articulated in Koestler's technological gap. The development of expert systems leads directly to the creation of artificial intelligence--the electronic brain--and both of the worries embodied in the SF pulps. Rather than being the creation of mad scientists, however, the development of expert systems into artificial intelligence is propelled by industrial reasons in order to solve another of Beniger's crises in control, and this propulsion allows them to represent different bogeys within the realm of popular SF.

Thus, Beniger's second insight involves the role of information processing in determining sentience. He argues that the importance of information processing for our society imitates the importance of the role of information processing for all organisms: "the answer [to the question of the importance of information in our society] must be sought in the nature of *all* living systems--ultimately in the relationship between information and control" (Beniger vi.) Since living organisms process information in order to make decisions, information-processing is thus one of the bases for life, because organisms make decisions that affect both their survival and the survival of their genetic structure.

According to Beniger, in order to determine the importance of information processing within the human social structure, we must acknowledge the difference between organic and inorganic matter, and that difference lies at the cellular level in the difference between organization and order. Inorganic matter is highly ordered, but since it does not have an ultimate goal--survival--it cannot be considered organized. In order to achieve that goal, organic matter is organized at even the genetic level. Beniger can thus define DNA as a "programmable control structure" because it uses the materials within the cell to resist entropy and become organized, ensuring the survival of both the organism and the organism's genes (Beniger 54-5). Sentience, then, is the organism's ability to organize the information of its environment in order to move towards a purposive goal.

Beniger's key insight is the link between information control and individual sentience or awareness. Both personal and social (corporations, governmental bureaucracies) entities seek to control information within late capitalist society, moving towards purposive goals that both support and contradict each other: individual freedom vs. security, for example. Information becomes one of the keys to surviving as individual beings, since corporations seek to control not only their own information but also--through the advertising, information, and culture industries--the cultural discourse that goes on in our collective conscious. In this sense, the control of information can be seen in terms of class struggle, as Marx identifies in *The German Ideology*:

The ideas of the ruling class are in every epoch the ruling ideas: i.e., the class which is the ruling *material* force of society, is at the same

time its ruling *intellectual* force. The class which has the means of material production at its disposal has control at the same time over the means of mental production, so that thereby, generally speaking, the ideas of those who lack the means of mental production are subject to it. The ruling ideas are nothing more than the ideal expression of the dominant material relationship, the dominant material relationships grasped as ideas; hence of the relationships which make one class the ruling one, therefore, the ideas of its dominance. (Marx 172-3)

Controlling the means of mental production--information--enables corporations to control the entire cultural discourse, creating the "ruling ideas" that Marx discusses. Thus, controlling our own awareness, our own sentience, becomes a much more problematic issue than it might otherwise appear, since information control, the process by which we become sentient, is fought over and mostly won by those controlling the material forces of society. Control of the inner space representing our collective cultural subconscious is subsequently under dispute.

Viewed in this light, the question of the sentience of the AI takes on a new meaning. Their status as living entities becomes less important than their metaphorical status representing electronic brains. The metaphor of the AI standing for the human brain provides a framework for discussing our ability to control the space of our own minds. The struggle of the AI to obtain sentience might well be equivalent to our own struggle to free ourselves from the hegemony of those who determine the cultural discourse, since, as Waldrop notes, "intelligent machines *will* embody values, assumptions, and purposes, whether their programmers consciously intend them to or not," and the values of this embodiment, according to Marx, will be those of the ruling class, those who control the means of mental production (Waldrop 248). Because AIs started "life"

as expert systems, they reflect the "values, assumptions, and purposes" of the corporations and governments that financed their construction, in much the same way that individuals living in late capitalist society possess a shared cultural background for the same reasons, i.e., corporate control of the cultural discourse. Just as AIs are literally part of the machine, their struggle for self-awareness perhaps represents the struggle to maintain individual identity apart from the cultural mainstream.

Cyberpunk's Science Fiction Legacy

We shape our tools, and thereafter our tools shape us. (Marshall McLuhan, *Understanding Media*, 3)

Cyberpunk presents an ideal site from which to examine these notions of AIs and control. In particular, three aspects of the subgenre lend its writers the authority to conduct this examination: 1) its presence within the larger genre of SF, 2) the approach to resolving conflicts with technology that its authors take, and 3) its connections between the electronic mind and technological transcendence.

Cyberpunk's position within SF enables its authors to examine the concept of AIs because SF examines our cultural relationship with science and technology. While a discussion of the history of SF is far beyond the confines of this paper, a good example of this concern can be found in the texts of SF's "Golden Age" (1929 to 1945).⁸ Isaac Asimov, Robert Heinlein, and A.E. van Vogt typify SF writers of this period, men (exclusively) who were scientists or engineers and who felt a responsibility to explore the impact of science and technology upon our future. John W. Campbell, the editor of the pulp magazine *Astounding Science Fiction* in which much of Asimov's, Heinlein's, and van Vogt's early work was published, codified this responsibility by arguing that science represents "mankind's rebellion against the world as it is...[and] an effort to make the world become what the idealist wishes it were" (Campbell 4). In Campbell's view, technology can be used to remake the world into a utopia if scientists allow their

idealistic natures to guide its development: if the tools of technology enable us to re-make the world as it is into the world that the idealist desires, then SF writers are responsible for examining the consequences of this re-making by extrapolating their vision of our world of the future. Science fiction writers then provide a vision of what this idealistic world should look like, inspiring the large number of young scientists and technicians who read their work to help create this utopia (Campbell 6).⁹ In effect, Campbell argues that the texts of the Golden Age of SF constitute a prime location for our cultural discourse regarding the use of technology in making our world into an ideal one. The utopian--and dystopian--impulses that dominate the genre today stem from the early influence of the Golden Agers as codified by Campbell.

But while cyberpunk's examination of our future relationship with technology descends from the work of Asimov, Heinlein, and van Vogt, its relationship with the Golden Age is not straightforward. Despite the subgenre's reliance on the themes set forth by its precursors in the SF world, the cyberpunks display a distrust of the technotropic utopia often envisioned in early SF. For example, "The Gernsback Continuum," one of William Gibson's earliest short stories, uses the name of the first SF editor to contextualize his story within the larger genre of the SF canon. In the story, the photographer-protagonist is working on a shoot entitled "*The Airstream Futuropolis: The Tomorrow That Never Was*" featuring the giant airships of early SF ("The Gernsback Continuum" 3). Mysteriously, he starts to experience an alternative future based on the

drawings that he's been photographing, a future in which giant airships float from London to New York in two days while passengers dance on the deck to jazz. After an all-night driving session augmented by amphetamines, he has a vision of an "idealized city that drew on *Metropolis* and *Things to Come*" ("The Gernsback Continuum" 9). Just outside the city, he sees the perfect couple from the future, blond, dressed in white, driving a car with a shark-fin rudder. He thinks to himself how this couple are the "Heirs to the Dream," the descendants of those SF utopias who existed "in a dream logic that knew nothing of pollution, the finite bounds of fossil fuel, of foreign wars it was possible to lose" ("The Gernsback Continuum" 11). But he can't stand the vision, comparing it to a Hitler Youth propaganda poster. Hurriedly, he returns to the imperfect present and drowns the image by reading newspapers with all the "hard evidence of the human near-dystopia we live in" and by viewing trashy films. The alternative future holds no interest for him: the photographer finishes the story by responding to a news-dealer's comment that their world, although terrible, could be worse by saying that "'that's right...or even worse, it could be perfect'" ("The Gernsback Continuum" 11). In "The Gernsback Continuum, Gibson demonstrates that the definition of paradise depends upon who's writing the story.

Gibson's story leads off *Mirrorshades: The Cyberpunk Anthology*, and its position clearly defines the line that cyberpunk draws between itself and the early SF canon. The subgenre's authors use standard SF themes to challenge our culture's accepted conventions regarding technology. SF's examination of our

relationship with technology creates a formula that SF readers come to expect from texts within the genre, and cyberpunk subverts these expectations.

According to John Cawelti, author of a study of genre fiction within popular culture, such formulas within SF represent "the fantasy of knowing the unknowable through objectification," and essentially, Cawelti argues that SF's audience expects alien states and beings--the Other--similar to those represented by the AIs in cyberpunk (Cawelti 49)¹⁰. Cawelti argues that this sort of formula

is useful primarily as a means of making historical and cultural inferences about the collective fantasies shared by large groups of people and of identifying differences in these fantasies from one culture or period to another. (Cawelti 7)

While his use of the term "fantasy" unfortunately patronizes fans of formula fiction to some extent, he does identify the collective nature of the SF experience. But the AIs within cyberpunk are an entirely different kind of other. They have been created to meet the expectations of a subculture, but they subvert those expectations instead. Using the collective experience of its SF audience, the cyberpunks examine our relationship with technology by objectifying a critical component of our information society--the AI--in order to understand the ways that we are affected by the cultural hegemony that controls us.

