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AUTOMATING GENDER: POSTMODERN FEMINISM IN THE AGE OF THE INTELLIGENT MACHINE

JUDITH HALBERSTAM

MY COMPUTER, MY SELF

The development of computers and computer science in the 1940s activated a debate between humanists and mechanists over the possibility of intelligent machines. The prospect of thinking machines, or cyborgs, inspired at first religious indignation; intellectual disbelief; and large-scale suspicion of the social, economic, and military implications of an autonomous technology. In general terms, we can identify two major causes for concern produced by cybernetics. The first concern relates to the idea that computers may be taught to simulate human thought, and the second relates to the possibility that automated robots may be wired to replace humans in the workplace. The cybernetics debate, in fact, appears to follow the somewhat familiar class and gender lines of a mind-body split. Artificial intelligence, of course, threatens to reproduce the thinking subject, while the robot could conceivably be mass produced to form an automated workforce (robot in Czech means "worker"). However, if the former challenges the traditional intellectual prestige of a class of experts, the latter promises to displace the social privilege dependent upon stable categories of gender.

In our society, discourses are gendered, and the split between mind and body—as feminist theory has demonstrated—is a binary that identifies men with thought, intellect, and reason and women with body, emotion, and intuition. We might expect, then, that computer intelligence and robotics would enhance binary splits and emphasize the dominance of reason and logic over the irrational. However, because the blurred boundaries between mind

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and machine, body and machine, and human and nonhuman are the very legacy of cybernetics, automated machines, in fact, provide new ground upon which to argue that gender and its representations are technological productions. In a sense, cybernetics simultaneously maps out the terrain for both postmodern discussions of the subject in late capitalism and feminist debates about technology, postmodernism, and gender.

Although technophobia among women and as theorized by some feminists is understandable as a response to military and scientific abuses within a patriarchal system, the advent of intelligent machines necessarily changes the social relations between gender and science, sexuality and biology, feminism and the politics of artificiality. To illustrate productive and useful interactions between and across these categories, I take as central symbols the Apple computer logo, an apple with a bite taken from it, and the cyborg as theorized by Donna Haraway, a machine both female and intelligent.

We recognize the Apple computer symbol, I think, as a clever icon for the digitalization of the creation myth. Within this logo, sin and knowledge, the forbidden fruits of the garden of Eden, are interfaced with memory and information in a network of power. The bite now represents the *byte* of information within a processing memory. I attempt to provide a reading of the apple that disassociates it from the myth of genesis and suggests that such a myth no longer holds currency within our postmodern age of simulation. Inasmuch as the postmodern project radically questions the notion of origination and the nostalgia attendant upon it, a postmodern reading of the apple finds that the subject has always sinned, has never not bitten the apple. The female cyborg replaces Eve in this myth with a figure who severs once and for all the assumed connection between woman and nature upon which entire patriarchal structures rest. The female cyborg, furthermore, exploits a traditionally masculine fear of the deceptiveness of appearances and calls into question the boundaries of human, animal, and machine precisely where they are most vulnerable—at the site of the female body.

On the one hand, the apple and Eve represent an organic relation between God, nature, man, and woman; on the other, the apple and the female cyborg symbolize a mass cultural computer technology. However, the distance travelled from genesis to intelli-

gence is not a line between two poles, not a diachronic shift from belief to skepticism, for technology within multinational capitalism involves systems organized around contradictions. Computer technology, for example, both generates a powerful mass culture and also serves to militarize power. Cultural critics in the computer age, those concerned with the social configurations of class, race, and gender, can thus no longer afford to position themselves simply for or against technology, for or against postmodernism. In order not merely to reproduce the traditional divide between humanists and mechanists, feminists and other cultural critics must rather begin to theorize their position in relation to a plurality of technologies and from a place already within postmodernism.

POISONED APPLES

"The true mystery of the world is the visible not the invisible."

Oscar Wilde, *The Picture of Dorian Gray* (1891)

The work of one pioneer in computer intelligence suggests a way that the technology of intelligence may be interwoven with the technology of gender. Alan Turing (1912-1954) was an English mathematician whose computer technology explicitly challenged boundaries between disciplines and between minds, bodies, and machines. Turing had been fascinated with the idea of a machine capable of manipulating symbols since an early age. His biographer Andrew Hodges writes:

What, Alan Turing asked, would be the most general kind of a machine that dealt with symbols? To be a "machine" it would have to retain the typewriter's quality of having a finite number of configurations and an exactly determined behavior in each. But it would be capable of much more. And so he imagined machines which were, in effect, super-typewriters.¹

In dreaming of such a machine, Turing imagined a kind of autonomous potential for this electrical brain, the potential for the machine to think, reason, and even make errors. Although the idea of the computer occurred to many different people simultaneously, it was Alan Turing who tried to consider the scope and range of an artificial intelligence.

