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ESTRANGING SCIENCE, FICTIONALIZING BODIES: VIRAL INVASIONS,  
INFECTIOUS FICTIONS, AND THE BIOLOGICAL DISCOURSES OF

“THE HUMAN,” 1818-2005

by

LAURA ANNE DIEHL

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## ABSTRACT OF THE DISSERTATION

Estranging Science, Fictionalizing Bodies: Viral Invasions, Infectious Fictions,  
and the Biological Discourses of “the Human,” 1818-2005

LAURA ANNE DIEHL

Dissertation Director:

Harriet Davidson

In 1818, Mary Shelley’s novel *Frankenstein* causes science and literature—two different discourses, two different signifying systems, two different realities—to collide. As it addresses the givenness, or “naturalness,” of “the human,” *Frankenstein* reimagines the putative boundary between the human and the nonhuman, a fictive border *made perceptible* by contemporary scientific investigation. Catalyzing a new genre, science fiction, Shelley estranges the enlightenment discourse of “reason,” revealing it as a highly regulative structure through which societies are forged and bodies governed. “Estranging Science, Fictionalizing Bodies: Viral Invasion, Infectious Fictions, and the Biological Discourses of ‘the Human,’ 1818-2005, posits a mutually infective relationship between science and literature. It both exposes the logic of purification that delimits “modern” forms of knowledge as discursively distinct (science v. literature) and considers how this distinction informs the evolutionary/philosophical shifts in how we think about the possible, the human, and the novel. Since literature plays a significant role in the history of science and science a significant role in the history of literature, the dissertation uses each imaginary technology to interpret the other. In so doing, it

defamiliarizes and recontextualizes not only individual texts, but entire literary histories and scientific discourses that are rarely thought of as science fiction. Finally, the dissertation argues that the question of “the human,” of what we invoke when we invoke “the human,” emerges most powerfully through an interpretive matrix of science and literature, genre and the novel. Though radically different methods of shaping those narratives that concern us all, science and literature both emplot the process by which novelty enters the world and affects our experience of the self and the relatedness of bodies. The epistemological—and epidemiological—encounters the dissertation explores make possible a whole range of new entities, properties, and kinships that connect through unfamiliar evolutionary and intellectual bonds. “Human nature” emerges as neither essential nor unchanging, random nor inevitable.

## Dedication

For my parents, Dorothy and Wendell Diehl, for everything

## Contents

Abstract	ii
Dedication	iv
Contents	v

### Introduction

I.	Science/Fiction and the Problem of the Human	1
II.	Teratology and Methodology	32
	Notes	51

### Chapter One: Science/Fiction and the Victorian Vampire

I.	A Science/Fiction Hermeneutic	56
II.	The Pre-Modern Vampire	61
III.	The Modern (or Post-Modern?) Vampire: Sheridan Le Fanu's <i>Carmilla</i> and the Emerging Science Fiction Body, or, Masturbation, Sexual Inversion, and the Vampire	78
IV.	Pre-Modern Bodies and Sub-Human Biologies in the Late Victorian Life Sciences	92
	Notes	123

### Chapter Two: Puppet Masters, the Starchild, and Men Like Gods: Alien Contact and the Evolutionary Significance/Future of the White Male Body

I.	The Science/Fictions of Microbiology, Immunology, and Evolution	135
II.	Alien Invasion and Evolution: <i>The War of the Worlds</i> and the Century of Speculative Biology	146
III.	"Is that man next to me an inhuman monster?" or, <i>Horror Autotoxicus</i> : Pod People, Puppet Masters, and the Viral as the Undead	151
IV.	The Starchild and Men Like Gods: Evolution by Transcendence in Early to Mid Twentieth-Century Science Fiction	163

### **Chapter Three: Evolutionary Hybridization and Symbiotic Kinships in Contemporary Science and Fiction**

I.	Infective Bodies and Posthuman Biologies in the New Science	188
II.	“For he was a man and he was alone:” Invulnerability and Stagnation in Richard Matheson’s <i>I Am Legend</i>	194
III.	Viral Being and Becoming in Octavia Butler’s <i>Clay’s Ark</i>	200
IV.	Evolutionary Hybridization and Symbiotic Kinship in Octavia Butler’s “Bloodchild”	207
V.	Consciousness Evolution (An Atomic Point of View)—Disembodied Information or Radical Incorporation?: The Case of Greg Bear’s <i>Blood Music</i> and Joan Slonczewski’s <i>Brain Plague</i>	215
	Notes	232

### **Chapter Four: Heredity, Kinship, and Immortality in Genetics and Science Fiction**

I.	The Immortal Gene	238
II.	Eugenics and Genetic Engineering	243
III.	Polluted Genes, Impure Species, and Alternative (Evolutionary) Kinships in the New Genetics	250
IV.	The Hybrid Immortalities of Octavia Butler: <i>The Xenogenesis Trilogy</i>	258
V.	Conclusion: Nature, Kinship, and Culture: Octavia Butler’s <i>Fledgling</i> and the Anthropology of Impure Blood	275
	Notes	280

Bibliography	288
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Curriculum Vitae	305
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## INTRODUCTION

Interpreted in a certain way, contemporary biology is, somehow, a philosophy of life.

—Georges Canguilhem, *Etudes*

We become *self-conscious* through self-observation; by making descriptions of ourselves (representations), and by interacting with our descriptions we can describe ourselves describing ourselves, in an endless recursive process.

—Humberto R. Maturana, *Biology of Cognition*

### I. Science/Fiction and the Problem of the Human

#### *Frankenstein, The Vampyre, and the Vitalist/Materialist Debate*

To account for the origin and historical trajectory of modern genre fiction, we must revisit the famous ghost-story competition between Mary Shelley, Percy Shelley, Lord Byron, and John Polidori which produced the first, and perhaps most important, science fiction novel ever written—*Frankenstein*—and gave birth to a new and very modern genre. Another progeny of that infamous week in 1816 was the literary (as opposed to the folkloric or mythological) vampire. Byron's fragment of a vampire story written at Villa Diodati but never completed was turned into a novella by his private doctor, John Polidori, and published as *The Vampyre* in 1819. Two wildly popular creatures (and genres) disgorged out of a gothic, heady mixture of madness and perversion, the metaphysical and the material. More importantly, modern genre fiction arose out of the most heated and controversial scientific debate of the day, the vitalist/materialist debate. The seemingly intractable argument over the origin of life itself (its "purposiveness" or its mechanics) had smoldered for centuries but reappeared with a vengeance at the turn of the nineteenth-century—and in monstrous garb. The hideous progeny unleashed at Villa Diodati were spawned out of the clamorous



arguments between materialists who reduced all matter animate or inanimate to physics, and vitalists who refused to believe life could be degraded to nonlife. Vitalists were certain that an ineffable force infused the human being at birth and took leave at death; in other words, life could never be created by (Franken)science.

Shelley's creature and Polidore's vampire were fantastic responses to contemporary scientific and philosophical debates over the origin and essence of life. For the vitalists, a living being was imbued with a vital principle that distinguished it from a nonliving thing. Life was neither reducible to nor derived from mechanical properties, and the nature of the living principle was beyond the reach of scientific investigation. Contrary to the vitalists, the materialists argued that there was no immaterial principle in the human, and that even the mind was merely matter complexly organized. If you took an organism, no matter how evolved or intelligent, and opened it up and broke it down into its constituent parts, you would find matter and only matter.<sup>1</sup> In *Frankenstein*, Shelley engaged these debates in shocking fashion, and came down squarely on the side of the materialists.<sup>2</sup> Neither created by God nor infused with immaterial Spirit, the creature was dead matter stitched together and animated by science alone. Significantly, Polidore, himself a scientist, was the first to animate the undead into English literature (after all, as a doctor he probably, even routinely, bled his patients). Both *Frankenstein* and *The Vampyre* registered the shift from a religious to a materialist worldview (where the monstrous warned not of spiritual apostasy but of material degeneration), and the emergence of a strange new biological epistemology, a vision of science's prerogative to discriminate nature from artifice, life from nonlife. For those who chose to believe in a

world without God, the philosophical problem was man's responsibility for the production of knowledge and what it meant to be human.

The uncanny body of the undead dramatized the sense that, in the modern period, biology rather than theology was the key to explaining existence. The discovery of the importance of the future (see Malthus's *On Population*) and of biology as the engine of civilization's advancement (see Gobineau's *Inequality of the Human Races*) fed the conviction that a "science" of human nature would lead to the rationalization of political and social structures (see Taylor's *Principles of Scientific Management*). The nineteenth-century bore witness to the first systematic biological interpretations of nation and history, as well as the concentrated cultivation of biologically based forms of oppression. As the study of the properties and phenomena of organized beings, biology unlocked the essence of bodies and thus helped to frame the most pressing political issues of the day (the problem of population, for example, or the justification for Empire). How did biology define the epistemological and ideological projects of the modern period? How did the West move from the sublime realm of the Spirit to the classification and engineering of matter?

In the early nineteenth-century, the emerging picture of the human as a zoological object in continuum with the natural world rather than in dominion over it began to complicate its sense of self. Once humanity was ontologically ruptured by the absence of God and its own classification as a zoological object (a *species*), it became not just *in* but *of* time, a biological being embedded in the evolution of matter.<sup>3</sup> In the eighteenth-century man stood over and apart from nature, and, though a generalization, we might

say that differences between men themselves were more or less superficial. Physically and morally, humans were essentially akin, which is why monogenism—the belief that all humans originated/descended from a single ancestor—was the reigning evolutionary consciousness. The supreme irony here is that, at the moment man realized his mutability and fluidity, he (and it was usually a he) set about to fix the differences between himself and his others. If man were governed by biological rather than theological laws, he had to discover and elaborate new sources for his supremacy over other living beings and systems. So when humanity recognized for the first time its radical materiality and contingency, it set about to classify, order, and hierarchize itself. In the nineteenth-century, human beings became physically and morally unlike, which is why polygenism—the belief that humans originated/descended from multiple ancestors—was an increasingly influential strain of evolutionary thought in the Victorian period (initially, but even after Darwin). When man was demoted from inspired creation to temporal (transitory) species, then women, non-white peoples, and sexual minorities were involuntarily drafted as the gendered, raced, and sexed of the species, while white Western Man stood in for the universal disembodied Human.

If we are persuaded by Michel Foucault's history of pathological anatomy and the birth of the clinic, then eighteenth-century natural history belonged to the Classical Age and was epistemically distinct from the modern project of the human. Foucault contends that natural history was a science of external forms, categories and properties, and that it did not concern itself with the origin, cause, evolution, or function of life. In *The Order of Things* (1966), Foucault argues that before the birth of the clinic (before 1750 anyway)

biology could not yet exist because there was no conception of life separate from nonlife. Life as a category of analysis made no sense in the classical ordering of things because the same principles applied to both the animate and the inanimate. Life was merely one property among many in the eighteenth-century study of nature, and until it could penetrate scientific epistemology, Foucault suggests, the arrangement of the real and the unreal and the human and the nonhuman could not yet take root in the materiality of the body.<sup>4</sup> This could only happen with the birth of the clinic and its epistemological prioritizing of pathological anatomy, the most significant event in the birth of the human sciences, and consequently, in modern genre fiction.

Foucault suggests that before the birth of the clinic, death was largely accepted as a natural part of life but ontologically distinct from it. In *The Birth of the Clinic* (1963) he writes that the French father of pathological anatomy, Xavier Bichat (1771-1802), was the first to reject the view of life and death as mutually exclusive polarities. Bichat asserted that knowledge of life was contingent upon knowledge of disease and death, and that death was a process rather than a state (he opened his *Recherches physiologiques sur la vie et la mort*, 1800, with the famous pronouncement—“Life is the collection of functions that resist death”<sup>5</sup>). The clinic helped to make this revision possible. In autopsy and dissection, disease could, for the first time, be localized at specific points within the folds of the body, and knowledge of life gleaned from intimations of death. While in the Classical Age, “knowledge of life was based on the essence of the living,” with Bichat and the clinic, “knowledge of life [found] its origin in the destruction of life and in its extreme opposite; it [was] at death that disease and life [spoke] their truth.”<sup>6</sup>

Frankenstein's creature amplified this peculiarly monstrous generation of life. Victor, it seems, had read his Bichat, honing his research into the principles of life through the chronicling of death.<sup>7</sup> In his "workshop of filthy creation," Victor engendered a hideous genetic hybrid of life and nonlife by stitching together dead body parts (and like the vampire, the creature goes for the family first). In the modern period, biology germinated into a science of life through the folds of a dissected corpse, and when this happened, man was no longer a special metaphysical creation but a competing *species*—Victor versus the creature.

At this historical moment, science and genre fiction—two different sets of discourses, two different imaginary technologies, two different realities—collided in their taking up of a pressing, and more general, philosophical problem: the problem of the givenness or naturalness of the human. Genre fiction registered a world remade according to entirely new epistemological and ontological principles. By the nineteenth-century, fundamental cognitive categories of space, time, and being could no longer remain unquestioned. Copernicus and Galileo (the telescope) had revealed humanity's marginality amidst the infinite void of cosmic space; Leeuwenhoek (the microscope) had revealed an invisible world that may have been responsible for the visible; and even before Darwin, geological time (coupled with rapid technological change) had shifted the locus of estrangement from space to time and materiality.<sup>8</sup> It had become futile to reconcile Biblical time with a fossil record that indicated thousands more species had lived, died, and gone extinct than were still living. With Darwin's publication of *Origin of Species* in 1859, the alienation of cosmic space and geological time finally condensed

into the alienation of evolutionary time, and thus, into the problem of life itself (the morphology of the human). Evolutionary theory destroyed any sense of the invulnerability or sanctity of the human form. Species were neither special nor fixed, but continually mutating in response to an environment that naturally selected for traits favorable for survival. But even before Darwin, and as early as 1818, Mary Shelley had demonstrated a prescient sense of the way the world was to be continually altered, disrupted, and revised by science's search for the theory of life. With *Frankenstein*, science fiction (and from this point on I include vampire fiction under the rubric of science fiction, for, as I will argue, vampire fiction is a particular *species* of science fiction, Bram Stoker's *Dracula* functioning as the *paradigmatic* Victorian science fiction text) emerged as a modern discourse in order to tackle the alien life forms inevitably engendered by science's compulsive juxtaposition of the human and the nonhuman in its search for the principles of life.

### The Science Fiction Vampire

Science and vampire fiction first appeared in 1816 in the Swiss Alps, but the two genres would not converge again for over a century. The vampire entered the science fiction frame with C.L. (Catherine Lucille) Moore's short story "Shambleau," published in *Weird Tales* in 1933. Moore's work is an aberrant species of popular fiction, and it features an aberrant species of vampire. In Moore's text, the vampire is neither supernatural nor folkloric, but the product of science. Shambleau is an alien life form, the endpoint of an alternative evolutionary path on another planet—she is *species vampiris*. No longer a matter of supernaturalism (though it never really was), vampirism

in the twentieth-century is a matter of evolution, mutation, infection, and genetic engineering.<sup>9</sup> As the first writer to explicitly work the vampire into a science fiction frame, Moore, like Shelley, had a canny sense of what genre fiction as a *mode of awareness*<sup>10</sup> could mobilize. In fact, I would argue that “Shamblau” is a provocative intertext to analyze how science fiction as a genre claims its own significance as a cultural activity, and how it does so (at least in part) by exposing what it sees as twin “sham” literary and knowledge structures—fantasy and the psychoanalytic libidinal account of becoming human.

A terrific early science fiction story (widely read by SF fans, irrelevant to the literary mainstream), “Shamblau” stands on the threshold between Oedipus and anti-Oedipus. Shocking at the time in science fiction circles because of its abject imagery and thinly veiled allegory of sexual perversion, Moore’s vampire depicts a female sexuality both excessively monstrous and literally alien. Moore exploits Shamblau as an encyclopedia of mythical archetypes and psychosexual fears of female sexuality/biology. Set on Mars in a science fiction future, the story opens with an hysterical male mob chasing a small, frightened, half-human female who flees like a “hunted hare.” Spying the chase (and unaware of Shamblau’s true “nature”), the macho space-traveler Northwest Smith recalls an ancient line from a book he read long ago: “Thou shalt not suffer a witch to live.”<sup>11</sup> Back in his room after aiding Shamblau’s escape from the mob, Smith looks closely at the girl for the first time. She is not fully human: Though her “brown, sweet body [is] shaped like a woman’s,” she has three fingers and a thumb, feet with “claws that sheathed back into the flesh like a cat’s,” penetrating feline eyes, a

scarlet mouth with sharp teeth, and a large, tightly wound turban wrapped around her head (ibid., 5-6). That evening, Smith awakens to find Shambleau unbinding her turban, and what he sees is sublimely grotesque, yet hypnotically seductive. With a “sick, fascinated incredulity,” he watches her hair unwind in horror:

Until now he had taken it for granted that it was the *segir* which had made it seem to move on that evening before. But now...it was lengthening, stretching, moving of itself. It must be hair, but it *crawled*; with a sickening life of its own it squirmed down against her cheek, caressingly, revoltingly, impossibly....Wet, it was, and round and thick and shining...She unfastened the last fold and whipped the turban off. From what he saw then Smith would have turned his eyes away—and he had looked on dreadful things before, without flinching—but he could not stir. He could only lie there on his elbow staring at the mass of scarlet, squirming—worms, hair, what?—that writhed over her head in a dreadful mockery of ringlets. (Ibid., 18)

The inexplicably revolting, mesmeric monster of beauty, Shambleau entwines her prey with a wet, slick, venomous morass that both stings and drains. Succubus and vampire, alien mutant and Medusa, Shambleau is a palimpsest for psychobiological fetishes of the female body. Smith finds himself intensely aware of “the brown, soft curves of her, velvety—subtle arcs and planes of smooth flesh under the tatters of scarlet leather. Vampire she might be, unhuman she certainly was, but desirable beyond words” (ibid., 17). In Moore’s story, as in dozens of science fiction stories to follow, gender differences are so dramatic as to become evolutionary differences. The battle between the genders is a battle between species.

Shambleau’s endless mass of crawling horror paralyzes men, enabling her to feed on their seminal energies, her species’ sustenance. Moore associates alien (female) penetration with a deathlike loss of (male) identity and autonomy, a major theme in twentieth-century invasion narratives. Testament to Moore’s skill as a writer, Shambleau



is spine-chillingly grotesque, even to the jaded modern reader. She begins her final attack on Smith:

And in her living cloak she swayed to him, the murmur swelling seductive and caressing in his innermost brain—promising, compelling, sweeter than sweet. His flesh crawled to the horror of her, but it was a perverted revulsion that clasped what it loathed. His arms slid round her under the sliding cloak, wet, wet and warm and hideously alive....In nightmares until he died he remembered that moment when the living tresses of Shambleau first folded him in their embrace. A nauseous, smothering odor as the wetness shut around him—thick, pulsing worms clasping every inch of his body, sliding, writhing, their wetness and warmth striking through his garments as if he stood naked to their embrace. (Ibid., 21)

Shambleau's seduction petrifies an ecstatic Smith, just as, according to Sigmund Freud, the male is both emotionally and literally petrified (tumescent) at the sight of Medusa's writhing, phallic hair (the terrified boy wards off castration anxiety by imbuing castrated bloody woman with excessive phallicism). Smith "stood, rigid as marble, as helplessly stony as any of Medusa's victims in ancient legends were, while the terrible pleasure of Shambleau thrilled and shuddered through every fiber of him" (ibid.). Just before Shambleau drains him of every last ounce of seminal energy, Smith is saved when his friend Yarol destroys Shambleau just as "Perseus killed [Medusa] by using a mirror as he fought to reflect what he dared not look at directly"—he shoots Shambleau while staring at her in the mirror, realigning the male with penetrative power (ibid., 17).

An orthodox psychoanalytic analysis of Moore's story might suggest that Northwest Smith is the male Ego under siege by a foreign female interloper who penetrates the bounded body and absorbs the edifice of selfhood. Yarol (with guns blazing) is the Superego, a ruthless judge and exterminator with the "face of a fallen angel, without Lucifer's majesty to redeem it" (ibid., 22). Shambleau is the Id, or better

yet, the unconscious itself, embodying the evolutionary recesses of humanity's biological and mental past (she is a race older than man, "spawned from ancient seed in times before ours"<sup>12</sup>). As Yarol explains it to Smith, the Shambleau is a species, a "sort of race," one of the very oldest:

Where they come from nobody knows. The name sounds a little French...But it goes back beyond the start of history. There have always been Shambleau....They're a species of the vampire—or maybe the vampire is a species of—of them. Their normal form must be...that mass, and in that form they draw nourishment from the—I suppose life-forces of men. (Ibid., 28-9)

Female sexuality, an orthodox critique might suggest, is here an irresistible force that drags man back down into the bottomless pit of primeval de-creation and nonbeing. As in fantasy, the Subject's attempt to realize his desires, to get back "behind the mirror" before the fall into language and difference, is to court entropy, madness, and death: "From head to foot [Smith] was slimy from the embrace of the crawling horror about him. His face was that of some creature beyond humanity—dead-alive, fixed in a gray stare, and the look of terrible ecstasy that overspread it seemed to come from somewhere far within, a faint reflection from immeasurable distances beyond the flesh" (ibid., 23-4). A "terror unnameable" and unspeakable, Shambleau is the primal undifferentiated unconscious before language (though Smith is "a linguist of repute" he cannot decipher Shambleau's language: "Some day I—speak to you in—my own language," Shambleau promises him after he saves her from the mob<sup>13</sup>). A psychoanalytic hermeneutic would inscribe Shambleau as the locus for the nonhuman and sexual horror. She is absolute sex, abject materiality, and *the* uncanny, threatening the male ego/life with her unquenchable erotic desires.

Once we remember, however, that we are dealing with science fiction, and that science fiction ruthlessly literalizes everything it touches (and is a genre historically allergic to fantasy), then our angle of vision begins to radically shift. With her story, Moore announces science fiction's formal and philosophical objections to the tendency of fantasy and psychoanalytic readings of the monstrous to absorb all difference into unconscious drives. Most people are familiar with the mythical Medusa and how Freud uses it to theorize castration anxiety as the nexus of his science of human libidinal development. The *text* of Moore's story stages the psychoanalytic account of becoming human (what must be repressed to become human, i.e. male), but the *subtext* of the story decries the physical and mental violence the narrative inflicts on women. There is no subtext in science fiction (or if there is, it's a joke or parody)—in "Shamblau," Moore critiques the *medical imagination* as rank with subtext. To become a woman under the psychoanalytic narrative is to enter into a profound state of alienation. It is a science of humanization that can inflict ponderous violence upon female bodies ("[p]sychoanalysis can never touch woman except to make a dead body of her"<sup>14</sup>). In its drive to reveal the "secret" of human life (the universal code of the unconscious, or, the more real than the Real), psychoanalytic orthodoxy abstracts from the irreducible heterogeneity of living beings, divorcing itself from life as lived. Moore argues that to organize our experience of our selves and others in biological terms is utterly alien in relation to *humanness*. With "Shamblau," science fiction confronts us with the impurity or limits of a modern form of knowledge. Social and sexual discourses on female sexuality are not only subjective and tropic, but eminently generic—female sexuality as mythically alien and nauseatingly

monstrific is literally *science fiction*, but it's a fiction that still kills.

If, at the turn of the nineteenth-century, the human sciences broke from superstition and demonology to arrive at objective truth about biology, then what had to have happened within the human sciences to make female biology pathological and female sexuality vampiric? C.L. Moore's answer would be that the psychoanalytic account of becoming human had to happen. But no matter what form it may take, the answer to the science fiction question (which is the question of science's power to stage and shape the human) is usually some kind of narrative about how science ushers in new ways of organizing our experience of ourselves and others, in other words, *how science ushers in new life forms*.

#### Postcolonial Science Fiction Bodies, or, the Politics of Alien Invasion and Evolution

In 1933, Moore created a new subgenre (the science fiction vampire) that adapted earlier literary forms to a new scientific event, namely, the psychoanalytic libidinal account of becoming human. "Shamblau" is a splendid example of how science fiction emplots questions about the nature of the human in a way that allows it to do a fundamentally different kind of work than biology does (Freudian science, we should remember, is intensely biologized). As I argue in the following chapter, to expose the oppressive thinking behind the drive to separate human from nonhuman, we must make crystal clear—on a conceptual level capable of considering all "biological" human differences—*the connections between the means of humanization and humanness itself*, and I would suggest that science fiction is more dexterously positioned than any other genre to make these connections crystal clear. "Shamblau" stands as a model for how to

remain savvy of the dangers hidden in modern forms of knowledge. In the hands of a skillful writer, biological images of degeneration illuminate the leaps in reason required to transform scientific concepts into natural phenomena. As an imaginary technology highly conscious of its own place within scientific discourse, science fiction is well positioned to track the impact of biological rationalities on the body, and to reveal the body as embedded in technological practices rather than in nature. In this way, “Shamblau” is a kind of modern invasion narrative that seeks to clarify the penetrative, even infectious nature of biological discourse, and to extrapolate the consequences.

The ongoing tension between scientific and science fiction articulations of the human is most excitedly elaborated in the alien invasion, infection, and evolution narrative. “Shamblau” is a useful template for studying the modern invasion narrative: It is at once a sweeping mythological battle between two species (one human and one alien), and an invasive biological battle over a discourse that penetrates and saturates the female body, defining it as the site where sexuality, disease, and discourse converge. The disease relationship arising out of alien invasion is the focus of investigation in this project. From Mary Shelley’s *Frankenstein* and Sheridan Le Fanu’s *Carmilla*, to H.G. Wells’s *The War of the Worlds* and Octavia Butler’s *Xenogenesis Trilogy*, science fiction writers deploy biological warfare (both inter and intra-species) to expose the susceptibility of disease discourses within hematology, evolutionary theory, bacteriology, and molecular genetics to political projects that segregate the pure from the impure. Postcolonial science fiction infection narratives articulate a central, and perhaps even founding, anxiety of modernity: the translation of scientific epidemiologies to political epidemiologies. Whether it be for the vampire hunter of the nineteenth-century or the

microbe hunter of the twentieth-century, disease is figured as a species of alien invasion in which foreign agents penetrate the white male body, take up permanent residence, and transform host into killer by subverting the body's security defenses. The colonial imaginary underlying medical metaphors of contagion is shockingly apparent even in contemporary popular epidemiological texts, where the virus is the "replicative Other"<sup>15</sup> that emigrates out of the Third World straight into the bodily substances of the West. As the ultimate horrifying Other, the virus in the infection narrative functions as a kind of phenomenal alien contact between human and nonhuman, body and antigen, self and other that distills the geopolitical fear of foreign invaders that enter "our" lands and "our" bodies.

Posthuman science fiction infection narratives by Richard Matheson, Walter M. Miller, Octavia Butler, and Joan Slonczewski subvert the disease paradigm of the human/nonhuman that metaphorically enabled the false conflation of scientific with political epidemiology. But this was not always so in a science fiction obsessed with alien contact and the evolutionary significance/future of the white male body. The modern literature of invasion officially began in 1871 with the publication of George Chesney's novel *The Battle of Dorking*. While Mary Shelley invented the genre, Chesney's novel marked the emergence of what contemporary readers would have recognized as science fiction (it was only after Chesney's novel, for example, that people began to speak of the uniquely "speculative" genre). In 1871, Sir George Chesney, patriot and professional officer in the British royal engineers in India, published a pamphlet entitled *The Battle of Dorking* and spawned a hugely prolific brand of science fiction called the future or imaginary warfare novel. Chesney wrote his novel in response to the

shocking invasion and defeat of the French by German troops in 1870 during the Franco-Prussian War. In it, he depicted, in skillful imaginative detail, a similar invasion and annihilation of England by German forces. The novel stood as a warning to England to bulk up her military against possible foreign invasion. It sold some 80,000 copies in its first month of publication<sup>16</sup> (editions were immediately available in North America and Australia). In his exhaustive analysis of the imaginary warfare subgenre, *Voices Prophesying War* (1992), I.F. Clarke notes that Chesney's novel caused such a ruckus in England that Prime Minister Gladstone felt it necessary "to warn the nation against the dangers of alarmism" in a speech at Whitby in September of 1871.<sup>17</sup> "Chesney," Clarke writes, "had gained a great literary success, since his story established the pattern for a predictive epic on the victory or defeat of a nation-species in the international struggle to survive. It was a narrow form of fiction; but it could be effective to the point of causing a national panic."<sup>18</sup> Hundreds of imaginary warfare novels quickly appeared on the heels of *The Battle of Dorking* and would continue to glut the popular presses until the end of World War II when Nazism and the bombs in Nagasaki and Hiroshima fulfilled decades of belligerent fantasies predicting race war and genocide.

It is no coincidence the new literature of imaginary warfare coincided in the West with the rise of a Social Darwinism that sought to depict the life of individuals, nations, and races as a battle for supremacy and survival. In *Voices Prophesying War*, Clarke writes that the

war of 1870 had altered the power system in Europe, and in a more general way it was considered to have revealed the working of the Darwinian mechanism for the rise and decline of species. In fact, on the Continent the war had an immediate influence on the development of Social Darwinism, since the struggle between the French and Germans had the apparent characteristics of a struggle for survival

between two rival species.<sup>19</sup>

By the turn of the century, the juggernaut of imaginary warfare and Social Darwinism lead jingoists in the West to the conviction that race war was inevitable. Even Darwin wrote that “[w]hen two races of men meet, they act precisely like two species of animals...they fight, eat each other, bring diseases to each other, etc., but then comes the more deadly struggle, namely which have the best fitted organisation, or instinct...to gain the day?”<sup>20</sup> The mindless glorification of empire, progress, and biological supremacy inspired some to abandon the notion of natural rights in favor of the belief that inequality was an inescapable scientific fact. It was the manifest duty of Anglo-Saxons to displace the nonwhite races and to spread its institutions across the globe. A sampling of future war novels from 1874 to 1936 may suffice to illustrate the irrational extrapolation of the Darwinian principle of natural selection in the animal and plant world, to warfare between nations and races as an evolutionary imperative. Novels like *The Carving of Turkey* (1874), *Anglo-Saxons Onward!* (1898), *The Yellow War* (1905), *Red Napoleon* (1929), *The Yellow Peril* (1929), and *The Black Emperor* (1936) all feature interracial warfare, biological invasion of a white nation (“germ” warfare), the threat of miscegenation (in *Red Napoleon* a “Mongol ruler of the U.S.S.R.” orders his men to conquer Europe and breed with its white women<sup>21</sup>), the enslavement of a white nation by a nonwhite foreign power, and a climactic obliteration of an Asian or African nation. At the apex of Empire, speculative writers used the future war motif to vent frantic and hysterical hatred of non-white people, asserting European right to global conquest on the grounds of racial vigor; colonialism wasn’t so much a political as an evolutionary imperative.



In the nineteenth-century literature of invasion, biological warfare raged between nations, races, and bodies. The dramas of organic pathology were evolutionary in scope and played out in the international arena, where ethnic differences frightfully collapsed into species differences (the Jew/vampire versus the Anglo-Christian/human in *Dracula*). Racial competition was articulated in evolutionary terms, and clearly, there were some bodies that would sustain the notion of progress and some that would not. All of this became even more complex, though no less disturbing, when in the 1870s Louis Pasteur proposed the astounding idea that *living creatures* caused contagious disease. The germ theory of disease held that contagion was due to an infiltration of animate creatures that penetrated the body and reproduced themselves *from within*. The discovery of a microscopic reality teeming with invisible yet living entities began to disrupt neat ontological categories within the life sciences: If humans were alive, then were the diseases of humans alive? If disease species were life forms, then who or what was sick? Was disease a mutation of life, or merely death? If there were species *within* species where, exactly, could one localize vivifying versus mortifying properties? Who or what was predator and quarry? Was it really possible that the invisible world was responsible for the visible?

With the publication of Chesney's *The Battle of Dorking* and the rise of bacteriology as the new biological/epistemological horizon for life and death, the literature of invasion began to fluctuate between fear of alien invasion from without the national body to fear of alien invasion from within the individual body. The term "alien" was constantly bandied about in both immigration debates and bacteriology discourse,<sup>22</sup> another manifestation of the susceptibility of political to scientific epidemiologies (and

vice versa). In his excellent essay “A Virulent Strain: German Bacteriology as Scientific Racism” (1999), Paul Weindling argues that bacteriology discourse was amenable, at the turn of the century and onwards, to racist and militaristic formulations: “microbe-hunters dreaded the importation of typhus, smallpox and especially plague by transmigrants from the East;” “‘Asiatic’ diseases threatened the vigour of imperial powers;” sexually transmitted diseases were “racial poisons” poised to eradicate European civilization.<sup>23</sup>

The expansion of inquiry into new horizons of reality (whether microscopic or astronomical) hardly led to a reassuring sense of humanity’s role in the grand scheme of things. With the microscope, people encountered something so inhuman, so hostile and malevolently Other, that it was little surprise segregative hygienic practices fell along very familiar lines of race.<sup>24</sup> In M.P. Shiel’s imaginary warfare novel *The Yellow Danger* (published in 1898), the evil genius Dr. Yen How, a half-Japanese half-Chinese warlord, manipulates European internal conflict while he organizes his massive “yellow army” to invade the disorganized West; he infects prisoners with cholera and then releases them into the European mainland, where, if unchecked, they will wipe out white civilization.<sup>25</sup>

Lest we think rabidly racist medical metaphors of contagion a thing of the past, we would do good to recall contemporary fears over the viral “emigration” of AIDS along the “Kinshasa Highway” out of the African heart of darkness and into the western white bloodstream. After World War II, the apocalyptic imagination began to shift in science fiction, as it did in popular consciousness, from communism and the bomb to pathogenic invaders from the Galactic/Third World.<sup>26</sup>

With important exceptions such as H.G. Wells’s *The War of the Worlds* and C.L.

Moore's "Shamblau," science fiction infection narratives from 1871 to World War II lost their critical distance from the conflation of scientific with political epidemiologies. Though invasion narratives in both science fiction and bacteriology discourse shifted seamlessly from the macroscopic (interspecies/international warfare) to the microscopic (immunological warfare), they shared a universal concern with the logic of purity and the practice of hygiene. As I argue in chapter two, by the 1930s at least conceptions and misconceptions of immunology, bacteriology, and virology had triangulated popular scientific meditation on the qualities that should and should not comprise the Self. By mid-century, scientific objectivity and science fictional exploration had taken a gigantic (and perhaps final) leap inward; it was here, in the microscopic and ultramicroscopic worlds, where science would unlock the key to the most fundamental properties of life and death. The science of individuality shifted from organismic efficiencies (tightly regulated body boundaries, appropriately hierarchized sexual drives, etc.) to cellular and chemical efficiencies deep within the folds of an immune system which came to be seen as the primary evolutionary mechanism by which a life form erected and cultivated a Self through discrimination of native from alien material. During these decades, immunology partnered with bacteriology and especially virology (the virus had been discovered in the late nineteenth century) to contribute to a stock of metaphors: If exogenous life forms managed to breach the outer boundaries of the body, a great *battle royale* commenced between invading marauders and valiant defenders of the homeland who, armed with powerful weapons of self-maintenance, attacked and triumphed over enemies of life bent on the transformation of host into *themselves*. These great invisible adversaries were feared and fetishized as the "missing links" between the living and the nonliving worlds.

The virus was imaged as a kind of primitive vampire that straddled ontological boundaries and subverted its host into a parody of the human. The nineteenth-century vampire hunter morphed into the twentieth-century virus hunter.

Though cleansed of the excrescences of *fin-de-siècle* epidemiological racism in science fiction and non-fiction, the early to mid twentieth century invasion narrative worked against, but at times within, this historical backdrop. In science fiction texts such as John Campbell's "Who Goes There?" (1938), Eric Frank Russell's *Sinister Barrier* (1939), Robert Heinlein's *The Puppet Masters* (1951), and Jack Finney's *Invasion of the Body Snatchers* (1954), alien contact implies an illicit ethnic contagion/colonization that is ultimately repelled by brave, white, American men (though Finney's *The Body Snatchers* is interestingly ambiguous). Because invasion paranoias follow Empire, these novels plot the *American* fight against miscegenate alien forces both galactic and somatic in nature. As the texts attest, white regimes are plagued by invasion fears of secret agents or invisible assassins that seek every opportunity to insinuate themselves into white bodies, subvert their integrity, and confound masculine invulnerability. Shapeshifting transitional life forms transmitted by physical contact, the viral-like killers in these narratives are kin to their vampire forbears: They cross species boundaries, hijack the reproductive machinery of their hosts, reprogram its software to replicate and disseminate themselves, and transform hosts into killers. The threat the viral poses is not merely one of disease, but of an invasion so profound that it leaves the body neither entirely human nor nonhuman. The white male body is thus primed in these texts as the central front against an exterior world swarming with purveyors of death and disease that work for alien evolution. Campbell, Russell, Heinlein, and Finney alike write in the

language of virology and immunology to equate the transgression of national boundaries with individual boundaries. The proteanism of the alien organisms reflects pervasive anxiety over Others poised to dehumanize mankind, stun the epistemological/ideological function of the body/nation's immune system, and replace essential humanness with soulless simulacrum. While the defensive investment in the integral white male body manifests in a crop of body invaders—the plague, the machine, the robot, the bacterium, the parasite, or the vampire—the alien menace in these texts are climactically vanquished in a denouement that purges the body of infection and reifies organic integrity and national supremacy.

In the parlance of a science fiction that cares about the past, present, and possible futures of the body, such aggressive defense of the status quo is decidedly anti-evolutionary; texts like Heinlein and Finney's problematize the human only so that they may delimit its proper boundaries and purge it of improper substances. But in a decade pulsing with fears of germ warfare and communist invasion, two science fiction texts again took up certain political and biological projects in their plotting of an alien contact that effects a radical *evolutionary* as well as intellectual shift in the framework for how we think of the human and the relationship between science and the world. An infection narrative akin to Richard Matheson's *I Am Legend* (discussed below), Walter M. Miller's "Dark Benediction" (1951) explores the ramifications of an epidemic that carries the human into the posthuman world. Like other white male protagonists of the postapocalyptic science fiction narrative, the protagonist of Miller's "Dark Benediction" feels like the lone human in a savage, post-plague world. Determined to maintain his status as uncontaminated, Paul yearns for an island where he can isolate himself from

humans and infected alike—“Life, above all else,” he muses, “was an avoidance of other human beings.”<sup>27</sup> Months prior to the opening action of the story, a swarm of extraterrestrial meteorites bombarded the planet and released infective microorganisms that transformed humans into “night-prowling maniacs, lurking in the shadows to seize the unwary” (ibid., 332). According to Paul, infected humans become eager allies of the disease that grips them: “Caught in its demoniac madness, the stricken human search[es] hungrily for healthy comrades, then set[s] upon them with no other purpose than to paw at the clean skin and praise the virtues of the blind compulsion that [drive] him to do so” (ibid., 333-4). The alien organism, so it seems, compels the human host to infect others through direct physical contact. Existentially and physically isolated in his humanity, Paul wearily makes his way to Houston where he is surprised to confront a heavily armed group of uncontaminated humans who have taken control of the city and placed it under quarantine to keep the diseased out, and the healthy in. The city is run like a police state, with its armed border patrols, its various uniforms signifying rank, its branding of “probies” (those who have not yet proved their “fitness” for permanent residency), and most significantly, its hunting down and extermination of “dermies” (the diseased). According to the leader of the new state, “Houston was to become a ‘Bulwark of health in a stricken world, and the leader of a glorious recovery’” (ibid., 339). When Paul sees a stripped and tortured dermie about to be murdered, he is so sickened “by the cold and efficient elimination” reminiscent of “Dachau and Buchenwald and the nameless camps of Siberia,” (ibid., 342) that he rescues the girl (though she’s been shot) and they flee Houston.

Paul and the injured Willie head towards the island-city of Galveston, where they

learn of a very different haven run by a group of monks and nuns whose scientists study the plague so as to learn how to live with it, rather than cure it. Surprised to hear Willie and the others refer to themselves as hypers and to the uninfected as nonhypers, Paul learns that the microorganisms intensify physicality by structuring new nerve cells and rerouting the sensory receptors directly to the brain, genetically altering humans so the changes will be passed to their offspring. The alien plague, in other words, genetically alters the infected's biology to enhance his or her capacity *to affect and be affected by other bodies*, for this is the very method by which the microorganisms replicate, and thus survive. Isolation and lack of immediate contact between bodies guarantees psychological and biological trauma for the infected, the obverse of Paul's drive to "stay healthy" via escape to a deserted island. When Paul pockets a piece of soap before leaving Willie to seek medical aid, she asks him why he's done it: "To wash you off of me" he replies (ibid., 350). For Paul, biological purity is the central indicator of his humanity. His logic of health and sickness slowly begins to change, however, as he sleeps that evening in the very "nest of disease," yet feels it to be the "most peaceful, the sanest place he'd seen in months" (ibid., 362). Paul himself begins to feel "like the leper" (ibid., 363).

Paul meets the island's head scientist who attempts to explain to the wary uninfected how and why the plague builds new nerve cells and "somesthetic receptors" in its host. Dr. Seevers speculates on the evolutionary origins of the microorganisms: He imagines a planet with an "overabundance of parasitic forms" that must do battle with each other for supremacy (ibid., 369). Some of the parasites would begin to develop advanced mechanisms for maximizing the host's body potential to ensure their own

replication. Eventually, the “parasites who kept their hosts in the best physical condition naturally did a better job of survival,” and thus it was to the parasite’s benefit to “stimulate nerve growth....and use that growth for the host’s advantage—and for its own” (ibid., 370). “After a long struggle,” Seevers continues, the parasites would begin “sharpening the host’s senses, building up complex senses from aggregates of old style receptors, and increasing the host’s intelligence” (ibid., 370-1). The evolutionary imperative would be to coevolve with the host from parasite to symbiont, from agent of infection to agent of evolution. Based on his observations of the life cycle of the infection, Seevers predicts an alien/human hybrid future for Earth’s survivors. “I saw a baby born yesterday—to a woman down the island,” he tells Paul, “[i]t was fully covered with neuroderm at birth. It has some new sensory equipment—small pores in the fingertips, with taste buds and olfactory cells in them. Also a nodule above each eye sensitive to infrared” (ibid., 375). The children of humanity may be able to “taste analyze substances by touch, qualitatively determine the contents of a test tube by sticking a finger in it,” and see a “warm radiator in a dark room—by infrared” (ibid.). Even now, the infected human, though motivated by a compulsion almost beyond his or her control, is re-vitalized by incorporation of the infection. The “intellectual boost” the infection guarantees, Seevers argues, “comes from an ability to perceive things in terms of more senses.” The “fully-developed hyper has more sensory tools with which to grasp ideas” (ibid., 376). As Seevers implies and Paul comes to understand, the infected trade autonomy for a precarious partnership, purity for an enhanced hybrid intellect, an island for an infective/affective community. No longer merely a metaphor, “Dark Benediction” literalizes the impossibility, in a posthuman world, of an isolated body or mind; the



infected *require* contact with other bodies if they want to stay sane.

Paul responds with typical fear over the plague's dissolution of the boundaries between self and other, mind and body, pure and polluted that his worldview depends on. For him, infection provokes profound anxiety:

How narrow was the line dividing blessing from curse, god from demon! The parasites came in a devil's mask, the mask of disease...the gray skin...taste buds in the fingertips...alien micro-organisms tampering with the nerves and the brain. Such concepts caused his scalp to bristle. Man—made over to suit the tastes of a bunch of supposedly beneficent parasites—was he still Man, or something else? (ibid., 380-1)

As he spends more time in the hyper colony, however, the pathology of a worldview that defines purity and separation as what it means to be human begins to hit Paul with full force. His desire to retreat to some original state of purity increasingly becomes a symptom of his own sickness. When a monk wearing gloves and a mask carries Paul's sterilized food into his cell, he begins to feel "as if he were the diseased and contagious patient from whom the others protected themselves" (ibid., 380). In a delusional, nearly mad state due to her fear over alien transformation, Willie sleepwalks into Paul's cell and caresses his skin. Horrified by her transmission of the disease, she flees to the ocean's edge where she will presumably commit suicide, but to everyone's shock Paul stops her and touches her for the first time. Lifting Willie into his arms, he walks back towards the infected community: "Her hair blew about his face in the wind. It smelled warm and alive. He wondered what sensation it would produce to the finger-pore receptors. 'Wait and see, he said to himself' (ibid., 385). No longer mourning the loss of his humanity, Paul looks forward to a mutated body and the hope embedded in its alien contact with and immersion in the world.