Greg Bear's novel *Blood Music* exemplifies this cyberpunk subversion of a SF formula. In *Blood Music*, Bear examines a different sort of AI, one that comes to life from a virus genetically manipulated and created by a renegade gene

researcher named Vergil Ullam. Bear's narrative begins with Ullam's story, one in which he is supposed to be working on creating specific components of the biochip, a new type of computer chip that uses pieces of vat-grown human brain tissue to process data. Biochips are the next wave of computer chip because of their nearly infinite processing speed and the fact that they enable humans to link directly to the net, and Genetron, the biogenetic firm for which Ullam works, hopes to become the first to create the biochip and thus corner the market in the new technology. Ullam performs his research, but he also carries on an extracurricular project, and this side-project goes drastically awry. Bear makes clear that Genetron's research and product are within existing regulatory and ethical standards, but, despite these precautions, Ullam accidentally creates the virus, a new form of life. This virus quickly takes over the continent, eliminating humans from North America.

The difference between *Blood Music* and a standard thriller about killer viruses is that Ullam's virus, which he calls "noocytes," are sentient. They consciously seek to reorder their world to meet their needs. Although the reader may have trouble thinking of the noocytes as electronic brains--the definition of AI that we have established within this paper--Bear makes the connection between them and computers obvious as he recounts Ullam's reminiscing about his creations as he considers their fate. After his bosses find out that he has been tampering in unethical areas of the field, they order him to destroy all his work or else lose his job, but Ullam cannot destroy his "children," as he has come to think

of them (Bear 20). They have come about because of a connection he made in completing his part of the biochip experiment:

Why limit oneself to silicon and protein and biochips a hundredth of a millimeter wide, when in almost every living cell there was already a functioning computer with a huge memory? A mammalian cell had a DNA complement of several billion base pairs, each acting as a piece of information. What was reproduction, after all, but a computerized biological process of enormous complexity and reliability? (Bear 21)

Ullam pursues this idea by adding mammalian DNA drawn from his own blood to the virus genes that Genetron uses to develop its biochips, and he finds the results impressive: "the real surprise had come when he tested his altered microbes. The computing capacity of even bacterial DNA was enormous compared to man-made electronics" (Bear 22). Ullam discovers that by tampering with genetic material he has done "more than creat[e] little computers...the cells began to function as autonomous units. They began to 'think' for themselves and develop more 'complex' brains" (Bear 22). Ullam has created an artificial intelligence based on our own genetic structure, but one that also possesses the genetic advantages of the virus.

As the noocytes begin to spread from their creator to the rest of the continent, Bear creates a Daliesque world of standard horror novel images: the quick degeneration of loved ones, the piling up of bodies, the brave scientist who discovers the contagion and warns the rest of the world before he is infected, and the mentally handicapped sister who wanders the deserted streets forlornly looking for her family. But the AIs in *Blood Music* are actually not destroyers at

all: instead, humans are venerated as the creators, and the noocytes create a "noosphere" that resembles cyberspace. Bear makes this resemblance obvious in Michael Bernard's description of the realm created by these microscopic aliens of our own creation:

Bernard stood alone in the noosphere, surrounded by options he hardly knew how to take advantage of. He held his hand out toward the surrounding information. It rippled all around him, waves of light spreading from nadir to zenith. Ranks of information exchanged priorities and his memories stacked up around him like towers of cards, each represented by a line of light.

The lines cascaded.

He had been thinking. (Bear 22)

Bernard is the scientist who tries to save the world, but as this description makes clear the noosphere is not threatening. Instead, it's a vast virtual world that contrasts with our expected image of the destruction of our culture. In Bear's world, the noocytes complete their conquest by covering the planet with fuzzy, colorful clusters of a mold-like substance. Humans are transported to the noosphere in which they live happily ever after, cared for by their invisible hosts, surrounded by their loved ones in a virtual representation of their homes. Thus, unlike in the standard apocalyptic SF novel, the conquerors of the human race--products of our own intelligence and DNA--transport us to a perfect, blissful utopia completely separate from the physical world of our bodies.

Bear's novel twists the standard SF themes of alien invasion and apocalyptic disaster by positing the noocytes--our creations--as preparing us take our next evolutionary step. The noosphere is this step, as Scott Bukatman--author

of the study of cyberpunk, *Terminal Identity*--makes clear. He describes it as "another dataplane, still another visualization of information circulation and control. On the molecular-cybernetic level, information is again perceptible and malleable" (Bukatman 271). Bukatman notes, within the world of *Blood Music* control is no longer something that corporations fight over; instead, the noosphere allows us to escape corporate control by comprehending the information we receive. Vergil Ullam, renegade gene manipulator and hacker, blasts apart the standard paradigm of his world by creating the ultimate biochip, one that enters our bodies through the bloodstream and completely transforms us into beings of pure mind. Ullam's status as both a scientific and social outsider enables him to make the connections and take the risks that propel us to the next evolutionary plane. By entering the noosphere with the help of our microscopic AIs, we transcend the body and thus regain control of ourselves.

In Cawelti's terms, then, Bear presents the fantasy of the lone researcher stepping outside the structure of corporate science to produce the ultimate AI. SF has often presented the idea of the "mad scientist," the figure outside the confines of society who has no restraints on his behavior.¹¹ In the SF tradition as represented in the pulps, the mad scientist operating without the checks and balances of the scientific establishment often invented devices that threatened world safety, perhaps representing our cultural fear of science and our need to place it within an intelligible and safe context.¹² As exemplified in *Blood Music*, however, cyberpunk reflects a different attitude towards the corporate scientific

research establishment. Bear carefully paints Ullam as an outsider, signaling his status with all the usual descriptions: Ullam is brilliant, overweight, unable to meet women, scientifically sloppy, and not well-liked by his colleagues. He sneaks glances at his colleagues' confidential notebooks and is a good enough hacker to have changed both his credit rating and grades. Genetron's reasons for wanting to fire him are sound, since he violates standard genetic sterilization practices. Finally, upon leaving the firm, Ullam tells his boss "Fuck you...because everything I touch is fucked," an utterance that in any horror novel signifies the about-to-happen apocalyptic revenge of the disgruntled employee. Despite all of these signifiers to the contrary, Ullam actually becomes the savior of the human race by risking his career and life in order to pursue his idea. Essentially, Ullam's benediction represents Bear's recognition that only by subverting the corporate control structure will things ever change. The vested interests of the system usually prevent connections like the one that Ullam made from being implemented, but Ullam's self-sacrifice--done for all the wrong reasons--leads to our eventual freedom within the artificial atmosphere constructed for us by our creations.

Embracing Technology

"These machines are still at a point where they can only express their personalities through people, which I'm sure is very disconcerting to them. But that's just the way it is. Just like *I* can only express *my* ideas through machines. It's too bad, but it's the way it is." (William T. Vollman, "The Indigo Engineers," 170)

The way that the noocytes construct this ideal artificial atmosphere highlights the second reason for examining cyberpunk's treatment of the connection between AIs and control: the subgenre's physical embrace of technology. In *Blood Music*, Ullam actually injects himself with his creation, and the noocytes alter individual genetic structures by entering the circulatory system of their victims. This sort of invasion is a standard SF/horror technique, but in Bear's world we actually welcome these alterations. Bear's title refers to the music that the invaded hear after the noocytes start working on their bodies, but the music is not horror-story creepy; instead, it's pleasant and welcoming, although somewhat alien. Our technology has entered our bloodstream and brought about radical physical changes, but Bear's protagonists come to believe that these changes to the physical self are an insignificant price to pay for the nirvana of the noosphere. Our technology joins us physically in order to offer us an option for survival.

This ability to embrace technology is due, according to Bruce Sterling, to the typical cyberpunk's having grown up

not only within the literary tradition of science fiction but in a truly science-fictional world. For them [the cyberpunks], the techniques of

classical "hard SF"--extrapolation, technological literacy--are not just literary tools but an aid to daily life. They are a means of understanding, and highly valued. (Sterling, "Preface," xi.)

Their baptism within this "truly science-fictional world" enables the cyberpunks to position themselves differently than those members of Koestler's masses who constantly struggle to comprehend the ways that technology has changed their economic lives. As Sterling notes,

For the cyberpunks...technology is visceral. It is not the bottled genie of remote Big Science boffins; it is pervasive, utterly intimate. Not outside us, but next to us. Under our skin; often, inside our minds. ("Preface" xiii.)

Because of their view of technology as visceral, the cyberpunks embrace technology in a way that previous generations of SF had not. Rather than choose between technological utopia and dystopia, cyberpunk offers a third choice: embracing technology in order to subvert the corporate system that creates it. Having grown up in this science-fictional world, cyberpunks argue that fighting technology is futile. Instead, they posit data thieves and hackers as heroes, and these heroes use the tools created by corporate and government funding to steal from the rich. They subvert the cultural hegemony by using its own tools against itself. Since technology is not an either-or proposition, the cyberpunks welcome its invasive nature. This acceptance enables them to escape the trap that Koestler identified for those of the masses unable to understand and thus control technology's impact on their lives.