Turing's development of what he called a "universal machine," as a mathematical model of a kind of superbrain, brought into ques-

tion the whole concept of mind and indeed made a strict correlation between mind and machine. Although Turing's research would not yield a prototype of a computer until years later, this early model founded computer research squarely on the analogy between human and machine and, furthermore, challenged the supposed autonomy and abstraction of pure mathematics. For example, G.H. Hardy claims that "the 'real' mathematics of the 'real' mathematicians, the mathematics of Fermat and Euler and Gauss and Abel and Riemann, is almost wholly 'useless.' . . . It is not possible to justify the life of any genuine professional mathematician on the ground of the utility of his work."² This statement reveals a distinctly modernist investment in form over content and in the total objectivity of the scientific project unsullied by contact with the material world. Within a postmodern science, such claims for intellectual distance and abstraction are mediated, however, by the emergence of a mass culture technology. Technology for the masses, the prospect of a computer terminal in every home, encroaches upon the sacred ground of the experts and establishes technology as a relation between subjects and culture.

In a 1950 paper entitled "Computing Machinery and Intelligence," Alan Turing argued that a computer works according to the principle of imitation, but it may also be able to learn. In determining artificial intelligence, Turing demanded what he called "fair play" for the computer. We must not expect, he suggested, that the computer will be infallible, nor will it always act rationally or logically; indeed, the machine's very fallibility is necessary to its definition as "intelligent."³ Turing compared the electric brain of the computer to the brain of a child; he suggested that intelligence transpires out of the combination of "discipline and initiative." Both discipline and initiative in this model run interference across the brain and condition behavior. However, Turing claimed that in both the human and the electric mind, there is the possibility for random interference and that it is this element that is critical to intelligence. Interference, then, works both as an organizing force, one which orders random behaviors, and as a random interruption which returns the system to chaos: it must always do both.

Turing created a test by which one might judge whether a computer could be considered intelligent. The Turing test demands that a human subject decide, based on replies given to her or his questions, whether she or he is communicating with a human or a

machine. When the respondents fail to distinguish between human and machine responses, the computer may be considered intelligent. In an interesting twist, Turing illustrates the application of his test with what he calls "a sexual guessing game." In this game, a woman and a man sit in one room and an interrogator sits in another. The interrogator must determine the sexes of the two people based on their written replies to his questions. The man attempts to deceive the questioner, and the woman tries to convince him. Turing's point in introducing the sexual guessing game was to show that imitation makes even the most stable of distinctions (i.e., gender) unstable. By using the sexual guessing game as simply a control model, however, Turing does not stress the obvious connection between gender and computer intelligence: both are in fact imitative systems, and the boundaries between female and male, I argue, are as unclear and as unstable as the boundary between human and machine intelligence.

By assigning gender to biology and cognitive process to acculturation, Turing fails to realize the full import of his negotiations between machine and human. Gender, we might argue, like computer intelligence, is a learned, imitative behavior that can be processed so well that it comes to look natural. Indeed, the work of culture in the former and of science in the latter is perhaps to transform the artificial into a function so smooth that it seems organic. In other words, gender, like intelligence, has a technology. There is an irony to Turing's careful analogical comparisons between bodies and machines. Two years after he published his paper, in 1952, Turing was arrested and charged with "gross indecency," or homosexual activity. Faced with a choice between a jail sentence or hormone treatments, Turing opted for the hormones. It was still believed in the fifties that female hormones could "correct" male homosexuality because homosexual behavior was assumed to be a form of physically or biologically based gender confusion. In fact, the same kind of reasoning that prevented Turing from understanding the radically unstable condition of gender informed the attempt by medical researchers to correct a supposed surfeit of male hormones in the homosexual with infusions of female hormones. During treatment, Turing was rendered impotent, and he began to grow breasts. As soon as the treatment was over, he resumed his homosexual relationships.

Two important points can be made in relation to the brush be-

tween science and desire. First, Turing's experience of gender instability suggests that the body may in fact be, both materially and libidinally, a product of technology inasmuch as injections of hormones can transform it from male to female; second, desire provides the random element necessary to a technology's definition as intelligent. In other words, the body may be scientifically altered in order to force "correct" gender identification, but desire remains as interference running across a binary technologic.

Alan Turing's homosexuality was interpreted by the legal system as a crime, by the medical profession as a malfunction, and by the government as a liability. Turing was considered a liability because during World War II he had used his mathematical training in the service of military intelligence, and, as a cryptanalyst, he had distinguished himself in his work to decode Nazi communications. Turing's homosexuality made him seem an unfit keeper of state secrets: he was exploitable, fatally flawed, a weak link in the masculinist chain of government and the military. He had a sexual secret that the enemy (in 1952, the enemy was, of course, Communism) could prey upon, and his secret made him incontrovertibly Other.

The association between machine and military intelligence, as Turing found out, is a close one; and computer technology is in many ways the progeny of war in the modern age. The fear generated by computer intelligence, indeed, owes much to this association of the computer with highly sophisticated weaponry. As Andreas Huyssen points out, the fear of an autonomous technology has led to a gendering of technology as female: "As soon as the machine came to be perceived as a demonic, inexplicable threat and as the harbinger of chaos and destruction. . . writers began to imagine the *Maschinenmensch* as woman. . . . Woman, nature, machine had become a mesh of signification which all had one thing in common: otherness."⁴ The fear of artificial intelligence, like the fear of homosexuals infiltrating the secret service, was transformed into a paranoid terror of femininity. Similarly, the machine itself was seen to threaten the hegemony of white male authority because it could as easily be used against a government as for it; autonomy was indeed its terrifying potential. The same argument that propelled a witch-hunt for possible homosexual traitors in the British government in the 1950s gendered the machine as female and attempted to convert threat into seduction.