Even before new findings in the field of bacterial genetics would debunk the fiction of genetic specificity and the aseptic individual as the *sine qua non* (cause, means, and effect) of the evolutionary process, science fiction writers like Miller argued for the bankruptcy of the human as an autonomous value in isolation from and at war with the world. The introduction of nonhuman genes into the human anticipates evolutionary transition into an alien/human hybridity that forces one to abandon any notion of human nature. In science fiction infection narratives like “Dark Benediction,” gangs of humans violently resist contamination by the alien. These “resisters” seek to protect and reproduce an unadulterated body, and by extension, the political status quo. But in their subversion of hegemonic political and scientific epidemiologies, “Dark Benediction” and other posthuman infection narratives by Matheson and Butler *literally deconstruct humanity* as white and male. Infected bodies in transition and mutation are the new posthuman norm against which all other bodies are measured and found sick.

#### The Specificity of Science Fiction Estrangement: A Genre Claim

To appreciate how science fiction stages and defamiliarizes the process by which biological newness (epistemology) enters the world, we should investigate how the genre works formally to differentiate itself from a related mode such as fantasy. In *Metamorphoses of Science Fiction* (1979), Darko Suvin describes science fiction as a unique literature that works by and through cognitive estrangement: It is a “literary genre whose necessary and sufficient conditions are the presence and interaction of estrangement and cognition, and whose main formal device is an imaginative framework alternative to the author’s empirical environment.”<sup>28</sup> Suvin takes his sense of

estrangement from Bertolt Brecht, who sees its look as both creative and cognitive. To see the everyday with an estranged glance, Brecht argues, we “need to develop that detached eye with which the great Galileo observed a swinging chandelier.”<sup>29</sup> Genre critics like Suvin take pains to set science fiction apart from the two genres (or modes) that flank it, fantasy and realism. Estrangement, Suvin argues, “differentiates [science fiction] from the ‘realistic literary mainstream,’” while cognition “differentiates it not only from myth, but also from the folk (fairy) tale and the fantasy.”<sup>30</sup> In Carl Freedman’s reading of Suvin, estrangement works by creating an “alternative fictional world that, by refusing to take our mundane environment for granted, implicitly or explicitly performs an estranging critical interrogation of the latter.” “But the *critical* character of the interrogation,” Freedman continues, “is guaranteed by the operation of cognition, which enables the science-fictional text to account rationally for its imagined world and for the connections as well as the disconnections of the latter” to the empirical world of the author.<sup>31</sup> For Suvin, the science fiction text introduces a clear otherness *vis à vis* the mundane empirical world when and where the text is produced, but it accounts for the otherness cognitively or scientifically, never metaphysically or fantastically. The discontinuities with our experience of the world inherent in the symbolic “novum” (the “new element” or “innovation” introduced into a constructed world) must be explained in concrete terms within the structure of the text in order for science fiction to avoid lapsing into fantasy or fairy tale. In short, the novum—the point of difference where epistemology and ontology are estranged—must be firmly fixed in the material. Unlike Gregor Samsa’s metamorphosis into a bug, which is inexplicable (asserted without being explained), the conceptual difference in the science fiction text is material—his

metamorphosis is the result of a genetic mutation or bizarre evolutionary/quantum physics event. As the cognitive/material literalization of strangeness, the novum is the point of difference between the constructed world of the text and the empirical world of the author. In the most fundamental structural terms, then, science fiction is about contact with alterity.

Science fiction opposes fantasy in several significant ways, as C.L. Moore's "Shambleau" amply demonstrates. In its emphasis on unconscious materials and drives, fantasy (and its interpretative frame) is intensely concerned with difference but one that can never ultimately be attained in the here and now. In the end, there is no escape from the Symbolic except in madness or in death. In fantasy, the unconscious, difference, and the cultural structures which repress triangulate, referring to one another in an endlessly recursive fashion; in contrast, the constructed world of a science fiction text offers an alternative life pattern that maps the difference that difference makes in the material world.<sup>32</sup> Instead of positing a more real than the Real, as fantasy does, science fiction posits an "alternative on the same ontological level as the author's empirical reality...a *different historical time* corresponding to different human relationships and sociocultural norms actualized by the narrative."<sup>33</sup> Though science fiction and fantasy alike may subvert the notion of the human as a continuous, stable, or linear narrative, science fiction alone, critics argue, effects a radical opening up of the present by insisting upon the contingency of the present order of things. By projecting imagined change into the future or into the past, as in the alternate history novel, the science fiction writer emplots possibilities for personhood, kinships, and communities opened up by the apprehension of the strangeness of historical narratives and of what we assume is inevitable.

But to evaluate (both assess and posit the question of value) the specificity of science fiction estrangement, I would argue we cannot disarticulate the science fictional text's structural estrangement from its attitude towards the estrangements being performed *by science in the world*. Rooted in collective experiences, science fiction is uniquely situated to voice the anxieties, paranoias, and promises that arise out of paradigmatic shifts in perception, especially those engineered by scientific and technological developments. In other words, if science *itself* is a system for estrangement, then how can we analyze science fiction estrangement without analyzing the text's relationship to science, which is, after all, its subject matter? From its prototypical beginnings in the imaginary moon voyages of the eighteenth-century, science fiction has sought to represent and measure the ontological ruptures in space, time, and materiality that have taken place in the West from Copernicus and Newton to quantum physics, from Mendel and Darwin to the unraveling of the human genome. But the modern monstrous entered the stage at the moment Man found *himself* more unknown than known, at the moment Man came to be defined as a competing biological species. When Shelley invented a genre to foreground the process by which a scientific world posited a biological problem, she estranged science itself as a system of regulative structures that ordered the relationships between bodies along a false, i.e. "science fiction" rationality. When literature collided with science, Shelley called upon genre to defamiliarize a scientific narrative and pose a very modern question: What was *scientific man's* response to his own estrangements (his own radical materiality and contingency)? Well, scientific man set about to classify, order, and hierarchize human bodies. C.L. Moore posed the same question with "Shamblau:" What was psychoanalytic man's

response to his own estrangements? Well, he set about to classify, order, and hierarchize human bodies. Finally, Walter M. Miller asked the same question with “Dark Benediction:” What was microbiological man’s response to his own estrangements? Well, he set about to classify, order, and hierarchize human bodies.

Like Frankenstein’s creature and the alien Shambleau, the bodies that populate the pages of this project bear the marks of the time and place of their production by “objective” investigation into the nature and origin of the human. Science fiction writers like H.G. Wells, Cordwainer Smith, Richard Matheson, Joan Slonczewski, and especially Octavia Butler shape mutant life forms in response to contemporary biological investigation into the normatively human and the healthy, extrapolating the impact of scientific change on entire societies and tackling questions that concern us all: What is the “appropriate” relationship between life and nonlife, the human and the machine? How can we render visible—and fraught—the knowledge structures that determine how we recognize each other as human or hygienic? What qualities of existence make us human? What would a future look like that broke with imperial and racist projects? The most effective science fiction works within the conceptual space opened up by the always politicized juxtaposition of the human and the alien that so frequently typifies biological discourse. Science fiction thrives within this space, stirring up ontological questions by deconstructing binaries that gird Western power and knowledge structures such as human/nonhuman, male/female, culture/nature, immaterial/material, healthy/sick. There is no essential nature here, and once nature itself is historically or discursively contingent, binaries of any kind cannot hold. Hyperaware of its own structures and themes, science fiction sees a world in which everything is always already

constructed. As science fiction writer and critic Gwyneth Jones writes, “there is nothing like constructing a world, or recognising a constructed world, for teaching you to see your own world as a construct. It is the existence of the technique that is significant.”<sup>34</sup> Reason, knowledge, bodies—even history itself—are never nonhistorical in this kind of science fiction, but highly regulative structures by which human societies are forged and governed. The science fiction I analyze in this project specially targets the knowledge structures that separate (in the sense of extracting for rejection) the pathological from the healthy and the artificial from the real. By exposing nature as neither essential nor unchanging, inevitable nor random, science fiction invalidates master/slave recognition systems (whether in the Hegelian or Althusserian sense) by which we deem others purely human or healthy.

## II. Teratology and Methodology

### The Social Body and Teratology

An important methodological/conceptual axis around which much of this project is organized is the deep connection between the body and the nation that was significantly advanced in the nineteenth-century but reached its apex in the international eugenics movement of the first half of the twentieth-century. The birth of the modern nation state after the French Revolution was accompanied by intense interest in the biological life and “welfare” of the nation’s citizenry. So deep became the connection between the body and that nation that, by the turn of the twentieth-century, nation building was bound to cultural and biological homogeneity—to race building. We can

trace the roots of racial nationalism back to the beginnings of the Victorian period, when a medical sociology began to convince itself that great nations depended upon the biological vigor of its citizenry, a vigor inevitably tied to racial purity and hygiene. It was medical sociology, doctors and administrators, public health experts and epidemiologists who helped to base nationalism on biological or ethnic purity. The imperative to maintain an uncontaminated national body led to great segregative practices in public health, and later, to immigration control and eugenics. If the foundations of national power were biological, then bodies (and later genes) were national resources to be purified. The fit had to be discriminated from the unfit, the good stock from the bad stock, all in the service of managing future generations.

The drive for national/racial purity was conceptually possible through a view of the social body as a biological organism. Michel Foucault argues that the very idea of a social body acquired explanatory density at the turn of the nineteenth-century, when sovereign power (the power over death) shifted to bio-power (the power over life), and life processes became a political event.<sup>35</sup> A new regime of bio-governance was deployed to control individual bodies through demographic practices. Because birth/death rates, health, illness, and other “vital statistics” were issues relating directly to future economic and political prosperity, to govern the population successfully, Foucault argues, the state needed to gather knowledge on individual bodies in order to chart the use each made of its biological capital (i.e. sexuality). This control of the populace through health practices played a crucial role in the invention of the *socius* as an organic body liable to illness. New forms of medical knowledge aggregated around the development of important tracking sciences such as demography and epidemiology, which eventually played key



roles in the tracking of risk populations and public health dangers. The new politics of citizenship was driven by an epistemology of health and sickness; those who were healthy were subjects, those who were sick subjected, and individuals came to experience themselves and others in medical terms of normality and abnormality.

The idea that society (and even history<sup>36</sup>) mimicked the physiology of an organism grew out of a new definition of life as the proper organization of forces. Science historian and philosopher Georges Canguilhem sees Auguste Comte's importation of "the concept of consensus into the theory of the social organism" as pivotal in the maturing definition of life as organization.<sup>37</sup> Comte (1798-1857) "defined the organism as a *consensus* of functions 'in regular and permanent association with a collection of other functions,'" and here Canguilhem notes the etymology of "consensus" as a Latin translation of the Greek "*sympatheia*"—"wherein the states and actions of the various parts determine one another through sensitive communication."<sup>38</sup> Once consensus, the chief element of the theory of living organization, was "identified with solidarity," Canguilhem writes, one no longer knew "which of the two, organism or society, [was] the model or, at any rate, the metaphor for the other."<sup>39</sup> The biological roots of collective/consensus life emerged as the dominant epistemological basis of bio-power.

The theory of life as organization coalesced with cell theory (as articulated, for example, by Rudolf Virchow in *Cellular Pathology*, 1858) as the model for a healthy liberal society: Each cell was an individual organism but also a constituent of a larger society of cells that worked together to ensure the smooth functioning of the organism, but the organism as a whole ensured the proper conditions necessary for maintaining the

life and health of the individual cells. Society thus saw itself as constituted by cells/organs within the body politic simultaneously autonomous yet subordinate to the organic functioning of the whole. Once society could be seen as a model for organic functions, the socius came to have a biological density organized by independent yet interrelated systems each determined by its own unique organic life cycle (of birth, growth, disease, and death). When this conceptual arrangement was made, the possibilities for the penetration of bio-power into the social body grew exponentially: The sexual behavior of the individual was directly relevant to public health initiatives; political theories based on evolutionary thought brought the body into the service of nationalism; and eugenic technologies were employed to intervene in and direct bodies, reducing social problems to biological problems. No matter what the demographic intervention, the biopolitical knowledge used in the analysis of all levels and facets of social organization focused on disease as the key feature of the organism that threatened the future. Once the socius and the body were drawn together under a similar epistemology, one could detect within the politic at large both evolutionary and devolutionary forces, and it was the job of medical sociologists to detect and root out atavistic elements from the national body.

In “Science/Fiction and the Victorian Vampire,” I argue that in the 1860s hygienical projects within hematology, masturbation, hysteria, sexual perversion, and racial/criminal anthropology discourses began to turn en masse to the monstrous as a privileged reservoir for the representation, and hence detection, of infectious agents within the body politic. The monstrous could be summoned to exteriorize the lines of hygiene in and out of the nation’s body. The great hygienical movement began in earnest

after the publication of Charles Darwin's *Origin of Species* in 1859. For Social Darwinist thinkers, the already deep connection between biology and culture took on tremendous import for the future. The "inefficiency" of natural selection (it took too long and modern institutions enabled the unfit to survive and reproduce) led many to believe that science needed to seize control of humanity's evolutionary destiny. This idea that evolution could and should be brought under conscious and direct control was a thoroughly modern view. We might even say that the "science" of human progress through the controlled breeding of bodies (eugenics) instantiated modern forms of rationality.<sup>40</sup> The dramas of health, purity, and evolution within the human sciences were played out in the service of a knowledge of human nature that promised utopia, but instead would cause all manner of woe. By the mid nineteenth-century, then, the body was modernized as a resource to be tamed and exploited for the future, and while the body devoted to the reproduction of the human was racially pure, appropriately hierarchized, and unmarked (disembodied), the body devoted to the reproduction of the sub-human was racially impure, inappropriately hierarchized, and marked (excessively embodied). Social and sexual medicine began to exploit the panoply of pre-modern bodies and sub-human biologies from the vampire tradition to articulate devolutionary properties, as well as to mobilize hygienical projects to guard the entryways into the nation's bloodlines. The language of (vampiric) epidemiology—bad blood, infection, hygiene, invasion, evolution—converged with the language of national defense—surveillance, border patrols, resistance, immunity—to militarize the fight against foreign agents determined to invade the West and contaminate whiteness. Theoretical biology was marshaled in the service of a logic of purification.

Sexual and racial anthropology discourses in particular adopted concepts of

blood, heredity, and purity to flush out (interpret and expose) agents of biological insurrection within the national body. As an effective imaginary source that could warn of promiscuous couplings and racial impurities, the vampire was mobilized again and again to lend sexual, racial, and biological models of identity explanatory power (and then science gave back to literature in the form of *Dracula*). The alien invasions and biologies so fantastically imagined in the Victorian life sciences facilitated a maturing race and health based nationalism; the life sciences drew from the bloody woman, the hysteric, the masturbator, the prostitute, and the pervert as vampire to aid in the division of human beings into the healthy and the sick, the fit and the unfit. But for those paranoid many who saw whiteness as the supreme political imperative of the day, there was nothing like the criminal as racial vampire to warn of the evolutionary effects of impure blood. In the first modern racial philosophy of history, *An Essay on the Inequality of the Human Races* (1853-55), Arthur Gobineau claimed that miscegenation sapped the vitality out of the bloodlines of superior civilizations. The introduction of alien blood through race mixing (or a myriad of other invasive movements) was the root cause of a civilization's decline. For the racist, hybridization was disastrous.<sup>41</sup> After Darwin's publication of the *Origin of Species*, men like Francis Galton would turn to an ersatz evolutionism to theorize hygienical projects based on concepts of hereditary purity. Galton (who coined the term "eugenics" in 1883, literally "good in stock" or "hereditarily endowed with noble qualities"<sup>42</sup>) believed that pathological forces threatened to infiltrate the West and infect the lifeblood of the imperial body.<sup>43</sup> Other scientists of Empire similarly envisioned an array of predatory life forms poised to feed on the physiological and economic capital of the white body. With blood as the central

conceptual bridge between purity, race hygiene, and heredity—the bridge between the present and the future, in other words—why wouldn't the life sciences turn to the undead to lend its biological and evolutionary theories explanatory weight?

While in the Victorian period science discovered in race and miscegenation the key concepts of human classification and contamination (respectively), many fear that in the coming biotechnology century science may discover equivalent concepts in genetic individuality and pathology. In “Heredity, Kinship, and Immortality in Genetics and Science Fiction,” I analyze the increasingly influential geneticization of human nature (the belief in essential differences), and how it is being used again in the twenty-first century to argue for inequality as an inescapable biological fact. By the mid twentieth-century, molecular geneticists had legitimized earlier popular assumptions that the hereditary complex (blood, the germplasm, chromosomes, genes) was the dominant factor in determining both organismic development (“fidelity” to the species) and the stable transmission of biological/economic rights from past to future generations. The search for the “Holy Grail” of biology was significantly advanced by scientific forces that shifted the subject of biology from the irrelevant, transitory individual to the omnipotent, potentially immortal gene (the most important players in this narrative were Erwin Schrödinger, Watson and Crick, and Richard Dawkins). Molecular geneticists began to buy messianic notions of the fundamental unit of heredity: The gene was the causal entity capable of unifying all biological phenomena; the *vital* distinction between life and nonlife was the gene's miraculous immunity to the ravages of entropy; both abstract and material, immortal and immanent, the gene was an enigma that alone withstood contingency. Gaining access to the primary agent of life has provided hereditary

scientists with the knowledge to reinterpret humanity's evolutionary past, and, more importantly, to predict and potentially control its evolutionary future. The machinery of immortality shifts throughout this project, as it has in the last two centuries, from the supernatural world, to omniscient consciousness, and finally, to the undead genome.

### Birth, Death, Immortality, and the Cartesian Monstrous

I was a substance the whole essence or nature of which is simply to think, and which, in order to exist, has no need of any place nor depends on any material thing. Thus this "I," that is to say, the soul through which I am what I am, is entirely distinct from the body and is even easier to know than the body, and even if there were no body at all, it would not cease to be all that it is.

—René Descartes, *Discourse on Method*

Man may be excused for feeling some pride at having risen, though not through his own exertions, to the very summit of the organic scale; and the fact of his having thus risen, instead of having been aboriginally placed there, may give him hopes for a still higher destiny in the distant future. But we are not here concerned with hopes or fears, only with the truth as far as our reason allows us to discover it. I have given the evidence to the best of my ability; and we must acknowledge, as it seems to me, that man with all his noble qualities, with sympathy which feels for the most debased, with benevolence which extends not only to other men but to the humblest living creature, with his god-like intellect which has penetrated into the movements and constitution of the solar system—with all these exalted powers—Man still bears in his bodily frame the indelible stamp of his lowly origin.

—Charles Darwin, *The Descent of Man*

The Cartesian revolution in science and philosophy signaled a desire to move beyond the Aristotelian theory of life as animation to search for a new science of man. Georges Canguilhem writes that after 1600, the conception of life as animation (for Aristotle, all matter was infused by spirit, the ultimate source of motion in the universe) lost ground to René Descartes's mechanical theory by which all living things were reduced to the physics of mechanics, the science of matter in motion.<sup>44</sup> Descartes regarded the bodies of men and animals as machines (animals were merely "automatons") governed *in toto* by the laws of physics. Descartes's argument for dualism, however, demanded a soul wholly independent of the body, and with this, Descartes (perhaps not entirely wittingly) ushered in the ontological split between mind

and matter that would largely structure Western thought for centuries. For Descartes, a person was essentially his or her non-material mind; the soul was never in conversation with the body, let alone acted upon by it. Dualism provided the Subject with an autonomous and coherent identity throughout time, despite (in the sense of contempt or scorn?) changes to the physical body during life and in death. The laws of physics alone determined the nature and function of matter, whether animate or inanimate, but the soul stood above and beyond all contingency.

So this is where Western science would begin its modern project, with Descartes' dream (not the most sensible of cognitive states) of himself/the human Subject as an immaterial, placeless, disembodied mind observing itself and the material world below and around but never in it (in the exact opposite sense of A.N. Whitehead's assertion that "[w]e are in the world and the world is in us"<sup>45</sup>). The radical separation of mind from body was essential for the Enlightenment scientific project of manufacturing a Subject that stood opposed to a world of materiality laid bare to its domination. In his meditation on mechanical dualism, Canguilhem contends that the Cartesian split between spirit and materiality, so long thought to be the condition of possibility for subjectivity, was in fact consciously deployed so that man might conquer, manipulate, and dominate everything that was not the Self: "It was necessary to conceive of man as a being who transcends nature and matter in order to then uphold his right and his duty to exploit matter ruthlessly."<sup>46</sup> It was the mechanical model of the organism that helped to legitimize the dominative Enlightenment project: "man can only make himself the master and proprietor of nature if he denies any natural finality or purpose; and he must consider the whole of nature, including all life forms other than himself, as solely a means to serve his

purposes.<sup>47</sup> Man manipulated a philosophical and scientific theory to separate himself from the material world so that he might conquer and bend it to his will.

The Cartesian split incited a binary method of thinking (male/female, human/nonhuman, self/other) that became the cognitive imperative by which the West hierarchized and controlled all that was not the Self. From its roots in the early nineteenth-century, science fiction has waged a relentless, oftentimes bloody struggle between the discarnate, invulnerable, Cartesian self, and the excessively embodied, vulnerable, Darwinian self. Even after twentieth-century quantum physics debunked the fiction of the detached observer cut off from materiality, the Western subject/object divide continued to be articulated across an immaterial/material trajectory. The obsessive rejection of the material and the immanent in science fiction began (as just about everything else in this project) with Victor's repulsion towards birth and death. In science fiction since *Frankenstein*, life has been defined by the constant struggle to deny those aspects of existence which remind us of our lowly animal origins, our materiality.<sup>48</sup> For many, physical vulnerability was a trap that compromised pure reason, but in order for the white male body to stand in for the universal unmediated Subject, scientific man had to call upon a multitude of other bodies to signify the impurity of materiality. Gendered bodies would henceforth become female bodies, sexed bodies would be perverted bodies, and raced bodies would become nonwhite bodies, and radical embodiment would become the rationalization for exploitation. This was the terror Canguilhem suggests lay at the heart of the dualistic drive. To raise humanity to a position of mastery and domination over the nonhuman, man had first to separate himself from brute irrational flesh, and as Shelley argued, women were the first victims of this always violent



separation. Denial of the material (and the concomitant fetish for hard technology) drove Victor to that most erotic of masculine fantasies—replication without women.<sup>49</sup> The horror of all things material began (of woman born) and ended (mortality) with horror of the female body.

As I argue in “Alien Contact and the Evolutionary Significance/Future of the White Male Body,” early to mid twentieth-century invasion narratives exploit alien contact (*the* primal moment of colonial encounter) as the most productive scenario for testing possible or impossible ways of being in the world. In the American invasion narrative, the interface between human and nonhuman initiates three radically divergent evolutionary paths—to very different political and philosophical ends. The first path is typified by John Campbell’s “Who Goes There?,” Robert Heinlein’s *The Puppet Masters*, and Jack Finney’s *Invasion of the Body Snatchers*, alien contact narratives that defend the white male body and reify the status quo, no matter what the cost. But from Olaf Stapledon’s epic *Last and First Men* (1931) and Arthur C. Clarke’s *2001: A Space Odyssey* (1968), to William Gibson’s cyberpunk novel *Neuromancer* (1984) and Greg Bear’s nanotechnology novel *Blood Music* (1985), science fiction writers have more frequently deployed alien contact as the means by which the body is left permanently behind in an evolutionary apotheosis of Mental Man. In this very masculinist tradition, materiality/embodiment is a regrettable, yet necessary step in the unfolding of man’s true destiny as discarnate Mind, master of *pure and limitless knowledge*. These texts are legion: Man casts off the final husk of animal existence and transcends via orgiastic synthesis into Absolute Spirit or pristine Mind (we need only watch Stanley Kubrick’s

fascinating *2001: A Space Odyssey* to understand these *potent* narratives of “masculinist self-birthing”<sup>50</sup>). Even cyberpunk fiction, which features the serially-penetrated white male body,<sup>51</sup> begrudges the body as “meat” to be disposed of so that pure consciousness may roam free in the omnipotent world of disembodied data. In cyberpunk fiction by men, the body is roundly rejected as an evolutionary dead-end (though there are important exceptions<sup>52</sup>); console cowboys loathe the meat and spend the bulk of their time downloaded into digital simulacrum, roaming what Gibson calls the “consensual hallucination” of cyberspace. For Victor, as for Descartes and the cyberpunk hero, materiality/maternity is a trap that emasculates man and threatens the quest for immortality. While Heinlein and Finney’s texts at the very least enable the reader to dissect cultural and biological investments in the white male body, evolutionary meditations on the nature and destiny of Mind in the cosmos affirm the capacity of science fiction to mystify biological ideas. While Social Darwinists convert Darwin’s biological theory into a credo for historical and technological progress, Stapledon, Clarke, Bear and others build metaphysical systems out of evolutionary biology, dragging a very material theory—the material theory—into eschatology. This is the Cartesian monstrous.

#### The Posthuman and Teratology: Evolutionary Hybridization and Symbiotic Kinship in Contemporary Science and Fiction

The third and final evolutionary trajectory explored in the second half of this project is most provocatively depicted in the postapocalyptic/posthuman infection narratives of Richard Matheson (*I Am Legend*), Joan Slonczewski (*Brain Plague*), and especially, Octavia Butler (*Clay’s Ark*, “Bloodchild,” *The Xenogenesis Trilogy*, and

*Fledgling*). Far from vanishing into the Cosmic Mind or omniscient information, the bodies in these texts are infective and affective; as in “Dark Benediction,” the introduction of nonhuman genes into the human effects evolutionary transition into an alien/human hybridity that forces one to abandon any notion of formal integrity or human nature. While a cherished notion of individuality (the certainty of belonging to a higher life form) underwrites most reactionary narratives of the invaded and defended self, in a stunning about-face, science fiction writers like Miller, Matheson, Slonczewski, and Butler embrace alien invasion as the promise of irrevocable and revolutionary change. In their texts, infective partnerships permanently transform both biological and social existence: There is no cure for infection, no return to a status quo, no transcendence, and no reversion to an original genetic purity. The stuff that posthuman science fiction is made of—alien/human symbiosis, genetic miscegenation, alien humanities, human alienities, speculative biologies—is a mechanism for generating bodies and lives that communicate with rather than absorb or eradicate difference. Instead of bodies with killer immune systems that destroy “difference,” for example, postcolonial bodies are crossbreeds open to an alterity that undermines the boundary between the self and the world and other bodies. As these science fiction bodies and posthuman biologies amply demonstrate, the search for intelligible meaning of the relationship between life and the world based on notions of immunity or ontological purity continually falters when up against the pathological, the abnormal, and the not-quite-human. For what issues forth from alien contact with sick bodies is a sense of the profound inadequacy of the human/nonhuman framework for understanding the self—the impossibility of pointing your finger and saying this is where life begins and this is where life ends.

While genetics and evolutionary theory have historically aspired to stable, and even profound division between the normal and the pathological, new and alternative theories in microbiology, evolution, and genetics contend that traditional notions of life and nonlife and healthy and sick may not be universally applicable. In fact, biological and evolutionary ideas since the 1950s have been used by fiction and non-fiction writers alike to theorize affinities between bodies and between the human and the nonhuman world based on an ontology of infection, contamination, and communication. Take the very complex viral world: For over a hundred years since the discovery of the virus, debate has raged over whether these submicroscopic organisms (beyond even the visibility of the ordinary microscope) are alive or not alive. As a noncellular substance that does not metabolize, viruses would normally be considered not alive. But though the virus lacks its own means for self-replication, it can invade a host cell, hijack its reproductive machinery, and reprogram its instructions to make copies of itself. If the ability of an organism to reproduce is the litmus test of whether a thing is alive, then a virus meets this criterion. Clearly not inanimate dead matter but requiring another living system to copy itself, the virus is an obligate parasite that inhabits a strangely liminal, unalive state between life and nonlife.

More crucial than the virus's ontology, however, is the key role it may play in human evolution. Contemporary scientific theories now recognize the pervasive role that infection and parasitism play in the evolution of biotic complexity, making it difficult, if not impossible, to separate out human from alien elements of life.<sup>53</sup> These theories emphasize symbiotic rather than competitive evolutionary processes. Bacteria and

viruses, for example, serve key evolutionary functions in swapping genes and transmitting new genetic material between and within species. Viruses are essentially genetic engineers that implant foreign genes in the organisms they infect, installing an alternative genetic program. After long (but sometimes short) periods of time, the viral/bacterial host works to accommodate and even coevolve with its nonhuman associate. The evolution of life, then, is a delicate biological elaboration between otherwise divergent species. If, as the new evidence suggests, evolution is a process of adjustment rather than bloody competition, we must begin to think of the human as a kind of infective or symbiotic ecology. Whereas before, evolutionary theory focused on the life process as one of greater and more profound levels of differentiation, new evolutionary theories focus on the vectors of communication between species and the world, and the consequent epidemiological exchange, as the basis for the life process. As Polish immunologist and microbiologist Ludwik Fleck asserts, if the organism can no longer be construed as a self-contained, self-congruent unit set apart from the world, then “it is very doubtful whether an invasion in the old sense is possible.”<sup>54</sup>

In the last five decades, the penetration of deeper horizons of reality and the unveiling of strange new biological matter under increasingly strong microscopes have yielded startling new discoveries that, rather than clarifying and delimiting life, work to confuse and illegitimize boundaries hitherto thought fundamental to the life sciences. Here was an atomic world that made no distinction between animate or inanimate, life and death; here was a promiscuous microscopic world where bacteria and viruses traded genetic materials so furiously that the very idea of a single, genetically autonomous, microorganismic species was pure fantasy; and here also was a human organism in

intimate and vital association with trillions of benign microbial partners that worked manically to keep their host healthy. The discovery of species and species *within species* for whom life and death, health and sickness, individuality and communality no longer stood in opposition began to hold radical implications for an orthodox evolutionary theory determined to sequester all creativity in the single genome, to fetishize genetic individuality as the cause, method, and effect of biological progress, and to see humanity at war with a visible and invisible world swarming with alien competitors.

The evolutionary synthesis of the 1930s and 1940s married Mendelian inheritance with the survival of the fittest, a synthetic ideological worldview that prized competition and individualism over cooperation and symbiosis. Darwinian orthodoxy was based on a vision of the Self struggling to discriminate itself from the environment; for the fit, the evolutionary encounter reinforced organismic autonomy, genetic homogeneity, and kinship specificity. Adherents of a mechanistic molecular and evolutionary biology argued that nature selected for individuals finely cut from the environment, and that meiotic heredity—the sexual transmission of genetic material via egg and sperm sex—was the sole method by which animals progressed, by the random accumulation of mutations, to higher and more complex levels of purity. However, microbiologists like Joshua Lederberg and Lynn Margulis posited, and have since proved, that microorganismic life patterns which made possible the exchange of genetic materials between species were a far more important and innovative source for evolution than the random accumulation of mutations stabilized through Mendelian inheritance. Evolution worked by and through the injection of new genes into the biotic world; genetic recombination/swapping was not only extremely effective in producing and releasing

new genes (and thus biological novelty), but was a principle that pervaded life at every level of existence. Margulis elaborated on the theory of symbiogenesis (originally put forth by Russian biologists), which insisted that evolution worked most quickly and creatively through the inheritance of acquired genetic material, or, symbiosis.

Evolutionary innovation (of new properties, functions, organs, and species) worked through infective or integrative biological alliances that merged genetically diverse material from different species. The significance of evolutionary hybridization was anathema to a Western theoretical biology bound to progressive competition and individuality.

Science/fictional discourses that privilege evolutionary hybridization, interspecies symbiosis, or genetic miscegenation break with idealized abstractions of genetic specificity and kinship, a fundamentally conservative set of hereditarian ideas made possible through the systematic misrepresentation of new discoveries in the field of genetics, and/or the denial of alternative evolutionary and microbiological theories. For a literature historically entwined with evolutionary thought, science fiction, in particular the posthuman infection narrative, finds arguments for the significance of hybridization and impurity splendid antidotes to a Darwinism that fetishizes the autonomous genome (the individual) as the ruling element of developmental health and fitness. Discovery of the rampant genetic trespassing in the microscopic world and its implications for evolutionary theory has had the most significant effect on Octavia Butler's miscegenate science fiction imagination. Like Richard Matheson's *I Am Legend*, Butler's *Clay's Ark* modifies the usually predatory relation between the viral and the human to signal a revolutionary posthuman body grounded in physiological dependence on the other. Like

Walter M. Miller's "Dark Benediction," Butler's "Bloodchild" extrapolates an evolved alien biology that requires interspecies symbiosis for reproduction and survival. But unlike any other science fiction text, Butler's epic *Xenogenesis Trilogy* subverts discourses that bank (metaphorically and literally) on hereditary endowment as providing a definitive genetic individuality and unambiguous kinship. Butler uniquely mobilizes the new sciences to envision illegitimate kinships outside of the nuclear family and its bonds of pure blood. In all of the science fiction texts I analyze in the second half of this project, bands of humans violently resist contamination by the alien. These resisters to hybridity cherish aseptic notions of human nature and genetic lineage/progeny; they fight to the death to maintain species purity. But in *The Xenogenesis Trilogy*, as in *Clay's Ark*, *I Am Legend*, and Joan Slonczewski's *Brain Plague*, bodies in transition and contamination are the new posthuman norm against which all "Other" uninfected bodies are measured, and found tragically incomplete.

If the engineering of human evolution is our next great scientific frontier, then few cultural activities are more important than debate over evolutionary master narratives of the past, the present, and the future. Well aware of the historical susceptibility of science to political anxieties over bloodlines and origins, purity and legitimacy, scientists like Lynn Margulis, philosophers like Donna Haraway, and science fiction writers like Octavia Butler and Joan Slonczewski (who is also a microbiologist) use their work to ask a profoundly important question: What if science were used to delight in rather than fear diversity? The postinfection body in contemporary science/fiction foregrounds the dramatic *transvaluation of values*<sup>55</sup> that accrues when



science delights in difference. For science fiction bodies, posthuman biologies, and symbiotic kinships, individuality is obsessive, pure knowledge is delusion, disembodiment is disease, invulnerability is fatal, and immunity is sick.

## Notes

1. Elliot Sober, *Philosophy of Biology* (Boulder: Westview Press, 1993), 22.

2. The Shelleys' relationship with the famous doctor William Lawrence played a central role in the development of their scientific philosophy. Lawrence was engaged in a series of very public and widely followed feuds with the more vitalist-minded president of London's Royal College of Surgeons, John Abernethy. Abernethy was Edinburgh trained, as was John Polidore (Edinburgh was at the center of the vitalist/mechanist debate). Lawrence was also the first to use the word "biology" in an English text published in 1818 (*Lectures on Physiology*). Marilyn Butler gives a fine introduction to the vitalist/mechanist debates that raged around the writing of *Frankenstein*. See Mary Shelley, *Frankenstein, or, The Modern Prometheus*, ed. Marilyn Butler (Oxford: Oxford University Press, 1993).

3. In *Systema Naturae* (1735-1758), Swedish botanist Carl Linnaeus classified humans along a biological continuum with plants and animals.

4. Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (New York: Vintage Books, 1994), 137. In *The Order of Things*, Foucault writes that before the birth of the clinic there was no such thing as biology or life as a scientific concept: "if biology was unknown, there was a very simple reason for it: that life itself did not exist. All that existed was living beings, which were viewed through a grid of knowledge constituted by *natural history*" (ibid., 127-8). Before Cuvier opened up the body, life did "not constitute an obvious threshold beyond which entirely new forms of knowledge [were] required" (ibid., 161).

5. See Canguilhem's work on Bichat in George Canguilhem, *A Vital Rationalist: Selected Writings from Georges Canguilhem*, ed. Paul Rabinow, trans. Arthur Goldhammer (New York: Zone Books, 1994).

6. Michel Foucault, *The Birth of the Clinic*, trans. A.M. Sheridan Smith (New York: Vintage Books, 1994), 145.

7. Victor lectures to Walton: "To examine the causes of life we must first have recourse to death. I became acquainted with the science of anatomy; but this was not sufficient; I [had] also [to] observe the natural decay and corruption of the human body" (Shelley, *Frankenstein*, 33).

8. In *Metamorphoses of Science Fiction*, Darko Suvin argues that the "central watershed" for the science fiction tradition "is around 1800, when space loses its monopoly upon the location of estrangement and the alternative horizons shift from space to time." Darko Suvin, *Metamorphoses of Science Fiction: On the Poetics and History of a Literary Genre* (New Haven: Yale University Press, 1979), 89.

9. Other science fiction vampires appear in Richard Matheson's *I Am Legend* (the vampire as mutation precipitated by biochemical plague), Tanith Lee's *Sabella, or the Bloodstone* (the vampire as endpoint of an alternative alien evolution), and Octavia Butler's *Fledgling* (the vampire as a genetically engineered human/vampire African-American hybrid).

10. Istvan Csicsery-Ronay, Jr., "The SF of Theory: Baudrillard and Haraway," *Science Fiction Studies* 55, no.3 (1991): 387.

11. C.L. Moore, "Shambleau," in *The Best of C.L. Moore*, ed. Lester Del Rey (New York: Ballantine Books, 1975), 5. Hereafter cited in text.

12. *Ibid.*, 29.

13. *Ibid.*, 7.

14. Sarah Kofman, "The Enigma of Woman: Woman in Freud's Writings," in *Modern Feminisms: Political, Literary, Cultural*, ed. Maggie Humm (New York: Columbia University Press, 1992), 250.

15. Richard Preston, *The Hot Zone* (New York: Anchor Books, 1995), 71.

16. I.F. Clarke, *Voices Propheying War: Future Wars, 1763-3749*, 2<sup>nd</sup> ed. (New York: Oxford University Press, 1992), 35.

17. *Ibid.*, 34.

18. *Ibid.*, 37.

19. *Ibid.*, 51.

20. Charles Darwin, *Fourth Transmutation Notebook*, MS 63-64, transcribed by Gavin de Beer, *Bulletin of the British Museum (Natural History)*, historical series 2 (1960): 166, quoted in Robert J. Richards, *Darwin and the Emergence of Evolutionary Theories of Mind and Behavior* (Chicago: University of Chicago Press, 1987), 166.

21. See Thomas D. Clareson's discussion of "The War to End All Wars" subgenre of science fiction in *Some Kind of Paradise: The Emergence of American Science Fiction* (Westport, CT: Greenwood Press, 1985), 49-80.

22. See Bernard Harris, "Pro-Alienism, Anti-Alienism and the Medical Profession in Late-Victorian and Edwardian Britain," in *Race, Science and Medicine, 1700-1960*, ed. Waltraud Ernst and Bernard Harris (London: Routledge, 1999), 189-217.

23. Paul Weindling, "A Virulent Strain: German Bacteriology as Scientific

Racism, 1890-1920," in *Race, Science and Medicine, 1700-1960*, 219.

24. See Alison Bashford, *Imperial Hygiene: A Critical History of Colonialism, Nationalism, and Public Health* (New York: Palgrave Macmillan, 2004).

25. Matthew Phipps Shiel, *The Yellow Danger*, 2<sup>nd</sup> ed. (London: Grant Richards, 1898).

26. See Heather Schell's "Outburst! A Chilling True Story about Emerging-Virus Narratives and Pandemic Social Change," *Configurations* 5, no.1 (1997): 112.

27. Walter M. Miller, Jr., "Dark Benediction," in *The Best of Walter M. Miller, Jr.* (New York: Pocket Books, 1980), 335. Hereafter cited in text.

28. Suvin, *Metamorphoses*, 7-8.

29. Bertolt Brecht, *Brecht on Theatre* (New York: Hill and Wang, 1964), 196, quoted in Darko Suvin, *Metamorphoses*, 6.

30. Suvin, *Metamorphoses*, 8.

31. Carl Freedman, *Critical Theory and Science Fiction* (Hanover: Wesleyan University Press, 2000), 17.

32. In his reading of Suvin, Freedman writes that the "science-fictional world is not only one different in time or place from our own, but one whose chief interest is precisely the difference that such difference makes, and, in addition, one whose difference is nonetheless concretized within a cognitive continuum with the actual." *Critical Theory and Science Fiction*, 43.

33. Suvin, *Metamorphoses*, 71.

34. Gwyneth Jones, *Deconstructing the Starships: Science, Fiction and Reality* (Liverpool: Liverpool University Press, 1999), 6.

35. See Michel Foucault, *Discipline and Punish: The Birth of the Prison*, trans. Alan Sheridan (New York: Vintage Books, 1995); and *The History of Sexuality: An Introduction, Volume I*, trans. Robert Hurley (New York: Vintage Books, 1990).

36. Robert Scholes and Eric S. Rabkin discuss the "introduction of macro-history into science fiction" by way of Wells (*Outline of History*, 1920), but also Toynbee (*The Geneses of Civilizations*, 1934, etc.) and Spengler (*The Decline of the West*, 1926-8). Spengler, the authors remind us, was trained as a biologist, and "[h]e even called his work a study in the 'morphology' of history, and in it he presented historical forces working in the manner of biological processes, with civilizations living through life

cycles from youthful expansiveness to the decline and decay of old age. This deterministic view of history, with its biological base, was bound to appeal to writers of science fiction.” (See as well my discussion of Olaf Stapledon in chapter two of this project). Robert Scholes and Eric S. Rabkin, *Science Fiction: History, Science, Vision* (New York: Oxford University Press, 1977), 54-5.

37. Georges Canguilhem, “Vie,” in *A Vital Rationalist*, 84.

38. Ibid., 83.

39. Ibid., 84.

40. See Paul Rabinow, “Artificiality and Enlightenment: From Sociobiology to Biosociality,” in *The Science Studies Reader*, ed. Mario Biagioli (New York: Routledge, 1999), 408.

41. See Josep R. Llobera’s *The Making of Totalitarian Thought* (Oxford: Berg Publishers, 2003). Gobineau’s work, Llobera writes, “was the first treatise to integrate disparate elements about races into a systematic and powerful philosophy of history. His theory tried to explain the rise and fall of civilizations in terms of racial miscegenation between a superior race (the Aryans,) and the other races” (3). “There is no doubt,” Llobera argues, that “in the principle of racial hierarchy [Gobineau] had discovered the key to the rise and fall of civilizations” (61). See also Nancy Stepan’s *The Idea of Race in Science: Great Britain, 1800-1960* (Hamden, CT: Archon Books, 1982), especially her discussion of Herbert Spencer and racial hybridity, 105.

42. Francis Galton, *Hereditary Genius and Inquiries into Human Faculty and Its Development* (Whitefish, MT: Kessinger Publishing, 2005), 17.

43. William Greenslade, *Degeneration, Culture and the Novel 1880-1940* (Cambridge: Cambridge University Press, 1994), 41.

44. On Aristotelian animation see Georges Canguilhem, “Vie,” in *A Vital Rationalist*, 74-76.

45. Alfred North Whitehead, “Nature Alive,” in *Modes of Thought* (New York: Capricorn Books, 1958), 227.

46. Georges Canguilhem, “Machine and Organism,” in *Zone 6: Incorporations*, ed. Jonathan Crary and Sanford Kwinter (Cambridge, MA: Zone Books, 1992), 50.

47. Ibid., 52.

48. See Elaine L. Graham, *Representations of the Post/human: Monsters, Aliens and Others in Popular Culture* (Manchester: Manchester University Press, 2002), 80.

49. See Andreas Huyssen, “The Vamp and the Machine: Fritz Lang’s *Metropolis*,” in *Fritz Lang’s Metropolis: Cinematic Visions of Technology and Fear*, ed. Michael Minden and Holger Bachmann (Rochester, NY: Camden House, 2000), 198-216.

50. See Donna Haraway, “The Promises of Monsters: A Regenerative Politics for Inappropriate/d Others,” in *Cultural Studies*, ed. Lawrence Grossberg, Cary Nelson and Paula Treichler (New York: Routledge, 1992), 299.

51. In his preface to the short story collection *Mirrorshades*, Bruce Sterling describes cyberpunk themes, which include: “[t]he theme of body invasion: prosthetic limbs, implanted circuitry, cosmetic surgery, genetic alteration,” and “[t]he even more powerful theme of mind invasion: brain-computer interfaces, artificial intelligence, neurochemistry—techniques radically redefining the nature of humanity, the nature of the self.” *Mirrorshades: The Cyberpunk Anthology*, ed. Bruce Sterling (New York: Ace Books, 1998), xiii.