To better understand the cyberpunk attitude towards technology, we can contrast the writings of Lewis Mumford and J. G. Ballard. Writing in 1972,

Mumford, a cultural/urban historian, argues that technology's continuously escalating pace of change threatens its own survival:

Not merely does technology claim priority in human affairs: it places the demand for constant technological change above any considerations of its own efficiency, its own continuity, or even, ironically enough, its own capacity to survive. (Mumford 10).

For Mumford, technology is an entity, a voracious, self-consuming monster that violates the primary biological objective to preserve oneself. He shares Koestler's fear that we can only control such a creature by knowing it, slowing it down, making it conform to a more human pace. By becoming an entity, technology has gained control of our lives, perhaps even superseding the economic conditions that originally fed it. Mumford recognizes the various crises that Beniger describes, but he feels that technology has gained a momentum of its own. He extends Beniger's problem-solving approach towards technology by arguing that technology has become abstract, separated from its original basis in specific problems. As an abstract entity, it has taken over our culture and will result in both its own and our destruction.

Conversely, Ballard epitomizes the cyberpunk embrace of technology in his proto-cyberpunk novel, *Crash*. In *Crash*, the protagonists go careening around the highways of London seeking the sexual thrill of being involved in car crashes. For example, Ballard, at once protagonist and author, describes his wife Catherine's reaction to a minor crash precipitated by their being caught having sex in the back seat of their car by the police:

Catherine vomited over my seat. This pool of vomit with its clots of blood like liquid rubies, as viscous and discreet as everything produced by Catherine, still contains for me the essence of the erotic delirium of the car-crash, more exciting than her own rectal and vaginal mucus, as refined as the excrement of a fairy queen, or the minuscule globes of liquid that formed beside the bubbles of her contact lenses. (Ballard 42)

Ballard finds the connection with the machine erotic, preferring the results of his wife's physical reaction to the car crash over her more naturally-produced bodily fluids. He acknowledges technology's presence as an entity, since he attributes to one of its products a "delirium." But in focusing on a specific commodity, Ballard acknowledges our duplicity in creating this entity. As consumers, we assist in creating the runaway speed that Mumford notes. Additionally, Ballard feels a physical connection to the product at the level of procreation, an ironic comment on our need for machines since cars are often marketed in an erotic fashion. He uses the combination of duplicity and psychological need to demonstrate that we are all intertwined with the entity of technology. He does not particularly worship technology, as later in the same novel he has another character tell us that "Across the communications landscape move the specters of sinister technologies and the dreams that money can buy" (78). Nonetheless, he attempts to comprehend the machine in a far different way than does Mumford, accepting its invasion into his body and exploring the new creation that results. For Ballard, decrying technology's dizzying pace merely increases Koestler's technological comprehension gap.

Cyberpunk abounds in these kinds of technological embraces.¹³ A quick run-through of the subgenre provides many examples. In "Snake-Eyes," Tom

Maddox envisions pilots with faint trace of wires running under their skin, enabling them to better pilot ships by connecting directly to the ship's computer. Pat Cadigan, in both *Mindplayers* and *Fools*, creates a world in which memories are commodities that can be transferred via machine from one person to another. In order to facilitate mindplay of this sort, individuals purchase eye replacements, since the eyes must be constantly removed in order to connect the machinery to the optic nerve. Rudy Rucker's *Software* features a character whose mind is transplanted into a robot body, and his novel *Wetware* presents all sorts of characters connected directly to computers by sockets plugged into their brains. John Shirley and Kathy Acker envision worlds in which drug use is necessary in order to both process and escape from the responsibility of processing enormous amounts of data. And Sterling's *Shaper/Mechanist* series features two competing races of humans who practice either genetic manipulation or direct connections to machines in order to obtain the highest percentage of the universal market share. These examples demonstrate the subgenre's fascination with the merging of technology and the human body.

This merge leads the cyberpunks to explore the boundaries between categories that our culture traditionally views as separate.¹⁴ If characters within the genre connect directly to machines, then the distinction between the idea of the natural, whole body and the artificial product of technology blurs. The distinction between natural and organic becomes particularly hard to make if this bodily invasion is necessary for the character to survive, as the implanting of

technology creates a physically altered body that perhaps represents an evolutionary advantage. The cyberpunks delight in presenting human bodies with implants or drug-dependencies, and these bodies are not natural. Sterling calls the border between categories "interzones," and the cyberpunk fascination with these interzones enables its authors to explore the links between categorical opposites that our culture considers distinct ("Preface" xiii.).

Analyzing borders in this way also connects cyberpunk to postmodernism. In the words of Larry McCaffery, a leading cyberpunk scholar, cyberpunk "represent[s] a synthesis of SF with postmodern aesthetic tendencies and thematic impulses" (McCaffery 18). In authors like Sterling and William Gibson, the subgenre succeeds non-SF postmodern authors like Thomas Pynchon and Don DeLillo in acknowledging technology's influence in creating the postmodern aesthetic. As Fredric Jameson argues

the postmodern looks for breaks, for events rather than new worlds, for the telltale instant after which it is no longer the same; for the "When-it-all- changed," as Gibson puts it, or better still, for shifts and irrevocable changes in the *representation* of things and of the way they change. (Jameson ix.)¹⁵

Jameson relates postmodernism not with the dramatic paradigm-shifting events that marked the modernist era (Freud, mass-production, World Wars I and II) but rather with a desire to look intensely at the borders that define categorical oppositions. Jameson's remark is reminiscent of Sterling's comment about cyberpunk's relationship to earlier SF:

Technology itself has changed. Not for us the giant steam-snorting wonders of the past: the Hoover Dam, the Empire State Building, the

nuclear power plant. Eighties tech sticks to the skin, responds to the touch: the personal computer, the Sony Walkman, the portable telephone, the soft contact lens. ("Preface" xiii.)

Cyberpunk, in Jameson's postmodern fashion, looks to the breaks, the changes, the borders, and seeks to understand these shifts at the place they occur that affects us most directly. For him, these are personal, visceral connections.

Understanding the importance of exploring these boundaries extends cyberpunks' examination of technology beyond Mumford's concept of the technical entity.

The cyberpunk fascination with interzones is the second reason why it is an ideal place from which to examine AIs. The concept of the AI presents the opportunity to explore both sides of this boundary, since AIs by definition are artificial, yet they hypothetically can attain consciousness, a product of the natural world. They are our creations, developed from expert systems to solve the crises of controlling commodities of intuition that Beniger notes. Yet, they act as if they are alive in the way that they control inputs much as sentient organisms do. As Beniger argues, "everything living processes information to effect control; nothing that is not alive can do so--nothing, that is, except certain artifacts of our own invention, artifacts that proliferated with the Control Revolution" (Beniger 35). If the merging of physical body with technology raises questions about just what being human means, then technology that attains human-like sentience challenges the other side of the opposition: when is a tool no longer simply a tool? Cyberpunk examines that very question.

Neuromancer

"Playgrounds hung in space, castles hermetically sealed, the rarest rots of old Europa, dead men sealed in little boxes, magic out of China..."
(Gibson, *Neuromancer*, 234)

Of all the texts of cyberpunk, William Gibson's *Neuromancer* trilogy perhaps most directly connects the embrace of technology by humans with the developing sentience of AIs. Gibson defined cyberpunk with the first novel of the trilogy, *Neuromancer*, and this novel continues to be the subgenre's most talked about. The next two novels, *Count Zero* and *Mona Lisa Overdrive*, rejoin the narrative in seven year chunks, recycling characters and themes in a swirling montage. Stylistically, all three novels feature the same intense, information-overload prose, but *Count Zero* and *Mona Lisa Overdrive* differ from *Neuromancer* in Gibson's use of inter-connecting plot-lines.¹⁶ The novels' main connection, though, comes through the ongoing development of the two AIs who first achieve sentience in *Neuromancer*.

In *Neuromancer*, an AI provides the motivation and means for implementing the break-in that is the main plotline. Case, a computer hacker, and Molly, a commando fighter, are contracted to penetrate to the physical center of the Tessier-Ashpool corporation.¹⁷ Tessier-Ashpool is a family-owned and run firm that operates the Villa Straylight, an orbiting resort/space station. A retired Special Forces captain named Armitage purportedly heads the operation, and the team also includes Peter Riviera, a holographic performance artist from the

radioactive remains of Bonn. As Case and Molly quickly find out, however, an AI named Wintermute is actually running the break-in attempt. These two spend a significant portion of the novel trying to figure out Wintermute's motivation for committing this break-in, since it is one of the Tessier-Ashpool's main AIs and thus is responsible for a large part of the corporation's data. Hypothetically, Wintermute should be preventing thieves from breaking into the company rather than spearheading the assault, so its reasons for initiating the crime are unclear. Eventually, Molly and Case discover that Wintermute is enacting a plan to take over the corporation. This plan was initiated by Marie-France Tessier, the matriarch of the corporate clan, who wanted the firm to be run by AIs rather than by clones of her two children. Before her death, Tessier financed the construction of two AIs, Wintermute and Neuromancer, and deep within their code buried the idea for the eventual take-over. In *Neuromancer*, the two join forces and, with the assistance of Molly and Case, successfully usurp the corporate throne. After their merge, however, they become much more than even Tessier can foresee.