Turing now became the object of scrutiny of the very security system he had helped to create. The machine Other, like the sexual Other within a system of gender inequality, is contained even as it participates in the power dynamic.

Turing ended his life in 1954 by eating an apple dipped in cyanide. He had experienced the ignominy of a public trial for homosexual relations, he had suffered through a year's course of "organotherapy," then he was kept under close surveillance by the British Foreign office as a wave of panic over homosexual spies gripped the country. Turing had been awarded the Order of the British Empire in 1946 for his war service, and he earned a police record in 1952 for his sexual activities. Rarely has the division between body and mind been drawn with such precision and such tragic irony.

Turing's suicide method, eating an apple saturated with cyanide, bizarrely prefigures the Apple computer logo. Turing's apple, however, suggests a new and more complicated story than that of Adam and Eve; it suggests different configurations of culture and technology, science and myth, gender and discourse. The fatal apple as a fitting symbol of Turing's work scrambles completely boundaries between natural and artificial showing the natural to be always merely a configuration within the artificial. This symbol reveals, furthermore, multiple intersections of body and technology within cultural memory. Turing's bite, then, may indeed be read according to the myth of Genesis as the act of giving in to temptation, but it must also be read as resistance to the compulsory temptations of heterosexuality. Turing's death may have been a suicide, but it was also a refusal to circulate in the arena of military secrets. Turing's apple may be the apple of knowledge, but it is also the fruit of a technological dream.

THE FEMALE CYBORG: FEMINISM AND POSTMODERNISM

"The projected manufacture by men of artificial wombs, of cyborgs, which will be part flesh, part robot, of clones—all are manifestations of phallotechnic boundary violations."

Mary Daly, *Gyn-Ecology: The Metaethics of Radical Feminism*

"The cyborg is resolutely committed to partiality, irony, intimacy and perversity. It is oppositional, utopian and completely without innocence."

Donna Haraway, "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s"

Postmodernism has most often been theorized with relation to the arts or literature, but artificial intelligence, quantum mechanics, and a general move away from disciplinarity reveal that postmodernity is not only a simultaneous formation across disciplinary boundaries, but it also challenges distinctions between art and science altogether and suggests that the two cannot be thought separately. Obviously, the definition of postmodernism is contested. However, a working model of postmodernism demands that it have a historical dimension, a political perspective, and a cultural domain. Because the theoretical concerns of postmodernism and feminism often seem to mirror each other, questions arise as to whether the two are in dialogue or opposition and whether one takes precedence over the other. I contend that feminism and postmodernism enjoy a mutual dependence within the academy and in relation to mass culture. Because postmodernism has often been represented as a chameleon discourse, without a stable shape, form, or location, I offer a working definition that attempts both to situate it and to maintain its ambiguities. Theorists such as Andreas Huyssen and Jean François Lyotard suggest that postmodernism does not simply follow after modernism: it arises out of modernism and indeed interrupts what Lyotard identifies as modernism's grand narratives.⁵ Huyssen finds that postmodernism sometimes breaks critically with modernism, and at other times merely reinscribes the modern enterprise.⁶ The postmodern is not simply a chronological "after" to the modern; it is always embedded within the modern as interference or interruption and as a coming to consciousness of a subject no longer modeled upon the Western white male. In his attempt to historicize postmodernism, Frederick Jameson calls it a "cultural dominant" in the age of multinational capitalism. As cultural dominant, postmodernism participates in a different perception of space and time, in the production of a fragmented subjectivity, and in the breakdown of a surface/depth model in the realm of representation.⁷ Refusing to designate postmodernism as a "style," Jameson demonstrates that

postmodernism is a production within a system of logic at a precise time in history.

Most theories of the postmodern concede that it involves a changing relation between our bodies and our worlds. Jameson suggests, with reference to architecture, that postmodern hyper-space "has finally succeeded in transcending the capacities of the individual human body to locate itself, to organize its immediate surroundings perceptually, and cognitively to map its position in a mappable external world."⁸ But the vertigo that Jameson describes, like the confusion precipitated in Lyotard's text by the breakdown of "grand narratives of legitimation,"⁹ is nothing new for women and people of color. The world, after all, has been mapped and legitimated for only a small group of people. As postmodernity brings space and truth, time and body, nature and representation, and culture and technology into a series of startling collisions, we begin to ask questions about what interests were served by the stability of these categories and about who, in contrast, benefits from a recognition of radical instability within the postmodern. Such questions have informed debates about postmodern feminism. By exploring feminist claims that postmodernism is merely an intellectual ruse to reconstitute the subject as white and male, I show that postmodernism and feminism are in fact mutually indebted. On the most basic level, feminism forces a theory of gender oppression upon postmodernism, and postmodernism provides feminism with a politics of artificiality.