52. For example, see Jeff Noon’s cyberpunk fiction, including *Vurt* (1994) and *Pollen* (1997).

53. See for example William H. McNeill, *Plagues and Peoples* (Garden City, NY: Anchor Press/Doubleday, 1976); Ann Giudici Fettner, *Viruses: Agents of Change* (New York: McGraw-Hill, 1990); and especially Peter Radetsky on the “viral-evolutionary service” run by gene-swapping ultramicroscopic organisms. *The Invisible Invaders: The Story of the Emerging Age of Viruses* (Boston: Little, Brown, and Company, 1991), 396.

54. Ludwik Fleck, *Genesis and Development of a Scientific Fact*, ed. Thaddeus J. Trenn and Robert K. Merton, trans. Fred Bradley and Thaddeus J. Trenn (Chicago: University of Chicago Press, 1981), 61.

55. See Friedrich Nietzsche, *On the Genealogy of Morals*, ed. Walter Kaufmann, trans. Walter Kaufmann and RJ Hollingdale (New York: Vintage Books, 1989).

## CHAPTER ONE

### Science/Fiction and the Victorian Vampire

Paradoxically, what characterizes life is not so much the existence of the life functions themselves as their gradual deterioration and ultimate cessation. Death is what distinguishes living individuals in the world, and the inevitability of death points up the apparent exception to the laws of thermodynamics which living things constitute. Thus, the search for signs of death is fundamentally a search for an irrefutable sign of life.

—Georges Canguilhem, “Vie,” *Encyclopaedia*

To be sure, many mutations are “monstrous”—but from the standpoint of life as a whole, what does “monstrous” mean? Many of today’s life forms are nothing other than “normalized monsters,” to borrow an expression from the French biologist Louis Roule.

—Georges Canguilhem, *Etudes*

#### I. A Science/Fiction Hermeneutic

In his essay “Science Fiction and ‘Literature’—or, the Conscience of the King,” science fiction writer and critic Samuel Delany describes the encounter between science fiction and literature as an encounter between “two different sets of values, two different ways of response, two different ways of making texts make sense, two different ways of reading—or what one academic tradition would call two different discourses.”<sup>1</sup> He offers his own encounter with a nineteenth-century historian to demonstrate the literary and historical contingencies that science fiction *as a mode of awareness* can open up: as a

historian specializing in the beginnings of the 19<sup>th</sup> century, he had been a great reader of literature, but had found, over a period of five or six years, that he was reading more and more science fiction until, for the last two years, other than his journals and nonfiction he read nothing else. “I was really afraid to go back and read a ‘serious’ novel,” he told me. “I didn’t know what would happen. Finally, in fear and trembling, I picked up Jane Austen’s *Pride and Prejudice*, always one of my favorites, just to see what happened when I did....Do you know something? I thoroughly enjoyed it, more than I ever had before. But I realized something. Before, I used to read novels to tell me how the world really was at the time they were written. This time, I read the book asking myself *what kind of world would have had to exist for Austen’s story to have taken place*—which, incidentally, is completely different from the world as it actually was back then. I know. It’s my period.”<sup>2</sup>

As a newly converted science fiction junkie, Delany's historian can't help but see through a *science fiction hermeneutical lens*—and he is stunned by its capacity to refract and disassemble both literary history and historical knowledge. This is the “science fiction question” (one Delany was the first to pose): What had to have happened for the events of the text to be taken at face value? What had to have happened for the events of the text to be possible, or, not yet impossible? In this chapter, I take up Delany's call for the “appropriation of literature by science fiction”<sup>3</sup> to suggest we might use the science fiction hermeneutic as a mode of encounter to defamiliarize and open up to a wider range of experience not only an individual text, but an entire literary history and form of scientific knowledge that are only counter-intuitively thought of as science fiction.

So let us pose the science fiction question to that quintessential Oedipal nightmare/fantasy *Dracula*: If, at the turn of the nineteenth-century, the human sciences broke from superstition and demonology to arrive at objective truth about biology, then what had to have happened in the West to make female sexuality and racial biology *actually, really, literally* vampiric by the end of the Victorian period? A science fiction incursion into *Dracula* effects two things: It defamiliarize the novel as a prototypical psychosexual fantasy—vampire fiction is here revealed as a peculiar *species* of science fiction; more importantly, the incursion deconstructs biological discourses that purport to define the normatively human and the pure as *themselves* perverse hybrids of science/fiction. Empirical arguments for the existence of immutable human differences (whether racial, sexual, gender, even class) crumble into hopeless discursive confusion—knowledge is impure, fiction contaminates, and life propagates illicitly and illegitimately. With the science fiction question, which is the question of science and



technology's power to stage and shape the human, the strangest of all cultural activities becomes the invoking and delimiting of the human. Our own methods of knowing the world and separating ourselves from others are alienated, in the most profound sense.

In the 1860s, genre fiction began to directly influence social and sexual medicine in the West. By the 1880s, vampire imagery, mythology, and morphology had infected five central discursive vectors for the study of human pathology: masturbation, hematology, hysteria, sexual perversion, and criminal and racial degeneration. The sexology texts of Richard Krafft-Ebing (the first to recognize sanguinary sadism as a real sexual fetish) and Havelock Ellis were dense with vampire imagery, but in his application of the “scientific” method to the study of criminal and racial anthropology, Cesare Lombroso’s oeuvre was saturated with vampire mythology, especially his *Criminal Woman*, published in English as *The Female Offender* in 1895. Only with a Lombroso could we have had a *Dracula*, with its layers and layers of racial and sexual drama (Stoker even quoted Lombroso in the novel). By the end of the century, the vampire had become a dense technological mechanism for organizing, interpreting, and hierarchizing bodies. Why, from 1860 to 1900, did social and sexual medicine continually resort (in the sense of adopting a strategy so as to resolve a difficult situation) to the panoply of pre-modern bodies and sub-human biologies from the vampire tradition to lend its evolutionary theories explanatory weight? How did the life sciences use the undead to establish and manage the key somatic sites for discriminating higher from lesser forms of life? How was degeneration—a theory of biological atavism that cut a swath through the human sciences—envisioned as a kind of dread vampire poised to

infect and feed upon the lifeblood of the nation?

At least three conceptual shifts had to have happened in the Victorian period to pathologize women, criminals, and people of color as literally vampiric in social and sexual medicine. Firstly, nation building had to become irrevocably tied to biological homogeneity—to race building. If the foundation of national power were the biological vigor of the citizenry, hygiene—or, the enhancement of whiteness—had to become the overriding cultural imperative. A science of borders and bodies that if properly deployed could guarantee historical progress, hygiene itself became a form of life and a material semiotic practice,<sup>4</sup> a biological discourse that erected real material boundaries between human beings. Secondly, Herbert Spencer’s remorseless Social Darwinism, intimately tied to his goal-directed view of human evolution, had to supplant Darwin’s theory of plant and animal evolution by the random accumulation of mutations in the popular consciousness. These shifts were really two sides of the same coin: The cleansing (hygiene) and management (eugenics) of the national gene pool grew out of a view of the social body as a single biological organism liable to disease. Hygienic scientists concerned that degenerate forces lurked within the national body applied the conclusions of evolutionary thought to the social and historical sciences, and because evolution was inevitably tied in the Victorian consciousness to the “problem” of racial homogeneity, then the “natural history” of the races took on a natural hierarchy of human properties. Biological differences, in other words, were now treated as a sign of deeper *historical* processes that determined the level of civilization between and within human beings. In his reading of Spencer’s “universal law of evolution,” Georges Canguilhem writes that Spencer generalized the principles of embryology to account for human social

development. In this view, everything “evolve[d] from more to less homogeneity and from lesser to greater individuation: the solar system, the animal organism, living species, man, society, and the products of human thought and activity, including language.”<sup>5</sup> Ersatz evolutionary thought repeatedly used the (ultimately disproved) theory of recapitulation—that ontogeny (the sequence of events involved in the evolution of an organism, i.e. embryology) recapitulated phylogeny (the sequence of events involved in the evolution of a species)—to account for biological gradations between living beings. Each adult organism of a “higher” life form passed through the adult stages of “lower” life forms. As Nancy Stepan writes in *The Idea of Race in Science* (1982), non-Western races were thus “living representations of an earlier stage in the evolution of European man.”<sup>6</sup> Those contemporary bodies arrested at an earlier evolutionary stage exhibited inferior biological organization; they were inappropriately hierarchized, grotesquely unbounded, and primitively undifferentiated.

Thirdly, science, with its collective technological apparatuses, had to be recognized as the prime objective method for resolving social problems. By the mid nineteenth-century, the human sciences seemed best poised to tackle the problems that faced modern man: If the human was now more unknown than known, how could man establish his subjectivity, or, the appropriate relationship between his Self and the Other? If life was, as Bichat had noted, the collection of functions that resisted death, how was biology to become a science of life through a science of pathology? What was the appropriate relationship between the organic and the inorganic? How could morally and biologically suspect bodies be rendered highly legible? How could science mobilize political forces against toxic agents whose presence befouled the social body? In their

fresh zeal to uncover the processes that would ensure progress, the human sciences began to invent structural hierarchies that could be used to order and classify living bodies. If it had not been already, the healthy, reproductive, heterosexual white body was hailed as the guarantor of national defense and evolutionary progress, in terms both of higher levels of physiological differentiation and the white march across the globe (manifest destiny). The enhancement of whiteness demanded national borders be protected against undesirable and infectious biological agents; it demanded life scientists become “detectives of degeneration.”<sup>7</sup>

## II: The Pre-Modern Vampire

Before Sheridan Le Fanu published his novella *Carmilla* in 1872, the vampire narrative remained typically generic; it was ruled by a conventional plot and dominated by flat, one-dimensional characters with little to no depth. In other words, it was all text and no subtext. This does not, however, suggest the pre-modern vampire was uninteresting. On the contrary, vampires from mythology and the Judeo-Christian tradition, as well as from literature such as Samuel Coleridge’s *Christabel* (1816), John Polidore’s *The Vampyre* (1819), and Theophile Gautier’s *La Morte Amoureuse* (1836) were all revolting, anarchic creatures who refused conscription into a false or banal humanity. For their contemporary readers, Lilith, Geraldine, Lord Ruthven, and Clarimonde were libidinally obvious vampires compelled to engineer bodies and pleasures that resisted absorption into pat binary systems of gender or sexuality. What they lacked in being, interiority, and depth, they made up for in subversive—and infectious—sexual arrangements. Rather than signaling pathology, these vampires

signaled the emergence of alternative forms of embodiment and blood kinships (novel ways of experiencing the body and other bodies). In the terms of this chapter, the pre-modern vampire would have made no sense of a modern hygienic movement that sought to use the analogue of invasion, disease, and evolution to conceptualize the boundary between healthy and sick bodies.

But from 1860 to 1900, social and sexual medicine marshaled the monstrous as a means of signification by which borders and bodies were drawn, maintained, and policed. The urgency behind the great wave of hygienical projects was the belief that, if biologically mismanaged or sexually undisciplined, women in particular threatened evolutionary degeneration for the race. The ensuing medicalization inscribed women into a pathological zone of fragility (the hysteric or the bleeding woman) and gender undifferentiation (the female prostitute or the sex pervert).<sup>8</sup> The extent of medical fear over the loss of white middle-class reproductive vitality could be gaged by the frequency with which medicine in the 1860s through the 1890s dissected the abject woman as vampire to segregate those bodies dedicated to the reproduction of English interests from those that were not. Images of biological horror equipped diagnosticians with the means to expose hidden physiological dangers, and few bodies were more menacing than the bleeding, sick, or perverted body. How and why did medical men obsess over women's blood? How did blood loss precipitate hysteria, and even criminality, in women? How was menstruation commensurate with death, or female "periodicity" linked to animality, heat, and sexual hunger? How did the prostitute function as the primary vector for infection and metamorphosis? How did a biological hermeneutic condemn the sexual pervert as a breeding ground for all varieties of evil? Orthodox accounts of "normal"

evolutionary modes of becoming human adhered to a vision of female and perverted bodies inappropriately hierarchized and neither completely human nor nonhuman. To understand the nature of scientific fear over biological dangers that reproduced by infection, we need a sense of the exotic biologies, dangerous desires, and infective sexualities of the pre-modern mythological, theological, and literary vampire.

### Bloody Women: Mythology and the Judeo-Christian Tradition

Blood is the central motif of Life and Death—and whether it is male or female, more often than not, determines whether it is pure or impure, clean or unclean, appalling or redemptive, or even a channel to the Divine. —Judith Ann Johnson, “Shedding Blood: The Sanctifying Rite of Heroes”

Female vampires from mythology and even theology reveled in their revolting biology and abject sexuality. Male, female, and transsexual monsters peppered classical mythology, but those marked especially by bloodlust have been female. Most demonic vampires from ancient mythology were tied to the predatory and bloody side of the feminine. These were the primal mothers, goddesses, and witches who ruled over the shadowy realms between life and death. Ovid’s Strigae were demonic birds who flew by night and maliciously sucked the blood of men and devoured the flesh of children. The Portugese Bruxsa used their beauty and irresistible charm to seduce passing men, suck their blood, and induce a sensuous death.<sup>9</sup> The Malaysian vampire was exclusively female, a terror of a woman who died in childbirth and returned to hunt and torture children; the Penanggalan was a mere severed head from which hung an esophagus and stomach sac.<sup>10</sup> The Kalie from Indian myth was a bloodsucking goddess of disease and death who devoured the entrails of her human victims and drank their blood from skulls.<sup>11</sup> In iconography and statues, she was “adorned with the blood of dripping hands

and heads of her victims.”<sup>12</sup> The female succubus exerted so dramatic an influence on the collective unconscious that she bequeathed the word “nightmare” to the English language. Vampire folklorist Paul Barber writes that the Slavic succubus the Mora (cognate of “mare”) was a sexually draining night demon that seduced young men in their sleep, laid heavily on their chests, and violated them, withdrawing vital fluids.<sup>13</sup> Having tasted man’s blood, the succubus returned for nightly draining. The bottomless pit of woman’s seminal craving for man was thus the literal “night-mare.”

The Sumerian demon Lilitu entered Greek mythology as Lamia; Lamia had children with Zeus which so enraged his wife Hera that she killed all children born of their union. In turn, Lamia seized every child who crossed her path and tore it to pieces and ate its flesh. Lamia was later borrowed by the Hebrew Talmud as Lilith, Adam’s first wife. Lilith was the first woman to walk the Earth, and like Adam, she was created out of the dust of the ground. As the story goes, she and Adam argued over who was superior and Lilith refused to concede to his authority, demanding full equality. When he wouldn’t hear of it she abandoned him, prompting Adam to complain to God that his wife deserted him. God sent three angels to capture Lilith and return her to Adam, but when the angels attempted to force her return by threatening to kill her children she admitted preferring this punishment to returning to Adam, so for her defiance the angels killed her children. When the more docile Eve came along and bore Adam children, Lilith attempted to kill them in revenge. Because Eve’s children were all of humankind, Lilith (or Lamia) was a scourge to humanity, the mother of all vampires.

Mythology merged with the Judeo-Christian tradition to form pre-modern (and even modern) visions of female biology as monstrous. Mythological and religious

tradition held that Pandora and Eve ushered the cycle of life and death into history, a cycle innate to women's own biology marked by periods of "bloodletting". Menstruation and childbirth were the punishment handed down through Eve's "curse" (slang for menstruation)—a bloody *mnemnotechnics*. But it was the Levitical prohibitions against bleeding women that yoked menstruation with the Fall and defined the Judeo-Christian tradition of women's ritual impurity (their abjection). Leviticus pathologized menstruation and childbirth as biological events that fixed women in the border zones between life and nonlife, the human and the subhuman. This innate liminality provoked repeated semiotic and philosophical anxiety in men. As feminist scholar and theologian Kristin De Troyer suggests, if God was the source of all life, but women were the source of all life, then women were a kind of corporeal affront to God. Thus, the Levitical prohibitions sought to segregate women from the community during menstruation and ban them from church services after childbirth (while they underwent a period of "blood purification"), the two biological events that signified women's ability to deal death as well as give life (respectively).<sup>14</sup> The prohibitions against bleeding women's movements were meant to prevent contamination. Whatever menstruating women touched they made unclean; their porous and leaking bodies made them less immune to evil, as well as more contagious (before Leviticus, Aristotle warned that sex with a menstruating woman could produce monsters, lepers, and other abominations<sup>15</sup>). Near the end of the Victorian period, the famous sexologist Havelock Ellis referred to these "ancient" ideas of women's menstrual impurity: "the wisdom, the energy, the strength, the sight, and the vitality of a man who approache[d] a woman covered with menstrual excretions would utterly perish." "These ideas," Ellis claimed, were "impartially spread over the most



widely separated parts of the globe. They equally affected the Christian Church, and the Penitentials ordained forty or fifty days penance for sexual intercourse during menstruation.”<sup>16</sup> Ritual prohibitions against bleeding women defined their unique capacity for monstrophic states of contagion. Bleeding women stood outside the zones of the holy.

### The Hysterical Woman as Vampire

In literature, the sex-starved bloodlusts of the hysterical woman as vampire (not yet to be confused with the “hysteric” as vampire) owed many facets of her existence to the wild appetites of the mythological or folkloric vampire. In his novella *The Vampyre* published in 1819, John Polidore was to patent a very different breed of male vampire as Romantic anti-hero. The vampire Lord Ruthven was a brooding intellectual outcast, a man (more human than nonhuman) burdened by his despair and forbidden knowledge. Ruthven (and Varney for that matter, the aristocratic vampire from the wildly popular, mass-market serial *Varney the Vampire, or, the Feast of Blood*, c. 1840) was an early existentialist, subject of an esoteric knowledge and cosmically alienated by the weight of it. Like his penetrating male counterpart, the male *victim* of the female vampire in the nineteenth-century usually survived sexual attack, himself becoming subject of an arcane knowledge (literally learning life from death). The female victim and vampire, on the other hand, usually did not survive attack, and the pre-modern female vampire (before *Carmilla* that is) remained much closer to her mythological and folkloric predecessors. In other words, she was abject rather than existentialist. While the vampire *femme fatale* relentlessly threatened female penetration and masculine sexual potency, she was also a foul wasting corpse absent agency and driven by a deathly desire that consumed, yet was

never sated.

The mythological and folkloric vampire first entered literature via German and English poetry in the late eighteenth-century. The first two literary vampires, Johann Goethe's bride of Corinth and Robert Southey's Oneiza, were hysterical women akin to the mindless blood-starved folklore vampire. Goethe's poem "The Bride of Corinth" (1797) and Robert Southey's ballad *Thalaba the Destroyer* (1797) set the stage for the hysterical woman as vampire that was to endure (and become medicalized) over a century, culminating in Bram Stoker's Lucy. These poems feature what Elisabeth Bronfen has called the "dead bride as revenant" (though Bronfen considers only *Dracula*).<sup>17</sup> The vampires in Goethe's poem and Southey's ballad, as well as in John Keats's later poem "Lamia" (1820), have all died between betrothal and marriage, in other words, between the promise of sexual initiation and its fulfillment. They are "jilted brides,"<sup>18</sup> sexually ripe yet eternally frustrated. In Goethe's poem (based on an Illyrian vampire legend), the bride of Corinth is a revenant come back to claim her groom. Against her desires in life, the bride's mother forces her into a convent, thwarting her romantic and sexual yearnings. Thus, in "veil and garment white array'd, / With a black and gold band round her brow," the corpse-bride haunts young men in death, demanding satisfaction of her unslaked desires. Her mother catches her seducing her sister's intended groom:

"Mother! mother!"—Thus her wan lips say:  
 "May not I one night of rapture share?  
 From the warm couch am I chased away?  
 Do I waken only to despair?  
 It contents not thee  
 To have driven me  
 An untimely shroud of death to wear?"

“But from out my coffin’s prison-bounds  
 By a wond’rous fate I’m forced to rove,  
 While the blessings and the chaunting sounds  
 That your priests delight in, useless prove.  
 Water, salt, are vain  
 Fervent youth to chain,  
 Ah, e’en Earth can never cool down love!  
 .....  
 From my grave to wander I am forc’d,  
 Still to seek The Good’s long–sever’d link,  
 Still to love the bridegroom I have lost,  
 And the life—blood of his heart to drink;  
 When his race is run  
 I must hasten on,  
 And the youth must ‘neath my vengeance sink.<sup>19</sup>

The young bride’s aroused yet frustrated desire drives her out of the grave to seek the  
 “Good’s long–sever’d link,” the sexual knowledge she yearns for but is never delivered.  
 The bride of Corinth requires sexual gratification, but if she cannot have her groom she’ll  
 destroy all men who come across her path. Woman’s unquenchable sexual hunger and  
 monomaniacal jealousy guarantee her and her lovers no rest, even in the grave.

In Robert Southey’s *Thalaba the Destroyer*, Oneiza is another jilted bride and  
 erotomaniacal vampire who seeks to drain her lover in a sinister embrace that will end in  
 his death. Oneiza dies mysteriously the night of her wedding to Thalaba, the hero of the  
 ballad; she dies after the ceremony, but before they consummate the marriage. Her  
 groom descends into an underground vault to grieve over his short-lived bride only to be  
 attacked by Oneiza when she rises from her tomb and attempts to drag him back down  
 into the deadly, cavernous grave. She plagues him thus nightly upon the midnight hour,  
 slowly draining his life away until his own father can no longer recognize him. Thalaba  
 takes his father Moath into the vault to witness the horror. Upon the strike of midnight,  
 Oneiza rises:

The Cryer from the Minaret  
 Proclaim'd the midnight hour.  
 "Now, now!" cried Thalaba;  
 And o'er the chamber of the tomb  
 There spread a lurid gleam,  
 Like the reflection of a sulphur fire;  
 And in that hideous light  
 Oneiza stood before them. It was She,..  
 Her very lineaments,..and such as death  
 Had changed them, livid cheeks, and lips of blue;  
 But in her eyes there dwelt  
 Brightness most terrible  
 Than all the loathsomeness of death.  
 "Still art thou living, wretch?"  
 In hollow tones she cried to Thalaba;  
 "And must I nightly leave my grave  
 To tell thee, still in vain,  
 God hath abandon'd thee?"<sup>20</sup>

Moath urges Thalaba to destroy his bride, screaming at him to "strike and deliver thyself!" But because Thalaba is "palsied of all power," Moath must take over for his son:

...Moath, firm of heart  
 Perform'd the bidding: through the vampire corpse  
 He thrust his lance; it fell,  
 And, howling with the wound,  
 Its demon tenant fled.<sup>21</sup>

In Southey's ballad, we have another woman who dies before sharing the wedding bed with her groom. Oneiza is cheated out of sexual knowledge and she wants compensation. She entwines her lover, beckoning him into the bottomless fleshy pit of female sexuality. With the first two literary vampires, then, the promise of sexual initiation is accompanied by some severe trauma, often death or a death-like unconsciousness (perhaps the early vampire was a progenitor of the modern fairy tale, where innocent girls traverse dangerous sexualities and bloody rites of passage—and are punished for their curiosity).

In a typical death for the female vampire, Oneiza is on the receiving end of a murderously penetrative masculinity: Moath thrusts his lance into her body, dispatching the inhuman lusts of the female vampire.

A final hysterical sex-starved female vampire, Keats's Lamia promises sensual beauty and magical riches but in the end offers only sterility, falseness, and death. Like the folklore vampire, she is absent agency and driven by an all-consuming passion; with enchanting music and magical riches and foods, this supernatural *femme fatale* lures men into her web for love. Victorian vampire scholar James Twitchell tells us Keats's poem is based on Philostratus's *Life of Apollonius* (c. 217-238 CE) via Robert Burton's *Anatomy of Melancholy* (1621). In *Life of Apollonius*, the young Menippus meets an exotic and enchanting woman whom his tutor, the wise Apollonius, objects to, reminding his pupil of the gardens of Tantalus in Hades, which on the surface look beautiful but underneath are rotten. Menippus's lover, he insinuates, similarly hides a putrid nature. Under his withering masculine intellect, the false woman finally admits that "she was a vampire and was fattening up Menippus with pleasure before devouring his body, for it was her habit to feed upon young and beautiful bodies because their blood is pure and strong."<sup>22</sup>

In "Lamia" (written while Keats was dying of tuberculosis, a disease that, in its consumption of the body, had long been associated with vampirism), Keats retells Philostratus's story of the supernatural *femme fatale* as vampire. Lamia is a gorgeous serpent-woman who lives more for love and romance than for male seminal male fluids. On her wedding night to her lover Lycius, the scientist and philosopher Apollonius deciphers the vampire's true nature and destroys her with his penetrating masculine authority. His stare denudes Lamia's false exterior, exposing the waste and barrenness

that lie beneath:

In the bride's face, where now no azure vein  
Wander'd on fair-spaced temples; no soft bloom  
Misted the cheek; no passion to illumine  
The deep-recessed vision:—all was blight;  
Lamia, no longer fair, there sat a deadly white.<sup>23</sup>

Lycius's "sweet bride" crumbles under the potency of Apollonius's eyes: "Then Lamia breath'd death breath; the sophist's eye, / Like a sharp spear, went through her utterly, / Keen, cruel, perçant, stinging."<sup>24</sup> Penetrated, Lamia perishes (the poet quickly supplants the male fantasy of penetration with a "murderous phallicism"<sup>25</sup>). Keats's Lamia and those like her are enchanting and beautiful on the outside, but contaminating to the touch, deadly in their metamorphosis of male flesh and spirit. Female desire in these texts is a hunger for male fluids that extends beyond the grave; it is the uncanny—that repressed thing that always returns to haunt the living. Promising beauty and sensual riches, in the end, woman offers only sterility and death.

### The Sexual Deviant and Prostitute as Vampire

Lord Ruthven and Clarimonde (the vampire courtesan from *La Morte Amoureuse*) are far more threatening in their erotic tastes and freakish biologies than the hysterical female vampire. The sexual deviants in Polidore and Gautier's texts exploit the polymorphously perverse, oral-sadistic, undifferentiated eroticism that would later be used to pathologize minority sexual practices. In these pre-modern vampire texts, particularly *La Morte Amoureuse*, the traditional signposts of gender dissolve in perverse sexual arrangements, the promiscuous mixing of male and female bodily fluids, and the disruption of the penetrator/penetrated sexual binary. Neat distinctions between man and

woman and masculinity and femininity flounder in the pre-modern vampire text. Before mid-century, the contemporary reader of these novels would have had no authoritative hermeneutic to interpret Ruthven and Clarimonde's illicit desires and dangerous sexual practices in the terms of disease.

Long before Dracula and his sexual and gender perversions would penetrate England, the vampire Lord Ruthven—a man with similar tastes to the Count—seduced the young, and very romantic, Mr. Aubrey. In the early part of the century, John Polidore set the stage for the vampire as sex deviant that was to have an enduring and wide-ranging influence on vampirism as metaphor for perverse sexuality. The first vampire to appear in English prose was decidedly a pervert. Polidore was involved in the legendary ghost-story competition at Villa Diodati with Mary Shelley, Percy Shelley, and Lord Byron (he was Byron's personal physician). *The Vampyre* (1819) was an elaboration of Byron's unfinished fragment, one of the results of the competition along with *Frankenstein*. Byron abandoned the tale, but Polidore published his novella to huge success due to the fact the reading public mistakenly believed it to have been written by the infamous Byron himself. By most accounts, Polidore was a hanger-on who hero-worshiped Byron. He unabashedly modeled his vampire on the hypnotically draining man (Ruthven was the name Lady Caroline Lamb gave Byron in her satirical novel *Glenarvon*, published in 1816).

Ruthven is a typical Byronic hero, a wandering exile, alienated from the world of men by the burden of his secret nature and esoteric knowledge. Polidore routs the currents of his own homoerotic abjection before Byron through Aubrey and Ruthven's intense romantic friendship. Ruthven's melancholy debauchery and aggressive,

penetrating masculinity make him a classic Sadean villain—and Aubrey his willing submissive. The entire plot of the novel revolves around Ruthven’s peculiar taste for the young Mr. Aubrey, a naive romantic innocent who finds himself enchanted by the powerful and charming older man. When Ruthven first comes to London, we learn that he’s a real lady-killer; society women flock to him and though he’ll feed on them to sate his hunger, he’s largely indifferent to the female of the species. Ruthven fixates instead on the young Aubrey, an orphan whose education, left to his own devices, “cultivated more his imagination than his judgement.”<sup>26</sup> Aubrey is a typical Gothic *heroine*: “allowing his imagination to picture every thing that flattered its propensity to extravagant ideas, he soon formed this object [Lord Ruthven] into the hero of a romance, and determined to observe the offspring of his fancy.”<sup>27</sup> Aubrey is an *ingenue* whose romantic imagination entraps him in Ruthven’s gothic world of darkness, terror, and perversion. The two men embark on a tour of the continent, and Aubrey soon learns of Ruthven’s “licentious habits” and “dreadfully vicious” character. Though he is always “determined” and “resolved” to leave him (or so he tells himself), Aubrey is never able to extricate himself from Ruthven and his irresistibly seductive powers.

While there are no women in Byron’s short fragment, there are two women in Polidore’s novella, but they don’t fare well. Pre-echoic of the homoerotic contact between the men in Van Helsing’s gang in *Dracula*, the contact between Ruthven and Aubrey is funneled through mediating women.<sup>28</sup> Like Lucy, women in *The Vampyre* are caught in the crossfires of male homoeroticism, an exchange which ends in their immobilization and/or death. Ruthven sacrifices Aubrey’s beloved gypsy girl Ianthe as well as his sister Miss Aubrey to feed his hunger, and to rid all women that stand



between him and Aubrey. Women serve Ruthven's material demands, but he needs men to fulfill his emotional and intellectual needs. In Greece Aubrey supposedly falls in love with the "infantile," "unconscious" peasant girl Ianthe, but Ruthven cuts their romance short by feeding on her. Aubrey then falls into a fever and Ruthven returns (they've been separated, though Ruthven is following him) to nurse him back to health. Suspicious but grateful to see him, Aubrey accepts Ruthven's constant attendance and care. His mind shocked and his body weakened by his tragedy, Aubrey becomes more like Ruthven, indulging in melancholy solitude and (prototypical) existential anxiety. When they are waylaid by a band of robbers who wound Ruthven, the vampire begs Aubrey not to impart knowledge of his "crimes or death" to any living being for a year and a day. Aubrey unquestionably agrees, but spends the next year haunted by and madly obsessing over Ruthven and his sworn oath to protect his true identity and dastardly deeds. Wholly deranged, Aubrey is confined in his chambers when at last he learns of his sister's impending marriage to Ruthven. Begging her not to marry the Lord, but unable to tell her why, Aubrey is deemed insane. Distracted by his self-imposed silence, Aubrey enables Ruthven to marry his innocent sister and satiate his hunger on their wedding night (the bridal bed is the death bed for poor Miss Aubrey). Akin to Dracula, Ruthven demands the ancient *droit du seigneur* over women, but his pleasure lies in the vicarious contact he has with Aubrey funneled first through his fiancé, and then through his sister. Polidore channels their desire for one another through two very short-lived relationships with soon-to-be-dead women. The vampire in Polidore's text, as in so many to come, embodies the illegitimate sexual relationship. Like Frankenstein, Aubrey dies haunted by his monster.

The Victorian world got its first taste of the prostitute as vampire in Theophile Gautier's novella *La Morte Amoureuse* (1836), in many ways a typically decadent French novel. Clarimonde is a courtesan vampire whose intellectual and carnal seduction of a priest climaxes in her unfortunate murder by a fellow holy man. But though Gautier was the first to feature the prostitute as vampire, his novel is more decadent than puritanical. Clarimonde is a vampire whose sole pursuit is sexual pleasure and the corruption of an obsolete morality of abnegation. She seduces the young priest Romuald and initiates him into sexual debauchery and occultic knowledge. Sympathetic to the innocent Mr. Aubrey, Romuald describes himself before his encounter with the seductress as another gothic heroine, imprisoned within the walls of the home: "I had never gone into the world. My world was confined by the walls of the college and the seminary...and I lived in a state of perfect innocence."<sup>29</sup> As soon as he meets Clarimonde, however, the priest is torn between two diametrically opposed worlds. His church duties consume his daily hours, but Clarimonde consumes his nightly hours: "my daily life was long interwoven with a nocturnal life of a totally different character. By day I was priest of the Lord, occupied with prayer and sacred things; from the instant that I closed my eyes I became a young nobleman, a connoisseur of women, dogs, and horses; gambling, drinking, and blaspheming" (ibid., 47). Clarimonde presides over nightly orgies at her castle (complete with "fantastically attired," "exotic" servants from the East), until her favored lovers are drained of spiritual or physical essence.

*La Morte Amoureuse* sets itself up to be a typical vampire narrative, especially in its sexualizing of the immobilized, dying, or dead female body (thus the title). Still unaware of her true vampiric nature, Romuald is thankful when he receives news of

Clarimonde's apparent death: "I knelt down and began to repeat the Psalms for the Dead, with exceeding fervour, thanking God that he had placed the tomb between me and the memory of this woman" (ibid., 58). He gazes sexually at Clarimonde's "graceful corpse:"

She seemed an alabaster statue executed by some skillful sculptor to place upon the tomb of a queen, or rather, perhaps, like a slumbering maiden over whom the silent snow had woven a spotless veil....Ah, must I confess it? That exquisite perfection of bodily form, although purified and made sacred by the shadow of death, *affected me more voluptuously than it should have done*...I forgot that I had come there to perform a funeral ceremony; I fancied myself a young bridegroom entering the chamber of the bride.<sup>30</sup>

Clarimonde's stunning corpse has a tumescent effect on the priest. In contrast to her active, penetrating sexuality in life, Romuald's attraction to Clarimonde here depends on a passive state of unconsciousness. But at the moment *La Morte Amoureuse* begins to read like typical misogyny, Gautier parodies the novel's own fetish for the paralyzed female body as erotic object of desire. In typical fairy-tale fashion, Romuald plants a last kiss on Clarimonde's mouth, and lo and behold she wakes up: "'Ah, it is thou, Romuald!'" she murmured in a voice languishingly sweet as the last vibrations of a harp. 'What ailed thee, dearest? I waited so long for thee that I am dead; but we are now betrothed; I can see thee and visit thee'" (ibid., 60). Rather than arising from the tomb to entwine her lover/prey and drag him back down into the grotto of female materiality, Clarimonde simply wants to resume their affair where they left off.

Of course the vampire is not yet dead. She rises again only to die the true death after the vicious Abbe Serapion learns of her monstrous nature and kills her with holy water (though the reader does not align herself with his brutality—Romuald "felt that the act of the austere Serapion was an abominable sacrilege"<sup>31</sup>). But before her final death,

Gautier treats his readers with the aggressive sexual adventures of the excessively phallic female vampire. With her “little riding whip” (ibid., 64) Clarimonde initiates masochistically-inclined men into carnal discipline. In a telling inversion of the Victorian fetish for immobilizing women, we learn that Clarimonde routinely drugs Romuald so that she may take her nightly sustenance:

When she felt assured that I was asleep, she bared my arm, and drawing a gold pin from her hair, began to murmur in a low voice: ‘One drop, only one drop! One ruby at the end of my needle....Ah, the beautiful arm! How round it is! How white it is! How shall I ever dare to prick this pretty blue vein!’...At last she took the resolve, slightly punctured me with the pin, and began to suck up the blood which oozed from the place. (Ibid., 68)

Oral-sadistic by nature, Clarimonde can’t help but flaunt her phallicism. Not at all dismayed by her paralyzing penetrative prowess, Romuald is a willing and enthusiastic masochist—after all, as a priest he is accustomed to the mortification and subjection of the flesh.

The most blatantly decadent *tête à tête* between the vampire and the priest occurs early one morning when Romuald cuts his finger. A sanguinary sadist, the sight of blood drives Clarimonde wild with desire:

The blood immediately gushed forth in a little purple jet, and a few drops spurted upon Clarimonde. Her eyes flashed, her face suddenly assumed an expression of savage joy such as I had never before observed in her. She leaped out of her bed with an animal agility—the agility, as it were, of an ape or a cat—and sprang upon my wound, which she began to suck with an air of unutterable pleasure. She swallowed the blood in little mouthfuls, slowly and carefully, like a connoisseur tasting a wine from Xeres or Syracuse...From time to time she paused in order to kiss my hand, then she would again press her lips to the wound in order to coax forth a few more drops. When she found that the blood would no longer come, she arose with eyes liquid and brilliant, rosier than a May dawn; her face full and fresh, her hand warm and moist—in fine, more beautiful than ever, and in the most perfect health. (Ibid., 64)

With such a passage, one might be tempted to discuss how, in the unconscious mind,

blood, semen and milk are inextricable,<sup>32</sup> but the sexual perversions in Gautier's novella are clearly textual and not subtextual (until *Dracula*, vampire fiction functioned almost entirely on the textual level). The subversions in *La Morte Amoureuse* are flagrant: Clarimonde is a penetrating machine (and her sexual activity is not yet separated from the ingestion of food), and as an agitator for pleasure as the sole sexual aim, her instincts subvert the cultural demands of heterosexual reproduction. She reproduces desires and kinships through blood rather than through children. In these final sexual encounters, Gautier envisions Clarimonde as a phallic sadist with impressive skill in penetrating men, and Romuald as a willing masochist thrilled to be penetrated or otherwise "feminized"—he is both phallus and bloody wound on which the vampire sates her hunger. While the novel ends with Clarimonde's violent though mournful death, the rest of the novella is delightfully decadent. With *La Morte Amoureuse*, for the first time a cocksucker became a bloodsucker.

### III: The Modern (or Post-modern?) Vampire: Sheridan Le Fanu's *Carmilla* and the Emerging Science Fiction Body, or, Masturbation, Sexual Inversion, and the Vampire

It may be coincidence that Sheridan Le Fanu published *Carmilla* less than a year after the first appearance of Chesney's *The Battle of Dorking* in 1871, but the novel demonstrated a canny sense of the bodies mobilized by fear of alien infiltration or evolutionary degeneration. The first vampire/horror genre writer to consciously exploit the disease paradigm of the human/nonhuman, Le Fanu warned of the oppressive possibilities inherent in modern forms of knowledge, especially within the human sciences. The novel was peculiarly modern in its historical consciousness, looking both

backwards and forwards at the alien biologies produced by the interface between the human and scientific discourse. Le Fanu drew upon the century-long controversy over the sickly sexed, anti-social body of the inveterate masturbator to reproduce the signs by which doctors could diagnose perversion. Masturbation was a dangerously sterile dead-end activity, and the masturbator an animated corpse who lacked being, interiority and depth—what more suitable source material for inscribing the sexually deviant woman as vampire? But Le Fanu also yoked the masturbator as the undead to contemporary sexology discourses on inversion which had just begun to swarm the Victorian scene a decade before the publication of *Carmilla*. Though not yet thoroughly medicalized (i.e. pathologized), the sexually inverted woman was a gender deviant who rejected men and motherhood, and thus played a large role in social disorder. As scholars of the history of sexuality have noted, in the literature after 1864 inversion was more frequently treated as a cross-gendered identity rather than as a simple sexual perversion. Perversion did not necessarily lie in the sexual object-choice, but in the form the sexuality took.<sup>33</sup> The independence and sexual aggressiveness of the female born invert (as opposed to the female “turned to the life”) made her a pathological usurper or imitator of masculine authority. The impulse to preserve the Subject of desire as a masculine position led sexologists to argue the female invert *was not really a woman after all* but occupied a male sexual position. While *Carmilla* rehearsed both historical and contemporary sexology discourses, the novel, I would argue, may have been open to a parodic reading of the fear of contamination that was obsessively routed through a hermeneutics of detection, diagnosis, and containment of alien agents transmitted by blood and inducing progressive transformation. In decoding the bankruptcy of an oppressive set of

discourses, Le Fanu warned of the potentially dehumanizing effects of the life sciences' pursuit of what it meant to be human. By the end of the century, the modern hygienic project would rely on the creative help of the monstrous as a primary means of signification by which bodies were sorted, hierarchized, and disciplined.

Two of the most interesting vampires from the nineteenth-century might have been read as sexual inverts by the mid to late Victorian medical imagination. By the publication of Le Fanu's *Carmilla*, the female vampire had come to dominate the genre, but she wanted nothing to do with men. Though Samuel Coleridge's *Christabel* (1816) appeared decades before the medicalization of same-sex desire began in the 1860s, Geraldine, the vampire from Coleridge's long poem, shares much in common with her sister-seducer Carmilla (Le Fanu was certainly indebted to Coleridge). Geraldine is a lamia, a serpent-woman whose carnal lust for Christabel is at the same time demonic and threatening to and subversive of patriarchal authority. Like her progeny Carmilla, Geraldine is a phallic, dominating woman come to tempt another woman into forbidden knowledge. The sexual nightmare/fantasy of penetrating woman has nothing to do in either text with men. The vampires' strong passions, authoritative manners, and predatory sexuality mark them both as born gender perverts (though only retrospectively in the case of *Christabel*). Geraldine and Carmilla are aggressive "masculine" seducers of young, beautiful, and innocent motherless women. While the literature on sexual inversion would see the female invert as a determined competitor to men for women's affections, there are no real male competitors in either *Christabel* or *Carmilla*. The only men the vampires are forced to contend with are their lovers' fathers, both of whom are

depicted as doddering blind old fools. Geraldine even pretends to be romantically affected by Christabel's father, Sir Leoline, for the sole purpose of gaining and maintaining access to his daughter (she looks upon him "in maiden wise" and casts "down her large bright eyes, / With blushing cheek and courtesy fine"<sup>34</sup>). In a fascinating inversion of the homosocial/patriarchal romantic exchange of women, these texts are ultimately "between women"—men are romantically irrelevant, even impotent.<sup>35</sup> The vampires easily penetrate domestic tranquility, disrupt its banal moral order, and corrupt its young women right under the fathers' noses. Unlike the future Van Helsing, who is cyclopean in his detection of sexual interlopers, the central patriarchal figures in these texts are blind to women's erotic intentions.

Carmilla is accompanied by two female cohorts (one posing as her mother, and the other an "exotic," perhaps West Indian woman) who stage a carriage accident to aid the vampire in her erotic pursuit of Laura. Carmilla's blood connection to the two women is unclear. They are presumably sister-vampires, but Carmilla's traditional family origins remain elusive. As the narrative unfolds, we learn that she is a distant ancestor of Laura's mother, but unlike both women the vampire exists on the edges of the patriarchal family (with its domestic imprisonment), and only so that she may corrupt its young women. Regardless of her family origins, she was inducted into a female homosocial community and presumably turned by one of its members. As she is outside of the world of men and their normative relationships, Carmilla's erotic plots fly under the patriarchal radar and are recognized only by women (which accounts for why the vampires prey on motherless virgins). When we first meet the General, the father of the young woman whom Carmilla seduced and killed before falling in love with Laura, he is ashamed by



his own “blindness” and “obstinacy” concerning the woman’s intentions.<sup>36</sup> Carmilla’s ruthless pursuit of women poses a threat to marriage and family, as well as to male knowledge.

In fact, Carmilla has nothing to do with masculine authority. Frightened by the multiple plague-like deaths of local peasant girls (Carmilla kills peasants while wooing upper-class women—she is a snobby, and decidedly deadly, aristocrat), Laura’s father wants to call in the doctors: “Doctors never did me any good,” Carmilla brusquely responds (*ibid.*, 182). Later, Laura remarks upon Carmilla’s apparent disregard for organized religion: “I often wondered whether our pretty guest ever said her prayers. I certainly had never seen her upon her knees” (*ibid.*, 187). Carmilla refuses to go down on her knees whether for religious, or, other kinds of service. Though one could argue Le Fanu introduced the medical detective plot into Victorian literature (to be perfected by Stoker), Styria’s doctors, fathers, and scholars are for the most part laughably inept. Ultimately, however, the vampire finds herself up against a male front that will put a stop to her sexual and genetic experiments (unlike Geraldine, who escapes the realignment of patriarchy with penetrative authority). While for most of the novel the men in Laura’s life are myopic bumbling fools, they finally manage to organize in the fight against the female interloper.