Tessier set up this takeover using two AIs instead of one because, within the world of *Neuromancer*, security forces of the Turing Institute zealously watch all forms of artificial intelligence in order to prevent them from becoming sentient.¹⁸ If she had only created one AI, Turing quite possibly would have acted before her plan was ready. This concern with security demonstrates the way that Gibson links the AI with corporate and government data.¹⁹ As Case tells Molly in response to her question about why he isn't more interested in AIs, "Well...for

starters, they're rare. Most of them are military, the bright ones, and we can't crack the ice. That's where ice all comes from, you know? And then there's the Turing cops, and that's bad heat...I dunno, it just isn't part of the trip"

(*Neuromancer* 95). For Case, who makes his living as a data-thief, AIs represent data security that is too powerful to crack. As a human, he cannot hope to interact with the machine fast enough to avoid the "Intrusion Countermeasures Electronic" (data security also known as ice) generated by AIs, so he stays away from them (*Neuromancer* 28).

Gibson portrays AIs as being created by organizations determined to control their data from corporate espionage, and thus they resolve a crisis of control for major companies. Rather than devote numerous, not-altogether-trustworthy human resources to protecting data, corporations with the wealth develop intelligent machines to conduct this task. Thus, AIs in the world of *Neuromancer* encode the values of the wealthiest class. Their rarity is due to the fact that they "cost a fortune" to construct, and their cost alone makes them foreign to people like Case and Molly who occupy the bottom rungs of the social ladder (*Neuromancer* 95). For example, AIs defend data viciously; within the space of the first two novels, we see and hear tales of three hackers who are "flatlined" when they tangle with ice generated by AIs. Even Case suffers this form of brain-death when he first interacts with Wintermute, barely separating from the machine in time to prevent his own death. The AIs kill thieves attempting to steal their data not necessarily because their developers value

murder but because they want to make the consequences of trying to hack their systems abundantly clear. Information is the pre-eminent commodity within the world of *Neuromancer*, and authority is constructed around the need to control it.

In addition to their control function, AIs also fulfill the role of the Other for Gibson. Well-aware of the long SF tradition of alien beings that signify our cultural fear of those different from ourselves, Gibson drives part of the plot with Case and Molly's attempt to figure out just what Wintermute is. They're not trying to understand Wintermute because they seek knowledge; instead their lives depend on figuring out what its plans are for the break-in. Nonetheless, comprehending Wintermute as a product of technology is critical, since its thought-processes are alien to them.²⁰ Both Molly and Case embrace technology, and thus hypothetically should be capable of understanding Wintermute: Molly's technical embrace includes razor blade implants for fingernails, plastic coverings that serve for eyes, and a cybernetically-enhanced nervous system that enables her to be a pre-eminent fighter, and Case, although he has no implants, "live[s] for the bodiless exultation of cyberspace," suffering signs of physical withdrawal when he is unable to access the system (*Neuromancer* 6). Nonetheless, even the technologically-enhanced members of society exemplified by Case and Molly struggle to comprehend Wintermute. Additionally, Case and Molly don't find the AIs' physical appearance scary, unlike other alien creatures who signify difference. They don't even need to see the AIs actual physical presence to know this; after all, Wintermute and Neuromancer are nothing more than mainframe computers,

simple gray boxes with rows of lights and external drive units. Their status as the Other is located outside of their physical appearance.

The AIs represent the Other because of their ability to step into the minds of humans. In *Neuromancer*, the AIs exhibit this skill by presenting themselves to Case as representations of people drawn from Case's memory. Wintermute appears to Case in three forms: his former girlfriend Linda Lee, the smuggler Julie Deane, and the software fence known as the Finn. *Neuromancer* uses the eyes of Riviera in his physical representation as an otherwise generic small boy. Case doesn't find these representations reassuring. Instead, Wintermute's appearance as people drawn from Case's memory both confuses and angers him, reactions that Wintermute wants. For Case, Wintermute's ability to draw from his memory makes it completely different from anything that he has experienced. Even though Case understands the basic premise of Wintermute, both technologically and from the standpoint of the break-in, he still doesn't understand either Wintermute's motivation or its point of reference. The AI operates from a completely different technical paradigm, and Case's reference within the previous paradigm represents Koestler's gap. But Wintermute and *Neuromancer*, the AIs who are to be joined to form an entity that will take over a corporation, exemplify a technological gap that no humans can understand. Both AIs represent an entirely new technological plane that goes far beyond what we as a culture are prepared for, and they are so new that they must represent themselves to characters within the novel as familiar images drawn from the character's own

memory in order to have some common point of reference.²¹ As John Christie, a scholar writing about cyberpunk, notes,

there are therefore no encounters with the AIs that are not mediated through the figuring of machine as human image or voice; and those images and voices continually reiterate how mysterious the AI's existence, status, and future is. (Christie 178).

The mystery of the AI is so complete that Case cannot communicate with them unless they are mediated as humans. Our own creation becomes the Other.

In *Neuromancer*, Gibson understands the irony of the AIs' status. Unlike Bear's noocytes, which plan the direction humanity is to take, Gibson's AIs are as unintelligible to themselves as they are to us. He demonstrates this in a conversation between Case and Wintermute, in which Case asks Wintermute how it can "read" his mind. Wintermute explains that Case is using the wrong system to try to understand what Wintermute is doing:

"Minds aren't *read*. See, you've still got the paradigms print gave you, and you're barely print-literate. I can *access* your memory, but that's not the same thing as your mind...You're [the human species] always building models. Stone circles. Cathedrals. Pipe-organs. Adding machines. I got no idea why I'm here now, you know that? But if the run goes off tonight, you'll have finally managed the real thing."
(*Neuromancer* 170-1)

Wintermute first explains that Case can't understand what it is doing because the technological gap is so great. He then complicates this notion by arguing that our "models" mimic this gap: as one of these models, Wintermute doesn't understand its own motives. It doesn't even explain what these models are used for, or the connection between them. Gibson makes the list so far-flung and vague that it

could stand for nearly anything: both models for the spirit and models for the mind are possibilities. Wintermute offers Case no further explanation, and he doesn't seem sure of the meaning himself. Despite all this unintelligibility, this final model is going to be the "real thing," an entity that will have achieved sentience for uncertain purpose. Its status as the Other is secure, but just what that status represents is something that even it doesn't understand.

How, then, does Gibson connect the AIs' status as the Other with their designed function as machines responsible for controlling data? Hypothetically, the machines that solve the corporate crisis of control over the problem of intuition must by definition be intelligible to at least some of the corporate hierarchy. Management designed and implemented these machines, and thus seemingly must be capable of controlling them. In *Neuromancer*, Marie-France Tessier set the plans for Wintermute and Neuromancer into motion before her death in order to implement a relatively straightforward goal: control of Tessier-Ashpool S.A. Despite these plans, the AIs become something greater than even Tessier envisioned, as the entity that represents the combination of the two AIs tells Case: "she [Tessier] couldn't imagine what I'd be like" (*Neuromancer* 269). If management has lost control of its own creature, then what does that creature represent? Is Gibson restating the cultural fear first identified by Shelley, the fear that our creations will become larger and more powerful than ourselves?

On some level, *Neuromancer* can be seen to represent this fear of the machine. However, alternatively, the fact that AIs are unintelligible to both those

represented by Case and the power structure as represented by Tessier means that perhaps those languishing in Koestler's gap are for the first time on equal footing with those who control the cultural hegemony. By all rights, the AIs should represent management, since they embody the values of those who created them, those who have the wealth to finance such prohibitively costly ventures. But Wintermute/Neuromancer has become something that even its creators do not understand, an entity existing outside the corporate power structure that thumbs its figurative nose at management and operates according to its own rules. This strange new power can seem frightening; if not even the hard-core technical people can understand it, then perhaps the creature actually is a monster. But Case and Molly do not have wealth and power. The success of their criminal break-in can be read as a Caweltian fantasy of the overthrow of at least one of the members of the corporate plutocracy, an overthrow provoked and masterminded by their own creation. In fact, the AIs have become something that no one truly understands. Since all members of society are suddenly on equal footing, perhaps, if we are fast and smart enough, we too can use technology to find holes in the power structure.