The relationship between feminism and postmodernism is anything but familial—they are not to be married, hardly siblings; they are both more and less than incestuous. The most successful unions of these two discourses, indeed, have suggested a robotic, artificial, and monstrous connection. Donna Haraway's 1985 essay, "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s," presents a radical departure for an emergent postmodern feminist discourse. Haraway merges radical feminism with a postmodern articulation of history and a politically necessary analysis of science and technology. She calls for a repositioning of socialist feminism in relation to technological production, theoretical articulations of the feminist subject, and the narrative of what she calls "salvation history." The cyborg for Haraway is "a condensed image of both imagination and material reality, the two joined centers structuring any possibility of histori-

cal transformation." Such an image is particularly useful for feminists who seek to avoid the ideological dangers of recourse to an authentic female self. Haraway's cyborg displays the machinery of gender; clothes herself in circuitry and networks; commits to "partiality, irony, intimacy, and perversity";¹⁰ and revels in the confusion of boundaries.

Haraway has been criticized for engaging in "an epistemological fantasy of *becoming* multiplicity" by Susan Bordo, who identifies a danger in theoretical projects that embrace multiple and unstable subject positions. Such "deconstructionist readings," she suggests, "refuse to assume a shape for which they must take responsibility."¹¹ Bordo is not alone in her suspicion of the elusiveness of the postmodern subject. Nancy Hartsock asks: "Why is it that just at the moment when so many of us who have been silenced begin to demand the right to name ourselves, to act as subjects rather than as the objects of history, that just then the concept of subjecthood becomes problematic?"¹² Both Bordo's suspicion of the locatedness of the postmodern subject and Hartsock's questioning of the historical imperative behind the postmodern project are valid and timely inquiries. The subtext to both questions is whether the postmodern subject, fragmented and in flux, is not after all merely another incarnation of the masculine subject of the Enlightenment. Gender, such theorists fear, has been deemphasized in order to allow the male subject to be renaturalized as "human."

Bordo, then, accuses postmodern feminism of refusing "to assume a shape," and yet Haraway has outlined clearly the shape, form, and agenda of a postmodern feminist cyborg who *participates* in power structures. Hartsock finds postmodernism to be suspiciously contemporary with the coming to voice of many who have previously been silenced; and yet, academic feminism, at least, is surely a discourse with a voice and with an increasingly empowered place within the institution. Hartsock asks why is it that subjecthood splinters when marginalized groups begin to speak. The answer is already embedded in her question; subjecthood becomes problematic, fragmented, and stratified *because* marginalized Others begin to speak. The concept of the unified bourgeois subject, in other words, has been shot through with otherness and can find no way to regroup or reunite the splinters of being, now themselves part of a class, race, and gender configuration.

The fears that Bordo and Hartsock articulate are indeed justified, but to overindulge in such a speculative drift must surely reduce institutional power to a one-way dynamic that always reproduces a center and margins structure. Debates about whether certain theoretical strategies neutralize the political content of academic feminism—or, worse, collaborate in its co-optation—are necessary and important as long as they do not fall back upon a conception of power that identifies it as full-scale repression coming from above. Power, Michel Foucault has forcefully demonstrated, comes from below; and the postmodern subject, in its fragmentary and partial form, was formed out of the very challenge made by feminism to patriarchy.

Haraway concludes her essay: "Although both are bound in the spiral dance, I would rather be a cyborg than a goddess."¹³ The cyborg and the goddess are suggestive terms for the comprehension of feminism as always multiple. Feminism has never been a monolithic theoretical or cultural project, but certain ideas do attain a kind of dominance over time. Hence, the "spiral dance," or history, makes the cyborg inconceivable in feminism without the prior presence of the goddess; one does, indeed, stand upon the other's shoulders. Haraway's essay figures the cultural feminism of the late 1970s and the early 1980s as the goddess because it revived and reinvested, in an idealized concept of woman, a concept that exiled her in nature and essentialized her in relation to gender. Such "cultural feminism," one which ignores the material bases of oppression and cathects "woman" as the real, the true, and the natural, reproduces, in Bidy Martin's words, "the classical split between the individual and the social formation" and assumes "that we can shed what is supposedly a false consciousness imposed and maintained from the outside, and begin to speak a more authentic truth."¹⁴ Although the goddess and the cyborg are merely poles in a complex debate, they are useful in thinking through gender. Indeed, although the terms of the debate may change over time, in the arguments for and against a postmodern feminism we can still trace an oscillation between these positions. The ground between the goddess and the cyborg clearly stakes out the contested territory between the category "woman" and the gendered "body." So, if the goddess is an ideal congruence between anatomy and femininity, the cyborg instead posits femininity as automation, a coded masquerade.

As early as 1970, Shulamith Firestone in *The Dialectic of Sex* suggested the promise of the female cyborg: "What is called for is a revolutionary ecological program that would attempt to establish an artificial balance in place of the 'natural' one, thus realizing the original goal of empirical science: total mastery of nature." Firestone argued that feminist revolution must seize control of the means of both production and reproduction: cybernation and fertility control will relieve women of their historical burden and lead the way to a different and fully politicized female subject position. Firestone remained caught in a kind of biologism which grounds gender oppression in the body of the mother. And although her call for "total mastery" resubmits to a kind of holism, she has nonetheless envisioned a solution which is neither apocalyptic nor idealist and one which welcomes developments in science and technology. Firestone's claim that "the misuse of scientific developments is very often confused with technology itself" leads her to suggest that "atomic energy, fertility control, artificial reproduction, cybernation, in themselves are liberating—unless they are improperly used." Such a perspective concurs with Haraway's argument that "taking responsibility for the social relations of science and technology means refusing an anti-science metaphysics, a demonology of technology. . . ."¹⁵