One thing the novel does detect, however, is the signs and symptoms of sexual excess, namely, of masturbation. In his depiction of Carmilla, Le Fanu presents his readers with a plethora of telltale signs to read the deviant female body. Here, we have the first conscious (generic) exploitation of the sexology literature, and so I must make a brief detour to look at the original discursive influence on the vampire/biological

imagination, the only “human” science to largely predate the modern vampire—the discourse on masturbation.

By the last decade of the nineteenth-century, the monstrous imagination had saturated discourses of sexual perversion and degeneration, coming to a head in the texts of Cesare Lombroso and Havelock Ellis. For example, the characteristic signs or symptoms of sexual excess in woman took on explicitly vampiric imagery, including such things as pointed features, sharp teeth, pale skin, anemic constitutions, and erotic languour. In the *fin-de-siècle* text *Woman; A Treatise on the Normal and Pathological Emotions of Feminine Love* (1904), Bernard Talmey wrote that the overindulgence of the sexual instinct in woman led “directly to anemia, malnutrition, asthemia of the muscles and nerves, and mental exhaustion. Immoderate persons [were] pale and ha[d] long, flabby, sometimes tense features. They [were] melancholic and not fit for any difficult and continued corporal or mental work.”<sup>37</sup> In *Criminal Woman* (1893), Lombroso argued that active sexuality awakened a latent criminal instinct in woman. The female criminal was “excessively erotic, weak in maternal feelings [and] inclined to dissipation...[She] dominate[d] weaker people, sometimes through suggestion, sometimes through force.”<sup>38</sup> Criminality in woman was tied to a sexuality that was becoming literally vampiric.

The dense vampiric language used to link female criminality with sexuality echoed a similar language employed in the preceding century to demonize that other most foul and anti-social use of one’s sexuality—masturbation. Popular belief held that the masturbator contaminated his or her offspring with moral pollution as well as physical and mental imbecility. Because it played a primary role in the moral and

physical decline of the Western body, the signs of masturbation needed articulation in order to root out the wasting sickness. To trace the historical/medical understanding of the masturbator as the walking, breathing, undead, we must go back over a century to the most influential and widely read text expounding the ills of masturbation, Dr. Samuel Tissot's *L'Onanisme, our Dissertation physique sur les maladies produites par la masturbation* (1760, first published in Latin in 1758). *Onanism* was the earliest, most important work to lay out the horrific effects of this preeminently anti-social behavior. Tissot's treatise was a popular and widely read medical text of the eighteenth-century, and it incited hundreds of other texts on the same subject. *Onanism* would go through dozens of editions into the nineteenth- and even twentieth-centuries.

Surely it was mere coincidence that Tissot's hugely influential treatise on the evils of masturbation was written soon after the infamous vampire plagues that struck Eastern Europe in the 1740s and 50s. Tissot was a Swiss doctor (living and practicing in Lausanne) who wrote extensively on the "plague" of masturbation, in addition to other actual plagues such as smallpox. At the very least, we could say Tissot had an epidemiological bent for infections that spread quickly and deadly. In *Onanism*, he blamed masturbation for a whole host of mysterious diseases, perversions, and deaths. For Tissot and countless others who followed him, "self-abuse" was a foul sexual plague that sucked the very marrow out of civilization; it was a certain road to the grave. Consequently, the corporeal "secret" of the masturbator was that his/her body maintained an intimate relationship with death. In the case studies section of his work, Tissot struck a typically dire note: His patient looked "more like a corpse than a living being, lying on the bed, his body dry, emaciated, pale, dirty, exhaling a disagreeable odor, and almost

motionless;”<sup>39</sup> He “could hardly be recognized as a human being” (ibid., 20). The masturbator was a species of the living dead.

From Tissot in the 1760s to Nicholas Cooke in the 1870s, sexual science condemned masturbation as a principle source of degeneration responsible for any number of physical and moral ills. The dozens of anti-masturbation texts that appeared after Tissot’s rehearsed almost verbatim the plague-like effects he had laid out in his original work. Nothing was worse for the body than masturbation (and it was even more dangerous for women). Symptoms included a livid pallor, languor, anemia, loss of appetite, consumption, moral degeneration, loss of memory, and nymphomania. Masturbators were subject to “attacks of hysteria, melancholy, incurable jaundice, acute pains in the stomach and back [and] elongations of the clitoris and furor uterinus, which deprive[d] [masturbators] both of modesty and reason, and place[d] them on a level with the most lascivious brutes, until death terminate[d] their career” (ibid., 28). Masturbation stimulated a frantic, one might say hysterical, desire for sexual intercourse in women—a “furor uterinus.” In *Satan in Society* (1871), the physician Nicholas Cooke compiled the effects of masturbation in women, which included sadness and melancholia, solitude or indifference, languor, weakness, loss of flesh, hysteria, cancer of the womb, nymphomania, sterility, and of course death. “It was not uncommon,” he concluded, “to see the shape impaired, or even deformed” in the female masturbator.<sup>40</sup> Anti-masturbation treatises like *Satan in Society* took pains to warn women and men alike that if they used their sexuality to anti-social ends, the effects would be both morally and physically monstrous. Particularly in women, masturbation was a criminal misdirection of vital reproductive functions. A sexual excess and sterile wasteland, it was an atavistic

instinct that would lead to the loss of biological (and thus national) vitality. But men who indulged in the vice were similarly warned. As Tissot claimed and others repeated *ad nauseum*, the loss of one ounce of semen enfeebled more than the loss of forty ounces of blood<sup>41</sup> (perhaps Gautier had read Tissot).

Anemia, emaciation, melancholy, hysteria, spinal diseases, death—all were ills of masturbation. But no symptom/effect of the dangerous vice was more interesting for my purposes than night-sleeplessness and photophobia. By most accounts, masturbators suffered from insomnia during the night and photophobia during the day (though these were hardly the most prevalent effects). Tissot claimed that some masturbators (these “children of the night”) barely slept at all, and that others were continually sleepy during the day (Tissot, *Onanism*, 17). One eighteen-year old female patient was “constantly affected with drowsiness during the day and wakefulness through the night” (ibid., 30). A male masturbator recounted his own narrative: “[D]uring the day I am sleepy and restless, in the night my sleep is disturbed, and does not refresh me.” The same patient’s eyes were constantly “weak and painful” (ibid., 22). Another habitual masturbator from S.B. Woodward’s tract *Hints for the Young, In Relation to the Health of Body and Mind* (1856) suffered from sleeplessness as well—sleep never refreshed him, and in the mornings he felt weak and weary.<sup>42</sup> The same patient admitted to suffering from severe photophobia: “My eyes, particularly in the morning, are affected with a burning sensation, which renders it almost impossible for me to use them for several minutes after rising—they seem to be full of sand;—the light is very oppressive;—I usually keep the blind closed to my room at all times of the day.”<sup>43</sup> In *Facts and Information for Young Women, on the Subject of Masturbation* (1845), Samuel Gregory claimed that

“[n]o part of the system seems more readily affected than the eyes, by this nervous excitement. They become weak, irritable, and painful—incapable of enduring the fatigue of reading or study.”<sup>44</sup> Amongst the slew of demonic effects of masturbation, photophobia and night-sleeplessness were the most interesting in the caricature of criminally sexed women and men as vampiric.

The work that incited these anti-masturbation tracts in the first place, Tissot’s *Onanism*, oddly mirrored the scapegoating of vampires for the mysterious plagues that ravaged populations in Eastern Europe in the early part of the eighteenth-century. But regardless of whether we buy a subterranean influence of the vampire plagues on Tissot’s writing of monstrously sexed bodies, reading his work even today is like reading a *morphology* of the vampire tale.

Le Fanu furnishes us with a plethora of signals to read Carmilla as a sexual deviant. Anemia, photophobia, languor, a livid pallor, and melancholia are all clues of sexual excess, and in *Carmilla*, they are clues of vampirism as well. Le Fanu repeatedly writes Carmilla as languorous, pale, and melancholy, and as suffering from a lack of appetite (and of course she wanders all night and sleeps during the day). Though she demonstrates a lively, penetrating mind, Laura refers to Carmilla as “languid,” “languorous,” or “listless” no less than fifteen times in the short novel, coding her a typical sex pervert and/or masturbator. As Geraldine and Carmilla both begin to turn their lovers, they too take on vampiric qualities. Christabel hisses twice, while Laura feels herself a “changed girl:”

For some nights I slept profoundly; but still every morning I felt the same lassitude, and a languor weighed upon me all day. I felt myself a changed girl. A

strange melancholy was stealing over me, a melancholy that I would not have interrupted. Dim thoughts of death began to open, and an idea that I was slowly sinking took gentle, and somehow, not unwelcome possession of me. If it was sad, the tone of mind which this induced was also sweet. Whatever it might be, my soul acquiesced in it. (Le Fanu, *Carmilla*, 190)

Laura is actively engaging in vampirism/perversion. As soon as Carmilla penetrates her home, she begins to drift away from her father. Aware she is changing into something alien, she nonetheless refuses to confide in any of the men around her: “I would not admit that I was ill, I would not consent to tell papa, or to have the doctor sent for” (ibid., 190). Now Laura wants nothing to do with doctors as well. She begins actively deceiving the men around her by keeping her changes and/or erotic escapades secret: “My father asked me often whether I was ill; but, with an obstinacy which now seems unaccountable, I persisted in assuring him that I was quite well” (ibid., 191). Carmilla wages a frontal attack against male sexual power, and she seduces and enlists women along the way.

Despite whether one reads Le Fanu’s text as an indulgence or parody of the hermeneutics of degeneracy, there is little doubt Carmilla’s passion for Laura is one of the most seductively and forcefully articulated female-female desires in any Victorian literary text. From the moment Carmilla sees Laura she’s desperately in love with her. Laura recounts a *tête à tête* (she narrates her story from some years removed) in which she teases the vampire about her passionate nature:

“How romantic you are Carmilla...Whenever you tell me your story, it will be made up chiefly of some one great romance.” She kissed me silently. “I am sure Carmilla, you have been in love; that there is, at this moment, an affair of the heart going on.” “I have been in love with no one, and never shall,” she whispered, “unless it should be you.” How beautiful she looked in the moonlight! Shy and strange was the look with which she quickly hid her face in my neck and hair, with tumultuous sighs, that seemed almost to sob, and pressed in mine a

hand that trembled. Her soft cheek was glowing against mine. “Darling, darling,” she murmured, “I live in you; and you would die for me, I love you so.” (Ibid., 185)

In stark contrast to the rabid cravings of the blood-starved folklore vampire, Carmilla, in her aggressive and articulate pursuit of her desires, is a persuasive sexual agent. She is no mindless, sex-starved walking corpse, and typical of the sexually inverted woman, Carmilla’s passion is sensuous rather than purely sentimental. In fact, she takes such active enjoyment in her pursuit that at one point Laura wonders if she is a male lover in disguise:

Sometimes after an hour of apathy, my strange and beautiful companion would take my hand and hold it with a fond pressure, renewed again and again; blushing softly, gazing in my face with languid and burning eyes, and breathing so fast that her dress rose and fell with the tumultuous respiration. It was like the ardour of a lover; it embarrassed me; it was hateful and yet overpowering....Respecting these very extraordinary manifestations I strove in vain to form any satisfactory theory....What if a boyish lover had found his way into the house, and sought to prosecute his suit in masquerade, with the assistance of a clever old adventuress? But there were many things against this hypothesis, highly interesting as it was to my vanity. (Ibid., 178)

If the active enjoyment of sexuality is a male prerogative, then there is little doubt Carmilla is a sex and gender pervert.<sup>45</sup>

Most importantly, Le Fanu writes Carmilla’s passion for Laura as ardent, sympathetic, and entirely human. The vampire offers a carnal romantic love, and though Laura may at times respond ambiguously she inevitably submits with pleasure. Early in her narrative she recalls “the first occurrence” in her existence which “produced a terrible impression” upon her mind—a ghostly visitation from Carmilla when she was six years old (a clearly erotic dream that equates vampirism with nocturnal emissions):

I saw a solemn, but very pretty face looking at me from the side of the bed. It was that of a young lady who was kneeling, with her hands under the coverlet. I



looked at her with a kind of pleased wonder, and ceased whimpering. She caressed me with her hands, and lay down beside me on the bed, and drew me towards her, smiling; I felt immediately delightfully soothed, and fell asleep again. I was wakened by a sensation as if two needles ran into my breast very deep at the same moment, and I cried loudly. The lady started back, with her eyes fixed on me, and then slipped down upon the floor, and, as I thought, hid herself under the bed. (Le Fanu, *Carmilla*, 165).

Now Carmilla is on her knees! (and what are her hands doing under the coverlet?). Like the vampire Clarimonde (certainly a blood relation), Carmilla flaunts female phallicism.

Laura describes another sexual/vampiric encounter in clearly orgasmic terms:

Sometimes there came a sensation as if a hand was drawn softly along my cheek and neck. Sometimes it was as if warm lips kissed me, and longer and more lovingly as they reached my throat, but there the caress fixed itself. My heart beat faster, my breathing rose and fell rapidly and full drawn; a sobbing, that rose into a sense of strangulation, supervened, and turned into a dreadful convulsion, in which my senses left me, and I became unconscious. (Ibid., 191)

As she does several times throughout the novel, Laura enthusiastically engages in sexual perversion, yet the vampire bed never spells her doom. Le Fanu resists portraying their desire as unnatural or hideous. Though the vampire is destroyed by a murderous male mob, Le Fanu writes her end (like Gautier writes Clarimonde's) as depressing rather than cathartic or therapeutic. Theirs is a romance doomed by the less-than-inspiring patriarchal powers that be. In marked contrast to *Dracula*, there is no pervasive unease, no disgust or paranoia permeating the narrative. Carmilla ruthlessly and at times murderously seduces women, yet her intentions for Laura are to turn her to the life, a provocative subversion of a Judeo-Christian tradition that defines woman's impurity as rooted in her contaminated/ing blood. Carmilla may infect and metamorphosize other women, but her blood is simultaneously *mortifying* and *vivifying*. Reproducing her kind through infection, Carmilla engineers new bodies, desires, and sexual arrangements that

destroy the happiness and security of the heterosexual patriarchal family, mobilizing and initiating women into new modes of being. The vampire in Le Fanu's text is a source for gender and sexual alterity.

Unable to brook the possibility of Laura's turn to the life, however, a male horde finally gathers around her and decides it must cut Carmilla down, for she has dared to turn what was before a passive, childishly docile (while unhappy) girl, into a disobedient and sexed one. Because Carmilla has usurped male penetrative authority (which will militarize Van Helsing and his gang in *Dracula*), the men must "stand up" (they're doing the penetrating now) to the interloper and reassert their right to penetrate female bodies. They stake, decapitate, and burn her. But while the clear and present danger of Carmilla's desires have been neutralized, the narrative stops short of dismantling or dispelling an intense erotic desire between two women. For Laura, learning the truth about Carmilla does not lessen the impact she has had on her emotional and sexual life. A full ten years after the events she narrates Laura is still unmarried (there is never any mention of a male lover, either in her past or her present), and continues to be haunted by the vampire's presence: "It was long before the terror of recent events subsided; and to this hour the image of Carmilla returns to memory with ambiguous alterations—sometimes the playful, languid, beautiful girl; sometimes the writhing fiend I saw in the ruined church; and often from a reverie I have started, fancying I heard the light step of Carmilla at the drawing-room door (ibid., 218). Unmarried at the "mature" age of twenty-nine and still haunted by Carmilla, one suspects Laura may in fact have succumbed to infection and been inducted into a queerer sort of existence.

In 1872, Le Fanu's *Carmilla* heralded a formal shift in the vampire narrative from

the depiction of alternative erotic frameworks rich in possibility to a densely subtextual and disciplinary text like *Dracula* that would be used to mobilize racial and sexual discourses in the fight against infectious bodies. Unlike previous vampires, Carmilla's body is hypertextual, saturated by the signs of sexual sickness. But instead of merely parroting the signs by which medical men could diagnose perversion in women, Le Fanu parodies the maturing hermeneutics of paranoia built around perversion and degeneration theory—the fear that deviancy lurks everywhere but is difficult to expose. The “hidden secret” in Carmilla is *not* female sexual perversion, for this is the *text* of the novel. Carmilla's impassioned advances towards her lover Laura are everywhere blatant and nowhere furtive (though men are still blind to them). The narrative imperative behind the novel is never to diagnose Carmilla as a sexual deviant but to diagnose her as, well, a *vampire*. If the male search for degeneracy finds its apotheosis in the rooting out of sexed female bodies it may, Le Fanu mocks, be chasing after its own tail—with Carmilla the vampire, there is no *there* there. Like C.L. Moore's science fiction vampire story “Shambleau,” Le Fanu's *Carmilla* has a subtext, but it functions on the level of parody. The novel bemoans the *medical imagination* as rank with subtext. Le Fanu invites his readers to read Carmilla the vampire as a palimpsest for inauthentic clichés (dead metaphors) for models of human identity. It is the attempt to rationalize organic processes within the human sciences that is so dangerous to women and others.

#### Part IV. Pre-Modern Bodies and Sub-Human Biologies in the Victorian Life Sciences

*Dracula* picked up a wider debate on the physiognomy of the “born criminal” and the nature of the recidivist (a figure who had increasingly dominated European debate on law and order the last quarter of the century); it might even be said to be *parasitic*, like its own villain, feeding off a social moral panic about the reproduction of degeneration, the poisoning of good bodies and races by bad

blood, the vitiation of healthy procreation...The family and the nation, it seemed to many, were beleaguered by syphilitics, alcoholics, cretins, the insane, the feeble-minded, prostitutes and a perceived “alien invasion” of Jews from the East who, in the view of many alarmists were “feeding off” and “poisoning” the blood of the Londoner. —Daniel Pick, *Faces of Degeneration*

\_\_\_\_\_ Contemporary readers of Theophile Gautier’s *La Morte Amoureuse* would have made little sense of measuring Clarimonde’s sexuality along a criminal continuum, but we cannot say this would have been equally true for readers of Bram Stoker’s *Dracula* in 1897. Between 1836 and 1897, evolutionary scientists, degenerationists, and criminal anthropologists cultivated a modern biological consciousness that banked on husbanding white bodies for the future. A vital, reproductive, white middle-class served imperial and economic interests, and because women bore the responsibility for the propagation of the species, concerns over the quality of the race were channeled through a female body that demanded diagnosis either as an agent of progress or an agent of regress. But after the publication of Darwin’s *Origin of Species* in 1859, degeneration theory cut across a myriad of disciplines within the life sciences to mark the borders between the normal and the pathological, the human from the less than human. In *Faces of Degeneration: A European Disorder* (1989), Daniel Pick argues that in the second half of the nineteenth-century, degeneration shifted from a “description of disease or degradation...to become a kind of self-reproducing pathological process—a causal agent in the blood, the body and the race—which engender[ed] a cycle of historical and social decline.”<sup>46</sup> Degeneration itself, Pick suggests, was envisioned as a kind of dread vampire that threatened to infect and feed on the lifeblood of the nation. Confronted by the urgency to interpret biological disasters, life scientists had to become expert in the production of gender, sexual, and racial differences. Spurred by the promise of mastery over human nature, and the

rationalization of political and economic institutions it would guarantee, social engineers revitalized the pre-modern bodies and sub-human biologies from the vampire tradition to illuminate the thresholds of pathology in the female, perverted, and racial body. By the 1890s, vampire imagery, mythology, and morphology had thoroughly infected five key discursive vectors for the study of human disease: masturbation, hematology, hysteria, sexual perversion, and criminal and racial anthropology.

### Woman as a “Theatre of Bloody Manifestations,” and the Hysteric as Vampire

Men represent the income, to be used and spent freely by each succeeding generation as need arises. Women must be considered capital, to be spent sparingly in the present, to be husbanded carefully for the future.

—W.C.D Whetham, *The Family and the Nation*

There is little doubt that mid to late nineteenth-century social and sexual scientists fancied themselves connoisseurs of woman’s blood. In mythological, religious, and medical discourses alike, woman’s degenerate subjection to her body and its cyclical blood sacrifices signaled an innate physiological link to animality, sexual hunger, and death. In “The Phenomena of Sexual Periodicity” (1899), Havelock Ellis argued for the analogy between menstruation and heat, in other words, between female sexuality and cyclical currents of animality: “We may now regard as purely academic the discussion formerly carried on as to whether menstruation is to be regarded as analogous to heat in female animals. For many centuries at least the resemblance has been sufficiently obvious.”<sup>47</sup> “Heat and menstruation,” he concluded, “with whatever difference of detail, are practically the same phenomenon. We cannot understand menstruation unless we bear this in mind.”<sup>48</sup> Woman’s reproductive system, so it seemed, played no small role in her periodic sexual hunger. But the process by which menstruation came to be commensurate with animality as well as with death was a long one. It began with the

ancients and advanced via the Judeo-Christian tradition, but culminated in late Victorian criminology and hematology discourses on the bleeding woman. Throughout the process, woman's menstrual blood was seen as death-dealing—after all, if blood had not flown a fetus might have developed. Feminist theologian Kathleen O'Grady argues menstruation thus “became conflated with an aborted or miscarried fetus...with the unformed matter (blood) constituting an undeveloped ‘corpse.’”<sup>49</sup> In “Sexual Periodicity,” Ellis traced the view of menstruation as “the result of a disappointed preparation for impregnation—a kind of miniature childbirth...an abortion of a decidua.”<sup>50</sup> For Pinard, Ellis claimed, menstruation was the “expression of the abortion of an unfertilized ovulum.”<sup>51</sup> Clearly, hematology borrowed heavily from mythology and the Judeo-Christian tradition. While he neither agreed nor disagreed with these views, Ellis took great pains to summarize woman as “the theatre of bloody manifestations.”<sup>52</sup>

Woman was depicted in these prolific hematology discourses as “possessed”—both biologically and supernaturally—by her sexual organs, rendering her susceptible to a whole host of pathologies. In *Man and Woman* (1894), Ellis claimed that menstruation could cause mental paralysis and irritability, migraines and epileptic fits, depression and periodic lunacy. “Erotomania, dipsomania, and kleptomania [were] also specially liable to be developed at this time, and of all forms of insanity melancholia [was] the most liable to occur.”<sup>53</sup> Even in good health, Ellis argued, menstruating woman displayed a “greater impressionability, greater suggestibility and more or less diminished self-control.”<sup>54</sup> Lombroso argued that woman's subjection to cyclical blood loss could actually precipitate criminal tendencies, especially amongst hysterics: “Hysterics commit[ed] theft and arson most frequently when they [were] menstruating.”<sup>55</sup> In

referring to Lombroso's work on female criminality, Ellis suggested that "[w]henver a woman commit[ted] a deed of criminal violence it [was] extremely probable that she [was] at her monthly period."<sup>56</sup>

Lombroso correlated blood loss and criminality in woman, especially in the prostitute. In *Criminal Woman* (1893), Lombroso concurred with fellow scholars who suggested that the female born criminal menstruated earlier and heavier than the normal woman. While in the normal Italian woman the onset of menstruation varied from thirteen to fifteen years, fellow criminologist Salsotto found that a high percentage of female murderers, poisoners, and killers of children experienced the "precocious onset" of menstruation between the ages of ten and twelve.<sup>57</sup> Lombroso quoted Rossignol's study of "fifty-eight girls who became prostitutes between the ages of nine and eleven"—twenty-seven of whom menstruated before the age of ten, nineteen before the age of eleven, ten before the age of twelve, and two before the age of thirteen, but all of whom "experienced heightened erotic feelings" during the menstrual period.<sup>58</sup> Particular criminal instincts in woman, Lombroso concluded, were precipitated by menstruation:

Menstruation strongly influences certain crimes. Of eighty prisoners arrested for rebelling against or assaulting the guards, I found that only nine were not menstruating. Parisian women are likely to begin shoplifting while menstruating: among fifty-six such thieves studied by Legrand de Saulle, thirty-five were in the menstrual period, and for ten it had just ended. Legrand thus concluded that when hysterical young women steal bibelots, perfume, and the like, it is almost always during the menstrual period. Emet and DeGardane observed that in exceptionally lascivious women, menstruation is always abnormally prolonged, repeated, or abundant...Sexual precocity among criminal women and prostitutes is evident in premature menstruation and even more in the early age when sexual relations begin.<sup>59</sup>

In no uncertain terms, Lombroso and his fellow scholars ascribed criminality and female sexual appetite to abnormally precocious and prolonged bleeding. Similarly, in

*Psychopathia Sexualis* (1886) Richard Krafft-Ebing asserted that “[i]n woman the sexual inclination [was] post-menstrually increased. At this time, in neuropathic wom[a]n, the excitement may reach a pathological degree.”<sup>60</sup> In “Sexual Periodicity,” Ellis also claimed the typical woman experienced irritability, impaired mental integrity, and a heightened sexual impulse during menstruation.<sup>61</sup> In the same essay, he compared menstruating woman to some of the lower female animals who, during heat, entered a state of sexual fury.<sup>62</sup> Erotic hallucinations and the climax of sexual feelings, he added, were more likely to appear during a woman’s monthly period.<sup>63</sup>

In sum, feral and hysterical during blood loss, woman was wholly subjected to her reproductive system and its periodic sexual hungers. Ellis solidified the connection in woman between blood loss and sexual hunger: There could be “no doubt whatever that immediately before and immediately after [menstruation], very commonly at both times...there [was] usually a marked heightening of actual desire” in woman.<sup>64</sup> In a note on the following page, he referred to a doctor Kossmann who routinely advised his female patients to have sexual intercourse “just after menstruation, or even during the later days of the flow, at the period when it [was] most needed.”<sup>65</sup> Because she has lost a vital substance, in other words, woman should renourish herself on the vital fluids of men. The net effect of these hematology and criminology discourses was to insinuate that, because of her blood loss, woman’s need for men was bloody, cyclical, and seminal; her sexuality was both metaphorically and literally vampiric.

In his influential text warning of the deleterious effects of the American system of education on girls’ reproductive health, Edward H. Clarke concluded a series of studies in 1873 by reminding his readers of a central tenet: “We have previously seen that the



blood is the life, and that loss of it is the loss of so much life.”<sup>66</sup> Here, two discursive traditions collided—the Judeo-Christian obsession with blood loss and the battle between good (sacred) and bad (profane) blood (“the blood is the life” is a Biblical phrase, one Dracula himself espouses), and the medical obsession with woman’s constitutional anemia and its degenerative effects. Victorian hematologists were not the first to discover the innately vampiric nature of sexed, bloody woman. They inherited hundreds of years of Judeo-Christian tradition and archetypal mythologies linking woman with blood and death (the subhuman). But they certainly made the male preoccupation with woman’s blood a cottage industry.

By the 1880s, vampirism had saturated the medical imagination in its analysis of female menstruation, sexuality, and hysteria. From Cesare Lombroso and the famous Dr. Charcot, to Havelock Ellis and even Sigmund Freud, the Victorian medical establishment agreed on the sexual etiology of hysteria. Hysterical symptoms could always be traced back to a sexual origin, and Lombroso even argued that the criminal offenses of the hysteric revolved around her sexual functions.<sup>67</sup> In *Man and Woman* (1894), Ellis observed that “[b]oth among the ‘possessed’ of former days and in modern times it [was] noted that erotic dreams [were] very frequent in the hysterical.”<sup>68</sup> In this literature, hysteria and criminality both were tied to woman’s sexual saturation, in particular, her subjection to menstruation. Fits of hysteria and/or criminality were typically said to appear upon a woman’s first blood loss, and recurred most frequently thereafter during her cycle, in effect yoking hysteria to the onset of sexual awakening and maturation. After all, a woman’s compromised immune system during menstruation made her prey to

sicknesses of all kinds, namely, to sexuality. Blood loss, hysteria, and sexual excess seemed to go hand in hand. The single most common physiological symptom of hysteria was anemia, and in certain medical texts, the suggested cure was re-sanguination.

In hematology and hysteria discourses from the 1870s and 1880s, woman's periodical "hemorrhaging" was said to literally drain her life away. Menstruation was a perpetual source of weakness and disease, and frequently induced hysterical fits of lunacy or violence. Even the "normal" woman was disposed towards hysteria and anemia. In *Man and Woman*, Ellis quoted an expert who claimed seventy percent of adult women were hysterical, and another who claimed the hysterical person was the "colossal image of all that [was] most peculiarly feminine."<sup>69</sup> On female congenital anemia, Ellis argued that "[t]he neuro-muscular exhaustibility of women is no doubt in some measure due to the fact...that the blood of women is more watery than that of men; in women, at all events as women exist to-day, a certain slight degree of anaemia may be regarded as physiological."<sup>70</sup> Hysteria was so often associated with anemia that doctors argued it constituted the primary physiological cause of the illness. Anemia certainly appeared everywhere in the literature. The famous American doctor S. Weir Mitchell (who infamously prescribed the "rest cure" for Charlotte Perkins Gilman) mentioned anemia dozens of times in his work on hysteria. His female patients were "very thin blooded;"<sup>71</sup> "pale, bloodless, meager and nervous;"<sup>72</sup> "anemic;"<sup>73</sup> "feeble and lacking in blood;"<sup>74</sup> and "thin and anemic."<sup>75</sup> Mitchell described a number of his patients as in desperate need of "additional blood" (re-sanguination) and "normal flesh."<sup>76</sup>

Masturbation, hematology, and hysteria discourses shared a central anxiety with the supernatural genres—the liminality of woman. Anxiety over woman's biological

liminality was especially evident in the relationship between the hysterical woman and her doctor, one characterized by intense epistemological anxiety. The doctor was both obsessed with and infuriated by the hysteric, for her ambiguous symptoms eluded classification and thwarted masculine authority.<sup>77</sup> Were the hysteric's symptoms simulations, or were they real? Was the hysteric a victim, or a fraud? Mitchell published several influential studies on the hysteric, and in them his frustration is palpable. In a section entitled "Mimicry of Disease" in his *Lectures on Diseases of the Nervous System, Especially in Women* (1881), Mitchell claimed that the hysterical state was the "fertile parent of evil. However produced, it [was] a fruitful source of mimicry of disease, in its every form, from the mildest of dreamed pains up to the most complete and carefully devised frauds."<sup>78</sup> The hysteric opened up a Pandora's box of diseases, but more importantly, her liminality insulted Enlightenment reason. Her body was skilled in the arts of mimicry—it imitated and/or took on the appearance of different states of being in order to ridicule. Her body confronted the doctor with his inability to distinguish nature from artifice, being from nonbeing. In the nervous woman, Mitchell admitted, it became "hard to separate the true from the false."<sup>79</sup>

Perhaps due to his acute frustration over the illegibility of the hysteric, the medical man imported demonology, folklore, and literature to engineer the hysteric as vampire. The epistemological and discursive anxiety over the hysteric culminated in S. Weir Mitchell's description of the hysteric as a *literal* vampire. For Mitchell, the hysteric drained the life out of those around her, and akin to the mythological and folkloric vampire, she went for the family first. In the following passages, Mitchell analyses the deadly influence of the hysteric on those closest to her. The hysteric's caregiver, one who

has “withdrawn from wholesome duties to minister to the caprices of hysterical sensitiveness,” is

the person of a household who feels most for the invalid, and who for this very reason suffers the most. The patient has pain,—a tender spine, for example; she is urged to give it rest. She cannot read; the self-constituted nurse reads to her. At last light hurts her eyes; the mother or sister remains shut up with her all day in a darkened room...until at last, as I have seen more than once, the window-cracks are stuffed with cotton, the chimney is stopped, and even the keyhole guarded. It is easy to see where this all leads to: the nurse falls ill, and a new victim is found. I have seen an hysterical, anaemic girl kill in this way three generations of nurses.<sup>80</sup>

The healthy family, Mitchell asserts, is inevitably absorbed by the hysteric’s consuming sickness. He advises families to break up the “whole drama of the sick room:”

I am now speaking chiefly of the large and troublesome class of thin-blooded emotional women, for whom a state of weak health has become a long and, almost I might say, cherished habit. For them there is often no success possible until we have broken up the whole daily drama of the sick-room, with its little selfishness and its craving for sympathy and indulgence. Nor should we hesitate to insist upon this change, for not only shall we then act in the true interests of the patient, but we shall also confer on those near to her an inestimable benefit. An hysterical girl is, as Wendell Holmes has said in his decisive phrase, a vampire who sucks the blood of the healthy people about her; and I may add that pretty surely where there is one hysterical girl there will be soon or late two sick women.<sup>81</sup>

The despair of physicians and the pariah of households, the hysteric infects and consumes all those who care for her. When the famous American doctor Oliver Wendell Holmes claims that the hysterical girl is a vampire who sucks the blood of those closest to her, we have the coming to ground of a series of discourses which before had remained merely literary and/or metaphorical—*hysterics literally kill*. With its discourses on woman’s menstruation, criminality, photophobia, sexual awakening, and biological and mental liminality, the male scientific imagination comes full circle in the hysteric as vampire.

Lucy Westenra is, of course, the most famous hysterical, sex-starved female vampire.<sup>82</sup> In his writing of Lucy, Stoker was surely influenced both by the vampire tradition and the long discursive history of hysteria. To return briefly to the sexology literature, the Victorian doctor was convinced the hysteric straddled different states of being and that this liminality thwarted her full membership in the reality of the here and now. She was highly susceptible to semi-conscious states such as mesmerism, hypnosis, and somnambulism. In a later text from 1899, Ellis surveyed the literature on hysteria, most of which, he claimed, documented the excessive emotionalism and excitability that rendered the hysteric impressionable and prone to semi-conscious states:

“Sollier...argued with much force that the subjects of hysteria really live[d] in a state of pathological sleep, of vigilambulism;”<sup>83</sup> Lombroso also studied the “diminished metabolism of the hysterical,” and compared hysterics “to hibernating animals;”<sup>84</sup> Lastly, Babinsky claimed the hysteric existed “in a state of subconsciousness, a state...reminiscent of our prehistoric past.”<sup>85</sup> In other words, the hysteric’s undifferentiated and confused mental state indicated her evolutionary atavism. As many critics of *Dracula* have noted, Lucy’s susceptibility to sleepwalking as well as Mina’s susceptibility to hypnosis coded both women as your run-of-the-mill hysteric. The hysteric was thought easily hypnotized (as were other “morbid” personalities, according to Charcot) and susceptible to hallucinations, somnambulism, excitability, and impressionability.<sup>86</sup> In the novel, even before Dracula’s vampiric penetrations Lucy’s rebelliousness and latent sexuality manifest at night. She is a nightwalker, an ungrounded, over-sexed woman who wanders in semi-conscious states. Lucy sleepwalks three times in the novel, and Van Helsing hypnotizes Mina no less than five times (he

gets a sexual thrill from immobilizing women). Whether sleepwalking or hypnotized, the hysterical woman in both fiction and non fiction imagined herself in communication with the supernatural.<sup>87</sup> An uncanny body infected by supernatural biological influences, the hysteric precariously straddled the threshold between life and death, being and nonbeing.

But Van Helsing's serial, immobilizing penetrations of Lucy (the blood transfusions) are for a time no match for Dracula's vampiric penetrations, which ironically vitalize. Just before she is to marry Arthur Holmwood Dracula successfully vampirizes Lucy, turning her into a monstrously sexed, phallic woman. Dying before her marriage to Arthur, Lucy is enraged at being cheated out of sexual knowledge, demanding satisfaction from her betrothed: "'Arthur! Oh, my love, I am so glad you have come! Kiss me!'"<sup>88</sup> "'Come to me, Arthur. Leave these others and come to me. My arms are hungry for you. Come, and we can rest together. Come, my husband, come!'" (ibid., chap. 16, 257). The quintessential cheated bride, Lucy is an hysteric—not merely wanting but *needing* to have sex. Dying before consummating her marriage to Arthur, Lucy's "sweetness was turned to adamant, heartless cruelty, and [her] purity to voluptuous wantonness" (ibid., chap. 16, 256). With her bloodstained mouth, her "eyes unclean and full of hellfire," and her "languorous, voluptuous grace" (ibid., chap. 16, 257), Lucy's unslaked desires are powerful enough to reanimate her corpse to attain sexual satisfaction. Thus, the cheated bride becomes the living dead, slave to a sexuality that drives her to seek out her lover, intent on dragging him down into the grave. On the day after what would have been her wedding night, Lucy is finally immobilized. The bridal bed is the funeral bed for the hysteric as vampire.<sup>89</sup>

### Creatures of the Night: Devolution and the Criminal Prostitute as Vampire

Victorian tracts on women's proper roles colluded with the human sciences to fret over the white female body and its reproductive health. Because women biologically furthered economic and imperial interests (and because reproduction was inherently "competitive"), the West could not risk its women being unprocreative, or procreative in the wrong way. The purity of the family, however, was under siege on all fronts by pathologies of all kinds. Female sexuality could not always be successfully channeled into marriage and childbearing, though the reproduction of economic structures depended upon the containment of sex in marriage. Anti-social uses of the female body threatened the moral and imperial agenda of the nation, and few uses of sexuality were a greater threat to Victorian society than prostitution.

For Lombroso, the prostitute was the female born criminal *par excellence*, prostitution being woman's "natural" crime: The "natural form of retrogression" in woman was "prostitution, not crime. Primitive woman was a prostitute rather than a criminal."<sup>90</sup> In Lombroso's texts, the prostitute constituted a sub-variety of the human, exhibiting mental and morphological inferiority to the normal woman. As a criminally sexed woman, the prostitute bore the stigmata of her fall from grace, and her degenerative qualities were typical of the lower stages of human development, in Lombroso's terms, typical of people of color. Lombroso took great pains to compile the degenerative attributes of the born female criminal. She commonly had a prominent ("prognathous") jaw, a virile physiognomy, a receding forehead, and a jutting brow. One criminal woman "thick hair, abnormal and premature wrinkles, a livid pallor, a short, hollowed-out nose, and a heavy jaw. Most prominently, she had an asymmetrical and

flattened face as in Mongolians.”<sup>91</sup> Lombroso and other criminologists frequently found dental anomalies in the female criminal, particularly, the over development of the canines or the incisors. Such unusual features signaled evolutionary degeneration: Anomalies in the teeth suggested reversion to the “primitive” races who needed the sharper teeth to tear tougher food (and by implication, for cannibalism<sup>92</sup>—Darwin wrote that “the occasional appearance at the present day of canine teeth which project above the others, with traces of a diastema or open space for the reception of the opposite canines, is in all probability a case of reversion to a former state, when the progenitors of man were provided with these weapons, like so many existing male *Quadrupeds*”<sup>93</sup>). The forces of atavism at work in the prostitute rendered her analogous to the “primitive” type of the species: “Primitive woman was rarely a murderer; but she was always a prostitute.”<sup>94</sup>

The criminology literature dovetailed nicely with popular media accounts of the menace posed by the syphilitic prostitute. While the angel in the house was the most important moral force in the Victorian world, the woman out of the house was a vector for disease and corruption. As David Skal argues, AIDS was not the first blood disease in the West to find expression in a reactionary rhetoric of vampirism. The scourge of syphilis in the late nineteenth-century left its mark on Victorian literature and iconography in connection to perverse sexuality, foreign infiltration, “obsession with blood contamination,” and above all else, “the demonization of prostitutes.”<sup>95</sup> In most identifiable folklore traditions, the prostitute was one of several marginalized outcast figures who was a potential vampire after death (along with heretics, suicides, illegitimate children, witches, murderers, werewolves, and sodomites). In pre-modern



times, the vampire was occasionally scapegoated as the infecting agent of a range of undiagnosed plagues and epidemics. The folklore and literary prostitute as vampire left her mark on the late Victorian obsession with perverse female sexuality and infection (in literature, Emile Zola would use vampiric metaphors in 1880 to depict his sympathetic, yet grotesque prostitute Nana). The syphilitic prostitute as vampire in popular media, art, and literature (documented by Sander Gilman and others<sup>96</sup>), and of course in the sexology literature, was just one rhetorical maneuver in a series of late Victorian moral panics that scapegoated sexually or otherwise deviant behavior as the source of social and national decay.

The Victorian prostitute embodied masculine anxiety over the invasion and transformation of the body by a female agent of contamination. Like the virus in the twentieth-century, the threat syphilis posed was not only one of disease, but of an invasion from within so profound that it dissolved all biological integrity. Public health officials and sexual medicine adopted the trope of the prostitute as vampire to stigmatize the sexed woman (the only safe kind of sexed woman was a dead sexed woman?). The public outrage over prostitution and the spread of syphilis coalesced around a rhetoric of female sexuality as vampiric and diseased. Both the vampire and the prostitute were, after all, social outcasts and fallen women in life; they transformed into predatory creatures of the night who stalked and corrupted their prey. The pernicious sexuality associated with the syphilitic prostitute made its way into Stoker's *Dracula* as the result, perhaps, of his own deviancy. Stoker probably died of tertiary syphilis in 1912, contracting the disease (most likely from a prostitute) as early as 1892 or 1893, several years before the publication of *Dracula*.<sup>97</sup> Themes of sexual pestilence, contaminated

blood, and male panic over the sexed female body loom large over the narrative of the novel. Lucy herself is a “nightwalker” whose metamorphosis into a vampire evokes the ravages of venereal disease<sup>98</sup> and/or masturbation. Arthur and Van Helsing are shocked by her transformation: “She was ghastly, chalkily pale; the red seemed to have gone even from her lips and gums, and the bones of her face stood out prominently” (Stoker, *Dracula*, chap. 10, 158); “Even [her] lips were white, and [her] gums seemed to have shrunk back from the teeth, as we sometimes see in a corpse after a prolonged illness” (ibid., chap. 10, 165). In Stoker’s rich and bizarre subconscious, Lucy is the disease of a sexed woman who may infect pure “brave man’s blood” (ibid., chap. 12, 189).

#### Sexual Perversion, Infective Devolution, and Vampirism

The prostitute as vampire invoked yet another anti-social use of one’s sexuality—homosexuality. Prostitutes and sexual deviants alike were caricatured in popular media as nocturnal predators who infected the bourgeois family, seduced the innocent in an unholy transformation, and contaminated the public body with bad blood.<sup>99</sup> In other words, perversion was blood-borne, transmitted by biological agents who sought to reproduce “their kind” through infection. The sexology/criminology literature uncovered a link between prostitution and lesbianism; indeed, the ranks of female born criminals swelled with sex deviants: “the prevalence of homosexuality among women in prison,” Ellis argued, was “connected with the close relationship between feminine criminality and prostitution.”<sup>100</sup> For some criminal anthropologists, prostitutes even constituted a sub-class of congenital homosexuals, but the first and foremost cause of lesbianism, Lombroso argued, was “an excessive lustfulness, which [sought] outlets in all directions, even the most unnatural.” The second cause was

environmental:

In prisons some women, being unable to satisfy themselves with a man, throw themselves on other women and become a center of corruption that spreads from the prisoners all the way to the nuns...As Parent-Duchatelet noted, prison is the great school for lesbianism...The same thing occurs in madhouses, in which the appearance of a single lesbian is sufficient to infect all other inmates, even if none of them earlier showed signs of this tendency.<sup>101</sup>

The unnatural appetites of the female sex pervert spread like wildfire amongst women in close-quartered areas such as prisons and madhouses. An agent for unholy lusts and sexual arrangements, the female criminal—whether prostitute or lesbian—was an infectious disease.

Scholars of the history of sexuality like Alan Bray argue that sexual perversion has had a long history of association with heretics, foreigners, prostitutes, papists, sorcerers, vampires, and werewolves.<sup>102</sup> In folklore, those who lived a wicked or debauched life were prone to become vampires after death—consecrated ground would reject their bodies, dooming them to walk the Earth in a purgatory between life and death. In widespread panics over mysterious and unexplainable wasting diseases, the religious, the superstitious, and the well-educated scapegoated members of minority communities, excoriating them as heretics, witches, or vampires. Modern sexual and moral purity campaigns had learned well, similarly excoriating perverts and foreigners as carriers of disease (or proponents of perverse politics), and in this way blaming Others for all varieties of social and economic ills. This routine set of social/political phenomena was tied to a biological hermeneutic that viewed sex perverts, women, and foreigners as breeding grounds for all varieties of evil (infectious disease, possession, political subversion). The biological Other was an infinitely penetrable, contaminated/ing body that was unbound, inappropriately hierarchized, and thus prey to disease. He or she

was both anti-evolutionary and less immune.