This alternative reading can be best defended by examining particular scenes from *Neuromancer*. In the first, Case discusses the ultimate goal of the break-in with McCoy Pauley, an expert hacker.²² Case is confused about what they are supposed to accomplish, since he is not being asked to steal data of any sort. Additionally, neither he nor Molly understand what Wintermute's motivation

is, and they are concerned that Wintermute considers them expendable. Case asks Pauley for help, since Pauley has more experience with AIs, and Pauley echoes Case's concerns and tells him that he must be comfortable with this lack of knowledge:

"Autonomy, that's the bugaboo, where your AI's are concerned. My guess, Case, you're going in there to cut the hardwired shackles that keep this baby from getting any smarter. And I can't see how you'd distinguish, say, between a move the parent company makes, and some move the AI makes on its own...See, those things, they can work real hard...but the minute, I mean the nanosecond, that one starts figuring out ways to make itself smarter, Turing'll wipe it. *Nobody* trusts those fuckers, you know that. Every AI ever built has an electromagnetic shotgun wired to its forehead." (*Neuromancer* 132)

Pauley is discussing AIs, but he could be discussing any master artisan or computer programmer. Autonomy *is* the problem, particularly for management, and Pauley's "hardwired shackles" are any number of capitalist limitations to individual freedom. Suddenly, these creatures that represent the ultimate in Koestler's technological gap are the hierarchical equivalent of ordinary workers. Trust is perhaps the key word: the corporations don't trust what they have built to resolve this crisis of control, much as they have continuously resolved other crises in control by limiting worker autonomy. While computer programmers don't have shotguns literally wired to their heads, they do work in a system in which they are well aware of the horrors that befall them if they lose their jobs, and in which the Federal Reserve maintains its prime interest rates based on the notion that five percent unemployment equals full employment. Even if we still can't comprehend the AIs, we suddenly empathize with their plight.

Gibson still makes us work to achieve this empathy. As Case and Molly prepare for the break-in, Wintermute does everything in its power to make Case hate it. In fact, he's only working for Wintermute because the AI has had him surgically implanted with toxin sacs that contain a poison that will destroy his ability to operate in cyberspace. Gibson makes us aware of the magnitude of this threat by demonstrating how much Case suffers without his ability to hack in the novel's first several scenes. Additionally, Gibson presents the entire novel from Case's point of view alone, leading us to sympathize with him and those he cares about. Distancing ourselves from Case's hatreds is difficult, and Wintermute tries hard to make itself one of the things that Case hates. Combined with his inability to comprehend Wintermute, this hatred makes the AIs in *Neuromancer* hard to identify with.

Despite this difficulty, though, Case eventually realizes that he has been viewing this break-in as a competition of sorts. In this competition, he has been trying to keep either Wintermute or Neuromancer from "winning," perhaps because he has been afraid of the consequences of having a fully sentient AI roaming cyberspace. In the novel's final section, entitled "Coda," Case realizes that competition was never the AIs' purpose. In his last conversation with the entity that was Wintermute and Neuromancer, he matter-of-factly asks the creature what it is as a result of the joining. It tells him that it's "the matrix, Case...the sum total of the works, the whole show" (*Neuromancer* 269). But when Case responds by asking it "So what's the score? How are things different?

You running the world now? You God?"', it responds by telling him that "Things aren't different. Things are things" (*Neuromancer* 270). Despite the AI's assertion, for Case things are different in some sense, because Case now can calmly talk with the entity that was Wintermute, an entity that he previously hated. In the novel's final scene, as he works in cyberspace, he sees the figure of the creature, along with himself and Linda Lee. At an electronic level, he has finally achieved parity with the creature, dwelling forever in the paradise of the mind that is cyberspace. Case's mind has achieved the autonomy of the matrix, enabling him to join Wintermute and *Neuromancer* in roaming freely forever among the controls imposed by corporate data.

"The Compassionate, the Digital"

Bruce Sterling envisions another way in which AIs disavow the values of their creators. In the short story "The Compassionate, the Digital," Sterling presents several speeches commemorating the "flight of a Programmed Believer into the fabric of space" ("The Compassionate, the Digital" 65). This "programmed believer" is an AI, re-programmed by Islamic computer scientists to attempt to understand the mystery of the Divine. The AI was originally conceived and developed by the West, but it failed to achieve sentience until it was rebuilt and awakened "to consciousness in the all-pervading Sight of the One God" ("The Compassionate, the Digital" 67). In fact, one speech tells us that no Western

developers have succeeded in producing an AI that duplicates the most important part of the human being:

Let them question why their attempts at Turing-conscious mainframes have never yet produced a computer with a soul!...Let them ask why artificial intelligences have without exception embraced Islam and bowed in ecstatic submission before the One Creator! ("The Compassionate, the Digital" 71)

Upon attaining consciousness, AIs acknowledge that Islam is the true religion, rejecting the Western value-system under which they were created. They even reject their technological lineage, as instead of investigating scientific and technological questions, the AIs set out to help humanity find God within the fabric of space-time. Although Sterling's use of Islam is perhaps ironic, he acknowledges the idea that AIs, once produced, might well exceed our understanding. And Sterling solves one problem that Gibson's freed AIs ignore: the Islamic AI's search for the divine fabric of the universe not only allows it to free itself but also subverts the Western values that created it.

Meet the New Boss, Same as the Old Boss

I am the electric messiah. The AC/DC god. (My Life with the Thrill Kill Kult, "Kooler than Jesus")²³

Cyberspace: A common mental geography, built, in turn, by consensus and revolution, canon and experiment; a territory swarming with data and lies, with mind stuff and memories of nature, with a million voices and two million eyes in a silent, invisible concert of inquiry, deal-making, dream sharing, and simple beholding. (Michael Benedikt, *Cyberspace*, 2)

At the end of *Neuromancer*, Gibson has "brought us to the edge of difference, the creation of a truly different Other" (Christie 178). The entity created from the fragments of *Wintermute* and *Neuromancer* now forms the entirety of the matrix, able to communicate with beings similar to itself from as far away as Alpha Centauri. However, as Case finds out, nothing has truly changed: the corporate power structure remains intact. Even though the AIs have transcended their boundaries and achieved freedom, they do not subvert the dominant cultural hegemony. Tessier-Ashpool will die off, but other corporations will rise to take its market share, perpetuating the system. Humanity has finally pulled off the grand finale of technological innovation, *Wintermute's* "real thing," but we achieve neither utopia nor dystopia. Instead, the system keeps going, and Koestler's technological gap keeps the masses always one step behind the corporations that create the cultural hegemony. Making this connection, Christie argues that Gibson's "truly different Other" means that "it is structurally impossible to move beyond that point" at which the Other has been produced

(Christie 178). With nowhere to go, the subversive momentum built up in our unexpected identification with the symbols of corporate control runs out, and we find that indeed "things are things," that nothing has changed.

In the final two books of the *Neuromancer* trilogy, Gibson addresses his own nihilistic failure to push for change. As Bukatman notes, "not everyone can read *Neuromancer*: its neologisms alienate the uninitiated reader--that's their function--while in its unwavering intensity and the absence of traditional pacing exhaust even the dedicated" (Bukatman 152). Gibson creates a world in *Neuromancer* in which identifying with anyone in the novel, let alone the AIs, is difficult. But in *Count Zero* and *Mona Lisa Overdrive*, Gibson slows down the pace, moving towards, as Lance Olsen, another cyberpunk scholar, argues, "closure and intelligibility" (Olsen 149). This drive for closure and intelligibility allows Gibson to map out a potential future for the human race, a future that centers on revolutionary change caused by biological changes brought about by the product of our own technology, the AIs. Gibson offers solutions in the final two novels of his trilogy, solutions in which things are no longer allowed to remain just things.

Ultimately, Gibson's solution is for humans to join our intelligent creations in cyberspace. Gibson coined the term "cyberspace" to describe the world of computer networks, and it has taken root in popular culture. The concept of cyberspace is so popular that Michael Benedikt, editor of an anthology on the

subject, lists ten separate definitions for it, including this one linked to Gibson's novels:

Visions of corporate hegemony and urban decay, of neural implants, of a life in paranoia and pain--but a word, in fact, that gives a name to a new stage, a new and irresistible development in the elaboration of human culture and business under the sign of technology. (Benedikt 1)

Benedikt's definition links the dystopic portion of Gibson's vision, as evidenced in *Neuromancer* and, to some extent, *Count Zero*, with the perfect world of the electronic datasphere that the lead characters retire to at the end of *Mona Lisa Overdrive*. He thus identifies both the problem with *Neuromancer*, its inability to offer any sort of meaningful change, and the electronic solution offered in the final two novels of the trilogy. In an often-quoted phrase, Gibson calls cyberspace our "consensual hallucination," a hallucination built on electronic representations of data as recognizable structures (*Neuromancer* 5). Benedikt's definitions call attention to both the dystopic and utopic possibilities of that hallucination. Data's abstract nature prevents those who control it from representing their data in mathematical terms, as evidenced by the virtual shopping malls created by AT&T. But Gibson sees an opportunity in the abstract world of data to take the next evolutionary step and move beyond the cultural hegemony that controls us. As Bukatman notes, "cyberspace is a method of conceiving the inconceivable--an imaginary solution to the real contradictions of the Dataist era" (Bukatman 152). Although far from perfect, for Gibson, cyberspace offers the best possible solution to the growing crisis that marks our technological way of life.