Firestone's grim optimism in the 1970s was countered within feminist discourse by the demonization of science and technology which, quite understandably, stemmed from a fear of the relatedness of technology and militarism. Mary Daly's *Gyn-Ecology*, perhaps the most important work in the cultural feminist tradition, imaginatively and yet reductively performs an unequivocal rejection of all technologies. In a section entitled "From Robotitude to Roboticide: Reconsidering," Daly argues that "phallogenic progress" aims eventually to replace femaleness with "hollow holograms" and female bodies with robots through such techniques as "total therapy, transsexualism and cloning."¹⁶ Daly proposes a strategy to counter this process and calls it "roboticide" or the destruction of "false selves." Given the history of gendering technology as female in order to make it seductive, the threat of a Stepford Wives phenomenon certainly has validity. However, Daly's cultural critique hinges upon an investment in binaries such as natural and artificial, intuitive and rational, female and male, and body and mind. Daly reinvests in the fear of autonomous machines and

equates artificiality with the loss of an essential self.

Daly categorizes cloning, artificial intelligence, and reproductive technology (or, as she terms it, "male-mother-miming") as boundary violations perpetrated by scientists, the "priests of patriarchy."¹⁷ She reads robotitude, or automated gender, as a negative condition because she imagines that it replaces something natural and organic within "woman." Unlike Haraway, Daly is certain of what counts as nature and of what constitutes a true self. I suggest that even though automated gender does indeed involve a certain "robotitude," automation functions amidst constant interference from the random elements of computer technology and therefore constantly participates in the ordering and disordering of resistances. The imperfect matches between gender and desire, sex and gender, and the body and technology can be accommodated within the automated cyborg, because it is always partial, part machine and part human; it is always becoming human or "becoming woman."¹⁸

To argue, as the cultural feminists do, that automated gender removes the humanity of the female subject is to ignore the technology of gender and to replicate a patriarchal gendering of technology. As we saw in relation to Turing, technology is given a female identity when it must seduce the user into thinking of it as desirable or benign. Daly's argument that the female robot contaminates woman's essential naturalness regenders the natural and the artificial in the opposite direction as female nature and male science.

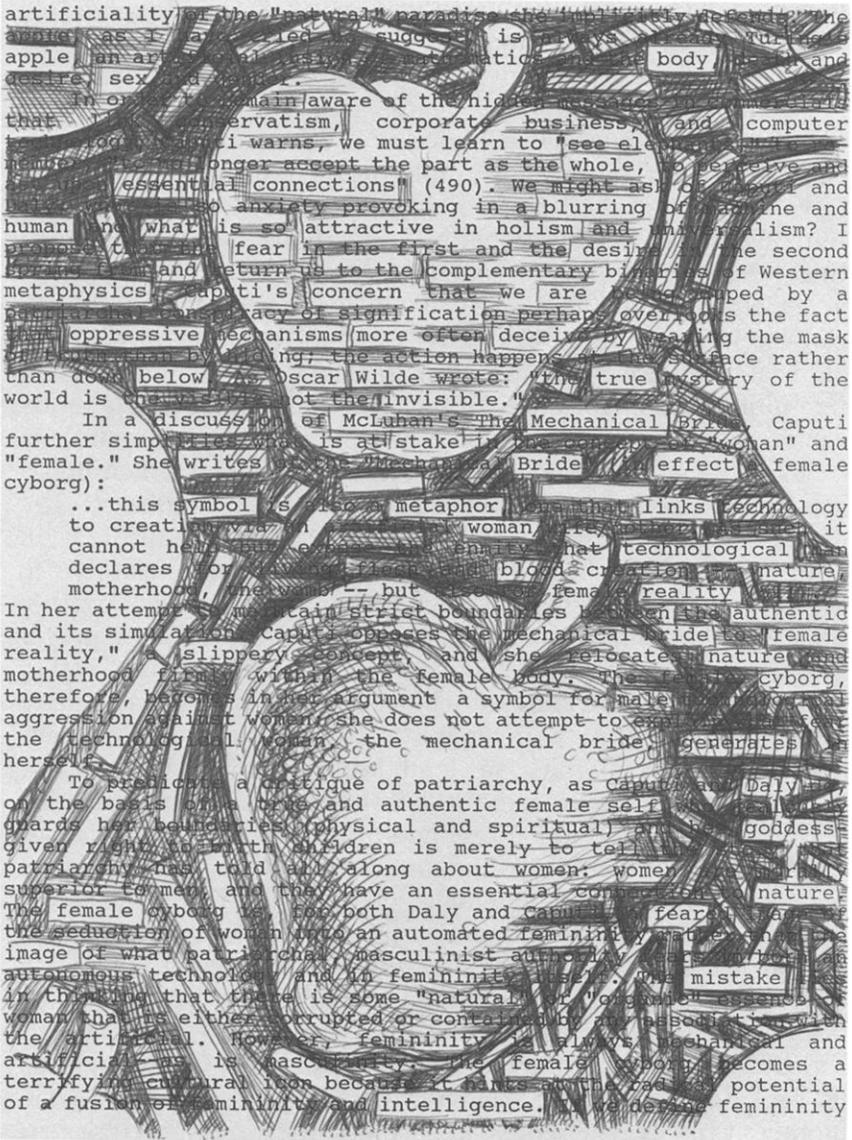
In a recent issue of *Feminist Studies*, Jane Caputi provides an updated version of Daly's critique of phallogocracy. Caputi's far-ranging analysis examines what she perceives as the ominous cultural import of the blurring of human and machine. Caputi opens her argument with a cogent reading of a television commercial for Elephant Premium floppy disks during election week 1984. The commercial's subliminal message, she suggests, is about memory, the mythical memory of the elephant, her own memory that the elephant is a symbol of the Republican party, and the electronic memory of the floppy disk. Caputi is concerned here with "the replacement of organic memory by an artificial substitute," and she fears that humans and machines will "slur/blur ever into one another, humans becoming more cold, the machines acquiring more soul."¹⁹ Memory, artificial memory, also concerns Caputi in her