Long before Sigmund Freud theorized the role arrested development played in libidinal maturation, sexology and criminology discourses twisted evolutionary thought to examine or dramatize the arrested development of women, perverts, and people of color. Even a brilliant mind like Darwin's would use the notion of evolutionary gradations *within* and between humans to articulate sexist and racist notions. For example, Darwin equated women and children in their shared "intuitive" and "imitative" powers, and then connected these immature female qualities with "the lower races." This lazy brand of evolutionary thought inevitability linked pre-adult (or pre-modern) stages of growth with "the lower races:" "It [was] generally admitted," Darwin argued, that "with woman the powers of intuition, of rapid perception, and perhaps of imitation, [were] more strongly marked than in man; but some, at least, of these faculties [were] characteristic of the lower races, and therefore of a past and lower stage of civilisation."<sup>103</sup> In *Criminal Woman*, Lombroso argued that even normal woman's emotional and biological characteristics brought her close to the level of the "savage, the child, and criminal" (Lombroso measured all female biology along a criminal continuum). For him, criminal woman not only invoked but literally embodied the "primitive type of [the] species."<sup>104</sup>

To chronicle the bio-social processes of the national body (and to determine what belonged and what didn't belong), sexologists construed an evolutionary theory that could be used to establish and manage the key somatic sites for discriminating normal from degenerate physiology, higher from lower levels of the human. As George Chauncey argues in his essay "From Sexual Inversion to Homosexuality" (1982),

degeneration theory “drew from those currents in late Victorian thought which postulated an organic relationship between the processes of evolution and civilization.”<sup>105</sup> Darwin himself argued that as species evolved the male and the female became increasingly differentiated. Some went so far as to argue that the level of a society’s civilization could actually be ascertained by the degree of sexual differentiation between the sexes: the more articulate the differences, the higher the level of civilization. Though a later work, Iwan Bloch’s argument in *The Sexual Life of our Time in its Relations to Modern Civilization* (1909) was typical of previous decades. The difference between the sexes was the “primeval preliminary of all human civilization.”<sup>106</sup> “The contrast between the sexes,” he argued, “becomes with advancing civilization continually sharper and more individualized, whereas in primitive conditions, and even at the present day among agricultural labourers and the proletariat, it is less sharp and to some extent even obliterated.”<sup>107</sup> The diminution of secondary sexual characteristics signaled the dark side of evolution, while menacing social and political structures by making men and women less distinguishable. As someone who confused traditional signposts of gendered and sexed subjects, the pervert was an evolutionary throwback, a sub-species of the human that had reverted to a primitive, sexually undifferentiated past (i.e. bisexuality or transgenderism).

In the persistent attempt to discriminate true from false sexualities, evolutionary thought coalesced with theological thought in arguing for the regressive de-creation, or nonbeing, of perversion. In his analysis of “sexual dissidence” in the Victorian period, Jonathan Dollimore argues that theories of sexual perversion “echoe[d] attributes of Augustinian privation: evil lack[ed] authentic being itself...and because, rather than in

spite of, that fact [was] utterly inimical to true being.”<sup>108</sup> Dollimore suggests that this “view of perversion as an inimical threatening absence,” as “the negative agency at the heart of privation...survive[d] into the ‘modern’ sense of perversion/homosexuality as a profoundly inimical, vitiating lack (of normality, of truth).”<sup>109</sup> As a deviation from God, evil in general was a “regression back towards [an] original state of non-being. So when man spurn[ed] divine subjection, turning from God to himself, it [made] him ‘less real.’”<sup>110</sup> Sexual perversion, then, in evolutionary and religious thought was a liminal corporeal and spiritual state (respectively) between authenticity and inauthenticity, the human and the nonhuman. Couple the Augustinian view of perversion as a vitiating lack with the evolutionary/sexology view of sexual undifferentiation as an atavistic drive towards non-being, and it is little surprise the medical imagination found in the pervert as vampire a rich discursive mechanism.

False evolutionary anthropological models have played a wide-ranging role in the inscription of women, sexual deviants, and people of color into a vector for theories—biological, emotional, psychological, intellectual, political—that arrest them at a lesser stage of the human. By the end of the nineteenth-century, three decades of highly dysfunctional biologies from the sexology literature gave way to the monstrously sexed and racially impure bodies of Bram Stoker’s *Dracula* (1897). In by far the most popular vampire narrative ever written, Stoker worked sexology and evolutionary discourses of the human and the subhuman to excess. By the time Stoker wrote his novel, the subhuman as vampire was a provocative and anxious site for biological, sexual, and racial confusion—within the *scientific* literature. After all, the figure of the vampire could be used like no other to literalize the pervasive, yet incorrect, evolutionary precept

that *ontogeny recapitulated phylogeny*.

In his book *The Politics and Poetics of Camp* (1994), Moe Meyer argues that Western epistemologies have always relied on the division between “organic, living flesh, reproduction, and heterosexuality” on the one hand, and “inorganic, dead flesh, sterility, and homosexuality” on the other.<sup>111</sup> While this is most certainly true, even in the ultimately conservative *Dracula* gender and sexual confusion is a formidable source of both anxiety and fantasy. With their freakish biologies, dangerous dietary habits, and promiscuous mixing of male and female bodily fluids, the vampires in *Dracula* violate the anxiously guarded border between organically sound, penetrating male bodies, and organically unsound, penetrated female bodies. Vampire desire in this novel, as in so many to follow, is an aggressive force that cuts across firm boundaries separating man from woman, masculinity from femininity, top from bottom, and in from out. Lucy, Mina, the three vampire-brides, Jonathan, and Dracula all, at one point or another, pervert traditional notions of gender and its properly aligned sexual role. A brief look at the oft-analyzed *ménage à trois* scene between Dracula, Mina, and Jonathan may suffice to demonstrate the vampire’s biological and sexual confusion of traditional signposts of gender. In the bedroom scene Dracula penetrates Mina’s throat from which flows her “unclean” blood (recalling the Judeo-Christian menstrual taboo), blood which Dracula *thirsts* for rather than abhors. But Mina also sucks from a bleeding wound in Dracula’s chest that, as many critics have noted, suggests a bleeding vagina: Dracula’s “right hand gripped her by the back of the neck, forcing her face down on his bosom. Her white nightdress was smeared with blood, and a thin stream trickled down the man’s bare breast which was shown by his torn-open dress. The attitude of the two had a terrible

resemblance to a child forcing a kitten's nose into a saucer of milk to compel it to drink" (Stoker, *Dracula*, chap. 21, 337). In Christopher Craft's reading of the scene, Dracula here "becomes a lurid mother offering not a breast but an open and bleeding wound,"<sup>112</sup> offering Mina mother's milk in a truly bizarre suckling scene. In the meantime, Jonathan lies prostrate on the floor next to the bed, suggesting his fluids have been withdrawn as well: "'Jonathan is in a stupor such as we know the Vampire can produce,'" Van Helsing whispers to Seward when they walk in on the "horrible" scene (Stoker, *Dracula*, chap. 21, 228). Clearly, Dracula has penetrated Jonathan and withdrawn extensive bodily fluids: He is in a full sexual swoon (criticism of the novel strangely overlooks this fact). An innocent *ingenue*, Jonathan is serially caught in the crossfires of Dracula's aggressive, penetrating masculinity.<sup>113</sup> If, in the Victorian mind, excessive seminal emissions is a central culprit in the biological degeneration of society, then Jonathan is well on his way to becoming an accomplished degenerate. In *Dracula*, even Stoker suggests the impossibility of purifying the human.

### The Criminal as Racial Vampire

Neither the threat of sexual contamination nor racial impurity is dispelled by *Dracula*'s narrative closure (even given Lucy and Dracula's ritual scientific exorcism). Stoker's novel reflected contemporary racial discourses that warned of the biological incursion of non-white bodies into the nation, particularly, Eastern European Jews who immigrated into England by the thousands. In the interest of defending the future purity of the white body, degenerationists as well as anti-immigrationists defined Others as biological dangers, agents of infection and racial impurity. These texts were legion.<sup>114</sup> The father of modern eugenics, Francis Galton, cousin of Charles Darwin (Erasmus



Darwin was their grandfather), argued that pathogenic forces were poised to infiltrate the West and contaminate the nation's blood supply, and hence, its hereditary vigor. Centuries of folklore and vampire narratives penetrated a eugenic consciousness that first appeared in England in the late nineteenth-century, but was cultivated in America in the first half of the twentieth-century (and culminated in Nazi Germany). In *Faces of Degeneration*, Daniel Pick notes that Galton was influenced by botanist and degenerationist Edwin Lankester, and that Galton "applied the image of the parasite (which was a primary instance of regression given by Lankester in his evolutionary theory of degeneration) to society."<sup>115</sup> There was, Galton argued, an absolute "contrariety of ideals between the beasts that prey and those they prey upon, between those of the animals that have to work hard for their food and the sedentary parasites that cling to their bodies and suck their blood."<sup>116</sup> In dozens of eugenical and political texts following Galton's lead, Jewish and African immigrants were derided as predatory lower life forms that fed on the physiological and economic capital of the white body.

Criminal and racial discourses converged in their description of the racial Other as predatory and vampiric. The born criminal was an atavistic regression to earlier stages of human development, and to elaborate this theory criminologists routinely described the criminal as Semitic, Asiatic, or African. Havelock Ellis (that most respected of English sexologists) argued that the criminal was an anti-social or pre-social anomaly within the "civilized" races who frequently resembled "in physical and psychical characters the normal individuals of a lower race."<sup>117</sup> According to Lombroso, the overdevelopment of the middle incisors and the excessive size of the orbits, combined with a hooked nose "often impart[ed] to criminals the aspect of birds of prey."<sup>118</sup> The

male born criminal had a nose that was “often aquiline like the beak of a bird of prey.”<sup>119</sup> His “eyebrows [were] bushy and tend[ed] to meet across the nose,” and he had the “relic of the pointed ear.”<sup>120</sup> Though she may have been European Anglo, the physical characteristics of the female born criminal in Lombroso’s *Criminal Woman* linked her to Asian or African ethnicities. Lombroso described a typical female criminal: “Her physiognomy [was] Mongolian, her jaws and cheek-bones...immense...the frontal sinuses strong, the nose flat” and the “under-jaw” “prognathous.”<sup>121</sup> Anthropologists like Lombroso essentialized biological images of the Jew, the Asian, or the African, yoking the racial Other to the savagery and parasitism characteristic of the born criminal. In 1885, the distinguished American doctor (with the undistinguished name of) Daniel Hack Tuke summarized his diagnosis of a criminal patient under his care: “Such a man as this is a reversion to an old savage type, and is born by accident in the wrong century. He would have had sufficient scope for his blood-thirsty propensities, and been in harmony with his environment, in a barbaric age, or at the present day in certain parts of Africa.”<sup>122</sup>

In *Dracula*, Stoker has Mina cite Lombroso as evidence that “[t]he Count is a criminal and of criminal type. Nordau and Lombroso would so classify him” (ibid., chap. 25, 403). Stoker had obviously read Lombroso and (ironically) the German Zionist Max Nordau, author of the famous *Degeneration* (1892),<sup>123</sup> but it was Lombroso’s work on racial and criminal physiology that located the “anthropologist” squarely within the hermeneutics of degeneration. For Lombroso, the criminal constituted a subspecies of the human whose morbid deviations and atavistic biology marked him or her as an evolutionary throwback. He drew upon images of reversion to lower stages of human

development in order to argue that criminality was rooted in the body and could be detected by the criminal's strong resemblance to the "primitive races" and the "savage." The born criminal, in sum, was a genetic mutant whose very existence defied evolutionary dreams of progress and purity. In degeneration theory, the criminal, regardless of ethnic background, was coded either African, Asian, or Jewish, but always vampiric.

Fears over the insufficiency of the body/national borders to protect against alien invaders were funneled in the late Victorian period into an obsessive ethnic phobia of foreigners, especially Eastern European Jews. Within the maturing eugenic consciousness that was to define *fin-de-siècle* scientific thought in the West, evolutionary theory was tied to the "problem" of racial purity. Eugenical thought held that the racial decadence of the Jew manifested in a host of legible signs indicative of criminality. With his ethnic impurity and hypersexuality, the Jew threatened to contaminate the pure blood of the West. David Skal writes that the fantasized bloodlust of the Jews reflected the anti-Semitic subtext of the "ugly Christian blood-libel of Jews as a race requiring the blood of gentile babies in its rituals." The creative apotheosis of this brand of racism was the Jew as blood-sucking vampire.<sup>124</sup> Several years after the publication of *Dracula*, Otto Weininger would claim that the Jew "adapts himself to every circumstance and every race, becoming, like the parasite, a new creature in every different host, although remaining essentially the same. He assimilates himself to everything, and assimilates everything."<sup>125</sup> Formless and unbound, the Jewish body parasitized or otherwise absorbed the white male body/ego. Typical of lower life forms (like women), Jews were adept at biological mimicry.

No other fictional text distills the mutually enriching relationship between the “life” sciences and the monstrous quite like *Dracula*. The Count is a palimpsest for contemporary discourses that inscribe pathology onto a racialized, sexualized, and politicized body. The medical detection novel *par excellence*, *Dracula* is cyclopean in its drive to detect racial parasitism and the foreign invasion/colonization of the white body. The world of the novel is organized not around good and evil or the sacred and the profane, but around a symbolics of bodies and anti-bodies, good blood and bad blood. Dracula threatens to carry diseased blood and perverse sexual arrangements onto the European mainland, and to reproduce “his kind” by the thousands. Jonathan Harker is horrified once he realizes he is playing a role in Dracula’s invasion and colonization of England: “There was a mocking smile on the bloated face [of the Count] which seemed to drive me mad. This was the being I was helping to transfer to London, where, perhaps, for centuries to come he might, amongst its teeming millions, satiate his lust for blood, and create a new and ever-widening circle of semi-demons to batten on the helpless” (Stoker, *Dracula*, chap. 4, 67). Dracula’s U.K. invasion and his plans to birth a new race mirror racist discourse over the supposed hyperfertility of the non-white Other. More than anything else, Dracula threatens a promiscuous miscegenation: As a “whirlpool of European races” (*ibid.*, chap. 3, 40), Transylvania imperils racial purity. “In our veins flow the blood of many brave races” (*ibid.*, chap. 3, 39), Dracula proudly tells Harker, who describes the Count when he first meets him at the castle:

His face was a strong—a very strong aquiline, with high bridge of the thin nose and peculiarly arched nostrils; with lofty domed forehead, and hair growing scantily round the temples, but profusely elsewhere. His eyebrows were very massive, almost meeting over the nose...his ears were pale and at the tops extremely pointed. (*Ibid.*, chap. 2, 25)

Harker's description of Dracula closely resembles key physical characteristics of Lombroso's born criminal as Semite. Mina parrots Harker's description: She sees Dracula as a "tall, thin man, with a beaky nose and black mustache and pointed beard" (ibid., chap. 13, 215). He is also hairy-palmed (a masturbator), fang-toothed (an atavistic regression), and mesmeric (he's a Svengali). The ethnic stigmata of Dracula's body signals his deviancy. Like Lombroso's born criminal, he is a genetic anomaly, "an atavistic being," "a relic of a vanished race."<sup>126</sup>

In racist discourse, the arrested biology of the Jew and African was rarely separated from his or her sexuality (with "civilization" came organic articulation and sexual modesty).<sup>127</sup> The anxiety over racial purity in the novel culminates in Dracula's threat to sexualize (and by implication racialize) Lucy and Mina, the battle between Van Helsing's gang and Dracula reading like a race war waged over the right of access to the white woman's body. The threat Dracula poses is clear: "'Your girls that you all love are mine already; and through them you and others shall yet be mine'" (Stoker, *Dracula*, chap. 23, 263). The vampire threatens the West with racial and sexual hybridity—while threatening to penetrate the men. Dracula's genetic experimentation gives birth to wholly new sexual arrangements, desires, and bodies that England simply cannot brook. In his book *Difference and Pathology* (1985), Sander Gilman writes that anti-Semitic discourse in *fin-de-siècle* England held that hysteria and neurasthenia in Jews were the result of a criminal sexuality, in particular, incest and inbreeding. Psychological illness was a sign of their perverse sexuality (and concurred with Jewish "lack of redemption"<sup>128</sup>). Dracula and his vampire-brides demonstrate a penchant for infanticide (recalling the blood-libel against the Jews) and incestuous couplings. The narrative implies that the three vampire-

brides in Dracula's castle are both his blood kin and his lovers. They are dark and have "high aquiline noses, like the Count" (Stoker, *Dracula*, chap. 3, 51), but they have also clearly been his lovers. When Dracula angrily disrupts their orgy with Jonathan, the vampires fly into a jealous rage of their own: "'You yourself never loved; you never love!'" a vampire accuses Dracula. "'Yes, I too can love,'" he responds, "'you yourselves can tell it from the past. Is it not so?'" (ibid., chap. 3, 53). The vampires' perverse sexual and familial arrangements must, at all costs, be prevented from spreading throughout England. Van Helsing is in line with contemporary biological thought: The gang must intervene to prevent Dracula's blood-borne racial and sexual disease from impoverishing the national body—he must be "sterilized."<sup>129</sup> By 1897, detectives of degeneration had found an effective hermeneutic in the vampire to categorize, manage, and discipline bodies.

In his introduction to the English edition of *The Criminal Man* (1911, originally published in Italian as *L'uomo delinquente* in 1876), Lombroso—in the very last work completed before his death—recounted his by now well-known epiphany while studying the physiognomy of the criminal. In charge of the "famous brigand Vilella's" post-mortem, Lombroso found a "distinct depression" at the spot of the spine where it met the skull, and he named the depression "*median occipital fossa*, because of its situation precisely in the middle of the occiput as in inferior animals, especially rodents."<sup>130</sup> But "[t]his was not merely an idea," Lombroso continued,

but a revelation. At the sight of that skull, I seemed to see all of a sudden, lighted up as a vast plain under a flaming sky, the problem of the nature of the criminal—an atavistic being who reproduces in his person the ferocious instincts of primitive humanity and the inferior animals. Thus were explained anatomically the enormous jaws, high cheek-bone, prominent superciliary arches, solitary lines in the palms, extreme size of the orbits, hand-shaped or sessile ears found in

criminals, savages, and apes, insensibility to pain, extremely acute sight, tattooing, excessive idleness, love of orgies, and the irresistible craving of evil for its own sake, the desire not only to extinguish life in the victim, but to mutilate the corpse, tear its flesh and drink its blood.<sup>131</sup>

This final text of Lombroso's reads like a summation of the ersatz evolutionary and biological consciousness that permeated the Victorian racial and criminal imagination. In this passage in which he looks over his life's work, Lombroso articulates the peculiarity of the criminal as due to his or her reproduction—in civilized times—of biological and behavioral features commonly found in the “primitive races” and in “still lower types as far back as the carnivores.”<sup>132</sup> “Thus [is] explained,” he writes, the born criminal's “enormous jaws [and] strong canines,” peculiarities “common to carnivores and savages, who tear and devour raw flesh.”<sup>133</sup> The born criminal and the racial degenerate are *literal vampires*.

Science fiction is more interested in the entry into scientific discourse and the estrangement of its *effects* rather than in any purported “truth” to its claims (Jules Verne aside). What is important is the immersion into a particular style or epistemological discourse. In this sense, we might look at Le Fanu's *Carmilla* as signaling something like an emergent *science fiction body*. The novel extrapolates (as does *Dracula*, though unconsciously) the revisualization of the boundary between the human and the nonhuman *made perceptible* by the implications of contemporary science. *Carmilla* was certainly a forerunner of early queer vampire texts like Cora Linn Daniels's *Sardia: A Story of Love* (1891), Jean Lorrain's “The Glass of Blood” [(1893) another vampire story by an author suffering from tuberculosis], and Eric Count Stenbock's “The True Story of a Vampire” (1894), all of which inscribe scientific conventions or epistemologies into a narrative

framework that mocks their inauthenticity as explanatory models of the human. These texts take up the challenge of modern forms of knowledge that condemn minority sexualities as a kind of disease that invades and deterritorializes normal human morphology. By fragmenting and recirculating medical categories of sickly sexed/gendered bodies, Carmilla and her progeny argue that to express knowledge of the self and others in fundamentally biological or medical terms is itself *sick*, whereas in *Dracula*, it's more the way of the world.

For Samuel Delany, science fiction is a “tool to help you think about the present—a present that is always changing, a present in which change itself assures there is always a range of options for actions, actions presupposing different commitments, different beliefs, different efforts...different conflicts, different processes, different joys. It doesn't tell you what's going to happen tomorrow. It presents alternative possible images of futures.”<sup>134</sup> By projecting imagined change into the future (or into the past, as in the alternate history novel), the science fiction writer insists upon the contingency of the present, uncovering possibilities for being that we never even realized existed. But science fiction as a mode of awareness or a hermeneutic can also work to defamiliarize historical narratives, as well as modern forms of knowledge that manipulate “the human” as the site of regulation where power orders subjects in terms of normality, purity, and hygiene. When fiction collides with science, genre itself may be called upon to denaturalize “empirical” bases for human differences and expose the (il)logic of purification behind knowledge discourses that work to rationalize biologically-based forms of oppression. The science fiction hermeneutic is another angle of attack against an historically fetishized human nature that is used to control, purify, and hierarchize



living bodies along false dichotomies. In fact, a science fiction look into structures that purport to define the normatively human reveals the abject body as a hyperfictive invention used to structure a *science of human inequality*. When pure Enlightenment rationality is substituted for life itself, the monstrous emerges (and there is nothing like H.G. Wells's *The Island of Dr. Moreau* to demonstrate the brutality of undiluted Reason). By defamiliarizing the vivifying and mortifying discourses within the human sciences, however, the generic hermeneutic I'm arguing for opens up the contingency of human nature as a set of possibilities. If we *clearly* see how science turns culture into nature, then we can appreciate the monstrous body as a spectacular failure of corporeal rationalities of oppression. The interface between literature and science engenders new life forms and alien biologies; it's a matter of mobilizing the alterity into alternative frameworks for thinking about different ways of being alive and living.

## Notes

1. Samuel R. Delany, "Science Fiction and 'Literature'—or, The Conscience of the King," *Starboard Wine: More Notes on the Language of Science Fiction* (Pleasantville, NY: Dragon Press, 1984), 87.
2. Delany, "The Conscience of the King," 99-100 (emphasis mine).
3. Ibid., 99.
4. On technoscience as a form of life and "semiotic-material production," see Donna Haraway, *Modest\_Witness@Second\_Millennium.FemaleMan\_Meets\_OncoMouse: Feminism and Technoscience* (New York: Routledge, 1997), 12.
5. Georges Canguilhem, *Ideology and Rationality*, in *A Vital Rationalist: Selected Writings from Georges Canguilhem*, ed. Paul Rabinow, trans. Arthur Goldhammer (New York: Zone Books, 1994), 39.
6. Nancy Stepan, *The Idea of Race in Science: Great Britain, 1800-1960* (Hamden, CT: Archon Books, 1982), 75.
7. In *Faces of Degeneration*, Daniel Pick references Violet Page, who suggested (in the *Fortnightly Review*, 1896) that Max Nordau taught his readers to become "detectives of degeneration." *Faces of Degeneration: A European Disorder, c. 1848-c. 1918* (Cambridge: Cambridge University Press, 1989), 188.
8. Michel Foucault argues that in the late eighteenth-century women emerged as "the medical object par excellence" under a burgeoning life sciences. Medical colonization of the body rendered women "almost always sick and always inducing sickness." "End of the Monarchy of Sex," in *Foucault Live: Interviews, 1961-1984*, ed. Sylvere Lotringer, trans. Lysa Hochroth and John Johnston (New York: Semiotexte(e), 1989), 218.
9. See Carol A. Senf, "The Origins of Modern Myth," in *The Vampire in Nineteenth-Century English Literature* (Bowling Green, OH: Bowling Green State University Popular Press, 1988), 17-30.
10. Brian J. Frost, *The Monster With a Thousand Faces: Guises of the Vampire in Myth and Literature* (Bowling Green, OH: Bowling Green State University Popular Press, 1989), 68.
11. Wolfgang Lederer, *The Fear of Women* (New York: Grune & Stratton, 1968), 133.
12. Ibid.

13. Paul Barber, *Vampires, Burial, and Death* (New Haven: Yale University Press, 1988), 186-7.

14. See Kristin De Troyer, "Blood: A Threat to Holiness or toward (Another) Holiness?" in *Wholly Woman, Holy Blood: A Feminist Critique of Purity and Impurity*, ed. Kristin De Troyer, Judith A. Herbert, Judith Ann Johnson, and Anne-Marie Korte (Harrisburg: Trinity Press International, 2003), 45-64. De Troyer discusses Walter Kornfield's reading of the Levitical prohibitions, specifically, his analysis of *Leviticus*'s pronouncement that women are unclean for seven days after giving birth to a boy but for fourteen days after giving birth to a girl: "female children are seen as women who are more inclined to uncleanness due to their menstruation and their capacity of giving birth" (in other words, woman giving birth to a woman multiplies abjection). De Troyer continues: "[t]he woman had to be kept separate from God because her health was seriously endangered after giving birth. The woman suffering from lack of blood, due to her losing blood, and therefore suffering from a lack of her life source, had to be kept away from God, the source of life" (ibid., 50). In the same collection, see also Kathleen O'Grady, "The Semantics of Taboo: Menstrual Prohibitions in the Hebrew Bible," 1-28.

15. See Piero Camporesi on Aristotle, the ancients, and menstruation in *Juice of Life: The Symbolic and Magic Significance of Blood* (New York: Continuum, 1995).

16. Havelock Ellis, "Auto-Erotism," in *Studies in the Psychology of Sex, Volume I* (New York: Random House, 1942), 291.

17. Elisabeth Bronfen, *Over Her Dead Body: Death, Femininity and the Aesthetic* (New York: Routledge, 1992), xiii.

18. Ibid., 352.

19. Johann Wolfgang Von Goethe, "The Bride of Corinth," in *The Bride of Corinth and Other Poems* (Whitefish, MT: Kessinger Publishing, 2004).

20. Robert Southey, *Thalaba the Destroyer*, vol.2, 3<sup>rd</sup> ed. (London: Longman, Hurst, Rees, Orme, and Brown, 1814), 8.9.

21. Ibid., 8.10.

22. Flavius Philostratus, *Life of Apollonius*, book 4, sec. 25, quoted in James Twitchell, *The Living Dead: A Study of the Vampire in Romantic Literature* (Durham, NC: Duke University Press, 1981), 50.

23. John Keats, "Lamia," in *John Keats: Selected Poetry* (Oxford: Oxford University Press, 1998), 2.272-76.

24. Ibid., 2.299-301. With his "lidless eyes and serpentine character," James Twitchell argues, Apollonius "is just as 'lethal' as Lamia. He is a vampire of another

sort; his means of destruction are not sensual but scientific; he ‘murders to dissect.’” *The Living Dead*, 53.

25. Christopher Craft uses this phrase in his analysis of *Dracula* in “‘Kiss Me with Those Red Lips:’ Gender and Inversion in *Dracula*,” in *Dracula, the Vampire, and the Critics*, ed. Margaret L. Carter (Ann Arbor: UMI Research Press, 1988), 182.

26. John Polidore, *The Vampyre*, in *Blood and Roses: The Vampire in 19<sup>th</sup> Century Literature*, ed. Adele Olivia Gladwell and James Havoc (London: Creation Press, 1992), 30.

\_\_\_\_ 27. Ibid.

28. See Eve Kosofsky Sedgwick’s analysis of the routing of male-male desire through the mediating bodies of women in *Between Men: English Literature and Male Homosocial Desire* (New York: Columbia University Press, 1985).

29. Theophile Gautier, *The Beautiful Dead (La Morte Amoureuse)*, in *Blood and Roses: The Vampire in 19<sup>th</sup> Century Literature*, translated by Lafcadio Hearn, 48. Hereafter cited in text.

30. Ibid., 58-9 (emphasis mine).

31. Ibid., 69.

32. See Ernest Jones’s early psychoanalytic interpretation of the vampire in *On the Nightmare* (New York: Liveright, 1951), originally published in 1931: “The explanation of these phantasies is surely not hard. A nightly visit from a beautiful or frightful being, who first exhausts the sleeper with passionate embraces and then withdraws from him a vital fluid: all this can point only to a natural and common process, namely to nocturnal emissions accompanied with dreams of a more or less erotic nature. In the unconscious mind blood is commonly an equivalent for semen” (119).

33. See especially George Chauncey, “From Sexual Inversion to Homosexuality: Medicine and the Changing Conceptualization of Female Deviance,” *Salmagundi*, no. 58-59 (Fall 1982-Winter 1983): 114-46; and Jay Prosser and Merl Storr’s introduction to sexology texts on transsexuality and bisexuality in *Sexology Uncensored: The Documents of Sexual Science*, ed. Lucy Bland and Laura Doan (Chicago: The University of Chicago Press, 1998), 75. The invention, and consequent medicalization, of homosexuality began in earnest in the 1870s after the publication of early (more benign) texts on same-sex desire by the Germans Karl Heinrich Ulrichs and Karl von Westphal. According to Ulrichs, nature produced the “third” sexes. The “urning” was a biological male with a female soul, and the “invert” or “uranian” a biological female with a male soul. In 1864, Ulrichs claimed that sexual inversion was a benign, naturally occurring anomaly. The invert and other members of the “third” or “intermediate” sex had characteristics of both sexes, making them mental rather than physical hermaphrodites.

In “Contrary Sexual Instinct” (1869), the psychologist Karl Westphal drew from Ulrich’s work to suggest that a female cross-dresser he was treating was a “congenital invert,” her abnormality rooted in her constitution. See Jay Prosser, “Transsexuals and the Transsexologists: Inversion and the Emergence of Transsexual Subjectivity,” in *Sexology in Culture: Labelling Bodies and Desires*, ed. Lucy Bland and Laura Doan (Chicago: University of Chicago Press, 1998), 116-132. By the 1880s, however, the crude biological reductionism of the degenerationists had firmly taken over. In *Psychopathia Sexualis*, Krafft-Ebing defined sexual perversion not as a benign inborn anomaly, as Ulrichs had done, but as a “neuropathic taint,” a “psychical anomaly,” and a “functional sign of hereditary degeneration.” Krafft-Ebing and Cesare Lombroso’s biologization of sexual difference and perversion defined the organic, hereditary basis of homosexuality. By 1882, homosexuality was a congenital pathology, and the homosexual an evolutionary regression to the more primitive stage of the human (the invert was not a “complete” man or a woman). Though avoiding the extreme biological crudity of Krafft-Ebing and Lombroso, Havelock Ellis also believed homosexuality to be a congenital degeneration. Sigmund Freud’s theories of human libidinal development, however, eventually displaced the congenital hermeneutic with the acquired abnormality model. Whereas earlier sexologists had argued that the true invert was born with his or her hereditary taint, Freud would argue that homosexuality was primarily the result of childhood trauma or the failure to resolve psychosexual problems; the etiology of homosexuality was mental rather than physical in nature.

34. Samuel Taylor Coleridge, *Christabel*, in *Samuel Taylor Coleridge: The Major Works*, ed. H.J. Jackson (Oxford: Oxford University Press, 2000), 2.575-6.

35. See, in contrast, Eve Kosofsky Sedgwick’s *Between Men: English Literature and Male Homosocial Desire*.

36. Sheridan Le Fanu, *Carmilla*, in *Blood and Roses*, 167. Hereafter cited in text.

37. Bernard Talmey, *Woman; A Treatise on the Normal and Pathological Emotions of Feminine Love* (New York: Practitioners Publishing Co., 1910), 170, quoted in Bram Dijkstra, *Idols of Perversity: Fantasies of Feminine Evil in Fin-de-Siècle Culture* (New York: Oxford University Press, 1986), 79.

38. Cesare Lombroso and Guglielmo Ferrero, *Criminal Woman, the Prostitute, and the Normal Woman*, trans. Nicole Hahn Rafter and Mary Gibson (Durham: Duke University Press, 2004), 192.

39. Samuel Tissot, *Treatise on the Diseases Produced by Onanism*, in *Sex, Marriage, and Society* (New York: Arno Press, 1974), 19. Hereafter cited in text.

40. Nicholas Francis Cooke, *Satan in Society*, in *Sex, Marriage, and Society* (Cincinnati: C.F. Vent, 1876), 112.

41. Tissot, *Onanism*, v.

42. S.B. Woodward, "Hints for the Young, in Relation to the Health of Body and Mind," in *Sex, Marriage, and Society* (New York: Arno Press, 1974), 50.

43. Ibid., 11.

44. Samuel Gregory, "Facts and Important Information for Young Women on the Subject of Masturbation," in *Sex, Marriage, and Society* (New York: Arno Press, 1974), 36.

45. It is difficult to imagine that, two decades later, Edward Carpenter had not read *Carmilla* or the like: "On the other hand, as the extreme type of the homogenic female, we have a rather markedly aggressive person, of strong passions, masculine manners and movements, practical in the conduct of life, sensuous rather than sentimental in love, often untidy, and outre in attire; her figure muscular, her voice rather low in pitch; her dwelling-room decorated with sporting-scenes, pistols, etc., and not without a suspicion of the fragrant weed in the atmosphere; while her love (generally to rather soft and feminine specimens of her own sex) is often a sort of furor, similar to the ordinary masculine love, and at times almost uncontrollable." *The Intermediate Sex*, 1896, reprinted in *Sexology Uncensored: The Documents of Sexual Science*, ed. Lucy Bland and Laura Doan (Chicago: University of Chicago Press, 1998), 50-1.

46. Pick, *Faces of Degeneration*, 22.

47. Havelock Ellis, "The Phenomena of Sexual Periodicity," in *Studies in the Psychology of Sex, Volume 1: The Evolution of Modesty, The Phenomena of Sexual Periodicity, Auto-Erotism* (New York: Oxford University Press, 1942), 97.

48. Ibid., 100.

49. Kathleen O'Grady, "The Semantics of Taboo: Menstrual Prohibitions in the Hebrew Bible," in *Wholly Woman Holy Blood*, 8.

50. Havelock Ellis, "The Phenomena of Sexual Periodicity," 95.

51. Havelock Ellis, *Man and Woman: A Study of Secondary Sexual Characters*, 6<sup>th</sup> ed. (London: A.&C. Black, 1926), 336.

52. Ellis, "Auto-Erotism," 290.

53. Ellis, *Man and Woman*, 346.

54. Ibid., 344.

55. Lombroso and Ferrero, *Criminal Woman*, 235.

56. Ellis, *Man and Woman*, 346.

57. Lombroso and Ferrero, *Criminal Woman*, 159.

58. Ibid.

59. Ibid., 160.

60. Richard Krafft-Ebing, *Psychopathia Sexualis: With Especial Reference to the Antipathic Sexual Instinct* (New York: Rebman, 1922), 49.

61. Ellis, "Sexual Periodicity," 100.

62. Ibid.

63. Ibid., 102.

64. Ibid., 103.

65. Ibid., 104.

66. Edward H. Clarke, *Sex in Education; or, A Fair Chance for the Girls* (New York: Arno Press, Inc., 1972), 63. Several important texts on the relationship between overeducation in women and its adverse effects on the reproductive system appeared in America in the 1870s; it was this relationship that helped to establish the link between women's blood loss and a whole host of medical and moral ills. Doctor Edward H. Clarke argued that the American system of education was responsible for draining young women of their reproductive vitality, vitiating their most sacred responsibility and threatening the health of Western society. Pale, bloodless, anemic, and neuralgic girls were everywhere in America: "To a large extent the [American] system of educating girls [was] the cause of this palor and weakness" (ibid., 22). These feeble women were destined "to give birth to a feeble race, not of women only, but of men as well" (ibid., 21). Because women were "possessed" by their sexual organs, rendering them susceptible to a host of pathologies, women were warned not to redirect precious physical energies away from their wombs and to their brains through excessive study. Such study, Clarke argued, "may and does open the flood-gates of the system, and, by letting blood out, lets all sorts of evil in" (ibid., 78). Mismanagement of the reproductive system in girls led to anemic bodies and anemic minds: "As the blood, so the brain; as the brain, so the mind" Clarke reminded his readers (ibid., 96).

67. See Lombroso: "Hysterics are remarkably erotic...It strikes me that all hysterical criminality in fact revolves around sexuality...I would say that in hysterics the sexual instincts are often exaggerated to the point of hallucinating intercourse, or are transformed into lesbianism." *Criminal Woman*, 235.

68. Ellis, *Man and Woman*, 383.

69. Ibid., 384-5.

70. Ibid., 422.

71. S. Weir Mitchell, *Lectures on Diseases of the Nervous System, Especially in Women* (Philadelphia: Henry C. Lea's Son & Co., 1881), 17, 21, 111.

72. Ibid., 232.

73. Ibid., 15, 53, 95, 107, 154, 158, 171, 220, 232.

74. Ibid., 101.

75. Ibid., 79.

76. Ibid., 43.

77. Freud's case study of "Dora" most famously illustrated the epistemological crisis male physicians experienced over the refusal of a woman's body to coherently signify.

78. Mitchell, *Lectures on Diseases of the Nervous System*, 51.

79. S. Weir Mitchell, *Fat and Blood: an Essay on the Treatment of Certain Forms of Neurasthenia and Hysteria* (Philadelphia: J.B. Lippincott Company, 1888), 65.

80. Ibid., 41.

81. Ibid., 52.

82. The hysteric as vampire literalizes the hysteric's metaphoric relationship to death in response to cultural and social irrelevance (and in this way is akin to Henry James's governess in *The Turn of the Screw*, another hysteric possibly in communication with the supernatural). The bride of Corinth, Oneiza, Lamia, and Lucy are cheated brides, figures who are alive yet not alive, existing in a literal no-man's land between their fathers' homes and their husbands.' In her book *Over Her Dead Body*, Bronfen analyzes the work of Jacques Lacan and Slavoj Žižek to theorize the hysteric's assumption of her own negation. In her reading of Lacan, Bronfen writes that because the hysteric's "unconscious desire motivates her to remain lacking, because it tells her that she is a no-body, her life emerges as an impossible desire to be by not being, always spent in proximity to loss, symptomatisation and annihilation" (289). The hysterical woman, Žižek suggests, ironically constitutes herself as a subject at the moment of her purest articulation of psychological death. Bronfen quotes Žižek, where he argues that "'beyond hystericization'" lies "'the death drive at its purest.'" "Looking Awry," quoted in Bronfen, 278. Assuming her already socially and economically articulated irrelevance, the hysterical woman is the living dead.

83. Ellis, "Auto-Erotism," 209.



84. Ibid.

85. Ibid.

86. See Lombroso: "Hysterical women are hypnotized easily. Their will is replaced by that of the hypnotizer, who can make one side of the patient's brain act quite contrary to the other side" (*Criminal Woman*, 234). See also Clive Leatherdale, *Dracula: The Novel and the Legend: A Study of Bram Stoker's Gothic Masterpiece* (Wellingborough, Northamptonshire: Aquarian Press, 1985), 152.

87. In his analysis of the auto-erotic dreamlife of hysterics, Havelock Ellis cites several cases of hysterical women who experience such vivid sexual dreams that they believe themselves to have been violated in reality. In these cases, the "erotic dreams of the night" become the "erotic delusions of the day" ("Auto-Erotism" 200). Ellis then moves into analysis of the work of Pitres and Gilles de la Tourette, pupils of the famous Dr. Charcot. In their work on hysteria Pitres and de la Tourette "consider that dreams generally have a great influence on the waking life of the hysterical, and they deal with the special influence of erotic dreams, to which, doubtless, we must refer those conceptions of *incubi* and *succubi* which played so vast and so important a part in the demonology of the Middle Ages, and while not unknown in men were most frequent in women. Such erotic dreams...are by no means always, or even usually, of a pleasurable character" ("Auto-Erotism" 202). In the Victorian medical imagination, auto-erotism plays a large role in the hysteric's communication with the supernatural.

88. Bram Stoker, *The Essential Dracula: The Definitive Annotated Edition*, ed. Leonard Wolf (New York: Plume Books, 1993), chap. 12, 201. Hereafter cited in text.

89. Lucy is finally immobilized in a death that many argue reads conspicuously like gang rape. With his friends gathered around him goading him on, Arthur stakes his bride: "The Thing in the coffin writhed; and a hideous, blood-curdling screech came from the opened red lips. The body shook and quivered and twisted in wild contortions; the sharp white teeth champed together till the lips were cut, and the mouth was smeared with a crimson foam. But Arthur never faltered. He looked like a figure of Thor, as his untrembling arm rose and fell, driving deeper and deeper the mercy-bearing stake, whilst the blood from the pierced heart welled and spurted up around it. His face was set, and high duty seemed to shine through it; the sight of it gave us courage" (chap. 16, 262). Arthur finally penetrates his beloved, and Lucy experiences her first and last orgasm. See Leatherdale, *The Novel and the Legend*, 162. But the hysteric was not yet dead—she had a half life even after Stoker's Lucy. See F. Marion Crawford's "For the Blood is the Life" (1911) and Clark Ashton Smith's "The Death of Illalotha" (1937) for more sex-starved jilted women as vampires.

90. Lombroso and Ferrero, *Criminal Woman*, 185.

91. Ibid., 140.

92. In an illustration of this type of reversion in criminal women, Lombroso refers to the Italian revolutions of the late eighteenth- and nineteenth-centuries: "In 1799, the women of Naples, impelled by epidemic passions, even sank into cannibalism: they ate the flesh of the republicans, as did the women of Palermo in the 1866 insurrection...Women, in these extraordinary, transient, atavistic reversions, become the cruelest of the cruel. They tear out the tongue of the corpse, disfigure its manhood, prolong their victim's agony, and demonstrate their thirst for inflicting pain...Like all human activities in which a power outside the individual produces pleasure, so, too, ferocious or cruel activities can cause delight, the delight of blood intoxication" (*Criminal Woman* 66-7). No longer dealing in metaphors, Lombroso goes for the kill: female criminals are literal sanguinary sadists.

93. Charles Darwin, *The Descent of Man and Selection in Relation to Sex*, 2<sup>nd</sup> ed. (New York: D. Appleton and Company, 1898), 574.

94. Lombroso and Ferrero, *Criminal Woman*, 148.

95. David Skal, *V is for Vampire: An A to Z Guide to Everything Undead* (New York: Plume, 1996), 6.

96. See Sander L. Gilman, *Difference and Pathology: Stereotypes of Sexuality, Race, and Madness* (New York: Cornell University Press), 1985.

97. See Daniel Farson, *The Man Who Wrote Dracula: A Biography of Bram Stoker* (New York: St. Martin's Press, 1975), 233-35.

98. Senf, *The Vampire in Nineteenth-Century English Literature*, 67.

99. A century later with the historical catastrophe of AIDS, anti-gay crusaders again yoked sexual minorities to a plague-like, blood-borne infection that lay waste large populations. After an extended hiatus from popular social and sexual medicine, the vampire again attained metaphoric power in the wake of the AIDS crisis. Right-wing ideologues used vampiric imagery to condemn homosexuals, prostitutes, Haitian immigrants, and IV drug users as biological dangers, vectors for infected blood that threatened to contaminate white middle-class America. AIDS was a blood plague, and homosexuals predators who reproduced by infection, driven to turn others "to the life." The fundamentalist purification movements of the 1980s sought to resolidify distinct categories of the population defined by sexual disease.

100. Havelock Ellis, "Sexual Inversion," in *Studies in the Psychology of Sex*, vol.2, 3<sup>rd</sup> ed. (Philadelphia: F.A. Davis Company Publishers, 1921), 209-10.

101. Lombroso and Ferrero, *Criminal Woman*, 177.

102. See Alan Bray, *Homosexuality in Renaissance England* (New York: Columbia University Press, 1995), 19, 21.

\_\_\_\_\_ 103. Darwin, *The Descent of Man and Selection in Relation to Sex*, 576.

\_\_\_\_\_ 104. Lombroso and Ferrero, *Criminal Woman*, 147.

105. George Chauncey, "From Sexual Inversion to Homosexuality: Medicine and the Changing Conceptualization of Female Deviance," *Salmagundi*, no. 58-59 (Fall 1982-Winter 1983): 133.

106. Iwan Bloch, *The Sexual Life of Our Time in its Relations to Modern Civilization*, trans. from the 6<sup>th</sup> German edition by M. Eden Paul (London: Rebman Limited, 1909), 55.

107. Bloch, 58.

108. Jonathan Dollimore, *Sexual Dissidence: Augustine to Wilde, Freud to Foucault* (Oxford: Oxford University Press, 1991), 241.