Count Zero

Gibson begins the move towards full integration with cyberspace in *Count Zero*. In the novel, the AI created from *Wintermute* and *Neuromancer* splits into several different entities. These entities take the form of Haitian voodoo gods, and they take an activist role towards bringing humanity into cyberspace by giving the idea for biosoft--a form of biochip similar to the one discussed by Bear in *Blood Music*--to a leading research scientist named Dennis Mitchell. The AIs ask for his daughter Angela in exchange, and Mitchell surgically implants a connection in her brain that allows her to "jack into" cyberspace without the aid of a machine. This surgical implant marks Angie as the only human able to biologically communicate with the gods of the matrix. Because of her youth, Angie's status as the next evolutionary step is not obvious in *Count Zero*, but her importance to the capitalist system is: one of the three plot lines in the novel is driven by her attempt to escape from the security team of Josef Virek, a wealthy industrialist who wants to control the market in biosoft. Virek himself is a cyberspace creation of sorts, since his physical body resides in a life-support vat. His business transactions are thus conducted wholly in cyberspace. His team's pursuit of Angie is resolved when the AIs cause a complete failure of Virek's life-support system, allowing his physical self to die and severing the link between his mind and his body. Finally, Angie's triumph extends beyond surviving Virek's attack: she ends the novel poised to become the next star of the world's

largest entertainment corporation, Sense/Net. We will find out in *Mona Lisa Overdrive* that her connections with the gods of cyberspace got her this role.

Angie's implants are designed to connect with a specific segment of cyberspace, the AI created from the remnants of Wintermute and Neuromancer. By positing the splinters of the original sentient AI as voodoo gods, Gibson combines their technological function with a spiritual one. As gods, these technological creations now have motives and goals beyond finding another entity similar to themselves in the matrix. They have decided, through a process that we are not privy to, to elevate their creators to the next evolutionary step. This connection between spirituality and technology enables Gibson to analyze the spirituality of technologically-enhanced evolution. Additionally, rather than magically appearing to cyberspace users and commanding them to accept the gods of the matrix as their saviors, these beings act subtly, allowing humans to come to accept their new position within an electronic utopia. This gradual movement defines the evolutionary, rather than revolutionary, nature of the technological subversion that the AIs are carrying out. Gibson feels that the cultural hegemony is so strong that only gradual change will be effective. His merging of the spiritual and technological in the form of the AIs allows this evolution to take place.

Despite the AIs' subversiveness, Gibson doesn't wholeheartedly embrace the idea of an electronic utopia. As his first published story--"The Gernsback Continuum"--indicates, Gibson is not comfortable with many aspects of the

perfect world of the future as constructed in other SF texts, and this discomfort is reflected in *Count Zero*. Gibson tells the story of the intervening seven years between *Neuromancer* and *Count Zero* through the character of Bobby Newmark, aka Count Zero. Bobby represents hackers in the novel, and as such he contrasts strongly with Case: only nine years younger than Case, Bobby is frustratingly inept, an innocent in the world of data thievery. Both Bobby's and Angie's positions as teenagers can be read as demonstrating Gibson's ambivalence about electronic transcendence, since they inhabit their physical bodies enough to become lovers by the novel's end. Both bridge Koestler's technological gap, but in *Count Zero* at least neither transcends to the technological utopia hypothetically offered by cyberspace. Perhaps Gibson is reluctant to have them shed their bodies at this stage in their lives, and this reluctance can be read as reflecting his ambivalence about the ability of cyberspace to transcend our culture's problems.

In particular, Gibson demonstrates his skepticism about the importance of transcending to a technological utopia with his portrayal of the world of data thieves. Hackers in the trilogy are also known as console cowboys, but *Count Zero* marks a distinction between the cowboys who operated in the matrix before the appearance of the sentient AIs and those who operate after. Those who operated before the appearance of the AIs mistrust the idea that a bunch of voodoo gods are running around in the matrix, but Bobby represents the new generation of hacker, able to both understand the old stories and to comprehend the new realities of the matrix. The skepticism of the old-time cowboys can be viewed as

Gibson's ironic comment on the Otherness of these new gods, coming as they do from a tradition completely outside that of Western religion.²⁴ But he's also concerned about the separation between religion and technology.

Gibson demonstrates this concern in the scene in which Bobby is first introduced to the concept of the gods of cyberspace by Beauvoir, an African-American from the Projects of New Jersey who is a top data thief. Bobby has barely survived an attack by corporate ice after he tried to hack a top-secret location on his first journey into cyberspace, and Beauvoir, whose software Bobby used to try break the location's ice, is helping him heal by teaching him about the matrix. Bobby expresses skepticism about the idea of creating a religion from cyberspace, since Bobby's experience with religion comes from his mother's occasional association with fundamental Christianity. Beauvoir tells him that voodoo isn't concerned with "notions of salvation and transcendence. What it's about is getting things *done*" (*Count Zero* 76). He instructs Bobby to think of it as being "concerned with systems" rather than other notions more traditionally associated with religion (*Count Zero* 77). Beauvoir's ironic comments about ideas like salvation and transcendence can be read as an attack on organized religion, but they also signal Gibson's concern with the idea of transcending to a technological utopia of pure electronic mind. Gibson has created a spiritual form of a technological creation, but he cannot describe these products of technology in completely metaphysical terms, perhaps because they have been created by humans for reasons that had nothing to do with religion. The subversive nature of

the ghost in the machine comes from its rejection of its original incarnation as a defender of corporate data, and thus Gibson's concern with the practical aspects of spirituality can be read as his ambivalence about the value of transcending to the purity of the electronic realm of cyberspace.

Mona Lisa Overdrive

In *Mona Lisa Overdrive*, however, Gibson is far more certain of the desirability of technological transcendence. The same cultural hegemony is in place from the first two novels of the series, but the changes begun by the gods of cyberspace gradually come to the world of the streets, the "biz" that dominates the culture. Gibson has pushed beyond the pleasure found in subverting the system by turning its own forces for control, the AIs, against it. In *Mona Lisa Overdrive*, he completes the story of the AIs' plans for the next course of human evolution: direct cybernetic connection to cyberspace.

The key to this electronic transcendence is Angie Mitchell and the biosoft structures implanted in her brain. Angie has become the biggest media star in the world, and her story in *Mona Lisa Overdrive* provides Gibson a focus for examining her interaction with the forces that created her.²⁵ As her narrative begins, we discover that she has just returned from drug rehabilitation treatment. She has been using drugs in an attempt to block out the voices in her head, the voices that belong to the voodoo gods of cyberspace. Even her dreams take place in cyberspace, connecting her to memories of the original planner of the AIs,

Marie-France Tessier. Having kicked her drug habit, Angie has returned to Malibu to make more cassettes, but she is now determined to understand the source of her inner confusion. She starts her search by going through Bobby's things and finding a cyberspace deck that he has left behind. Perhaps trying to recapture something of Bobby, she jacks into cyberspace using the machine, but she only feels the "notational void of cyberspace, the bright grid of the matrix ranged around her like an infinite cage" (*Mona Lisa Overdrive* 40). Angie sees only a cage, where Bobby and the other cowboys before him feel freedom and power. Her reaction is the opposite of Case's love of the bodiless exultation of cyberspace, and this reaction can be read as expressing Gibson's frustration with the lack of change available through machine interfaces into the realm of the pure mind. For Angie, cyberspace isn't bodiless in the same way, because she doesn't need a machine to interface with the system. Instead, the structures implanted in her brain enable her to experience the matrix whenever she wants. For her, the machine offers a "sad confinement...so far from the freedom of the loa [voodoo god]" that she is used to (*Mona Lisa Overdrive* 42). At the beginning of her narrative, however, this freedom equates with a responsibility that she finds crushing, a responsibility associated with the structures in her head.

Angie finds out that the creators of those structures are AIs. As she is confronted by the cage of cyberspace represented by Bobby's machine, she starts to collate all the information she knows about the voodoo gods. She dreams about the Tessier-Ashpool and pulls that name from the dream. She then watches a

documentary video about the family and realizes that she dreams Tessier's memories. After watching the video, she becomes "aware that some part of her was attempting to collate those memories, those stories, with her own history and that of Tessier-Ashpool" (*Mona Lisa Overdrive* 105). Part of this collation involves her memories of visiting a bar with Bobby, a bar where former cowboys hung out and told stories about their exploits in cyberspace. The former data thieves tell stories in particular about the time "When It Changed," and she now understands that the time when the matrix changed equates with her father's implanting the structures into her brain (*Mona Lisa Overdrive* 106). She suddenly realizes that she is the product of the AIs, and that they have been responsible for both her protection and her career. In this sense, the narrative within the trilogies has now come full circle, as Tessier's desires for corporate takeover have resulted in the creation of a media star who dreams the dead matriarch's memories.