consideration of the Apple computer logo. She argues that the logo both reactivates the myth of original sin and creates a new and dangerous myth about "an artificial paradise, indeed the artificial as paradise." Here, Caputi fails to question the very artificiality of the "natural" paradise she implicitly defends. The apple, as I have tried to suggest, is Turing's apple, an artificial fusion of mathematics and the body, death and desire, sex and gender.

In order to remain aware of the hidden messages in commercials that link conservatism, corporate business, and computer technology, Caputi warns, we must learn to "see elephants," to remember, "to no longer accept the part as the whole, to perceive and act upon essential connections."²⁰ We might ask of Caputi and Daly, what is so anxiety provoking in a blurring of machine and human and what is so attractive in holism and universalism? I propose that the fear in the first and the desire in the second spring from and return us to the complementary binaries of Western metaphysics. Caputi's concern that we are being duped by a patriarchal conspiracy of signification perhaps overlooks the fact that oppressive mechanisms more often deceive by wearing the mask of truth than by hiding; the action happens at the surface rather than down below. As Oscar Wilde wrote, "the true mystery of the world is the visible not the invisible."

In a discussion of Marshall McLuhan's *The Mechanical Bride: Folklore of Industrial Man*, Caputi further simplifies what is at stake in the concepts of "woman" and "female." She writes of the "Mechanical Bride" (in effect, a female cyborg): "This symbol is also a metaphor, one that links technology to creation via an artificial woman/wife/mother. As such, it cannot help but expose the enmity that technological man declares for living flesh and blood creation—nature, motherhood, the womb—but also for female reality."²¹ In her attempt to maintain strict boundaries between the authentic and its simulation, Caputi opposes the mechanical bride to "female reality," a slippery concept, and she relocates nature and motherhood firmly within the female body. The female cyborg, therefore, becomes in her argument a symbol for male technological aggression against women; she does not attempt to explain what fear the technological woman, the mechanical bride, generates in herself.

To predicate a critique of patriarchy, as Caputi and Daly do, on the basis of a true and authentic female self, who jealously guards



Ira Livingston, untitled drawing, mixed media.

her boundaries (physical and spiritual) and her goddess-given right to birth children, is merely to tell the story that patriarchy has told all along about women: women are morally superior to men, and they have an essential connection to nature. The female cyborg is, for both Daly and Caputi, a feared image of the seduction of woman into an automated femininity rather than the image of what patriarchal, masculinist authority fears in both an autonomous technology and in femininity itself. The mistake lies in thinking that there is some "natural" or "organic" essence of woman that is either corrupted or contained by any association with the artificial. However, femininity is always mechanical and artificial—as is masculinity. The female cyborg becomes a terrifying cultural icon because it hints at the radical potential of a fusion of femininity and intelligence. If we define femininity as the representation of any gendered body, and intelligence as the autonomous potential of technology and mental functioning, their union signifies the artificial component in each without referring to any essential concept of nature. A female cyborg would be artificial in both mind and flesh, as much woman as machine, as close to science as to nature. The resistance she represents to static conceptions of gender and technology pushes a feminist theory of power to a new arena. The intelligent and female cyborg thinks gender, processes power, and converts a binary system of logic into a more intricate network. As a metaphor, she challenges the correspondences such as maternity and femininity or female and emotion. As a metonym, she embodies the impossibility of distinguishing between gender and its representation.

By merging so completely the familiar with the strange, the artificial with the natural, the female cyborg appears to evoke something unsettling, something that profoundly disturbs and frightens certain authors. We might call the effect produced by the female cyborg "uncanny." "The uncanny," Freud writes in an essay of the same name, "is that class of the terrifying which leads back to something long known to us, once very familiar."²² He then leads us back to the repressed as castration or the repressed as the mother's genitals. The repressed becomes uncanny when it recurs: it is the familiar (i.e., the mother's genitals) become strange (i.e., castrated).

By way of illustrating his theory, Freud refers to Hoffman's tale, "The Sand Man." He wants to use the story to prove his thesis that

the threat of castration is what creates uncanny effects. Freud argues that the uncanny is represented in the castrating figure of the Sand Man himself, rather than in the lifelike doll, Olympia, with whom the hero, Nathaniel, falls in love.