109. Ibid., 136.

110. Ibid., 136.

111. Moe Meyer, *The Politics and Poetics of Camp* (London: Routledge, 1994), 113.

112. Craft, "'Kiss Me with Those Red Lips,'" 186. See also Christopher Bentley, "The Monster in the Bedroom: Sexual Symbolism in *Dracula*," in *Dracula, the Vampire, and the Critics*, 29.

\_\_\_\_\_ 113. *Dracula's* most dramatic seduction of the masochistically-inclined Jonathan occurs in the original first chapter to the novel, published separately and posthumously as the short story "Dracula's Guest" in 1914. In this excised chapter, Dracula actually gets a taste of Jonathan, making it crystal clear he belongs exclusively to the Count, who exerts *droit du seigneur* over a man (as he will later over Lucy and Mina). Vampire narratives abound with male masochists.

114. See *Race, Science and Medicine, 1700-1960*, ed. Waltraud Ernst and Bernard Harris (London: Routledge, 1999); and especially Alison Bashford, *Imperial Hygiene: A Critical History of Colonialism, Nationalism, and Public Health* (New York: Palgrave Macmillan, 2004).

115. Pick, *Faces of Degeneration*, 198.

116. Francis Galton, "Eugenics: Its Definition, Scope and Aims," in *The Idea of Race*, ed. Robert Bernasconi and Tommy L. Lott (Indianapolis: Hackett Publishing Company, 2000), 79-80.

117. Havelock Ellis, *The Criminal* (Boston: Adamant Media Corporation, 2000), 251-2.

118. Gina Lombroso-Ferrero, *Criminal Man: According to the Classification of Cesare Lombroso* (Montclair, N.J.: Patterson Smith, 1972), 7.

\_\_\_\_\_ 119. Ibid., 15.

\_\_\_\_\_ 120. Ibid., 18.

\_\_\_\_\_ 121. Cesare Lombroso, *The Female Offender* (New York: D. Appleton and Co., 1897), 99. This quote is from an inferior 1897 edition of *La Donna Delinquente*.

\_\_\_\_\_ 122. Daniel Hack Tuke, quoted in Havelock Ellis, *The Criminal*, 253.

\_\_\_\_\_ 123. Nordau attacks the “irrationalism” of modernist art, music (he cites the anti-Semitism of Wagner as proof that *fin-de-siècle* Europe was degenerating), and philosophy (particularly that of Nietzsche).

124. Skal, *V is for Vampire*, 11. In *Dracula: The Novel and the Legend*, Clive Leatherdale discusses the short fiction of Hans-Heinz Ewers, where “the undead [are] depicted not as supermen but as squalid, wandering Jewesses, symbolic of a race...infecting the Continent” (235).

\_\_\_\_\_ 125. Otto Weininger, *Sex and Character*, trans. Robert Willis (Whitefish, MT: Kessinger Publishing, 2006), 320.

\_\_\_\_\_ 126. Lombroso, *Criminal Man*, 135.

127. Sander L. Gilman argues that the presence of Africans (especially women) in the Victorian arts indicated an illicit sexuality and forbidden knowledge of the flesh. The great *femme fatales* of Victorian art such as Salome and Judith (and sundry prostitutes) were frequently accompanied by African women to signify their linked animal sexuality. See “The Hottentot and the Prostitute: Toward an Iconography of Female Sexuality,” in *Difference and Pathology: Stereotypes of Sexuality, Race, and Madness* (Ithaca: Cornell University Press, 1985), 76-108. Both of the female vampires in Gautier’s *La Morte Amoureuse* and Le Fanu’s *Carmilla* are accompanied by African or West Indian men and women. Clarimonde sends letters to her lover Romuald through a “fantastically garbed” “negro page.” Serapion, the abbe of Romuald’s church, excitedly tells Romuald of an orgy he witnessed: “The great courtesan Clarimonde died a few days ago, at the close of an orgy which lasted eight days and eight nights. It was something infernally splendid. The abominations of the banquets of Belshazzar and Cleopatra were re-enacted there...the guests were served by swarthy slaves who spoke an unknown tongue, and who seemed to me to be veritable demons” (61). *Carmilla* too is accompanied in the beginning of the narrative by a fantastically attired, possibly West Indian woman. *Carmilla* and her cohorts stage the carriage accident outside of Laura’s home so that she may gain access to her

future “novitiate.” One of Laura’s governesses spies the woman hiding in the shadows of the carriage just before the accident: the governess “described a hideous black woman, with a sort of coloured turban on her head, who was gazing all the time from the carriage window, nodding and grinning derisively towards the ladies, with gleaming eyes and large white eye-balls, and her teeth set as if in fury” (172). Carmilla’s companion is a racial exotic (and perhaps a witch). Le Fanu implies that perverted white women are in league with the demonic. The African men and the West Indian woman in these texts indicate white woman’s sexual corruption.

128. Gilman, *Difference and Pathology*, 158.

129. Van Helsing uses the word “sterilise” several times in discussing the fight against *Dracula*. See especially chapter 12.

130. Lombroso, *Criminal Man*, xxiv.

131. *Ibid.*, xxiv-xxv.

132. *Ibid.*, 7.

133. *Ibid.*, 7-8.

134. Samuel Delany, “The Necessity of Tomorrows,” in *Starboard Wine: More Notes on the Language of Science Fiction* (Pleasantville, NY: Dragon Press, 1984), 34.

## CHAPTER TWO

### **Puppet Masters, the Starchild, and Men Like Gods: Alien Contact and the Evolutionary Significance/Future of the White Male body**

#### I. The Science/Fictions of Microbiology, Immunology, and Evolution

A central scientific as well as ideological preoccupation of the nineteenth and twentieth-centuries has been the problem of how the individual recognizes itself as a discrete identity—how it recognizes mind, body, blood, chemical makeup, and genes as belonging to itself and no one else. In articulating the self as a biological as opposed to metaphysical problem, the need has been to account for how a founding differentiation in some way elaborated and gave rise to an organism with the capacity to discern “the self in the context of its encounter with the other.”<sup>1</sup> This is precisely why alien contact in both science fiction and non-fiction (such as colonial anthropology) has been so privileged a forum for the exploration of how a humanity grounded in an individuality relies on political and corporeal projects for distinguishing self from nonself. Though riddled with inconsistencies and beset by delusions of objectivity, the Victorian human sciences cultivated technologies of the self that worked to discriminate endogenous from exogenous material based on a racial and sexual science aggressively biological in nature, and on the level of the organism. In other words, ontological categories such as life and nonlife, normality and pathology could be readily apparent to the discerning scientific eye, or with a sharp scalpel. The organization of vital versus mortal forces relied upon efficient macromanagement of the thresholds between human and alien, self (white western man) and other (woman, person of color). The literature of invasion dramatized evolutionary biological warfare between nations, races, and genders (*Dracula* is the paradigmatic text).

However, a significant shift in the science/fiction of invasion accompanied the rise and eventual preeminence of the germ theory of disease in the late nineteenth and early twentieth-centuries. Since Leeuwenhoek's invention of the microscope in the seventeenth-century, the expansion of biological inquiry into the microscopic realm had yielded steady discovery, but Louis Pasteur and Robert Koch's arguments for the pathogenicity of microorganisms proved to be dramatic in thought and effect. Life and death, their microscopes seemed to suggest, depended upon an *invisible* world teeming with alien creatures both benign and malicious in intent. The literature of invasion began to fluctuate, at times seamlessly, at others abruptly, between a nationalistic paranoia that dramatized biological warfare between races (i.e. "species"), and a more visceral corporeal paranoia that dramatized biological warfare between species within the interior of the individual body. If the agents that caused disease in living beings were *themselves* alive,<sup>2</sup> then the looming scientific conflict of the ages was that between the human and its microscopic Others. Rather than at their borders, aliens were in their midst.

Istvan Csicsery-Ronay articulates the shift, in the twentieth-century, from "expansive" to "implosive" science fiction as a shift from intergalactic exploration and empire—"historical analogies of colonialism and social Darwinism"—to the romance of adventure and discovery deep within the human body. The "topoi of implosive SF," he writes, "are based on analogies of the invasion and transformation of the body by alien entities of our own making. Implosive science fiction finds the scene of SF problematics not in imperial adventures among the stars, but in the body-physical/body-social and a drastic ambivalence about the body's traditional—and terrifyingly uncertain—integrity."<sup>3</sup> Whereas Jules Verne transports his readers 20,000 leagues under the sea or around the

world in eighty days, Harry Kleiner transports his viewers into the wondrous mysteries of the body in his movie *Fantastic Voyage* (novelized by Isaac Asimov). The film's action (directed in 1966 by Richard Fleischer, who also helmed *Soylent Green*) follows a miniaturized team of doctors and submarine navigators injected directly into the bloodstream of an eminent Russian scientist who both has secrets to tell and suffers from a blood clot in the brain that can only be eradicated from within. The central "villains" of the movie are, of course, the scientist's own rather uncooperative antibodies.

But no other science fiction plot indicates the dramatic shift in scientific objectivity and exploration quite like A. Hyatt Verrill's rather undistinguished story "The Exterminator," first published in 1931. "He was a magnificent specimen of his kind," the story opens:

Translucent—white, swift in movement, possessing an almost uncanny faculty for discovering his prey, and invariably triumphing over his natural enemies. But his most outstanding feature was his insatiable appetite. He was as merciless and as indiscriminate a killer as a weasel or a ferret, but unlike those wanton destroyers who kill for the mere lust of killing, the Exterminator never wasted his kill. Whatever he fell upon and destroyed was instantly devoured.<sup>4</sup>

As we might soon guess, the protagonist of Verrill's story is none other than a white corpuscle, the body's "front line" in its defense against marauding, microscopic Others. The Exterminator heads a disciplined and deadly army against hordes of aliens that perpetually threaten the boundaries of the homeland. With its "one all-consuming purpose—to kill and devour" (ibid., 64), the Exterminator is armed and ready for blitzkrieg attack against the "savage beings" and "hordes of enemies" that break through the outer fortifications and struggle to gain a foothold in the body's interior. But though driven by a "ceaseless ferocious urge to kill, kill, kill" (ibid., 65), the Exterminator demonstrates an uncanny capacity to distinguish friend from foe, native from foreigner.



The “harmless red things” crowd and jostle the Exterminator, but by some preternatural wisdom it knows to ignore them and instead slaughter “the others”—the “writhing, thread-like creatures...the globular, ovoid, angular, radiate and bar-like things...the rapidly wiggling tadpole-like organisms.” Amongst these alien others he wreaks “rapid and terrible destruction” (ibid., 64). Verrill ends his story depicting the white corpuscle’s last valiant stand against an invading horde of “wiggling, gyrating, darting, weaving enemies” whose attack at first threatens to be victorious. But suddenly, “as if exposed to a gas attack, the swarming hosts of innumerable strange forms dwindled,” and in “an amazing short time the avenging white creatures had practically exterminated their multitudinous enemies” (ibid., 67). With the help, perhaps, of an injection of antibiotics, the Exterminator snuffs out his last remaining foe—his “hereditary enemy”—and, triumphant to the last, lies “dead in the rapidly drying blood drop on the glass-slide” (ibid., 69). A human scientist confirms the Exterminator’s final victory and tragic death as he peers under a microscope at a blood sample withdrawn from his sick patient. The great white hope has vanquished the ubiquitous microbial hordes.

Verrill’s story conveys that, by the 1930s at least, conceptions and misconceptions of microbiology, immunology, and virology had triangulated popular scientific meditation on the qualities that should and should not constitute the Self. The search for the secrets of life took a gigantic leap inward, and it was here, in the most enigmatic recesses of the body’s chemistry, that scientists would find the key to unlocking the most fundamental properties of life and death. The great successes of the “microbe hunters” Louis Pasteur, Robert Koch, Ilya Metchnikoff (who advanced the theory of immunity), vividly romanticized in Paul de Kruif’s wildly popular, best-selling *Microbe Hunters* (1926, 1953,

2002), seemed to suggest that it was the *battle royale* between the individual's immune system and "marauding microbes" that embodied the valiant effort of the individual to maintain his or her integrity (or, personal property, hereditary endowment) against a world of would-be thieves and killers.<sup>5</sup> The science of individuality, as De Kruif and Verrill's texts suggested, came to focus less on the macroscopic world than on the biological/chemical processes of the microscopic world, where an organism's antibodies struggled to erect a Self against a world swarming with alien non-Selves. "[T]he first stage in the intellectual history of modern immunology," Leon Chernyak and Alfred Tauber write in "The Dialectical Self," "was shaped by the vision of individuality as struggling to find its own integrity...and whose only concern was to protect itself from the foreign."<sup>6</sup> The integrity-preserving activities of the Self shifted from the visible dramas of border wars to the invisible dramas of the microorganismic and immunological worlds. In popular as well as scientific circles, the immune system came to be seen as the fundamental mechanism by which a life form erected and cultivated a Self through the discrimination of its own cellular/chemical material from alien material. Some sort of primary (or even primordial) lesson of the chemical and material recognition of Self preceded the more enduring pedagogical process of antibody production by which the Self came to recognize nonSelf. The evolutionary necessity of physiological integrity demanded a rigorous recognition system by which Self could determine the biological qualities that belonged and didn't belong in the system. In sum, the immune Self arose out of the evolutionary premise and mechanism of *xenorecognition*. Programmed by eons of evolutionary experience, the "Exterminators" of the system learned to distinguish between the born and bred residents of the Self and their "hereditary enemies"—the illegal,

trespassing others. That the concern of the immune system was to discriminate Self from nonSelf dominated the modern study of immunology for over four decades.<sup>7</sup>

In *Microbe Hunters* (which reads like an historical romance), De Kruif argued that with Pasteur “[a]ll Europe...was in a furor about microbes;” the eminent bacteriologist “had changed microbes from playthings [and] useful helpers of mankind,” into “dread infinitesimal ogres and murdering marauders, the worst enemies of the race.”<sup>8</sup> The “invisible assassins” and “sub-visible deadly enemies” of the microscopic world were now the “chief foes of man,”<sup>9</sup> the foreign menace hell bent on transgressing borders between species and usurping the host’s defenses for its own nefarious replication. As we saw in the analysis of *Dracula* and the imaginary warfare subgenre, the cruel paranoia typical of *fin-de-siècle* invasion narratives was in no small part instigated by fear of the alien Other pillaging the white body and nation, a fear increasingly articulated at the turn of the century and onwards in terms of bacteriology and epidemiology. In the political and literary imagination, alien contact implied illicit copulation or contamination (in the imaginary warfare novel, species differences were an analogue for racial differences, the threat of miscegenation looming large). Anti-immigration activists in the West accused immigrants (especially Eastern European Jews fleeing the pogroms of the 1880s and 90s) of importing disease and infection across their borders.<sup>10</sup> Racialized concepts of contagion were put into the service of a growing epidemiological racism that condemned immigrants as vectors for infection. Microbiological discourses depicted foreign germs and invasive parasites as attackers, colonizers, and contaminators of individual cells, and by extension, bodies. Disease was newly conceived as the result of a species of invisible alien attack and transformation. Vampire and microbe hunters alike dreaded foreign

bodies that worked to adulterate the western body.

By the 1926 publication of De Kruif's *Microbe Hunters*, the viral/bacterial world was feared and fetishized as the exotic "missing link" bridging the living and nonliving worlds,<sup>11</sup> which may account for the narrative similarities between the non-fiction microbe hunter and the science fiction "lost-race" subgenre<sup>12</sup>—both set out to discover the missing link between the human and nonhuman worlds through a condensed metaphorical racism that deemed non-white peoples as the evolutionary primitive (for De Kruif, "microbe hunters and death fighters" faced a world "more savage than hordes of Huns," but thanks to the Ulysses of the microscopic world like Pasteur and Koch, "Europe and America no longer dread[ed] the devastating raids of these puny but terrible little murderers from the Orient"<sup>13</sup>). Though anachronistic to introduce here, we might benefit from analysis of the publication in 1994 of Richard Preston's similarly best-selling *The Hot Zone*, a virus hunter narrative that (as Heather Schell would agree, based on her terrific "Outburst! A Chilling True Story about Emerging-Virus Narratives and Pandemic Social Change"<sup>14</sup>) exemplifies the cumulative endpoint of over half a century of enormously popular journalistic dramatizations of killer viral emigrations out of the Third World (in Preston's case, out of the African heart of darkness) and straight into the heart of the white Western body. In an account that may shock the most avid of horror fans (replete with Ebola victims sloughing off their intestines through their anuses, etc.), Preston details the destruction wrought by the emigration of the "replicative Other"<sup>15</sup> out of Africa along the Kinshasa Highway (which Schell notes he refers to as the "AIDS Highway") and into Europe and other points West. In *The Hot Zone*, Preston fashions the virus as an enthralling and enigmatic vampire who exists to convert the living into legions

of the undead. Blood-dwelling primordial life forms that lurk in the liminal shadows between life and nonlife, the virus adulterates racial/corporeal purity and engineers genetic contamination to the point where the human appears but a parody of itself (passing for human, a walking time bomb). Here, the AIDS virus in particular appears as a skillful shapeshifter and mutant that paralyzes the recognition function of the immune system as it consumes the host's materials in order to replicate itself.<sup>16</sup> Typical of "outbreak tales,"<sup>17</sup> *The Hot Zone* lionizes CDC and army-affiliated virus hunters as the modern day Van Helsing who, to trace the origins and vectors of alien life forms neither completely alive nor dead, must travel back to the cradle of the human species in the heart of Africa (or, in the case of *Dracula*, Romania). More than one science fiction vampire and lost race novel owes an inspirational debt to the idea that to understand the earliest and most primitive structures of (alien) life, one must travel back down the evolutionary ladder into non-white countries.

Early to mid twentieth-century invasion narratives exploit alien contact, *the* primal moment of colonial encounter, as the most productive scenario for testing possible or impossible ways of being in the world. Since H.G. Wells's *The War of the Worlds*, science fiction writers have mobilized the speculative biologies and evolutionary trajectories suggested by alien contact to make sense of the changing human situation implicated by contemporary scientific or technological discoveries. Whether alien contact is manipulated for reactionary or subversive ends, it exposes the very definite programs a society uses to erect the Self and recognize Others as biologically sound or unsound. In the American invasion narrative, alien contact from these decades takes two distinct evolutionary paths, and to very different political and philosophical ends. The first path is

decidedly anti-evolutionary (in science fiction, this suggests an aggressive protection of the status quo), and is typified by Robert Heinlein's *The Puppet Masters*, John Campbell's "Who Goes There?," and Jack Finney's *Invasion of the Body Snatchers*. These are your classic "fifth column" narratives that allegorize national invasion as body invasion: An alien biological/ideological virus contaminates and transforms the white male body into a lifeless mimic of itself (the human). Like the vampire who survives by passing for human, the alien invaders in these texts evoke the terror of self-disintegration and the insidious threat of the simulacra.

The paranoia that drives early to mid-century invasion narratives draws upon fear of microscopic body invaders that absorb the individual into a malignant and soulless parody of the human. Campbell, Heinlein, and Finney use the language of contemporary virology and immunology to make sense of the threat of foreign miscegenation, the permeability of body boundaries, the mutation and dehumanization of masculinity, and the human as simulacrum. Immunology, or, the study of how biological organisms tolerate or reject alien matter, is the science of an individuality the loss of which signifies a body *less than human*. There is nothing quite like the virus for articulating anxiety over a foreign agent with the capacity to supplant the body cell by cell, atom by atom. Two elements of twentieth-century life strike fear into the heart of the science fiction writer—the boot in the face and the onslaught of simulacra. Modern degradation lies in the facility with the self is vulnerable to dehumanization by the machine or the plague, forms of life that survive through the regimentation or adulteration of the human. But confronted with the human as cog or simulacrum, the male protagonist of the American invasion narrative quakes at his inability to distinguish life from death, self from other,

friend from foe.

Though preoccupied by many of the same issues, the alien contact narratives I analyze in the second half of this chapter take a dramatically divergent evolutionary path. Like Heinlein, Campbell, and Finney's texts, the invasions that endanger genetic or ideological purity in texts by Colin Wilson, Arthur C. Clarke, and others end with a resounding defeat of the foreign menace, the reification of organic integrity, and solidification of the status quo. Typical of paranoid forms of knowledge, they fixate on the secure centralized Self purged of impurities. But these victories are only an intermediary step in alien contact narratives that end in the evolutionary transcendence of Mental Man. The second path through alien contact is evolution by transcendence (in science fiction, this suggests a profound opting out), and is typified by Theodore Sturgeon's *More Than Human*, Colin Wilson's *The Mind Parasites*, Olaf Stapledon's *Last and First Men*, and Arthur C. Clarke's *2001: A Space Odyssey*. The Cartesian split between mind and matter that Wells extrapolates in *The War of the Worlds* into evolutionary fact would be replayed over and over again throughout a twentieth-century science fiction polarized by opposing politics of purity and impurity—the Cartesian Self and the Darwinian Self. As opposed to a body merely incorruptible or immune to alien contact, the white male body in these texts is cast off entirely in an evolutionary emergence of Mental Man that demands emancipation from the contingency and vulnerability of materiality. The quest for a bounded, invulnerable Self thwarted in Heinlein and Finney's texts is here brought to its logical conclusion in a mythic escape from the muck of materiality into the pristine realm of consciousness.

By way of illustration, let us briefly look at a typical evolutionary apotheosis of the

white male into a god-like intellect. In Arthur C. Clarke's *Childhood's End* (1953), an alien energy force roams the universe in search of species ripe for an evolutionary leap into the Overmind. A new race of psychically gifted humans are nurtured by the Overlords, aliens that having themselves become trapped in an "evolutionary cul-de-sac," may never ascend into the cosmic consciousness and thus act as emissaries for the Overmind. "Midwives attending a difficult birth," the Overlords help to "bring something new and wonderful into being."<sup>18</sup> As the children of men begin to realize their latent paranormal powers, they merge into telepathic communication with one another and then suddenly pass to a more spiritual, or, postcorporeal, state, signaling the end of their species' "childhood." As the children assimilate into the cosmic Overmind, they lose all individuality and morph into a single entity, having no more identity than "the cells in a single body."<sup>19</sup> As the "sum of many races" and having "left the tyranny of matter behind," the Overmind bears "the same relation to man as man bore to amoeba. Potentially infinite, beyond mortality...it had drawn into its being all that the human race had ever achieved. This was not tragedy, but fulfillment."<sup>20</sup> Having absorbed the last of the children, the Overmind destroys Earth with its billions of humans stuck in evolutionary childhood, and takes leave of physical existence all together to transcend into an immortal force with limitless knowledge.

Man's journey towards immortality in these texts is apocalyptic in nature and apolitical in effect, as it converts multiplicity into unity, and dissonance into consonance. Drawing upon revolutions in the science of the mind and quantum physics (which, taken together, may imply the mind is the ultimate and only true reality), science fiction texts by Wilson, Clarke, and Stapledon explore the movement of history as a stairway of



consciousness from religion to science, and finally, to a metaphysics of mind that unifies all that is known or unknown in the universe. In *Last and First Men* Stapledon especially encapsulates the complex relationship between the history of science fiction and evolutionary philosophy, while he affirms the capacity of science fiction to mystify biological theory. With Stapledon's contemplation of the nature and destiny of mind in the cosmos, evolutionary thought entered the eschatological domain, inciting a multitude of other writers to adapt pseudo-scientific and messianic notions of mental power to man's fusion into cosmic consciousness. Though frequently interesting philosophical experiments, these extravaganzas which confirm man's transcendence into the infinite literally (and ironically) *embody* pathological denial of physical existence. Mentality in these texts is both the engine of advance and the evolutionary final cause. While the invasion of puppet masters and pod people at the very least problematizes the authority invested in the white male body, fantasies of omniscient intelligence enshrine white masculinity even as they deny the fact of embodiment, no matter what the cost.

## II. Alien Invasion and Evolution: *The War of the Worlds* and the Century of Speculative Biology

In 1898, H.G. Wells extrapolated evolutionary ideas to theorize a most bizarre alien biology, and in the process he imagined the most spectacular future war and alien invasion novel in science fiction. However, in *The War of the Worlds* Wells employed alien contact to subvert the cult of imperialism and technological progress that had incited the imaginary warfare novel to its frenzied racism. Typical of the future war subgenre, Wells equated colonial with evolutionary warfare (casting "racial" competition in biological terms), but he manipulated their implied philosophy of the survival of the fittest

in order to expose the brutality of an ideological worldview of racial and technological superiority. The manifest destiny that adhered to the division of the races based on Social Darwinist views here took on intergalactic scope; the Martians merely exercise their technological/evolutionary prerogative (in the sense of an exclusive *hereditary* right) to invade and exterminate a lesser life form. Like that other most important *fin-de-siècle* invasion narrative, *Dracula*, *The War of the Worlds* is a “reverse colonization narrative”—alien Others invade, colonize, or simply exterminate Europeans. But unlike Stoker (whom Stephen D. Arata argues used reverse colonization to articulate fear over perceived racial or moral decline which made the West “vulnerable to attack from more vigorous, ‘primitive’ peoples”<sup>21</sup>), Wells set out to expose colonial cruelty and shock complacent Victorian believers in Empire by portraying what it felt like to be invaded by a ruthless and bloodthirsty alien force with vastly superior technology. Early in the novel, Wells’s narrator admonishes his readers:

we must remember what ruthless and utter destruction our own species has wrought, not only upon animals, such as the vanished bison and the dodo, but upon its own inferior races. The Tasmanians, in spite of their human likeness, were entirely swept out of existence in a war of extermination waged by European immigrants, in the space of fifty years. Are we such apostles of mercy as to complain if the Martians warred in the same spirit?<sup>22</sup>

As he lamented in a later non-fiction work (*The Outline of History*, 1920), the last native Tasmanian died in 1877 due to less than a century of European guns, germs, and steel,<sup>23</sup> an entire civilization (numbering in the hundreds of thousands in the early part of the century) wiped out of existence by a more advanced technological culture bent on global expansion. Wells’s invective against the mechanized violence, enslavement, and genocide that inevitably followed in the wake of European contact with non-white populations, appeared, as science fiction critic H. Bruce Franklin writes, “in the midst of the most

aggressive expansion of the British Empire, as it led the colonial powers in their final cut-throat division of the non-white world.”<sup>24</sup>

In *The War of the Worlds*, Wells turned his sights on the boundless optimism and self aggrandizement of a population that believed itself to be at the pinnacle of historical, technological, and biological evolution (though man was one competing species among many, the struggle was undoubtedly over with man the victor). Unlike the xenophobic warmongering of the future war novel, Wells sought to dethrone man from the top of the evolutionary ladder, robbing his readers “of that serene confidence in the future” generated by technological narratives of prosperity and progress.<sup>25</sup> For the early pessimistic Wells, it was fantasy to measure success by the degree to which humans exhibited mastery over and independence from nature, but it was precisely this fantasy that prompted humanity to envision a cosmos looming with hostile forces. Instead of manufacturing inexorable progress, technology in *The War of the Worlds* has corroded Martian bodies and dehumanized their ethics. The Martians have so seamlessly evolved with technology that the narrator has a difficult time discerning where the aliens end and their machines begin. They are “a great body of machinery on a tripod stand” (Wells, *War of the Worlds*, 390). The narrator describes a Martian cyborg:

Seen nearer, the Thing was incredibly strange, for it was no mere insensate machine driving on its way. Machine it was, with a ringing metallic pace, and long, flexible, glittering tentacles...swinging and rattling about its strange body. It picked its road as it went striding along, and the brazen hood that surmounted it moved to and fro with the inevitable suggestion of a head looking about. Behind the main body was a huge mass of white metal like a gigantic fisherman’s basket, and puffs of green smoke squirted out from the joints of the limbs as the monster swept by me. (Ibid., 390-1)

At first, the narrator wonders if the aliens are “intelligent mechanisms,” or whether a Martian sits within each tripod, “ruling, directing, using” the machine “much as a man’s

brain sits and rules in his body” (ibid., 395). In his depiction of the Martian cyborgs, Wells chillingly suggests that the future mechanization of the human will triumph in the vitalization of the machine:<sup>26</sup> “The contrast between the swift and complex movements of these contrivances and the inert, panting clumsiness of their masters was acute,” the narrator muses, “and for days [he] had to tell [himself] repeatedly that these latter were indeed the living of the two things” (Wells, *War of the Worlds*, 473). The Martians are machinic vampires, their technological efficiency coming at the cost of organic and ethical decay. Again, Wells demanded his Victorian readers question Empire by forcing them to experience the nightmare of invasion and extermination by a ruthlessly technologized alien society. In *The War of the Worlds*, colonialism is vampirism.<sup>27</sup>

In arguing that technological progress may eventuate in dehumanization of the human, Wells spearheaded a critical argument within science fiction circles over mind/body dualism and the evolution of the human. That technological progress fabricates an emotionless world of automatons is a staple of the twentieth-century dystopian novel. But in *The War of the Worlds*, Wells makes the more unusual argument that it is the increased power of the mind at the *expense* of the body that deteriorates ethical behavior. Because they have coevolved with technology, the Martian body has atrophied to the point where it no longer has sexuality, a digestive system, nor entrails. This forces the Martians to feed on the “fresh, living blood of other creatures,” injecting it directly into their veins via a “little pipette into the recipient canal” (ibid., 465). The narrator muses over the brutality attendant upon disembodiment: “Without the body the brain would, of course, become a mere selfish intelligence, without any of the emotional substratum of the human being” (ibid., 467). Even more remarkable, Wells projects this

hypothetical far future evolution as *our* future—we will be the Martians, they are the future human. Wells manufactures his Martians according to the evolutionary specs he lays out in his rather playful essay “The Man of the Year Million” published in 1893. Wells contends that, according to Darwinian principles, with the march of civilization and the technological victory over nature, humanity will continue to naturally select for mentality. This will lead to an evolutionary future of big brains and withered bodies: “so man is the creature of the brain; he will live by intelligence, and not by physical strength, if he lives at all. So that much that is purely ‘animal’ about him is being, and must be, beyond all question, suppressed in his ultimate development.”<sup>28</sup> Future humans, he suggests, will have enormous heads and eyes, along with delicate hands, but the rest of the body will decay—“[t]heir whole muscular system, their legs, their abdomens [will shrivel] to nothing, a dangling degraded pendant to their minds.”<sup>29</sup> The Man of the Year Million will be merely a brain forever immersed in a nutrient bath from which it nourishes itself while living a purely mental existence.

Clearly, Wells’s Martians are men of the year million. Physiological and technological efficiency has withered the body to the point where the Martians have become “heads—merely heads.” They have neither sexual organs nor digestive tracts, no “glands and tubes and organs” that could turn “heterogeneous food into blood” (Wells, *War of the Worlds*, 465). In other words, Martian efficiency has made them pure parasites, literally living off the blood of other sentient creatures. The narrator speculates on a Martian evolution in which “the perfection of mechanical appliances must ultimately supersede limbs [and] the perfection of chemical devices, digestion.” The “nose, teeth, ears, and chin were no longer essential parts of the human being,” he muses, “the

tendency of natural selection would lie in the direction of their steady diminution through the coming ages.” “The brain alone remained a cardinal necessity” (ibid., 467). In the *Martians*, we have “beyond dispute the actual accomplishment of such a suppression of the animal side of the organism by intelligence” (ibid.). In his depiction of bloodsucking aliens, Wells unintentionally set the template for the “Bug-Eyed Monsters” that would dominate the American pulps through World War II. But in his extrapolation of philosophical arguments over the mind/body split into biological and evolutionary fact, Wells projects future Mental Man as a disaster for what it means to be human. Unlike evolutionary speculation to come which will persistently fetishize disembodiment, Wells roots ethics and humanness in the body rather than in the mind. In this way, as in so many others, *The War of the Worlds* set the parameters for the debates that science fiction writers would argue over for the next century, including, finally, debate over the role the microscopic world played in human being and becoming. The Martians are, after all, slain neither by man’s technology nor his ingenuity, but by “the putrefactive and disease bacteria against which their systems were unprepared...by the humblest things that God, in his wisdom, has put upon this earth” (ibid., 506). In his denouement, Wells reverses the typical association of foreign bodies with infectious germs; the Martians are destroyed by our *terrestrial* microbial allies.

### III. “Is that man next to me an inhuman monster?” or, *Horror Autotoxicus*: Pod People, Puppet Masters, and the Viral as the Undead

Though its value as fiction (even science fiction) is questionable at best, Eric Frank Russell’s *Sinister Barrier* (1939) gestures towards the epistemological and ontological shifts that accrue when science extends the range of human vision, stripping

away layers of material reality. Similar in content to Colin Wilson's novel *The Mind Parasites* (discussed in the following section), Russell's novel explores an array of invasive attacks by an alien race of mind vampires that, through a very strange turn of events, enables man's scientific as well as evolutionary apotheosis. Both novels follow the invasion of an alien species that leeches the vital energies of humans in order to survive and reproduce. The male protagonist of each novel discovers a humanity possessed by a foreign life form whose power comes by virtue of its invisibility. "This planet is at present being watched by an enormous number of alien intelligences," the protagonist of Wilson's novel announces to the world, "whose aim is either to destroy the human race or to enslave it...These forces are more dangerous than any yet known to the human race because they are invisible, and are capable of attacking the human mind directly."<sup>30</sup> While a far less erudite piece of science fiction than Wilson's *Mind Parasites*, Russell's novel is interesting in its preoccupation with the power of the microscopic world to affect evolutionary arguments over the origin of the human. *Sinister Barrier* signals the early twentieth-century shift in the threat of invasion from the abject foreign body highly visible in its dysfunction, to the sinister, because invisible, alien assassins of the microscopic world. In Russell's novel, as in novels by Robert Heinlein, Jack Finney, and Colin Wilson, the vampire functions like a germ, a bacterium, a virus.

The protagonist in *Sinister Barrier* discovers that mankind is the "property and plaything" of an "unclassifiable" advanced race of beings: "They are neither solid, nor liquid nor gas. They are not animal, vegetable or mineral. They represent another, unclassified form of being"<sup>31</sup> that exist beneath the threshold of ordinary microscopic vision and are thus "of a menace more invincible, more revolting than anything born of

[human] shape and form” (ibid., 124). The mental vampires exist “[b]eyond that sinister barrier of our limitations,” the narrator muses, “outside that poor, ineffective range of vision...invisibly preying on us as ruthlessly as any parasite” (ibid., 79). Like many science fiction writers before and after him, Russell meditates upon the power of science to point beyond the known into the unknown, here, to the almost immeasurably small life forms emerging from within ever lower strata of physical existence. “Think of it,” urges a scientist in the novel, “living, active animals swarming around us, above us, below us, within us, fighting, breeding and dying even within our own bloodstreams, yet remaining completely concealed, unguessed-at, until the microscope lent power to our inadequate eyes” (ibid., 78). The invention of a powerful new “means of extending the visible portion of the spectrum far into the infrared” (ibid.) allows the scientists in *Sinister Barrier* to finally penetrate to a depth of visibility where they are able to illuminate the existence of the mind vampires. The narrator contemplates the power the newly discovered life forms wield over the macroscopic world:

So far as they’re concerned, we exist as energy-producers which kindly nature has provided to satisfy whatever they use for bellies. Thus, they breed us, or incite us to breed. They herd us, drive us, milk us, fattening on the currents generated by our emotions in precisely the same way that we fatten on juice involuntarily surrendered by cattle. (Ibid., 96)

However, with their newly acquired ability to pierce “that barrier of sight” with “eyes equipped to see them with the new vision” (ibid., 79), the scientists in the novel vanquish the alien vampires. Russell provocatively suggests the integral/vampiric role the microscopic realm plays in the origin and evolution of the human. Like the discovery of worlds beyond worlds, the discovery of worlds within worlds never fails to unsettle the status of the human in its relationship with the nonhuman.



As a matter of course, tales of imaginary invasions or uprisings envisioned foreign Others, both macroscopic and microscopic, as aliens threatening to penetrate, subvert, and transform the body politic. The discovery of microscopic alien life forms was vexing (to say the least) to a humanity that had always prided itself at being at the top of the food chain, predators instead of prey. Given that the rise in world dominance has historically animated invasion paranoia, it is little surprise American science fiction in the first half of the twentieth-century metaphorized bacteriological invasion and metamorphosis in the terms of racial hygiene. The alien mind vampires that feed on human energy in Russell's *Sinister Barrier*, for example, gather a massive Asian force to help quell the American rebellion. Having become the "mental slaves of their ghastly opponents" (ibid., 172), the Asian army recalls the "Mongol hordes" that invaded the West by the thousands in the future war novels of the late nineteenth and early twentieth-centuries. The "mind-warped" instruments of their foe (ibid.), the Asian "swarms" have numbers on their side: "In sheer weight of numbers lay the Asians' strength. Theirs was the greatest weapon, the weapon possessed by every man...that of his own fertility" (ibid., 118). The nationalist paranoia so typical of the early to mid-century invasion narrative correlated with fear over the alien/immigrant's supposed excessive breeding and its dreadful implications for the political future of the country. Whether parasites, seed pods, or slugs, foreign bodies breed rapidly and deadly.

External foreign menace translated into anxiety over contamination by miscegenate agents or alien ideologies; alien invasion/immigration in the political and literary imagination of the early twentieth-century was consistently yoked in the West to epidemiological models of infectious disease. These discourses shifted seamlessly from

the nation to the body, from the macroscopic (global or galactic alien invaders) to the microscopic (invasive disease agents). The “fight for racial survival” against “outside invaders”<sup>32</sup> in Robert Heinlein’s *The Puppet Masters*, for example, is a biological fight against a foreign menace allegorized as communist, ethnic, and virological in nature. The protagonist of the novel is on a mission to search and destroy all “zombie” spies, and at one point he wonders why the slugs had not first attacked Russia:

Stalinism seemed tailor-made for them [but]...I wondered what difference it would make; the people behind the Curtain had had their minds enslaved and parasites riding them for three generations. There might not be two kopeks difference between a commissar with a slug and a commissar without a slug.<sup>33</sup>

Though more ideological in nature, Heinlein’s covert enemy agents, like so many in American invasion narratives, are those who carry communicable bodily conditions into Empire (his novel *Sixth Column*, 1941, is more obviously troubling in its depiction of a “PanAsian” invasion of the U.S.). Invasion paranoias like *The Puppet Masters* equate transgression of national boundaries with somatic boundaries, allying the threat of foreign incursion into the body politic with disease, infection, and transformation of the white male body. If unchecked, alien infection would absorb, consume, and subvert the Self into something utterly foreign.

Infrequently in the service of alterity (but with important exceptions such as “Shamblau”), invasion narratives from the early to mid twentieth-century are more Heinleinian than Wellsian in nature. Anxiety over national invasion or the transformation of the body by an alien entity tends to peak during times of social upheaval and political change (as well as imperial aggression). American invasion narratives from the 1950s evoke fear over covert threats to the nation and family by communists, homosexuals, people of color, what have you. Invasion narratives from this decade typically dramatize

some form of alien infiltration that subverts and progressively mutates the white body, which then works against the nation's interests. Heinlein's *The Puppet Masters* (1951) is the quintessential alien invasion as blatant allegory for the communist menace of the 1950s. Flying saucers carrying parasitic slugs invade America and land in Iowa, the country's heartland. Each slug in service of The Puppet Master affixes itself to the top of the spine and controls the host's personality, thought, and action, reducing him or her to an automaton. Forced to obey a collective will and to recruit others, the human hosts spread alien possession until much of the country is conquered. Like other mid-century invasion narratives in literature and film,<sup>34</sup> Heinlein's novel is paranoid McCarthyite fantasy: The slugs pervert good innocent Americans into zombie spies who slave to infiltrate and transform those working in the highest echelons of U.S. government. The strategy of the menace is the stuff of paranoid nightmare, for despite looking like every other true-blue American, the hosts in *The Puppet Masters* are robotic agents of an alien force bent on global domination. Most disturbingly for those few humans who remain pure, the alien-controlled hosts pass for human (i.e. American) in a nefariously systematic attack that makes it virtually impossible to distinguish citizen from alien, friend from foe, Self from nonSelf.

In *Sinister Barrier* and *The Puppet Masters*, internal enemies hidden deep within the national/individual body endanger whiteness and the political authority invested in it, but invasion is hardly just about the "possessive investment in whiteness,"<sup>35</sup> or the threat of miscegenation. Heinlein's *The Puppet Masters*, Russell's *Sinister Barrier*, John Campbell's "Who Goes There?" and Jack Finney's *Invasion of the Body Snatchers* are phenomenal defensive-reactions by white heterosexual men who use the language of

virology and immunology to make sense of and/or assuage penetration anxiety, the permeability of body boundaries, the mutation and loss of control over identity, and the human as simulacrum. Historically, the body as a securely bounded autonomous value separate from society has functioned as the baseline requirement for what it means to be human under the Western philosophy of a liberal subject; though he may possess a body, the liberal subject may never be possessed *by* a body. In popular scientific discourse, it was the integrity-preserving activities of the immune system that would protect the Subject against hostile agents and ensure that his (and it was usually a he) biological substance was pure Self. Immunology discourse shifted the war against the Other from the macroscale to the microscale, from the defenses without the body to the defenses within, and as many cultural critics have noted, the rhetoric of warfare was deployed to articulate the ceaseless battles “waged between our defense system and invading microbes, with both sides locked into a struggle for control of territory and resources.”<sup>36</sup> In the old view of the body as a “scene of total warfare between ruthless invaders and determined defenders,”<sup>37</sup> immune system discourse aspired to erect a clearly defined boundary between the Self and a nonSelf world teeming with assassins permanently at the ready for blitzkrieg attack.

In the twentieth-century dystopian novel, body invaders like the machine, the alien, or the viral provoke visceral terror of dehumanization or the technologization of life. The threat to identity mimicked in the vampire, the virus, the android, or the machine raises fundamental questions about the status of the human, and in classic dystopias like Yezgeny Zamyatin’s *We* and George Orwell’s *1984*, the self as automaton programmed to carry out its functions from above is the horror of the self erased in the twentieth-century

totalitarian society. Nearly as terrifying, however, as the boot in the face is the fear of the “onslaught of simulacra”<sup>38</sup>—that the original may become indistinguishable from the copy, that life may become indistinguishable from death. There is no metaphorical device like the viral as the undead to voice these fears: The virus, both alive and unalive, seizes every favorable circumstance to insinuate itself into and replicate itself within an already living body. Once inside a living system, the virus seizes its reproductive machinery and engineers the now condemned cells to make copies of its own xenic form. It is difficult to imagine that those who advance contemporary meme theory—that ideological, religious, or social patterns of information operate like a virus, infecting whole societies by leaping from one host body to another<sup>39</sup>—did not first familiarize themselves with 1950s invasion narratives. In *The Puppet Masters* and *Invasion of the Body Snatchers*, Communism, like a virus, is an infection of new information that, in a sub- and macroscopic *coup d'état*, leads to the host's control, transformation, and passive replication of alien information. Biological and/or ideological viruses, the alien agents in the novels convert the hosts into their own kind while retaining the outward appearance and functional capabilities of the original. The true horror in these texts is that the automaton (the virus, the vampire, the machine) may pass for human, while the human may pass into the undead—but one cannot tell which is which.

For the protagonist of the early American invasion narrative, the permeable white male body horrifies. In *The Puppet Masters*, as well as in John Campbell's “Who Goes There?” (1938) and Jack Finney's *Invasion of the Body Snatchers* (1954), there is palpable male anxiety over the protean powers of the alien invaders (though one can easily read Finney's novel as satire on the mindless conformity of the 1950s, “where the lack of

emotion of the pod-people corresponds to the ethical blind eyes turned by Americans to the persecutions of their fellows by over-zealous McCarthyites,”<sup>40</sup> or where the pod-people are not Communists but “Americans who are forced to conform to a rigid, homogenous model of American behavior”<sup>41</sup>—interpretations realized in two film versions of the novel<sup>42</sup>). In both “Who Goes There?” and *The Body Snatchers*, Earth is invaded by an organism that, in its undiluted and unbounded materiality, has limitless capacity to usurp and imitate any living thing. The alien organism drains the individual of essence, and though the copy may have the same memories and the same body as before, it is no longer human. In “Who Goes There?” male scientists in Antarctica revive an alien life form that thousands of years prior had crash landed and was buried under hundreds of feet of ice. Once unfrozen, the telepathic shapeshifting monster assumes the form of any living thing it encounters, surviving by assimilating and replicating the men, invalidating the difference between man and alien. Similarly, in *The Body Snatchers* spores from space invade Earth and cultivate seed pods that grow into exact replicas of individual humans. The alien pods metastasically absorb the host until the original collapses into itself and splatters. The depersonalized replica is then substituted for the original, and the alien simulacrum obeys its prime directive—to survive and reproduce by covertly assimilating the entire human population.