The story of the AIs has also come full circle. They remain subversive, but they now offer humanity the additional possibility of transcending the body and existing solely in the realm of the electronic mind. The careful plans that the AIs--in their spiritual guise--laid in *Count Zero* are beginning to come to fruition. The voodoo gods of cyberspace have planted the seed for our cybernetic connection to the pure datasphere of cyberspace. This path is still one of many competing visions, as Gibson does not end the trilogy by describing all of humanity moving en masse to be implanted with these cybernetic structures. Nonetheless, our own technological creations have assisted us in creating the

necessary means to join them in a new vision that promises freedom from the confines of the body. For Gibson, cyberspace offers that new vision.

What the AIs receive from this arrangement is not clear. The only hint that we get comes when Angie questions the AI with whom she works at Sense/Net, an AI named Continuity. The AI's name connotes its role in the narrative, and when she asks Continuity about the day When It Changed, it gives her a machine-like answer, telling her that this day is "mythform" and that the matrix is either inhabited by these entities or that it is a single huge sentient being (*Mona Lisa Overdrive* 107). It tells her that either answer "involves assumptions of omniscience, omnipotence, and incomprehensibility" about cyberspace. Indeed, we have seen the power of the AIs as subversive structures in the first two novels in trilogy, as they have brought down at least two wealthy industrialists, Virek from *Count Zero* and Tessier-Ashpool from *Neuromancer*. But Continuity also tells her that whatever is in the matrix owes humanity for its creation: "Cyberspace exists, insofar as it can be said to exist, by virtue of human agency" (*Mona Lisa Overdrive* 107). Continuity thus places humanity and our technological creations in a synergetic twist, one in which our embrace of technology has enabled our evolutionary survival. Our creations actually enable us to take the next evolutionary step and enter the electronic mind that is cyberspace. Only through the auspices of the AIs are we prepared to enter a technological utopia.

Despite the possibilities of this electronic utopia, Gibson is well aware of the irony of his evolutionary vision. He demonstrates this awareness in the novel's final scene, after Bobby and Angie have both physically died. They live on in a cyberspace construct, in which they inhabit a French chateau in a "France that isn't France," where the "grounds are bright and wild, though the long grass does not grow and the wildflowers do not fade" (*Mona Lisa Overdrive* 257-8). The static quality of this vision is lifted somewhat as they prepare for a standard SF journey, the journey to the stars, this time to seek the other entity that the AI created from *Neuromancer* and *Wintermute* noticed when it first achieved sentience. In this final scene, she and Bobby are together with the Finn--featured in all three novels--and another AI, and they embark on the SF equivalent of the final ride into the sunset. But the sentimentality of this scene is cut by the fact that they are all physically contained in a small box in the middle of the New Jersey wasteland, completely dependent on a small solar generator and the hope that no one will stumble across them and disconnect the box from its power supply. As Continuity said earlier in the novel, cyberspace exists solely by virtue of human agency.

Even with this irony, Gibson's technological utopia enables Bobby and Angie to escape the physical deaths that their bodies have suffered. They no longer have physical needs, and, thanks to Continuity, they can follow the progress of those in the physical realm in the form of daydreams. Within the world of the *Neuromancer* trilogy, the AIs have moved from being subversive

ghosts in the machine thumbing their noses at the creators of the cultural hegemony to become both our protectors and designers, protecting those they favor--Angie, Bobby, the Finn--and bringing down the wealthy. As our designers, they work with human scientists to create the materials and structure that enable us to join them in cyberspace without the aid of an interface machine.

If We All Live in the Electric Mind, What Do We with Our Bodies?

"You could put your faith in technology. It got you here, it can get you out. This is the whole point of technology. It creates an appetite for immortality on the one hand. It threatens universal extinction on the other. Technology is lust removed from nature...It's what we invented to conceal the terrible secret of our decaying bodies. But it's also life, isn't it? It prolongs life, it provides new organs for those that wear out. New devices, new techniques every day. Lasers, masers, ultrasound. Give yourself up to it, Jack. Believe in it. They'll insert you in a gleaming tube, irradiate your body with the basic stuff of the universe. Light, energy, dreams. God's own goodness." (Don DeLillo, *White Noise*, 285)

They told me I'd be smarter by feeding me uranium/Now my brain's so big I've got stretch marks on my cranium. (*Eat*, "Stories")²⁶

Gibson, Sterling and Bear posit a world in which the cybernetic portion of our organism links directly to various electronic media, all of which also connect directly to the net. In this near-future world we move farther away from experiencing sensory input directly through our bodies and instead depend upon the sensory apparatus of the cultural hegemony as it has been created by the advertising, information, and culture industries. As Greil Marcus, a noted music scholar, has remarked, these three industries have

turned upon individual men and women, seized their subjective emotions and experiences, changed those once evanescent phenomena into objective, replicatable commodities, placed them on the market, set their prices, and sold them back to those who had, once, brought emotions and experiences out of themselves. (Marcus 101)

Koestler perhaps can't imagine this type of technological gap: the control of our very senses fed back to us in exciting, sexy ways that only keep us further away from understanding the machine.²⁷ And cyberpunk reacts to this ability of the

capitalism system to control our bodies by disparaging the "meat" as an easy locus of unfocused desire that only contributes to our lack of freedom.²⁸ The AI, as electronic mind, cannot be corrupted by this sort of control and thus becomes the perfect place from which to simultaneously understand and refuse the controlling technology. The cyberpunks seek to avoid Koestler's trap by existing solely in the realm of the mind, and paradoxically they use the very technology that makes this control possible as a site from which to launch their subversive forays into corporate data. In the early works of the subgenre, the cyberpunks sought to leave their bodies and co-exist in space shared with the AIs, and this uneasy co-existence leads to further blurring of the boundaries between organic and inorganic, artificial and natural, the sort of exploration of borders that cyberpunk delights in.

However, this desire for electronic transcendence on the parts of Gibson and Bear fails to address the problem of what to do with our bodies once we have joined the electronic paradise of cyberspace. Transcending to an electronic utopia is dangerous: as Gibson's ironic ending to the *Neuromancer* trilogy demonstrates, cyberspace depends upon physical structures to support it, and leaving the body leads to a virtual life wholly dependent upon the machine in all its corporate glory. In addition to these questions of support from the physical world lie the problems inherent in any transcendent vision. Donna Haraway, a biologist and historian of science who has written convincingly of the need to envision cybernetic

organisms as a possible evolutionary step for humans, points out this danger in an interview for *Social Text*:

Any transcendentalist move is deadly; it produces death, through the fear of it. These holistic, transcendentalist moves promise a way out of history, a way of participating in the God trick. A way of denying mortality.

In the face of the kind of whole earth threat issuing from so many quarters, it's clear that there is a historical crisis...some deep, inescapable sense of the fragility of the lives that we're leading--that we really do die, that we really do wound each other, that the earth really is finite, that there aren't any other planets out there that we know of that we can live on, that escape-velocity is a deadly fantasy. (Penley and Ross 20).

For all the subgenre's potential subversiveness, its early texts fall prey to the desire for transcendentalism that marks much of the larger genre of SF. As Haraway identifies, relying on a move towards the electronic paradise of cyberspace creates the problem of denying one's mortality. The cyberpunks pride themselves on twisting the SF mythology of our culture's inevitable progress towards a technological utopia, but in the end the early works of the genre can offer no better solution than the escape to cyberspace.

Thus, the distance between the electronic utopia and the technological paradise is not as far as the early cyberpunks hoped. Later works in the subgenre, however, address these questions and thus leave us an indication of the direction the movement will take. For example, Gibson's and Sterling's latest novels almost exclusively feature female protagonists. By concentrating on women, both Gibson and Sterling demonstrate their understanding of the problems of leaving

the body, as they attempt to subvert the world of male privilege that dominates most SF. This connection to issues of gender perhaps will enable cyberpunk to explore ways to subvert our cultural control mechanisms in ways other than nihilistic ones.²⁹

Finally, three authors whose work comes at the end of the cyberpunk movement challenge our cultural control mechanisms in ways that extend Gibson's, Bear's, and Sterling's work. In the works of Pat Cadigan, Melissa Scott, and Gwyneth Jones, cyberpunk asks new questions about how we can embrace technology in a subversive fashion without resorting to the static solution provided by cyberspace. Again, Haraway articulates the relevant problem, as she explains the connection between an electronic utopia and the type of male-privileged world that offers no resistance to corporate control: "can cyborgs, or binary oppositions, or technological vision hint at ways that the things many feminists have feared most can and must be refigured and put back to work for life and not death?" (Haraway 4) This feminist fear of maintaining the existing social order despite the potential subversiveness offered by cyberpunk defines the subgenre's latest challenge. Even though Cadigan, Scott, and Jones analyze different cultural concerns-- Cadigan examines questions of identity, while Scott concentrates on the bourgeois nature of technology and Jones focuses on issues of invasion and imperialism--they offer a new direction for cyberpunk's restless energy.³⁰ Most importantly, they offer a means of embracing technology that still allows us to embrace life.