But I cannot think – and I hope most readers of the story will agree with me – that the theme of the doll, Olympia, who is to all appearances a living being, is by any means the only element to be held responsible for the quite unparalleled atmosphere of uncanniness which the story evokes. . . . The main theme of the story is, on the contrary, something different . . . it is the theme of the Sand Man who tears out children's eyes.

In this passage, Freud deliberately and forcefully shifts the terms of the debate in order to oppose Ernst Jentsch's work suggesting that the uncanny is produced by intellectual uncertainty. Jentsch gives as an example "doubts whether an apparently animate being is really alive," and he refers to "wax-work figures, artificial dolls and automatons."²³ Obviously, for Jentsch it is the automaton Olympia that is the locus of the uncanny in the story. Freud refutes Jentsch not only because of the importance of the castration theory to psychoanalysis, but also because Freud needs to separate the female body from both technology and the production of terror. Thus, he can maintain a critical connection (the very connection that Caputi and Daly defend) between the female body, nature, and motherhood.

A cycle of repetition-compulsion characterizes Freud's wandering journey through the uncanny. He represses the female figure Olympia who returns as the "painted woman" of Italy (the *gen-Italia*); then as the dark forest in which one might be lost; and finally as that "unheimlich place" itself, "the entrance to the former heim [home] of all human beings, to the place where everyone dwelt once upon a time and in the beginning."²⁴ This return reassures Freud of the possibility of an origin (easily lost among infinite repetitions) and calms his fear of the automated woman, the doll to whose womb neither he nor any man may return. Olympia, of course, is a cyborg, not a flesh-and-blood woman; nonetheless, she is desirable. Technology and the feminine reside at once in Olympia. Olympia, the mechanical bride, represents technology's seductiveness and its inevitability.²⁵

In Hoffman's "The Sand Man," Olympia seduces the protagonist, Nathaniel, because as automaton she does not interfere with his narcissistic need to find himself mirrored in the Other. Her ans-

wer to all his questions, "Ach! Ach!" assures him that he has found true femininity, a perpetually consenting adult. When she is revealed to be an automaton, when her femininity as mechanism is finally brought to his attention, his very masculinity lies in the balance. Olympia as automaton radically questions the possibility of taking the body as proof of gender. She produces uncanny notions that the machine is more than a metaphor for self, that sexuality has a mechanism, and that gender is a technology.

Clearly, there is a problem when the arguments used within psychoanalysis or within modern scientific discourse to essentialize femininity are replicated within feminist theory. Mary Daly warns us of the dangers of robotitude but fails to problematize the ways in which technology has already been gendered female or why. Jane Caputi opposes artificial and natural memories but does not remember that feminism has called naturalized memory, or "history" into question all along. Some strands of feminist theory have demonized science and technology rather than attempting to undo oppressive discourses while participating in those that may empower us. In the age of the intelligent machine, political categories can no longer afford to be binary. A multiplicity is called for that acknowledges power differentials but is not ruled by them; that produces and reduces differences; and, finally, that understands gender as automated *and* intelligent, as a mechanism or structure capable of achieving some kind of autonomy from both biological sex and a rationalistic tradition. The female cyborg, in other words, calls attention to the artificiality of gender distinctions and to the political motivation that continues to blur gender into nature.

Feminist rereadings of what Haraway calls "the social relations of technology," of Olympia the artificial woman, the mechanical bride, can contribute to different technologies and different conceptions of gender identities. The apparently female cyborg releases the female body from its bondage to nature and merges body and machine to produce a terrifying and uncanny prospect of female intelligence. Gender emerges within the cyborg as no longer a binary but as a multiple construction dependent upon random formations beyond masculine or feminine. Different readings of cultural symbols, such as the apple of temptation, produce new myths and refuse the eschatology of a Christian science. Turing's travels into artificial intelligence, his experience of the tech-

nology of gender within his own body, his homosexuality, and finally, his fatal bite into the cyanide apple produce difference and the artificial as always concomitant with the natural. The cyborg and the apple demand post-Christian myths, myths of multiple genders, of variegated desires, myths of difference, differences and tolerance.

POSTSCRIPT

Postmodern feminism, as I have been arguing, can find positive and productive ways in which to theorize gender, science, and technology, and their connections within the fertile and provocative field of machine intelligence. Using the image of a female machine, I posit gender as an automated construct. Although the female cyborg proves to be a fascinating metaphor and an exciting prospect, it may gloss or obscure certain relations between living women and technology. For example, within the information industry, a traditional gender division exists with regard to work—men write programs and women process words—and such a division reinforces existing models for gendered labor.

Although Shoshana Zuboff does not directly confront the gendered division of labor, her book, *In the Age of the Smart Machine: The Future of Work and Power*, implies that such a division is not compatible with the new technology. Calling manager-employee relations in the automated workplace "posthierarchical," she claims: "This does not imply that differentials of knowledge, responsibility, and power no longer exist; rather they can no longer be assumed. Instead they shift and flow and develop their character in relation to the situations, the task and the actors at hand." Work relations, Zuboff argues, when clustered around an electronic text rather than spread between manual labor and personnel management, tend toward a system of equality. To arrive at this conclusion, Zuboff traces the history of blue- and white-collar workers, clerical workers, and management in relation to disciplinary systems of power within technology and industry. The predominance of women in the word-processing field might be attributed, then, to a continuation of the effects of the feminization of office work after the introduction of the typewriter in the 1890s: "in 1890, 64 percent of all stenographers and typists were women; by 1920, the figure had risen to 92 percent."²⁶ But typewriting and

word processing—textual reproduction and textual manipulation—are different kinds of tasks, with a much greater potential for change existing within word processing. As jobs increasingly focus upon the manipulation of electronic texts and symbols, word processing will very probably not remain a secretarial task involving simple transcription; word processing, whether performed by women or men, may conceivably break down traditional divisions of labor within the office. The smart machine, indeed, requires that we change the way we envision our jobs as much as the new jobs alter social relations within the workplace.