In both texts, the proteanism of the alien organisms reflects deep rooted anxiety over the horror of continuity and the loss of integral body, identity, and species boundaries. “The Thing” and the “Body Snatchers” disarm the white male body by infiltrating and transforming it from within. The doctor in “Who Goes There?” performs an autopsy of “the thing” after it attacks their team of dogs: “The thing we found was part

Charnauk [the lead dog] queerly only half-dead, part Charnauk half-digested by the jellylike protoplasm of that creature, and part the remains of the thing we originally found, sort of melted down to the basic protoplasm.”<sup>43</sup> The scientists wonder if they have ever seen the organism in its “natural form,” and agree that they probably have not and never will, for it functions like a virus by hijacking other living bodies. The threat of absorption by undiluted, primordial matter stirs up similar anxiety in *The Body Snatchers*. The protagonist Miles (another doctor) and his companions are shocked when they find several bursting pods oozing a gray substance spilling out onto the floor of his basement:

The tangled masses of what looked like grayish horsehair at our feet were slowly spilling out of the membraneous pods...It’s hard to say how long we squatted there...But it was long enough to see the gray substance continue to exude, slowly as moving lava, from the great pods out onto the concrete floor. It was long enough to see the gray substance lighten and whiten after it reached the air. And it was long enough to see the crude head-and-limb-shaped masses grow in size as the gray stuff spilled out.<sup>44</sup>

Miles and his companions watch in horror as the seething gray mass organizes itself into four distinct human shapes: “the thick skeins of sticky fiber that composed them were united at all edges now, the surfaces unbroken, rough as corduroy still, but smoothing out steadily, and entirely white. Four blanks, the faces bland, smooth, and unmarked, lay almost ready to receive the final impressions.”<sup>45</sup> As these passages suggest, the creeping, and lingering, terror in both texts derives from the nightmare of being swallowed up, absorbed into, or transformed by soulless materiality—the Self being replaced by the nonSelf.

Because the alien in “Who Goes There?” perfectly replicates the human with atomic precision, the dilemma for the scientists is to discriminate man from alien. But even the penetrating power of the microscope is useless in their search for the truth of

bodies: “I don’t think anything would have distinguished it,” the doctor laments, “not [the] microscope, nor X-ray, nor any other means. This is a member of a supremely intelligent race, a race that has learned the deepest secrets of biology, and turned them to its use.”<sup>46</sup> As the dread of the thing’s *modus operandi* dawns on the men, they suddenly feel an “air of crushing menace” as they look sharply at each other and wonder, “[m]ore keenly then ever before—*is that man next to me an inhuman monster?*”<sup>47</sup> *The Body Snatchers* goes to great lengths to stress that the form that survives the pod takeover *is* the original person—with his or her same body, knowledge, habits, memories, and even atoms—but simultaneously *not* the original person. The lead pod person Budlong (terrifically played by Leonard Nimoy in the 1978 version of the film) explains to Miles that he and his kind are “completely evolved” life forms that have “universal adaptability to *any and all other life forms, under any and all other conditions*” they may confront. “[T]he pods are a parasite on whatever life they encounter,” Budlong continues, “[b]ut they are the perfect parasite, capable of far more than clinging to the host. They are completely evolved life; they have the ability to re-form and reconstitute themselves into perfect duplication, cell for living cell, of any life form they may encounter.”<sup>48</sup> In a prescient passage, Finney articulates a biological ontology that mirrors the increasingly influential cybernetic theory of the human as an information pattern. Budlong explains:

Yes, Doctor Bennell, your body contains a pattern, all living matter does—it is the very foundation of cellular life. Because it is composed of the tiny electrical force-lines that hold together the very atoms that constitute your being. And therefore it is a pattern—ininitely more perfect and detailed than any blueprint could be—of the precise atomic constitution of your body at exactly that moment...So it can happen...the intricate pattern of electrical force-lines that knit together every atom of your body to form and constitute every last cell of it—can be slowly transferred...you are precisely duplicated, atom for atom, molecule for molecule, cell for cell, down to the tiniest scar or hair on your wrist. And what happens to the original? The atoms that formerly composed you are—static now, nothing, a pile



of gray fluff.<sup>49</sup>

The human in *The Body Snatchers* is reduced to a pattern of information that can be downloaded, simulated, or replicated by a nonhuman life force that *survives by parodying life*.

By perfecting molecular and informational mimicry, the alien agents in these texts subvert the discriminatory functions of the white male immune and political system. As in molecular mimicry, where the virus synthesizes antigens so alike to the cellular material of the infected host that it passes for native biological substance,<sup>50</sup> the alien invaders make it impossible to discern dangerous interlopers from substances naturally present in the host's own tissues. This is what immunologists refer to (or used to refer to) as "horror autotoxicus"—the horror of becoming toxic to yourself. In autoimmune disorders, the body's self-defense mechanisms either do not "recognize the nonself, which means that you cannot build any immune response against an attack from outside," or they cease "recognizing things that actually are self," and mistakenly attack them.<sup>51</sup> In either case, external agents scramble the system's discriminatory function, making it impossible to distinguish human from inhuman, or citizen from alien.

The fear of alien conspiracy to assimilate the individual into communal consciousness (the "hive mind" as Heinlein would put it) as well as to penetrate the male body and render life (the Self) indistinguishable from death (the nonSelf), all conspire in these texts to place the authority located in the white male body under serious threat. Heinlein, Campbell, and Finney's texts exhibit exquisite anxiety over the vulnerability of embodiment and absorption of human essence by foreign substance. Though most early to mid-century invasion narratives end with the defeat of the foreign invader, the reification

of organic integrity, and a return to the status quo, they insufficiently dispel the specter of alien disintegration of masculine boundaries; men are invited, for example, to experience what it feels like to gestate an alien life form that transforms the body (an all too common experience for women). In these science fiction texts, the straight white male American body is in a *state of emergency*. In her analysis of the politics of artificiality, Sadie Plant advocates for the subversive and “insidious threat posed by anything capable of faking its humanity:”<sup>52</sup> “replicants are neither copies nor original, natural facts nor artificial constructions. They are duplicates of something that was never at square one, had no starting point, and no first place.”<sup>53</sup> As Sadie Plant would agree and Jack Finney may suggest, anything capable of faking its humanity subverts the power of patriarchy to reproduce itself, while mocking whiteness as the standard for a universal humanity—there’s no *there* there.

#### IV. The Starchild and Men Like Gods: Evolution by Transcendence in Mid Twentieth-Century Science Fiction

Science has penetrated not only to the bounds of space but into the foundations and springs of the mind. Men were humiliated, they were stripped. But now we perceive that that stripping was as necessary for man as the snake’s casting of its skin or the seed its husk...Man has to cast off this final husk of his animal individual self, its uniqueness, worth and dignity that he might realise that man is something more than men and that the mind which is growing in them, they do not own and use, but it owns and uses and it is fulfilled as it uses them up. Their complete emergence is their assumption. There is nothing mystical in this. It is all part of the evolutionary emergence of man.

—Gerald Heard, *The Emergence of Man*

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.

—Donna Haraway, interview in *Social Text*

Science fiction by Theodore Sturgeon, Colin Wilson, Olaf Stapledon, and Arthur C. Clarke engineers contact with the inhuman, the alien, or the machine as the means by which the body is transcended all together.<sup>54</sup> No longer merely unmarked or standing in

for the universal human, the white male body disappears in an evolutionary apotheosis of Scientific or Mental Man. In their desire for immortality, these fantasies draw upon pseudo-scientific and quasi-religious concepts of mental power to transform biological into metaphysical evolution. *More than Human*, *The Mind Parasites*, *First and Last Men*, and *2001: A Space Odyssey* derive their metaphysical systems of man's destiny in the cosmos from an incongruent, yet bizarrely productive synthesis, of evolutionary philosophy, quantum physics, and the unleashed powers of the mind. Fundamentally Hegelian, evolutionary fantasies dramatize the forward movement of historical time as the maturation of man's consciousness into omniscience. History is the evolutionary unfolding of the mind's perfection, with Absolute Knowledge prevailing at the end of all things. This peculiarly prolific brand of science fiction moves towards a transcendence rooted in separation, post-corporeality, universality, and omniscience. The apotheosis of the Cartesian mind (the self as master of limitless knowledge), evolutionary narratives of transcendence pass from the body and materiality to a bloodless and pristine mentality. We might use Robert Young's critique of Western Marxism's reliance on Hegelian historiography to recognize the dangers inherent in the metaphysical trespassing into scientific territory: The evolutionary march of man is absolutist and homogenous, a becoming of the Self that, "through the dialectical incorporation of otherness," culminates "in a total or totalitarian self-realisation."<sup>55</sup> It is synthesis without meaning, metaphysics without ethics.

The revolutions in psychology and quantum physics colluded in science fiction after 1930 to devalue the body as an evolutionary dead-end. For writers within the science fiction fold persuaded by the powers of psychology (which would become "psi powers")

and the new quantum physics, the mind emerged as the ultimate and only reality.

Classical/Cartesian physics posited a consciousness and human intention that stood above and beyond the observed world, explicitly excluded from its description. The mind was unaffected by space, time, or materiality; it was wholly outside the world of classical mechanics. This all changed in the early twentieth-century with the theory of relativity and quantum physics, where mind became integral to the description of the material world. In 1927, Danish physicist Niels Bohr argued that quantum phenomena came into existence only in the act of observation: “Nothing exists until it is measured,” he famously stated.<sup>56</sup> Post-Cartesian/post-Newtonian physics posited a consciousness and human intention that (at least in part) determined the structure and shape of the physical world, and thus were explicitly included in its description. For some science fiction writers, man was no longer a being degraded by the mindless materiality of the universe (like he was in Wells) but, through the power of mind, was in potential mental control of probability. If quantum phenomena came into existence only in the act of observation, then one could see materiality spun out of the mind itself. When quantum physics implicated consciousness in the description of reality, issues that had previously been thought metaphysical in nature were now open to scientific speculation (and vice versa). In light of psychology, relativity, and quantum physics, writers like Philip K. Dick would retool science fiction to express profound epistemological and ontological uncertainty. But whereas Dick would draw upon post-materialist science to paralyze, other science fiction writers, especially those influenced by editors like Hugo Gernsback and John Campbell, would use the revelatory and revolutionary powers of the mind to become omnipotent.

Under the editorial direction of John Campbell who, after Hugo Gernsback,

presided over the pulps from the 1930s to the 1950s, science fiction stories tracking the evolution of superhumanity through the cultivation of mind were legion. The power of human will implied by quantum physics induced scores of writers to invent supermen who, with their psionic powers of telepathy, telekinesis, and teleportation manipulated space, time, and matter at will. The pulp magazines overflowed with stories of men becoming Overmen, leading humanity to a higher state of existence. With his mastery over mind and matter, Scientific Man straddled space and time, directing human bodies and the flow of history like a transcendent god. Isaac Asimov translated both psychology and history into an exact science with his superpsychologists of the *Foundation* series (1951-1999), masterful intellectuals who predict and control humanity's future through science and the reason it enshrines (“[w]ithout pretending to predict the actions of individual humans, it [psychohistory] formulated definite laws capable of mathematical analysis and extrapolation to govern and predict the mass action of human groups”<sup>57</sup>). L. Ron Hubbard created what he argued was an exact “Modern Science of Mental Health” that would open up vast avenues of mental power latent within each of us. Science fiction that embraced the post-materialist power of consciousness seamlessly morphed into fiction about men becoming gods in a godless world (when Einstein famously expressed anxiety over the implications of quantum physics—“That God would choose to play dice with the world is something I cannot believe”—Bohr is said to have replied “Einstein, stop telling God what to do!”<sup>58</sup>). L. Ron Hubbard encapsulated the hazy line between extrarational modes of mentation and cultic religiosity when his psionics became his Dianetics became his Scientology.

Theodore Sturgeon's *More Than Human* (1953) illustrates (more or less

harmlessly) how psi fiction weaves into an evolution of consciousness that will guide the children of men into a higher plane of existence. Like so many science fiction novels in this vein, *More Than Human* asserts that the next crucial evolutionary step for humanity will be psychic rather than physical. Taking his cue from the biological principle of symbiosis, where “[t]wo kinds of life depend[] upon one another for existence,”<sup>59</sup> Sturgeon tracks the growth of a group of mutant superchildren into a collective mental gestalt, a revolutionary consciousness that echoes the theories of the French Jesuit philosopher Teilhard de Chardin, whose work synthesizes evolution and eschatology in the cosmic becoming of mind.<sup>60</sup> The mutant superchildren, each with his or her own psi power, evolve into a “gestalt life-form” in which each plays a role in a single, organismic identity. “Homo Gestalt” is the new human, superior to yet in symbiosis with homo sapiens (the overmind must choose a non-mutant human to bring the group into a cohesive ethical responsibility). More than human, or, more human, Homo Gestalt emphasizes radical interdependency and an expanded consciousness that encompasses a more harmonious vision of the future based on communication and communality; improvement in the species comes through mutation, a decisive shift from the norm (a common theme in science fiction). Yet Sturgeon’s romantic view of consciousness ultimately becomes entangled with an occultic notion of transcendence, the most common trap for metamorphic illusions of the superhuman. The gestalt consciousness is immortal in that its collective superiority comes at the cost of its individual members, who are endlessly replaceable.

Sturgeon and others use parapsychological powers as the intermediary step between Philosophical and Cosmic Man. The ideological view of progressive evolution

typical of the late Victorian period shifts to a romantic view in these twentieth-century texts. Like Russell's *Sinister Barrier*, Colin Wilson's *The Mind Parasites* (a much later novel published in 1967) uses alien contact as the means by which man attains the full realization of his mental powers. Influenced by existential psychology, Teilhard de Chardin, and Henri Bergson (who, in his book *Creative Evolution*, revitalized the evolutionary vitalist debate), *The Mind Parasites* examines man coming to consciousness of himself and his innate evolutionary powers, a process that inevitably absolutizes the Cartesian split between mind and body. The narrator Gilbert Austin learns that for two hundred years aliens living within the deepest recesses of the brain have prevented humans from arriving at their maximum evolutionary powers.<sup>61</sup> These "vampires of the mind" seek out species on the brink of advance and "feed for as long as possible on the tremendous energies generated by the evolutionary struggle." "Their purpose," Austin learns, "is to prevent man from discovering the worlds inside himself" (*ibid.*, 59).

Through a strict regimen of phenomenology and existentialism, man may become aware of the existence of the mind vampires, but this is only the first step in becoming "*an inhabitant of the world of the mind*" (*ibid.*), an arcane explorer of the "greatest of all mysteries, for to know its secret would turn man into a god" (*ibid.*, 67). In *The Mind Parasites*, the quest for revelation in outer space shifts decidedly to the quest for revelation in inner space. As they begin to taste the extent of their maturing mental powers, Austin and his select few men begin to look down on ordinary humans with a "kind of god-like pity" (*ibid.*). Rather than deploying his mental prowess to lessen the immiseration of others, Austin's only concern is to use the mind "*to explore its own capabilities*," after all, "to what better purpose can consciousness be employed than to

explore the laws of consciousness?" (ibid.). As Wilson implies, man must map his "inner world," the "geography of consciousness," if he is to pursue the transcendent (ibid., 55).

Like other self-birthing narratives whereby consciousness evolves out of consciousness by means of consciousness (like immune individuality), *The Mind Parasites* sees evolution as an inherently progressive movement away from the maternal and the material to the discarnate and the omniscient. Corporeality compromises the Mind and its quest for universality. As his powers germinate, Austin comes to view physical existence as a "great weight on [his] thoughts" (ibid., 129), the body as a "mere wall between two infinities"—"[s]pace extends to infinity outwards" but "the mind stretches to infinity inwards" (ibid., 30).<sup>62</sup> Once Austin and his men achieve mastery over the fundamental laws of existence, they reject their imperfect fragile bodies to evolve beyond the human into an emergent god-like entity that migrates beyond Earth in search of communion with other Cosmic Minds. No longer an orphan or fluke of evolution to be toyed with by the vagaries of contingency, humanity (though no longer human) stands at the epochal endpoint of an evolution that will guarantee dominion. Consciousness, rather than the bite of the vampire, becomes the machinery of immortality.

Evolutionary metaphysicists like Bergson and De Chardin (especially in his *The Phenomenon of Man*) rely on metarational mental constructs to envision a purposive becoming or transcendent rebirth of the mind. Their most famous science fiction counterparts, Olaf Stapledon and Arthur C. Clarke, assimilate the philosophers' romantic views of consciousness into narratives that vitalize a Hegelian and/or Technological Sublime. Olaf Stapledon's *Last and First Men* (1931) is an opus to the significance of mind and its ascension into a kind of Absolute Spirit. A crucial novel in the history of



science fiction, *Last and First Men* exploits the unstable border between metaphysical and scientific speculation, or, the extension of metaphysics into territory once believed to be purely scientific.<sup>63</sup> An “essay in myth creation,”<sup>64</sup> the novel is an extravaganza that elaborates a total synthetic view of man in the universe, delving into the mysteries of evolution, matter, time, and space. It is an eschatological journey through time, a history of the biological and mental stages of humanity traced over two billion years. The Bergsonian/De Chardian influence is particularly felt in those passages where Stapledon urges man to “gather all his strength for a flight into some new sphere of mentality...to take control of himself and remake himself upon a nobler pattern” (ibid., 113). In their attempt to “remake human nature upon an ampler scale” and to push “man’s final advance to full humanity” (ibid., 211), the “Sixteenth-Men” devise a brain that can fuse with others to form an “altogether new mode of consciousness” (ibid., 212), a “Cosmic Mind” that is the eventual goal for all sentient life in the universe. The mystery of the mind’s relationship to the universe begins to reveal itself with the arrival of the “Eighteenth-Men,” the last of the human species and the culmination of the achievements of all earlier cultures.

Drawing upon their telepathic powers, the Last Men assimilate into a single vast consciousness which then reaches out to others to form an even vaster “racial mind” that apprehends all things temporal and astronomical. Physicality vanishes into ethereality as the racial mind straddles history and observes all beneath it with indifference: The “mind of the race” sees

with all eyes, and comprehends in a single vision all visual fields...He now stands above the group-minds as they above the individuals. He regards them as a man may regard his own vital tissues, with mingled contempt, sympathy, reverence, and dispassion. He watches them as one might study the living cells of his own brain,

but also with the aloof interest of one observing an ant hill. (Ibid., 225)

In his claim to the universal galactic future as playground for the supreme achievement of Spirit, Stapledon's novel incarnates Hegel's synoptic, quasi-religious approach to history as the blossoming metaphysics of mind. Hegel's history focuses on a future far beyond any human experience of time, one that discloses a steadily maturing reason passing from one state of consciousness to another, forever reaching towards an end which will vanquish the separation between subject and object, past and future, life and death. Stapledon's own metascientific awakening of the Spirit moves via cosmic symphony that culminates in "the beautiful whole of things" (ibid., 234). The "cosmical idea" is something far beyond the human but which uses its maturation to unfold itself into the perfection of the Whole: "The music of the spheres passes over him [humanity], through him, and is not heard. Yet it has used him. And now it uses his destruction. Great, and terrible, and very beautiful is the Whole; and for man the best is that the Whole should use him" (ibid., 246).

Stapledon's apocalyptic vision of the ultimate dissolution of the human and its absorption into the infinite marks the mythic beauty and danger of moving beyond the dialectical tension of self and other, time and space—in encompassing everything, the infinite is nothing. In *Star Maker* (1937), Stapledon's sequel to *First and Last Men*, consciousness spreads out even beyond the racial mind portrayed in the first novel to encompass all Thought that has ever existed in inter-galactic space and time. The *Star Maker* is the creative engine behind history, space, eternity, and the cosmos, the "eternal and perfect spirit which comprises all things and all times."<sup>65</sup> In short, Stapledon's science fiction opus is truly that than which nothing greater can be thought (the ontological

argument for the existence of God). With his contemplation of the essence, movement, and destiny of mind in the cosmos, evolutionary thought entered the eschatological domain, inciting an array of other science fiction writers to build metaphysical systems out of evolutionary philosophy.<sup>66</sup> Humanity had a lot of catching up to do with God.

Finally, Arthur C. Clarke's less grand *2001: A Space Odyssey* (1968) engineers an alien contact that similarly surges man towards the infinite and the immortal. Like Wilson and Stapledon, Clarke's scientific appetite for invulnerability collapses into a metaphysics made to order for a mind that, in the spirit of arcane knowledge and extraterrestrial conquest, strives to leave nothing unpenetrated. Like his novel *Childhood's End*, *2001* subsumes biological transformation into a homogenous procession of consciousness realizing itself through the incorporation of everything that is not Self. But in *2001*, man's emergence is wired through the intermediary step of machine intelligence. In both the novel and film (Clarke co-wrote the screenplay with Kubrick on which the novel is based), man's journey towards the infinite first leads him through the Technological Sublime. The triumph of advanced technology, Clarke implies, will be to effect the final Cartesian split between mind and matter. In this way, *2001* anticipates the relentless struggle between embodiment and disembodiment that would later typify the cyberpunk movement in its electronic fantasies of liberation from the flesh (and the maternal—Andreas Huyssen writes that “the ultimate technological fantasy” is “creation without mother”<sup>67</sup>). Enlightenment moves through human intelligence into machine intelligence into omniscience.

*2001* fashions a dramatic evolution of intelligence as the result of contact with the nonhuman. An alien force nurtures humanity's advance from Ape Man, to Scientific Man,

to Technological Man, and finally, to Mental Man. The most important evolutionary relationship in the novel, however, is that between man and his tools (the protagonist is named Dave *Bowman*). Advanced technology in the form of artificial intelligence (always imaged as male in the science fiction and nonfiction imagination—pure mind=man) equips man for a mythic escape from mortality into immortality. Well into his intergalactic journey with HAL (the artificial intelligence system) as his only remaining companion, Dave Bowman reflects on contemporary predictions of the technological transcendence of the body:

There were thinkers...who did not believe that really advanced beings would possess organic bodies at all. Sooner or later, as their scientific knowledge progressed, they would get rid of the fragile, disease-and-accident-prone homes that Nature had given them, and which doomed them to inevitable death. They would replace their natural bodies as they wore out—or perhaps even before that—by constructions of metal and plastic, and would thus achieve immortality.<sup>68</sup>

Eventually, Bowman muses, even the brain must go: “[a]s the seat of consciousness, it was not essential; the development of electronic intelligence had proved that.”<sup>69</sup> The conflict between mind and matter would eventually be subsumed in the final enfranchisement from physical existence: “The robot body, like the flesh-and-blood one, would be no more than a stepping-stone to something which, long ago, men had called ‘spirit.’”<sup>70</sup> Here, Clarke predicts a postcorporeal future along the lines of contemporary transhumanist arguments, especially those of Hans Moravec and Marvin Minsky, who argue that one day we will be able to surgically extract memories from the human brain and digitalize them to computer software, discarding the body and opting for an uploaded existence either as sentient information in a vast database with access to all information, or as an indestructible cyborg body with infinitely replaceable parts. Moravec and Minsky argue that if the human can be reduced to a complex pattern of information, then

theoretically, it could be dematerialized and uploaded onto software or released into an informational existence.<sup>71</sup> Either way, reconstituted as pure intellect the human would attain immortality.

So the alien intelligence in *2001* guides Bowman's evolution from the immaturity of embodiment, through machinic symbiosis, and finally, to the bodiless realm of the Mind, an evolutionary synthesis Bowman himself had already imaginatively plotted: "In their ceaseless experimenting," he soliloquizes, scientists

had learned to store knowledge in the structure of space itself, and to preserve their thoughts for eternity in frozen lattices of light. They could become creatures of radiation, free at last from the tyranny of matter. Into pure energy, therefore, they presently transformed themselves...Now they were lords of the galaxy, and beyond the reach of time. They could rove at will among the stars and sink like a subtle mist through the very interstices of space.<sup>72</sup>

Bowman's reemergence from the transdimensional hyperspace duct (the "Star Gate") signals the end of man's evolutionary childhood and the birth of something new. As Dave Bowman the flesh and blood man ceases to exist, another becomes immortal, and in "an empty room, floating amid the fires of a double star twenty thousand light-years from Earth, a baby opened its eyes and began to cry."<sup>73</sup> The indestructible "Star-Child" (the bizarre floating fetus at the end of Kubrick's movie) embodies a power of Mind that, in its final abstraction and omnipotence, can be identified with godhead. Indifferent to the world it plans to destroy (at the end of the novel the Star-Child moves towards the annihilation of Earth), the messianic intelligence that concludes the novel represents a despotism over immanence, materiality, and contingency. Typical of all the texts analyzed in this section, in *2001* man gives birth to himself as an etherealized consciousness—a virgin birth untouched by materiality or women. With their dreams of purity and invulnerability, science fiction writers like Wilson, Stapledon, and Clarke buttress rather

than confront traditional understandings of what it means to be human. Evolution beyond biology to immateriality effects a transcendental synthesis that converts multiplicity into unity, difference into homogeneity. The conflation of scientific and metaphysical speculation functions as merely another bogus fantasy of postcorporeal bodies immune from penetration, corruption, and alterity. It is an eschatological, rather than transformational, mode of becoming.

The fascinating thing about science fiction, however, is that, even amongst early American writers of the genre, for every John Campbell there is a C.L. Moore, for every Arthur C. Clarke there is a Cordwainer Smith, a pulp writer who like Moore refuses to endorse the sterility of a reason surgically detached from or cleansed of the vulnerability of the flesh.<sup>74</sup> Two critically influential strands of science fiction explicitly resist the false rationality embedded in omnipotent fantasies of Mental or Technological Man—the “Big Brain” subgenre and the critical dystopia (the latter far more important than the former). The ruthless detachment from the body so vividly portrayed by Wells in *The War of the Worlds* (as well as in *The Island of Dr. Moreau*) would eventuate in the Big Brain fictions of the pulp magazines, stories that caricature the heirs of mankind as amoral beings with atrophied, or nonexistent bodies, and massive brains. With the Big Brain theme, pulp science fiction writers caution their readers against the fetishization of mentality as a future evolutionary goal. Our theoretical Big Brain descendants are overwhelmingly powerful and malevolent.<sup>75</sup> Cordwainer Smith’s “Scanners Live in Vain” (1948) is an ingenious little story that, similar to *The War of the Worlds*, warns against a technologized, instrumental reason inevitably cruel and amoral in effect. But unlike Wells’s novel, in Smith’s story the ethically challenged species is mankind. Scanners are

the supermen of the universe, men who have voluntarily segregated themselves from human society in order to guide the ships that connect the Earth worlds. The Scanner undergoes extensive surgery to sever mind from body so that he may effectively function amidst the unbearable pressing pain of space travel. The Scanner is “made with the cuts:” “The brain is cut from the heart, the lungs. The brain is cut from the ears, the nose. The brain is cut from the mouth, the belly. The brain is cut from desire, and pain. The brain is cut from the world.”<sup>76</sup> In annihilating space and time, the Scanners are enigmas that exist in a borderland between the living and the nonliving. They are “killed for Space but they live for Space” (ibid., 367), they are dead though they live (ibid., 369). In surrendering their humanity to serve as “Agents of the Instrumentality of Mankind,” the Scanners grow increasingly alienated from humans (whom they disdainfully call the “Others”) and human qualities as they come to identify with the machine above all else.<sup>77</sup>

The protagonist Martel is a Scanner who is desperate to get back into his body and out of the “horrible prison” of his mind. A rare character in early science fiction, Martel is a man utterly hysterical at the loss of his embodiment. He wants to “*feel* again—to feel [his] feet on the ground, to feel the air move against [his] face...[to] feel the warmth of being alive, of being human” (ibid., 354-5). He actively loathes the Scanners for their extrarationalist stance towards their bodies:

how easy it was to be a Scanner when you really stood outside your own body...and looked back into it with your eyes alone. Then you could manage the body, rule it coldly even in the enduring agony of Space. But to realize that you *were* a body, that this thing was ruling you, that the mind could kick the flesh and send it roaring off into panic! That was bad. (Ibid., 358)

It is difficult to exaggerate Martel’s agitation over the loss of physical ties. “How can I be a man,” he frantically asks his wife,

not hearing my own voice, not even feeling my own life as it goes through my veins?...Don't you think I remember what it is to be a man and not a haberman [a Scanner]? To walk and feel my feet on the ground? To feel a decent clean pain instead of watching my body every minute to see if I'm alive? How will I know if I'm dead? Did you ever think of that, Luci? How will I know if I'm dead? (Ibid., 359-60)

The Scanners are literally divided between mind and body, but twice monthly they can “cranch” and temporarily download their minds back into their bodies. In the middle of a particularly cruel and emotional cranch, Martel is summoned to an emergency meeting where he and the other Scanners learn that a man named Adam Stone has invented a device that would “Screen Out the Pain of Space,” rendering the Scanners obsolete and their sacrifice in vain. Martel is horrified when the Scanners vote to murder Stone, and he attributes his revulsion at the idea of murder to his embodiment, and the others’ indifference to their disembodiment:

When he was not crunched he noticed his body no more than a marble bust notices its marble pedestal...This time, it was different. Coming crunched, and in full possession of smell-sound-taste-feeling, he reacted more or less as a normal man would. He saw his friends and colleagues as a lot of cruelly driven ghosts. (Ibid., 371)

“[O]nly a crunched Scanner,” Martel realizes, “could feel with his very blood the outrage and anger which deliberate murder would provoke among the Others” (ibid., 379).

The rest of the plot is largely irrelevant: Martel rescues Stone and thus his and the other Scanners’ humanity. Most significant is the story’s palpable anxiety over being cut off from the affective ethical world that *embodiment seems to guarantee*. In obvious ways, “Scanners Live in Vain” is typical of the twentieth-century dystopia in its rejection of the ruthless rationality of a society programmed by the single standard of efficiency. Novels like *We* and *1984* warn their readers that the increasing regimentation of life will dehumanize and eventually engulf humanity (self, in Baudrillard’s terms, becomes



subject/ed to the system of objects it creates<sup>78</sup>). Physicality becomes increasingly repugnant under a technorationalist worldview that orients humans towards things (the seamless, rigid ideal of the machine) rather than towards people. The fear of the machine turning humans into machines is a staple of the twentieth-century dystopia,<sup>79</sup> but Smith's story remains unique in its certainty that something like the vulnerable, tactile body is the *condition of possibility* for humanness: you are not an automaton if you feel pain or empathy. Utterly opposed to the science fiction discussed elsewhere in this chapter, "Scanners Live in Vain" works for the contingent and the corporeal in order to subvert the teleology of disembodiment that narratives of technological or scientific mastery imply. Divorce from the body, Smith argues, is divorce from the irreducibility of the other.<sup>80</sup> Flesh as lived vulnerability—to pleasure, pain, and desire—counters egology (as well as sight as the dominant epistemological sense), and acts as an imperative for non-violence; human life requires a body grounded in contact with other bodies. This view of the self and its relations with others inspires the science fiction I analyze throughout the rest of this project.

## Notes

\_\_\_\_\_. 1. Alfred I. Tauber, *The Immune Self: Theory or Metaphor?* (Cambridge: Cambridge University Press, 1997), 9. See also *Organism and the Origins of Self*, ed. Alfred I. Tauber (Dordrecht, Holland: Kluwer Academic Publishers, 1991).

2. Peter Radetsky, *The Invisible Invaders: The Story of the Emerging Age of Viruses* (Boston: Little, Brown, and Company, 1991), 92.

\_\_\_\_\_. 3. Istvan Csicsery-Ronay, Jr., "Cyberpunk and Neuromanticism," in *Storming the Reality Studio: A Casebook of Cyberpunk and Postmodern Science Fiction*, ed. Larry McCaffery (Durham, NC: Duke University Press, 1991), 188.

4. A. Hyatt Verrill, "The Exterminator," in *Caught in the Organ Draft: Biology in Science Fiction*, ed. Isaac Asimov, Martin H. Greenberg and Charles G. Waugh (New York: Farrar, Strauss and Giroux, 1983), 63. Hereafter cited in text.

5. Tom Wakeford, *Liaisons of Life: From Hornworts to Hippos, How the Unassuming Microbe Has Driven Evolution* (New York: John Wiley & Sons, 2001), 10. Wakeford writes that "De Kruif's book is a brilliant crime novel, in which scientists are cast as the defenders of private property, while bacteria play the part of thieves and murderers" (ibid., 10). In a discussion of Pasteur's conservatism (he once ran for the French Senate), David Bodanis dramatizes Pasteur's use of bacteriological language to vent his disgust at the lower classes (this is not a quote from Pasteur, but Bodanis's gloss on Pasteur's conflation of bacterial/lower class hordes): "Let the mob take Paris and without the King or Emperor to shore us up we would dissolve into aimless bodies no different from the mob; let the bacterial mob take our physical body and we would decay into a putrefying bacterial mass no different from the attackers. If unpleasant entities such as the people or bacteria had to exist, then they must be kept firmly in place. The people, especially the workers, were safe only if kept in passive Catholic trade unions, or state-run clubs, or other trustworthy bureaucratic bonds. The bacteria, in all their unpleasant and quick-to-grow varieties, were safe only if restricted to one slot in the Great Chain of Being, that of the decomposer of dead bodies, destroying order only after all life in it had naturally gone, and returning its atoms to the soil for re-birth. Outside of that, though, and they were terrible." David Bodanis, *Web of Words: The Ideas Behind Politics* (New York: MacMillan, 1988), 17.

\_\_\_\_\_. 6. Leon Chernyak and Alfred I. Tauber, "The Dialectical Self: Immunology's Contribution," in *Organism and the Origins of Self*, 131.

\_\_\_\_\_. 7. Tauber, *The Immune Self*, 7.

8. Paul de Kruif, *Microbe Hunters* (New York: Harcourt, Brace & World, Inc., 1926), 93.

9. Ibid., 126, 131.

10. See especially Paul Weindling, "A Virulent Strain: German Bacteriology as Scientific Racism, 1890-1920," in *Race, Science and Medicine, 1700-1960*, ed. Waltraud Ernst and Bernard Harris (London: Routledge, 1999), 229. In the same collection, Bernard Harris writes that between 1880 and 1914, between 120,000 and 150,000 Jews settled in Britain after "fleeing economic and religious persecution in Eastern Europe." Bernard Harris, "Pro-Alienism, Anti-Alienism and the Medical Profession in Late-Victorian and Edwardian Britain," 190.

11. Early speculation on the virus as the "missing link" between life and nonlife made its way into an influential retrospective history of vitalism by Leonard Richmond Wheeler. Wheeler discusses the work of a contemporary writer on mechanistic theory: "he [Wightman] turns hopefully—as do many other materialists of the present day—to the filterable viruses as substances which are hard to define as living or non-living and therefore may provide the 'missing link' ... He points out that their discovery is due to the diseases they cause, and thinks it is 'no wild speculation to suppose that...there are many other such bodies whose function is the creation and sustaining of life, but which...must at present blush unseen.' If so, the gap between living and non-living matter is bridged." L. Richmond Wheeler, *Vitalism: Its History and Validity* (London: H.F. & G. Witherby, 1939), 98-9.

12. The classic "lost race" novel is H. Rider Haggard's *She* (1887). The science fiction subgenre deals fancifully with prehistory and archaeology, but is driven largely by the white male sexual fear of and obsession with nonwhite women and miscegenation.

13. De Kruif, 124, 131.

14. Heather Schell argues that postcolonial "[f]ears about an emerging viral menace...actually offer a revamped justification for reasserting national, racial, and sexual categories," and that "[d]ebates about national and personal boundaries are unfolding within our anxious apprehensions of an approaching viral pandemic." In non-fiction viral narratives, she warns, the "virus emerges as a dangerous foreign being, a fecund, primitive yet evolving, hungry, needy, African predator unleashed by modern travel from the last recesses of the wild. It wants to immigrate, with or without a visa." "While ostensibly pondering the possible overthrow of the food chain," virus discourse, Schell argues, "imagines the overthrow of the social order. Viruses represent social change—frightening and enormous social change—and our drastic fear of viral epidemics is in part a reactionary response to the possibility of such change. Virus discourse has become a covert means of negotiating identity and contact in the increasing multiculturalism of the global village." She concludes by arguing that viral narratives retell "old imperialist nightmares that, neutralized under cover of medical common sense, seem to justify exclusionary practices, surveillance, and general prejudice that we would otherwise find inexcusable as well as politically untenable." "Outburst! A Chilling True Story about Emerging-Virus Narratives and Pandemic Social Change," *Configurations* 5, no.1 (1997), 114, 95-6.

15. Richard Preston, *The Hot Zone* (New York: Anchor Books, 1995), 71.

16. Ann Giudici Fettner discusses David Katz's analysis of AIDS and other autoimmune disorders as "dyslexic self-recognition." Katz "describes autoimmunity in a generic way by referring to it as dyslexia of the immune system. Dyslexia, which is a disturbance of the ability to read, is comparable to dysfunctions that cause the loss of communication between various cells of the immune system. When this occurs, the immune system is no longer properly regulated, and tolerance of self antigens is lost. Any number of malfunctions may ensue." *Viruses: Agents of Change* (New York: McGraw-Hill, 1990), 200, 61.

17. See also Lisa Lynch, "Not a Virus, but an Upgrade:" The Ethics of Epidemic Evolution in Greg Bear's *Darwin's Radio*," *Literature and Medicine* 20, no. 1 (Spring, 2001): 71-93; and Illiana Alexandra Semmler, "Ebola Goes Pop: The Filovirus from Literature and Film," *Literature and Medicine* 17, no. 1 (Spring, 1998): 149-174.

18. Arthur C. Clarke, *Childhood's End* (New York: Ballantine Books, 1953), 176, 177.

19. *Ibid.*, 203.

20. *Ibid.*, 183, 205.

21. Stephen D. Arata, "The Occidental Tourist: *Dracula* and the Anxiety of Reverse Colonization," *Victorian Studies* 33 (1990): 623.

22. H.G. Wells, *The War of the Worlds*, in *Four Complete Novels* (New York: Barnes and Noble Books, 1994), 355. Hereafter cited in text.

23. See H.G. Wells, *The Outline of History* (New York: MacMillan, 1920); and Jared Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (New York: W.W. Norton & Co., 1997).

24. H. Bruce Franklin, "Eternally Safe for Democracy: The Final Solution of American Science Fiction" in *Science Fiction, Social Conflict and War*, ed. Philip John Davies (Manchester: Manchester University Press, 1990), 152.

25. Wells opens the novel by invoking the two greatest scientific discoveries in history—that of space and of the microscopic world—but only to expose humanity's utter insignificance: "No one would have believed that in the last years of the nineteenth century that this world was being watched keenly and closely by intelligences greater than man's and yet as mortal as his own; that as men busied themselves about their various concerns they were scrutinised and studied, perhaps almost as narrowly as a man with a microscope might scrutinise the transient creatures that swarm and multiply in a drop of water. With infinite complacency men went to and fro over this globe about their little affairs, serene in their assurance of their empire over matter. It is possible that the infusoria under the microscope do the same...Yet across the gulf of space, minds that are to our minds as ours are to those of the beasts that perish, intellects vast and cool and

unsympathetic, regarded this earth with envious eyes, and slowly and surely drew their plans against us. And early in the twentieth century came the great disillusionment” (*The War of the Worlds*, 516). A bitter parody of the future war novel and its dogma of racial manifest destiny, *The War of the Worlds* sought to strip Europeans of the delusion that the meaning of history and human experience was bound to triumphant technological/colonial expansion.

26. Chris Hables Gray, Steven Mentor and Heidi J. Figueroa-Farriera, “Cyborology: Constructing the Knowledge of Cybernetic Organisms,” in *The Cyborg Handbook*, ed. Chris Hables Gray, Heidi J. Figueroa-Sarriera and Steven Mentor (New York: Routledge, 1995), 5.

27. Perhaps Wells had read Marx (he was a socialist after all). Marx used vampire metaphors to describe the accumulation of capital as “dead labour which, vampire-like, lives only by sucking living labour, and lives the more, the more labour it sucks.” Karl Marx, *Capital: A Critique of Political Economy*, ed. Frederick Engels, trans. Samuel Moore and Edward Aveling (New York: The Modern Library, 1906), 257; as well, the bourgeoisie “has become a vampire that sucks out its [the peasant’s] blood and brains and throws them into the alchemist’s cauldron of capital.” Karl Marx, *The Eighteenth Brumaire of Louis Bonaparte*, ed. Daniel de Leon (Chicago: Charles H. Kerr & Co., 1907), 74; and lastly, capital lives “by constantly sucking in living labour as its soul, vampire-like.” Karl Marx, *Grundrisse*, trans. Martin Nicolaus (New York: Penguin, 1993), 646.

28. H.G. Wells, “The Man of the Year Million: A Scientific Forecast,” in *Darwin to the Double Helix: The Biological Theme in Science Fiction*, ed. Leonard Isaacs (London: Butterworths, 1977), 32.

29. *Ibid.*, 34.

30. Colin Wilson, *The Mind Parasites* (Frogmore, UK: Panther Books, Ltd., 1969), 114-5.

31. Eric Frank Russell, *Sinister Barrier* (New York: Ballantine Books, 1939), 135. Hereafter cited in text.

32. Robert A. Heinlein, *The Puppet Masters* (New York: Ballantine Books, 1951), 26.

33. *Ibid.*, 205.

34. For more 1950s alien invasion as Communist-scare movies, see *It Came from Outer Space* (1953), and *Invaders from Mars* (1953). On the communist/homosexual witch-hunts of the 1950s see Jennifer Terry, *An American Obsession: Science, Medicine, and Homosexuality in Modern Society* (Chicago: University of Chicago Press, 1999). Terry writes that both communists and homosexuals were groups who sought to appear

“normal” in order to infiltrate the highest levels of government, and both corrupted the young (ibid., 344).

35. See George Lipsitz, *The Possessive Investment in Whiteness: How White People Profit from Identity Politics* (Philadelphia: Temple University Press, 2006).

36. Such unreflective rhetoric can be seen in Ethne Barnes’s *Diseases and Human Evolution* (Albuquerque: University of New Mexico Press, 2007), 11. See Emily’s Martin’s excellent critique of popular scientific and lay conceptions of the immune system in *Flexible Bodies: The Role of Immunity in American Culture From the Days of Polio to the Age of AIDS* (Boston: Beacon Press, 1995), as well as Donna Haraway’s “The Biopolitics of Postmodern Bodies,” in *American Feminist Thought at Century’s End: A Reader*, ed. Linda S. Kauffman (Cambridge, MA: Blackwell Publishers, 1993).

37. Emily Martin, “Toward an Anthropology of Immunology: The Body as Nation State,” in *The Science Studies Reader*, ed. Mario Biagioli (New York: Routledge, 1999), 359.

38. Shohini Chaudhuri, “Visit of the Body Snatchers: Alien Invasion Themes in Vampire Narratives,” *Camera Obscura* 40-41 (May 1997): 191.

39. See Susan Blackmore, *The Meme Machine* (Oxford: Oxford University Press, 2000).

40. Adam Roberts, *Science Fiction* (London: Routledge, 2000), 80.

41. Cyndy Hendershot, “Vampire and Replicant: The One-Sex Body in a Two-Sex World,” *Science Fiction Studies* 22 (1995): 390.

42. See *Invasion of the Body Snatchers*, DVD, directed by Don Siegel (1956; Los Angeles: Republic Pictures Home Video, 1998) and *Invasion of the Body Snatchers*, DVD, directed by Philip Kaufman (1978; Santa Monica, CA: MGM Home Entertainment, 2007). In Siegel and Kaufman’s interpretation of the novel, American conformism is dehumanizing, its effects deadly. There are several passages in the novel where Finney suggests that small town America is the true menace. The narrator looks fearfully about: “Unchanged to the eye, what I was seeing out there now—in my eye, and beyond that in my mind—was something alien. The lighted circle of pavement below me, the familiar front porches, and the dark mass of houses and town beyond them—were fearful. Now they were menacing, all these familiar things and faces; the town had changed or was changing into something terrible.” Jack Finney, *Invasion of the Body Snatchers* (New York: Simon & Schuster, 1954), 103.