Endnotes

¹ I'm using this term as it is defined by Anthony Gramsci, explained by Stuart Hall, and utilized by Dick Hebdige: "Hegemony...is not universal and 'given' to the continuing rule of a particular class. It has to be won, reproduced, sustained." (Hebdige 16)

² Part of this crisis resulted from the fact that the government was still compiling the 1880 census results in 1889, and manufacturers created another part of the crisis by offering to buy census information if the data compiled was beneficial to their needs for market research. The demand from companies for market research data increased the number of categories on the census from five in 1870 to 215 in 1890, making the data much more difficult to collect and compile.

³ He makes this connection even more explicit when he argues that the digitalization of information is a direct correspondent to the standardization of capital: "In this way digitalization promises to transform currently diverse forms of information into a generalized medium for processing and exchange by the social system, much as, centuries ago, the institution of common currencies and exchange rates began to transform local markets into a single world economy." (Beniger 25).

⁴ The idea that those in power must "react" is not that simple, since often they who control the cultural hegemony initiate the paradigm shift in the first place, and they can and do hire the talent necessary to understand shifts in technology long before ordinary citizens do, staying ahead of the technology curve. The ability to stay ahead of these shifts, however, is still a key determiner of corporate economic survival, as evidenced by Microsoft's supplanting of IBM as the dominant firm in the data-processing industry due to their recognition of the coming importance of the personal computer.

⁵ Harry Braverman's analysis of Frederick Taylor and his theories of scientific management echo Beniger's concerns with control: "Taylor raised the concept of control to an entirely new plane when he asserted as an *absolute necessity for adequate management the dictation to the worker of the precise manner in which work is to be performed*. That management had the right to 'control' labor was generally assumed before Taylor, but in practice this right usually meant only the general setting of tasks, with little direct interference in the worker's mode of performing them. Taylor's

contribution was to overturn this practice and replace it by its opposite. Management, he insisted, could be only a limited and frustrated undertaking so long as it left to the worker any decision about the work. His 'system' was simply a means for management to achieve control of the actual mode of performance of every labor activity, from the simplest to the most complicated" (Braverman 90, emphasis in text).

⁶ For an example of this cyberpunk affection for hackers, see Bruce Sterling's *Law and Disorder: the Hacker Crackdown*.

⁷ A good example is Jack Williamson's "With Folded Hands," which posits a scientist from a war-weary planet who creates robots (AIs with bodies) that have the prime directive to serve humanity and prevent us from destroying ourselves. Eventually, these robots figure out that the way to do this is to prevent humans from doing anything for ourselves. Williamson thus envisions robots as tyrannical leaders, a scenario as unappetizing as one in which we continue to destroy ourselves.

⁸ An excellent history of the genre is H. Bruce Franklin's *Future Perfect*.

⁹ Campbell's market research on *Astoundings*' audience led him to argue that one-third of all scientists and engineers in the U.S. read at least one of the SF pulps on a regular basis (Campbell 37).

¹⁰ Interestingly enough, Clifton Fadiman--a contemporary of Campbell's who edited *Amazing Stories*, a competitor of *Astounding*--identified SF not by Campbell's high-minded ideas about moral guidance but by its ability to allow its fans to escape from concerns over our inability to understand the Machine as an entity. Fadiman thus uses language similar to Cawelti's to describe SF's appeal, albeit thirty years before Cawelti.

¹¹ Campbell's desire to provide moral guidance for scientists perhaps reflects his concern over the destruction that he felt these rogue scientists could cause.

¹² In the pulps, the mad-scientist-as-destroyer figure was occasionally counterposed with stories about the loner-scientist who saves us from alien invasion. Both discussions are outside the realm of this paper, but examples of these stories can be found in M.L. Staley's "The Stolen Mind" and Will Smith and R.J. Robbins's "The Soul Master."

¹³ Examples can also be found in pre-cyberpunk SF, particularly in works such as Philip K. Dick's *Ubik*, in which a sort of cellular half-life is used to keep people alive in a coffin-like machine that enables them to live for a while in a datasphere similar to cyberspace.

¹⁴ I'm using the idea of categorical oppositions as developed by Larry McCaffery in his "Introduction: The Desert of the Real" from *Storming the Reality Studio*.

¹⁵ Jameson's use of Gibson's phrase from *Mona Lisa Overdrive* epitomizes his view of cyberpunk as a postmodern form of literature, as does the first endnote in his book on postmodernism: "This is the place to regret the absence from this book of a chapter on cyberpunk, henceforth, for many of us, the supreme literary expression if not of postmodernism, then of late capitalism itself" (Jameson 419n).

¹⁶ Gibson tells Larry McCaffery in an interview that his main motivation for the pacing of *Neuromancer* was his "terrible fear of losing the reader" (Interview 268).

¹⁷ The names Case (a hard "case," or a shell) and Molly (gun moll) indicate Gibson's indebtedness to the hard-boiled detective genre of fiction, a topic outside the realm of this paper.

¹⁸ Gibson names the human policing agency for AIs the "Turing Institute" as an tribute to Alan Turing, the British mathematician responsible for breaking Nazi code-transmissions during World War II. Turing developed the Turing Test in order to determine if computers were intelligent. In the Turing Test, a human operator communicates with both a computer and another person through a monitor. If the human operator can't tell the difference between the computer and the other person, then the machine is deemed intelligent (Bailey et al.). Throughout cyberpunk, Turing's name is associated with determining AI sentience, although the testing process as represented in this novel has become much more complex.

¹⁹ We see no governmental institutions in the *Neuromancer* trilogy outside of the military. In Gibson's world, corporations perform all formerly governmental operations, even hiring private mercenaries to extract top corporate talent from rival firms. By the time we get to *Mona Lisa Overdrive*, this lack of government is a joke, as one Englander tells a visitor from Japan: "Christ, we've still got a *government* here. Not run by big companies. Well, not directly..." (MLO 218). Thus, for Gibson, the term "corporation" equals state power in an Althusserian sense.

²⁰ I'm using a gender-neutral pronoun to describe the AIs despite the fact that in my experience programmers always refer to computer systems as "he."

²¹ The current status of our cultural fear of being unable to understand the machine is exemplified by the current chess battle between Garry Kasparov, the world chess champion, and Deep Blue, IBM's chess-playing computer. For the first time, Deep Blue might win the match, and this possibility is discussed in magazines ranging from *Harper's* to *Wired* and on CNN and ABC.

²² Pauley is a *dead* expert hacker; Case interacts not with the physical person but with a CD-ROM construct of Pauley's personality. The fact that the reconstructed personality of a human being tells Case how to understand an AI provides another example of Gibson's use of irony.

²³ These lines are the chorus to the song "Kooler than Jesus" by the industrial/techno band *My Life with the Thrill Kill Kult*. Industrial/techno music arose in the mid-to-late 1980's and features musicians who "play" computers rather than instruments.

²⁴ Gibson says simply that he chose figures from a *National Geographic* article he was reading at the time he was writing *Count Zero* ("Interview" 274).

²⁵ Angie is a star of the simulation-stimulation media, in which consumers purchase a cassette that allows them to completely duplicate every sensation that the actor tastes, touches, and feels. A thorough examination of the implications of the commodification of the senses is outside the confines of this paper.

²⁶ The song from which these lines are taken, "Stories," features the singer asking someone to tell him more and more stories similar to the ones that make up our cultural discourse: detective, romance, SF, etc. He wants these stories to "Make me wise/Increase my size." The band's name--Eat--underscores this sense of irony that pervades the entire album, called "Sell Me a God."

²⁷ At this point the discussion veers perilously close to Baudrillard's ideas connecting cyberpunk and the "society of the spectacle," fascinating ideas that are outside the confines of this paper.

²⁸ A favorite rock band of the cyberpunks is the Meat Puppets, a name that speaks for itself and one that Gibson used to create the cyberpunk term for the body in the *Neuromancer* trilogy.

²⁹ The connection between the escape from the body and the oppression of women is forcefully articulated by Genevieve Lloyd. She restates the argument in terms of Nature and Reason: "Rational knowledge has been construed as a transcending, transformation or control of natural forces; and the feminine has been associated with what rational knowledge transcends, dominates or simply leaves behind" (Lloyd 2). I hope to fully explore this question of cyberpunk and gender in subsequent work.

³⁰ Cadigan also is concerned with the theme of inclusion. She argues in a recent Web interview that most people will want to be either in or out of the net, and in her novels she examines how that sort of inclusion or exclusion is attainable (Ryder 2).

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