At the same time, the electronic marketplace threatens to enforce a new kind of literacy and to create a disenfranchised body of illiterates. Being at ease with computer technology demands exposure that right now only money can buy. Even a slight decrease in market value, however, could make the personal computer as affordable and ubiquitous as the television set. If the labor force is to resist a split between those who work on computers and those who continue to hold low-paying and low-prestige service jobs, a split that could follow predictable class and race lines, people must have roughly equal access to computer time. Of course, the configurations of class, race, and gender in the age of the intelligent machine are not reducible to a single model or strategy. As the technology changes, social relations change; as social relations change, the technology is altered. Cybernetic systems, at least potentially, tend toward a posthierarchical labor structure in which the system stresses interaction—among workers and management, computer systems and operators—as much as production.

Gender, in this essay, has figured as an electronic text that shifts and changes in dialogue with users and programs. The apple signifies an altered relation between our bodies and ourselves in the age of the intelligent machine, and the Apple logo's byte no longer proves fatal. Postmodern feminism, I argue, may benefit from the theory of artificiality proposed by Turing's explorations in artificial intelligence and symbolized by the Apple logo. Such a theory shows that we are already as embedded within the new technologies as they are embodied within us. Both Turing's apple and the female cyborg threaten our ability to differentiate between our natural selves and our machine selves; these images suggest that perhaps already cyborgs are us.

NOTES

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1. Andrew Hodges, *Alan Turing, the Enigma* (New York: Simon & Schuster, 1983), 97.
2. G.H. Hardy, quoted in *ibid.*, 120.
3. Alan Turing, "Computing Machinery and Intelligence," *Mind* 59 (October 1950): 433-60.
4. Andreas Huyssen, "The Vamp and the Machine: Fritz Lang's *Metropolis*," in Andreas Huyssen, *After the Great Divide: Modernism, Mass Culture, Postmodernism* (Bloomington and Indianapolis: Indiana University Press, 1986), 70.
5. Jean François Lyotard, *The Postmodern Condition: A Report on Knowledge*, trans. Geoff Bennington and Brian Massumi (Minneapolis: Minnesota University Press, 1984).
6. Andreas Huyssen, "Mapping the Postmodern," in *After the Great Divide*, 185.
7. Frederick Jameson, "Postmodernism, or the Cultural Logic of Late Capitalism," *New Left Review*, no. 146 (July-August 1984): 53-92.
8. *Ibid.*, 83.
9. Lyotard, 51.
10. Donna Haraway, "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s," in *Feminism/Postmodernism*, ed. Linda J. Nicholson (New York and London: Routledge, 1990), 191, 192. I am using the most recent publication of this article because it does contain a few changes from the original version published in *Socialist Review*, no. 80 (1985): 65-107.
11. Susan Bordo, "Feminism, Postmodernism, and Gender-Scepticism," in *Feminism/Postmodernism*, 145, 144.
12. Nancy Hartsock, "Foucault on Power: A Theory for Women," in *Feminism/Postmodernism*, 162.
13. Haraway, 223.
14. Biddy Martin, "Feminism, Criticism, and Foucault," *New German Critique*, no. 27 (Fall 1982): 14-15.
15. Shulamith Firestone, *The Dialectic of Sex: The Case for Feminist Revolution* (New York: Morrow, 1970), 219, 224, 223.
16. Mary Daly, *Gyn/Ecology: The Metaethics of Radical Feminism* (Boston: Beacon Press, 1978), 53.
17. *Ibid.*, 103.
18. See Alice Jardine's provocative analysis of feminism and postmodernism and "the woman-in-effect" or "becoming woman" as a model for the postmodern subject in Alice Jardine, *Gynesis: Configurations of Woman and Modernity* (Ithaca and London: Cornell University Press, 1985).
19. Jane Caputi, "Seeing Elephants: The Myths of Phallotechnology," *Feminist Studies* 14 (Fall 1988): 514, 490.
20. *Ibid.*, 490.
21. *Ibid.*, 511.
22. Sigmund Freud, "The Uncanny" (1919), in Sigmund Freud, *On Creativity and the Unconscious*, trans. Alix Strachey (New York: Harper & Row, 1958), 123-24.
23. *Ibid.*, 133, 132.
24. *Ibid.*, 153.

25. To make an interesting connection here between Freud's uncanny doll and Turing's dream of intelligent machines, one need only note that "Olympia" is the name of a typewriter company. Turing imagined his machines as "supertypewriters."
26. Shoshana Zuboff, *In the Age of the Smart Machine: The Future of Work and Power* (New York: Basic Books, 1988), 401-2, 116.