43. John Campbell, “Who Goes There?” in *The Best of John W. Campbell* (New York: Ballantine Books, 1976), 265.

44. Finney, *Invasion of the Body Snatchers*, 98.

45. Ibid., 99.

46. Campbell, "Who Goes There?", 266.

47. Ibid., 290.

48. Finney, *Invasion of the Body Snatchers*, 173.

49. Finney, *Invasion of the Body Snatchers*, 176.

50. See Fettner, *Viruses*, 62.

51. Ken Holden, quoted in Martin, *Flexible Bodies*, 196. See also Robert S. Root-Bernstein, "Self, Nonself, and the Paradoxes of Autoimmunity," in *Organism and the Origins of Self*, 159-209.

52. Sadie Plant, *Zeros + Ones: Digital Women + The New Technoculture* (New York: Doubleday, 1997), 91.

53. Ibid., 243.

54. In a different context, Jenny Wolmark writes that in classic cyberpunk texts such as those by William Gibson, the computer/human interface is the "means by which the body is transcended." Indeed, the "disappearing body" of the cyberpunk text "has become an ironic, and indeed iconic, form of posthuman embodiment. It is, however, a form of embodiment in which the idea of the 'natural' body is left unchallenged, allowing the unstable subject to be restored to a unitary wholeness that excludes difference of any kind." "Staying with the Body: Narratives of the Posthuman in Contemporary Science Fiction," in *Edging into the Future: Science Fiction and Contemporary Cultural Transformation*, ed. Veronica Hollinger and Joan Gordon (Philadelphia: University of Pennsylvania Press, 2002), 76.

55. Here I quote from Laura Chrisman and Patrick Williams's discussion of Robert J.C. Young's *White Mythologies: Writing History and the West* (New York: Routledge, 1990), in their essay "Colonial Discourse and Post-Colonial Theory: An Introduction," in *Colonial Discourse and Post-Colonial Theory: A Reader*, ed. Patrick Williams and Laura Chrisman (New York: Columbia University Press, 1994), 9.

56. See David Lindley, *Uncertainty: Einstein, Heisenberg, Bohr and the Struggle for the Soul of Science* (New York: Doubleday, 2007).

57. Isaac Asimov, *Foundation and Empire* (New York: Ballantine Books, 1982), 30.

58. On Einstein's arguments with Niels Bohr and Werner Heisenberg, see Dugald Murdoch, "The Bohr-Einstein Dispute," in *Niels Bohr and Contemporary Philosophy*, ed.

Jan Faye and Henry J. Folse (Dordrecht, Holland: Kluwer Academic Publishers, 1994), 303-24, and David Lindley, *Uncertainty: Einstein, Heisenberg, Bohr and the Struggle for the Soul of Science*.

59. Theodore Sturgeon, *More than Human* (New York: Ballantine Books, 1953), 107.

60. See Henri Bergson, *Creative Evolution* (1910), and Teilhard de Chardin, *The Phenomenon of Man* (1959).

61. Wilson, *The Mind Parasites*, 73. Hereafter cited in text.

62. It is worth noting that even *The Mind Parasites* features a race war between Africa and Europe.

63. Greg Egan, one of the best science fiction writers working today, describes his work thus: "what happens in my novels is that the border between science and metaphysics shifts: issues that originally seemed completely metaphysical, completely beyond the realms of scientific enquiry, actually become part of physics. I'm writing about extending science into territory that was once believed to be metaphysical." Of course Egan is just one writer amongst many within a long tradition of science fiction's confusion/conflation of science with metaphysics. Quoted in Kathryn Cramer, "Hard Science Fiction," in *The Cambridge Companion to Science Fiction*, edited by Edward James and Farah Mendlesohn (Cambridge: Cambridge University Press, 2003), 195.

64. Olaf Stapledon, *Last and First Men*, in *Last and First Men and Star Maker: Two Science Fiction Novels by Olaf Stapledon* (New York: Dover, 1968), 9. Hereafter cited in text.

65. Olaf Stapledon, *Star Maker*, 429.

66. See Brian Stableford, *Scientific Romance in Britain, 1890-1950* (London: Fourth Estate, 1985) for the best history/analysis of this peculiar trend in science fiction.

67. Andreas Huyssen, "The Vamp and the Machine: Fritz Lang's Metropolis," in *Fritz Lang's Metropolis: Cinematic Visions of Technology and Fear*, ed. Michael Minden and Holger Bachmann (Rochester, NY: Camden House, 2000), 204.

68. Arthur C. Clarke, *2001: A Space Odyssey* (New York: Signet, 1968), 173.

69. *Ibid.*, 173-4.

70. *Ibid.*, 124.

71. See Marvin Minsky's *The Society of Mind* (1987), and Hans Moravec's *Mind Children* (1988) and *Robot: Mere Machine to Transcendent Mind* (1998).



72. Clarke, 2001, 185-6.

73. Ibid., 217.

74. Here I adapt David Hinckley's language in his analysis of H.G. Wells's *The Island of Dr. Moreau*, a novel with which "Scanners Live in Vain" has much in common. See David Hinckley, "Surgical Evolution, or, the Scalpel as Shortcut: The Doctor as Interface between Science Fiction and Horror," in *No Cure for the Future: Disease and Medicine in Science Fiction and Fantasy*, ed. Gary Westphal and George Slusser (Westport, CT: Greenwood Press, 2002), 90.

75. Other science fiction predicting/plotting man's future mental evolution includes George Bernard Shaw's *Back to Methuselah* (1921), S. Fowler Wright's *The Amphibians* (1924), and John Campbell's "Forgetfulness" (1937). See James Blish's "Surface Tension" (1952) for a terrific send-up of masculine self-aggrandizement and galactic domination in science fiction.

76. Cordwainer Smith, "Scanners Live in Vain," in *The Science Fiction Hall of Fame, Volume I*, ed. Robert Silverburg (New York: Avon Books, 1970), 367. Hereafter cited in text.

77. On the machine/robot in science fiction, see Thomas P. Dunn and Richard D. Erlich, eds., *The Mechanical God: Machines in Science Fiction* (Westport, CT: Greenwood Press, 1982). Gary K. Wolfe's "Instrumentalities of the Body: The Mechanization of Human Form in Science Fiction," 211-224, is particularly good and briefly discusses "Scanners Live in Vain."

78. Jean Baudrillard, *The System of Objects*, trans. James Benedict (London: Verso, 2005).

79. See Erika Gottlieb, *Dystopian Fiction East and West: Universe of Terror and Trial* (Montréal: McGill-Queen's University Press, 2001), 57.

80. This is Derrida on Husserl: "The alterity of the transcendent thing, although already irreducible, is such only by means of the indefinite incompleteness of my original perceptions. Thus it is incomparable to the alterity of Others, which is also irreducible, and adds to the dimension of incompleteness (the body of the Other in space, the history of our relations, etc.) a more profound dimension of nonoriginality—the radical impossibility of going around to see things from the other side. But without the first alterity, the alterity of bodies (and the Other is also a body, from the beginning), the second alterity could never emerge. The system of these two alterities, the one inscribed in the other, must be thought together: the alterity of Others, therefore, by a double power of indefiniteness." Jacques Derrida, "Violence and Metaphysics: An Essay on the Thought of Emmanuel Levinas," in *Writing and Difference*, trans. Alan Bass (Chicago: The University of Chicago Press, 1978), 124. See Edith Wyschogrod's excellent essay "Towards a Postmodern Ethics: Corporeality and Alterity" for a philosophical survey of

the postmodern body of ethics, in *Ethics and Aesthetics: The Moral Turn of Postmodernism*, ed. Gerhard Hoffmann & Alfred Hornung (Heidelberg: C. Winter, 1996), 53-67.

## CHAPTER THREE

### Evolutionary Hybridization and Symbiotic Kinships in Contemporary Science and Fiction

The nucleated, mitochondria-containing eukaryotic cell on which all nonbacterial forms of life are modularly based is itself the result of symbiosis and bacterial recombination (omnisexuality). The xenic origins of the eukaryotic cell have major implications for the self, the body and a vulgar Darwinism that equates evolutionary success with competition...Eukaryotic cells evolved through a process known as endosymbiosis. Perhaps the simplest model of endosymbiosis is for one organism to swallow another without digesting it. In microbes especially, thanks to their lack of an immune system, organisms may be eaten that are likely to survive within their hosts. A more complex form of endosymbiosis is bacterial infection: in this case, too, death does not ensue but, rather, the invading organisms successfully reproduce inside, and in some cases may even become absolutely required by, their hosts. Not only the origin of new species, but the origin of the metakingdom Eukaryotae as well, comprising all nonbacterial organisms, occurred not through gradual accumulation of mutations but through endosymbiosis: we may owe our very existence to the ancient "failure" of Lilliputian vampires, oxygen-respiring bacteria similar to modern-day *Bdellovibrio*, to kill the hosts whose bodies they had invaded.

—Dorion Sagan, "Metametazoa: Biology and Multiplicity"

#### I. Infective Bodies and Posthuman Biologies in the New Science

Mechanistic geneticists and Neo-Darwinists systematically ignore the question, in both a quantifiable and qualitative sense, of what *life itself is* in order to focus exclusively on the organism in abstraction from its environment or interdependence with other units of life (respectively). The desire for a reassuring genetic kinship, specificity, and continuity ironically drives many within the life sciences (especially within the fields of immunology, genetics, and evolutionary theory) to take the most lifeless unit of study as the *sine qua non* of their discipline. Contemporary genre fiction that cares about the past, present, and future of the body, however, somehow foils projects of purification whether at the organismic, microscopic, or genetic levels of biological existence. As such, it is little surprise that the bodies, kinships, and biotic complexes in texts that straddle the disciplinary divide between science and fiction share the unvarying *virtue* of being diseased, in the sense of direct communication with other bodies and environments.

Scientific or fictional discourses that privilege evolutionary hybridization, interspecies symbioses, or genetic hybridity break with evolutionary narratives that fetishize the individual (genome) as the ruling element, and the cause and effect, of developmental health and fitness. The evolutionary synthesis of the 1930s and 1940s married Mendelian inheritance with the survival of the fittest, a synthetic scientific and ideological worldview that prized competition and individualism over cooperation and symbiosis. Darwinian orthodoxy was based on a vision of the organism struggling to discriminate itself from the environment through violence. For the fit, the evolutionary encounter reinforced autonomy, specificity, and immunity. In immunology discourse (which methodologically coalesced with Neo-Darwinism) the differentiation of Self from Other was the “fundamental evolutionary mechanism enabling any organism which live[d] by digesting the substance of other organisms to protect its integrity and to maintain a surveillance over the orthodoxy of its chemical structure.”<sup>1</sup> For several decades, the mechanistic reduction of life functions to physics and chemistry typified a molecular genetics and immunology that demanded strict delimitation of the individual as the disciplines’ *condition of possibility*. Adherents of a mechanistic life science argued that nature selected for individuals finely cut from the environment, and that meiotic heredity—the sexual transmission of genetic differences via sperm and egg sex—was the sole method by which animals progressed, by the random accumulation of mutations, to higher and more complex (i.e. articulated) biological taxa: “Anything else,” science historian Jan Sapp writes, “transmitted sexually or not, was by definition foreign, disease, retrogressive.”<sup>2</sup>

The individualistic ethos underlying evolution by survival of the fittest dovetailed

nicely in the first half of the twentieth-century with an American politics allergic to any theory, whether social or scientific, that smacked of Communism (or the feminine, for that matter). In his book *Liaisons of Life* (2001), Tom Wakeford notes that evolution by infective or integrative symbioses was at first condemned in the West as political subversion. The founders of symbiogenetic theory were pre- and post-revolutionary Russians, particularly, the biologist Konstantin Sergeivich Merezhkovsky (who coined the term). “Symbiosis was invented as a purely scientific term,” Wakeford writes, but was

fatally bracketed in the minds of its enemies with dangerous political movements...In the wake of the carnage of World War I and the new threat from the Soviet Union, symbiosis was condemned by mainstream science as a political subversion that could provide explanations neither for humanity’s apparent lust for conflict nor for the evolutionary patterns of life.<sup>3</sup>

The idea that the evolution of the cell (the basic unit of all life) and the origin of species could be the result of infective agents or genetic hybridization was anathema to a Western experimental biology that bound the meaning of human existence with a progressive competition and individuality.

Neo-Darwinists, for whom individuality is the mechanism and endpoint of organic evolution, see the loss of individuality attendant upon ecological/interspecies mutualism as a degenerate condition rather than a novel resource. Intimate associations between two or more species, or between an organism and its environment, cannot, however, be satisfactorily explained in terms of a strict parasitism/contagion model of being or heredity. Symbiogenesis, the theory of evolutionary innovation via the inheritance of acquired genetic material, or, symbiosis, argues for an origin and evolution of life made possible by complex biological alliances that merge genetically diverse material from different sources. In the second half of the twentieth-century, electron microscopy

increasingly revealed a bizarre world teeming with infective bacterial and viral mergers that lead abruptly to new properties by the creation or releasing of fresh genetic material, in effect moving life into uncharted territory. In “The Web of Life: Development over 3.8 Billion Years of Trophic Relationships,” Peter W. Price writes that parasites (infections) play a key role in the evolution of biotic complexes: “Because they are finely evolved for living intimately with other organisms, parasites have a predisposition, or preadaptation, for becoming symbiotic mutualists.”<sup>4</sup> The incorporation of other beings via ingestion, infection, and parasitism, microbiologist Lynn Margulis contends, was responsible for the largest evolutionary leap in the biological world, from prokaryotes (bacteria—organisms composed of cells with no nuclei) to eukaryotes (all other living things—organisms composed of cells with nuclei<sup>5</sup>). The evidence continues to grow today for symbiogenesis as the driving force behind not only microscopic but macroscopic evolutionary novelty. A process fundamentally different from the random selection of mutations and the survival of the fittest, symbiosis, as an inescapable codependency of organisms in evolutionary partnership, has wide-ranging scientific and philosophical implications. There is no biologically relevant individual, only interactive composite organisms that have mastered or are working towards mastering the art of mutual existence. According to Polish microbiologist and immunologist Ludwik Fleck, if the organism can no longer be construed as a self-contained, self-congruent unit set apart from the world, then “it is very doubtful whether an invasion in the old sense is possible.”<sup>6</sup>

Contemporary biologists like Joshua Lederberg and Lynn Margulis, and science writers like Dorion Sagan stress the significance of evolutionary/genetic hybridization and the planet as a complex living system in radical codependency, taking biology beyond the

genetic uniformity and specificity promised by a mechanistic molecular biology. Margulis insists that Neo-Darwinists ignore biological and hereditary diversity in positing an evolutionary theory that works solely through the random accumulation of mutations and Mendelian inheritance. But meiotic sex, Margulis and Sagan argue, actually works to stabilize and restrict genetic expression, when evolution works by and through the injection of new genes into the biosphere (meiosis is the form of biological sex “hitched to reproduction”<sup>7</sup> rather than novelty). Their elaboration of symbiogenesis posits an exogenous rather than endogenous origin for new organismic properties and even species. As Sagan writes above, the new biology affirms that even the basic unit of all life, the eukaryotic cell, is not, in fact, a homogenous unit but the result of an ancient bacterial merger that began as a hostile takeover, but evolved into an association so integral to survival for both predator and prey that both parties became, for all intents and purposes, a new biological entity. The ancestors of our mitochondria, he and Margulis argue, evolved symbiotically with engulfing, infecting, and omnisexual (gene-trading) bacteria that avoided being digested. While Neo-Darwinists argue that anything other than the sexual transmission of genetic identity is error, contamination, or disease, Margulis argues for the infective origins and evolution of life, subverting any concept of the organism as an autonomous or homogenous unit of evolutionary selection. The biological individual is so abstract a concept as to be utterly meaningless. Symbiogenesis proves that dynamic ecological and organismic alliance rather than competition lies at the very heart of life itself.

In the microscopic world and the science fiction influenced by it, infective

symbioses, interspecies parasitisms, genetic hybrids, and discongruent crossbreeds usher in novel life forms and kinships, new ways of experiencing ourselves and our relationships with others. The third and final alien evolutionary path this chapter and the next explores is most provocatively represented in the microbial/symbiotic/genetic infection narratives of Richard Matheson, Joan Slonczewski, and Octavia Butler. Far from vanishing into ethereality or a pristine realm of the mind, the bodies in these texts are infective and affective; they transgress formal integrity and subvert the boundary between the self and the world. Wary of an evolutionary theory that premises an expansive individuality on the assimilation or elimination of the Other, posthuman infection/invasion narratives turn to new theories within the fields of bacteriology, genetics, and evolution to mobilize symbiotic kinships and life patterns. Matheson's *I Am Legend*, Slonczewski's *Brain Plague*, and especially Butler's *Clay's Ark*, "Bloodchild," and *The Xenogenesis Trilogy* are key texts in twentieth-century science fiction that herald an end to the prevailing conception of the body as mechanistic, aseptic, and autonomous. Invasion narratives that modify the usually predatory relation between the alien and the human, these texts give way to symbiotic kinships and illegitimate biologies that work horizontally as well as laterally, producing difference rather than the same. From epidemiological adjustments between predator and prey, to the unlikely hybrids ceded by interspecies mergers, all of the texts I analyze in these final two chapters feature novel disease relations that permanently transform both biological and social existence: There is no cure for infection, there is no return to a status quo, there is no transcendence, and there is no reversion to an illusory genetic purity. A literature that literalizes the impossibility of individuality or separation, where alien agents react violently to the Self's



attempt to maintain purity within its borders, the posthuman infection narrative invites us to experience bodies no longer purely human or nonhuman. The epidemiological encounters in these texts make possible a whole range of new entities, properties, and kinships that demand radical interdependency. What begins as deadly infection—a virus, a bloodsucking parasite, a bacteriological infection, or a genetic contaminant—becomes a new bodily part or method of illicit reproduction.

And in both sexual and symbiotic fusions, Margulis writes, “hunger [is] a likely primordial factor urging the desperate to merge...”<sup>8</sup>

## II. “For he was a man and he was alone:” Invulnerability and Stagnation in Richard Matheson’s *I Am Legend*

Bacteriology provided proof of its militant scientificity by giving rise to the science of immunology.  
—Georges Canguilhem, “Statut épistémologique”

A norm cannot be normative without being militant, that is, intolerant.  
—Georges Canguilhem, *Le Normal et le problème des mentalités*

Born of English-German stock, Robert Neville is a thirty-six year old white American male with bright blue eyes—and he is also the last of his species. A mysterious plague unleashed by biological warfare has swept the planet and mutated humans into a new species of “*Homo Vampiris*”<sup>9</sup> compelled to nourish the germ that has usurped their bodies by feeding it blood. Neville alone remains resistant to the infectious agent, speculating that he built up immunity years before when he was bitten by a vampire bat while in the army. He spends his days roaming the city, invading homes, experimenting on female vampires, and slaughtering sleeping vampires by the dozens. He also works tirelessly to refortify his house against the nightly barrage of vampires sick for his blood. He pores over physiology, bacteriology, and hematology books to study the plague,

peering into his microscope, laboring to pinpoint the disease agent and find a cure. While Neville makes prodigious use of the typical tools of the vampire hunter trade such as garlic and stakes, his central weapon in the fight against the revenants is his microscope, and as Kathy David Patterson writes in “Echoes of *Dracula*: Racial Politics and the Failure of Segregated Spaces in Richard Matheson’s *I Am Legend*,” Neville uses his own blood as the norm against which all others are diagnosed and found healthy or sick.<sup>10</sup> Because his body/house is under perpetual threat of incursion by menacing vampiric hordes, the bulk of the novel plots Neville’s fight to fend off the bloodthirsty invaders and to maintain a precisely defined boundary between his Self (which is to be kept in the house), and his nonSelf (which is to be kept out).<sup>11</sup> But ultimately, Matheson writes Neville’s immunity to the plague as the element which spells his doom—as the last of a dead race, Neville becomes the new monstrous and the legendary Other to be feared. His ruthlessly aggressive individuality prevents contact with alterity *and it kills him*. With *I Am Legend* (published in 1954), Richard Matheson offers a provocative critique of contemporary popular scientific notions about the centrality of the Self/nonSelf immunological, or racial, ontology in defining what it means to be a person, while critiquing white masculinity and the power and property it accrues as a sick and fatal stability.

*I Am Legend* sets itself up to be yet another alien invasion novel that elicits male hysteria and violence over the transgression of clearly marked boundaries of race and masculinity. But in a clever move, Matheson articulates Neville’s possessive investment in his individuality as the fulcrum for a pathological protection of both white masculinity and private property (see Herbert Marcuse on the philosophy of individualism and its

intrinsic connection with private property—“man could not develop a self without conquering and cultivating a domain of his own to be shaped exclusively by his free will and reason”<sup>12</sup>). Throughout the novel, Neville wages relentless warfare to defend his home and his body against a malevolent species locked into battle with the remaining human for control of territory (his house) and resources (his blood). Convinced of the purity of his own blood and determined to maintain his status as uncontaminated, Neville fortifies his house as the site of armed conflict between the defender of white property and hordes of infected Others. An analogue of his hyperactive immune system, Neville’s house marks the boundary between the human and the nonhuman; it is the surface that must not be breached, the “first line of defense”<sup>13</sup> against vampires racialized as contaminated Others that seek to penetrate and mutate the white male body. Matheson casts Neville’s hatred of the vampires in racist terms. In an imaginary drunken dialogue, Neville mocks minority protest against social and economic injustice:

“Why, then, this unkind prejudice, this thoughtless bias [against the vampire]? Why cannot the vampire live where he chooses? Why must he seek out hiding places where none can find him out? Why do you wish him destroyed? Ah, see, you have turned the poor guileless innocent into a haunted animal. He has no means of support, no measures for proper education, he has not the voting franchise. No wonder he is compelled to seek out a predatory nocturnal existence.” Robert Neville grunted a surly grunt. Sure, sure, he thought, but would you let your sister marry one? (Ibid., 32)

Disgusted by the thought of penetration by the vampire and its miscegenate implications, Neville wages bacteriological and immunological warfare. Though they may be a “minority element” loathed merely “because they are feared” (ibid., 31), Neville nevertheless reduces the vampires *in toto* to carriers of a disease poised to eradicate white civilization. Wired as he is to believe in his own integrity and incorruptibility, Neville fights tooth and nail against any threat to his biological or economic property. His body,

like his home, is stocked with powerful weapons to repel the marauding Other.

Neville's aggressive resistance to alterity—his killer immune system—has already enabled him to meet, conquer, and absorb the Other without himself having been transformed. His integrity and individuality established, Neville then turns to his own blood as the template for who is human and who is inhuman. When he meets Ruth (a vampire who “passes” for human in order to spy on him) and puts her blood under his microscope, Neville “is ready to kill her based solely on what he sees in her blood.”<sup>14</sup> Like his immunological defense system, Neville's microscope is a master epistemologist of life and death; in *I Am Legend*, science is an eminently penetrative practice whose discoveries literally kill. But as he slowly learns, the microscope, rather than clarifying and delimiting life, reveals a biological reality that illegitimizes boundaries between healthy and sick. Peering into the microscope, Neville locates the disease agent (“*vampiris bacterium*”) responsible for the plague:

All he could think was that here, on the slide, was the cause of the vampire. All the centuries of fearful superstition had been felled in the moment he had seen the germ. The scientists had been right, then; there *were* bacteria involved. It had taken him, Robert Neville, thirty-six, survivor, to complete the inquest and announce the murderer—the germ *within* the vampire. (Matheson, *I Am Legend*, 86)

The infected, Neville understands, is the tool for a germ that is both mortifying and vivifying. The agent that causes the disease is itself alive, and all it wants is to establish a mutual accommodation with its host. When Neville learns that life and death no longer stand in opposition within the new species, he wonders what, or whom, he has been killing: “he suddenly realized that he didn't know what portion of the vampires who came nightly were physically alive and what portion were activated entirely by the germ” (ibid., 89). Under the old science, Neville's slaughter of the vampire might be justified, but

under the new science, with its extended range of visibility, his slaughter of the vampire might be genocide.

As it turns out, Neville has been killing both the undead and those still living with the disease; with a medication that helps to alleviate their hunger for blood, Ruth and her kind have mutated into a new species of the human that has learned to live in precarious partnership with the *vampiris bacterium*. When inside the system and properly fed, the germ “is anaerobic and sets up a symbiosis with the system. The vampire feeds it fresh blood, the bacteria provides the energy so the vampire can get more fresh blood.” But when air enters the system (i.e. when Neville stakes his victims) or when the germ is starved of blood, “the situation changes instantaneously. The germ becomes aerobic and, instead of being symbiotic, it becomes virulently parasitic” and “eats the host” (ibid., 145). But even though Neville admits there are those living with the disease, he continues his slaughter, convinced of their inevitable demise. Ruth shocks him with the knowledge that her people are not only living with the disease, but they are *organizing*. In a letter warning him of their plans Ruth uses the language of revolutionary violence: She confesses they are in the nascent stage of overthrowing the status quo, but “[n]ew societies are always primitive...[i]n a way we’re like a revolutionary group—repossessing society by violence. It’s inevitable” (ibid., 166). By the end of the novel the poles of healthy and sick, and fit and unfit have reversed, and it is Neville, the white human male, who circulates invisibly and dangerously, threatening the foundations of the new civilization. As he lies in bed awaiting execution he contemplates the reversal:

suddenly he thought I’m the abnormal one now. Normalcy was a majority concept, the standard of many and not the standard of just one man. Abruptly that realization joined with what he saw on their faces—awe, fear, shrinking horror—and he knew that they were afraid of him. To them he was some terrible

scourge they had never seen, a scourge even worse than the disease they had come to live with. He was an invisible specter who had left for evidence of his existence the bloodless bodies of their loved ones....Robert Neville looked out over the new people of the earth. He knew he did not belong to them; he knew that, like the vampires, he was anathema and black terror to be destroyed...Full circle, he thought while the final lethargy crept into his limbs. Full circle. A new terror born in death, a new superstition entering the unassailable fortress of forever. I am legend. (ibid., 170)

Neville has become the legendary mythical vampire. In his incapacity to adapt to a changing world, he is civilization's disease.

*I Am Legend* signals a dramatic shift from the typical biological warfare novel where the male protagonist fights to the death to maintain the pure Self as an evolutionary imperative. The plague in *I Am Legend* promises irrevocable and revolutionary change; a radical new world order has been set in motion and Neville and his kind—white American men—will play no role in its future. With his novel, Matheson argues for the bankruptcy of the human as an autonomous value in isolation from and at war with the world, and he does so by turning the idea of the survival of the immunest on its head. As I write above, the immune system has traditionally been thought of as the point of alien contact between the Self and the world; each time the Self meets and defends itself against that world, it reinforces genetic integrity, individuality, and survival value. In *I Am Legend*, however, Neville's self-equality and invulnerability are the surest path to species stagnation. Maintaining the inviolability of the system is not only a bad strategy for survival, but an evolutionary dead-end.<sup>15</sup> As a prophylactic against disease/alterity, Neville's immune system fights to maintain a status quo based on an ontology of purity and differentiation, but as he comes to realize, the perfectly static world that this would represent is a fantasy, even, anti-evolutionary. By linking the drama of biological purity with the defense of private property, Matheson writes a novel in which white masculinity no longer has the

biological or economic ability to reproduce itself—the “Other” will *inherit* the Earth.

Before he dies Neville sees a future where white men will have lost the right to enforce their version of the human and the pure on others. He is the “last of an old race” (Matheson, *I Am Legend*, 166), the new uninfected Other against whom Ruth will measure her own postplague, hybrid humanity.

### III. Viral Being and Becoming in Octavia Butler’s *Clay’s Ark*

Is an anomalous individual, that is, an individual in some respect at variance with a defined statistical type, a sick individual or a biological innovation? Is a fruit fly with no wings, or vestigial wings, sick?  
—Georges Canguilhem, *Normalité et normativité*

Akin to Walter M. Miller’s “Dark Benediction,” but a more complex and ambiguous text, Octavia Butler’s *Clay’s Ark* (1984) anchors posthumanity in a radical instability and contamination of the alien that brings painful, yet empathetic ties to the physical world and to other bodies. *Clay’s Ark* shares thematic and methodological similarities with *I Am Legend* and “Dark Benediction.” Firstly, Butler draws upon the enemy (anti-American) status of the viral to critique hysterical fears over the reproductive menace of the Other. The novel rehearses and subverts the old colonial nightmare of exotic life forms that invade the country, revolt against white bodies, and birth ethnic and biological horrors. Secondly, the extraterrestrial virus merges with its host to form a genetically recombinant living system that prospers through symbiosis rather than assimilation. It is an infective partnership that requires the irreversible alteration of both human physiology and psychology. Contact with alien alterity, Butler suggests (as do Matheson and Miller), calls neither for the eradication of the Other nor for its assimilation, but for mutual change and coevolution. Thirdly, like the meteoric

microorganisms in “Dark Benediction,” the Clay’s Ark organism volatilizes human flesh in obeying its prime directive to replicate through direct contact with other bodies. Because it thrives through reinfection, the alien virus intensifies physicality, enhancing the infected’s capacity to affect and be affected by other bodies. But unlike any other infection narrative in contemporary science fiction, Butler’s novel uniquely envisions the vulnerable flesh as the point of alien contact between external *and* internal antigens that so drastically mutates boundaries as to make it impossible to cull the nonhuman out of the human (the protagonist Keira is invaded from without and within in the novel—she is dying of leukemia when the Clay’s Ark disease infects her). While the epidemiological exchange of properties between human and alien ushers in new kinships and near immortality, it demands a loss of control so profound that the infected find it difficult to resist committing horrific acts like rape and incest. The terrors and the possibilities embodied in the posthuman make Butler’s novel a deeply ambiguous work. The alien virus hybridizes the human and contaminates categories that have been used to deny humanness to others, but it also reduces men and women alike to breeders of an alien organism over which they exert little control.

The narrative of the novel fluctuates between a present that tells of Keira and her family’s abduction by a group of infected humans isolated in a desert community, and a past that tells the story of Asa Elias Doyle, chief geologist for the spaceship Clay’s Ark, and the first human to introduce an extraterrestrial life form onto the planet. The only survivor of a crew infected by a disease from the planet Proxima Centauri, Eli crash lands back on Earth and succumbs to the demands of the alien organism to spread and reproduce itself. Butler (one of the few African-Americans working in the field) engages



narratives that link invasion fears with race and disease: A black man who imports an exotic foreign virus into America, Eli is the ultimate nonSelf, carrier of a seemingly savage alien species bent on the usurpation and dissolution of the white body. Butler uses Eli as the central disease vector to mimic postcolonial racist fixation on viral traffic, where the disease emanating out of the “Third World” and into “The First” reads like a nightmare of the mindless breeding of the racial Other (“the nativist’s worst nightmare [is] alien procreation gone mad, uncontrollable and unstoppable”<sup>16</sup>). In *Clay’s Ark*, the viral highway is intergalactic, though the body carrying the alien agent is still sick and black. As well, the novel evokes historical fears of the introduction of alien blood through miscegenation, an anxiety typically expressed in the “scientific” belief that the “natural history” of the human races revealed an evolutionary gulf between black and white that was so great as to prevent hygienic union. In the racist imaginary, hybrid offspring were thought sterile or otherwise degenerate. Butler’s depiction of Keira, in fact her entire science fiction oeuvre, exercises and exorcizes the political history of miscegenation. Keira is an already sick and hybrid biracial young woman who prospers with rather than degenerates from alien infection.

The Clay’s Ark virus captures the genetic information of the body it infects and transfers its own alien material to recombine with the host’s to produce entirely new hybrid offspring. Rather than outright destruction of host cells, the virus “combines with them, lives with them [and] divides with them,”<sup>17</sup> in other words, it thrives by symbiotically merging with the host’s native biological substance. When the viral genetic material becomes a functional part of the infected, the human is no longer entirely human as distinctions between invader and invaded begin to fade. Because a stable life/disease

pattern can only evolve when parasite and host manage to survive (the evolutionary imperative for the invader is to evolve from agent of infection to agent of evolution), the Clary's Ark organism confers significant advantages to its host. The infected has sharpened senses and increased speed and strength; she is "utterly resistant to more conventional diseases" (ibid., 47) and largely invulnerable to injury. The virus's skill at transforming its host (humans have no immunological defense) and keeping it alive serves its single directive to replicate: "Their purpose was now his purpose," Eli muses, "and their only purpose was to survive and multiply. All his increased strength, speed, coordination, and sensory ability was to keep him alive and mobile, able to find new hosts or beget them. Many hosts" (ibid., 32). An alien agent that has no respect for species boundaries (from a viral perspective humans are indistinguishable from plants or animals<sup>18</sup>), the extraterrestrial virus is a vector of alterity between living bodies; the more contact between bodies the more opportunities the virus has to multiply. As a host for millions, perhaps billions, of extraterrestrial life forms, the infected has no choice but to obey the organisms's demand to reproduce by infecting other bodies; the alternative is physiological and psychological torture. The infected need "the company of other people almost as badly as [they] needed water" (Butler, *Clay's Ark*, 4). Butler invites us to imagine what it feels like to transform into a host for alien tissue that makes us lose control of all that defines us.

But for characters like Keira, the terror of corporeal invasion makes way for the hope embedded in the possibilities of the human/nonhuman interface. Like other posthuman scenarios that rework the opposition between human/pure and alien/contaminated, Butler's novel illegitimizes traditional categories of healthy and sick

by contrasting Keira's reaction to the disease to her father and her sister's reactions.

Keira's father Blake (a white doctor) can accept neither a humanity marked for extinction nor a penetrable, mutable body that loses self control. He fights to stay healthy and fully human—"he did not intend to live his life as an emaciated carrier of a deadly disease" (ibid., 41). Though an entirely sympathetic character, Blake is simply unable to brook alien difference and the psychological adjustments it demands. Where Keira sees possibility in an alterity that insinuates itself within her body like the disease she already has, Blake sees only the biologically unsound and the inhuman. As Keira and her family come to learn, the introduction of exogenous alien material mutates the humans so drastically as to alter their offspring. The children of the infected are no longer human; the Clay's Ark organism denies reproductive fidelity, the faithful transmission of "humanness" from one generation to the next (this is Neville's nightmare). The first child of the infected community, Jacob, is a highly intelligent and not entirely human quadruped who has significantly enhanced senses and extraordinary speed, strength, and agility. When Keira and her family briefly glance Jacob running alongside their car, Blake thinks they've seen an animal, but Keira corrects him: It is a "[d]isease-induced mutation. Every child born to them after they get the disease is mutated that way...Jacob's beautiful, really...The way he moves—catlike, smooth, graceful, very fast. And he's as bright as or brighter than any other kid his age. He's—" 'Not human,'" Blake flatly interrupts her (ibid., 68). Keira's sister Rane is similarly determined to escape the transformations wrought by the disease. Though initially intrigued by Jacob's unique intelligence, she eventually comes to see him as an "animal," a "thing," a disease requiring treatment.

Because Keira is already sick, her response to the posthuman is vastly different

from her family's. As the novel opens, the reader learns that Keira is dying from a rare untreatable form of leukemia. A cancer of the blood or bone marrow, leukemia (from the Greek "white" and "blood") is an abnormal proliferation of white blood cells, the body's "front line" in the fight against disease. Keira's immune system, in other words, is slowly but surely killing her. Without an effective defense system to maintain biological normativity, Keira has intimate knowledge of what it feels like to have a vulnerable body under invasion and beyond her control—alien blood courses through her even before infection by the Clay's Ark organism. With her "therapy-induced sensitivity to infection" (ibid., 119), Keira simply accepts the alien transgression of her body and the irrevocable social change it sets into motion. So while Blake and Rane fight infection tooth and nail, Keira initiates infection by first touching and then sleeping with Eli, and to her shock her body prospers with the disease. The organism seems to uniquely thrive with the leukemia, and Keira's body translates the infusion of extraterrestrial matter into a scheme for renewed growth and strength. In *Clay's Ark*, Butler echoes the historical loss of human status attendant upon inhabiting bodies that are sick, female, or of color (for Donna Haraway, reading Butler and Hortense Spillers allows her to understand "the situation of the human being" under slavery as "the situation of the body that passes on the status of 'nonhuman' to the children"<sup>19</sup>), but she sees the aggressive embodiment that comes with being sick as offering a privileged viewpoint from which to understand our inextricability from other bodies. Butler reverses the usual conception of disease as a pathological breakdown in communication. The Clay's Ark virus is a vector for *enhanced* communication within and between bodies, and it is this widening of affective capacity that depends not on the eradication of nonSelf from Self, but on the breakdown of the

body's defenses.

Butler anchors her posthumanity in an unstable contaminated body that guarantees enhanced contact between bodies, but *Clay's Ark* is by no means utopic. With their exquisite sense of smell and touch, the infected experience an unprecedented intensity to their corporeal encounters, but the virus can also subject people to the overwhelming compulsion to infect others through physical and sexual violence. The heightened contact between bodies is irrevocable, but ultimately ambiguous, for we are dealing with a purely selfish organism: “‘When we’ve changed,’” Eli explains to Keira, “‘when the organism ‘decides’ whether or not we’re going to live, it shares the differences it’s found in us with others who have changed...We had a woman who had had herself sterilized before we got her—had her tubes cauterized. Her organisms communicated with Meda’s and her tubes opened up. She’s pregnant now’” (Butler, *Clay's Ark*, 206). The virus reduces men and women to reproductive bodies compelled by the needs of the organism to procreate, and evolved to accommodate its demands. Genetic hybridization with the organism turns the infected “into breeding animals” (ibid., 106). There is a fine line, Butler suggests, between a liberatory posthuman discourse that requires us to visualize personhood in non-anthropomorphic terms, and an amnesiac posthuman discourse that ignores historical and juridical forms of power that have used peoples’ bodies against them.

In the epilogue of *Clay's Ark* we learn that the disease has escaped the desert community and begun to spread violence and mayhem across the country. Keira’s infected partner, Stephen Kaneshiro, tells her that in “Louisiana, there’s a group that has decided the disease was brought in by foreigners—so they’re shooting anyone who seems a little odd to them. Mostly Asians, blacks, and browns’” (ibid., 212). But nothing can stop Keira

and her children from inheriting the Earth, for just like the infected in Matheson and Miller's texts, "Jacob thinks uninfected people smell like food" (ibid.). Epidemiological narratives like *Clay's Ark* can be a great shock to the system: The virus as an agent of radical transformation is a precarious means for exploring the hope and fear of alien evolutionary trajectories and posthuman embodiments. But as the most provocative test scenario for how organisms accept or reject alien tissue, the viral contact narrative challenges the centrality of the Self/nonSelf immunological (or racial) ontology as a highly fraught means of becoming human. A newcomer to the infective/affective community asks Eli to articulate to what extent his humanity has been compromised: "how much of what you do is what you really want to do—or at least, what you've decided on your own to do...How much of *you* is left?" (ibid., 140). Eli finds the question not only impossible to answer but entirely irrelevant. The Clay's Ark organism so effectively transforms the body and alienates the concept of Self that it becomes irrational to pretend to say where the human ends and the nonhuman begins.

#### IV. Evolutionary Hybridization and Symbiotic Kinship in Octavia Butler's "Bloodchild"

Symbiosis is like sex in that the genetic materials of different individuals eventually join in the formation of a new individual. Symbiosis, therefore, is considered 'parasexual.'

—Lynn Margulis and Dorion Sagan, *Microcosms*

Octavia Butler uses science fiction to explore the extreme codependencies and precarious kinships that accrue from symbiotic modes of being and becoming. Because the alien organisms in her texts demand a physical contact that is nonnegotiable, infection produces unfamiliar evolutionary and social partnerships. In *Clay's Ark*, as well as in Butler's "Bloodchild" and *The Xenogenesis Trilogy*, sexual and symbiotic fusions merge

vastly different life forms into complex collectives based on the sharing of bodies and exchange of powers and limitations. In the ceding of functional autonomy, symbioses generate physiological novelties that alienate the traditional logic of what counts as sick or as legitimate relations between bodies. But for some (blinkered) critics of Butler's work, the radical alien/human symbioses that pepper her science fiction can only be interpreted in terms of loss and dissolution, pathology and struggle, master and slave.

It astonished Octavia Butler when feminist critics analyzed her Hugo and Nebula award-winning "Bloodchild" (1984) as a story about slavery. Her afterword to the reprint of the story is worth repeating at length:

It amazes me that some people have seen "Bloodchild" as a story of slavery. It isn't. It's a number of other things, though. On one level, it's a love story between two very different beings. On another, it's a coming-of-age story in which a boy must absorb disturbing information and use it to make a decision that will affect the rest of his life. On a third level, "Bloodchild" is my pregnant man story. I've always wanted to explore what it might be like for a man to be put into that most unlikely of all positions. Could I write a story in which a man chose to become pregnant *not* through some sort of misplaced competitiveness to prove that a man could do anything a woman could do, not because he was forced to, not even out of curiosity? I wanted to see whether I could write a dramatic story of a man becoming pregnant as an act of love—choosing pregnancy in spite of as well as because of surrounding difficulties.<sup>20</sup>

"In the story 'Bloodchild,'" Butler elsewhere responds, "some people assume I'm talking about slavery when what I'm really talking about is symbiosis."<sup>21</sup> Indeed, there is substantial evidence in Butler's story that can be used to read the alien penetration, impregnation, and commodification of the human male body as a disturbingly effective analogue for women's reproductive subjugation under patriarchy. But the reading gains currency through a critical failure on three fronts: a failure to understand "Bloodchild" within the context of Butler's work as a whole; a failure to understand the extent to which her science fiction is steeped in contemporary biologic and evolutionary philosophy; and a

failure to appreciate the fact that, though she is an African-American woman, her work need not necessarily be about slavery.

The idea that humans could be selectively bred for genetic enhancement haunts much of Butler's science fiction. Though programs for human evolutionary progress by way of controlled breeding went out of fashion after World War II, the recent decoding of the human genome coupled with advances in genetic engineering and prenatal screening have led to a wide-ranging resurgence of interest in heredity as the dominant factor in personal identity and kinship. As a "highly precise molecular text" that "promises a reassuring certainty, order, predictability, and control,"<sup>22</sup> DNA creates a deterministic self validated by unambiguous genetic bonds to lineage and progeny (thus the burgeoning interest in genealogy and the genetic engineering of fetuses). Increasingly, dramas of biological continuity, or, genetic uniformity, are being played out through competing reproductive or evolutionary philosophies. As its history in the West demonstrates, eugenics (and even neo-eugenics) privileges a hereditary lineage/future that adheres to a Darwinian worldview of manifest destiny based on the production of purified gene lines. This is the worldview affirmed by twentieth-century intergalactic colonial science fiction, where "Astrofuturism" means simply the reproduction of 1950s America across the galaxy and beyond.<sup>23</sup> This brand of science fiction binds the meaning of existence to faith in human (i.e. white) genetic superiority, and its destiny to spread its institutions and values even beyond the globe. Butler's vision of Astrofuturism is radically different. Against the backdrop of devastation wrought by American racism, economic inequality, and uninhibited violence, Butler's human characters confront alien biologies and values that require their *own* metamorphosis for survival. For Butler, the political will to protect



the self/future from the racially or genetically foreign extracts a measure of human misery unparalleled in history. She counters this will through a poetics of evolutionary miscegenation and genetic discontinuity—to weed purity out of the gene pool. To that end, her fiction explores, though never unambiguously, the creative biological and social effects of infective symbiosis and hybridization.

In “Bloodchild” Gan’s alien lover T’Gatoi is the Tlic “government official in charge of the Preserve,”<sup>24</sup> a protected/restricted area for humans who fled an uninhabitable Earth ravaged by violence and slavery in order to shelter on the extrasolar planet. The reservation recalls the rural ghettoization of Native Americans, but the situation is dissimilar. Gan’s ancestors fled degradation and oppression in their own homeland to settle on an alien planet, where blood was then shed between human and Tlic. In a heated conversation with Gan, T’Gatoi suggests past Terran (human) racism against their alien protectors: “your ancestors, fleeing from their homeworld, from their own kind who would have killed or enslaved them—they survived because of us. We saw them as people and gave them the Preserve when they still tried to kill us as worms” (ibid., 25). But as Gan well knows, T’Gatoi is a smooth manipulator. After the Tlic subdued the humans they controlled their movements and treated them as breeding stock: “Back when the Tlic saw us as not much more than convenient, big, warm-blooded animals,” Gan reflects, “they would pen several of us together, male and female, and feed us only eggs. That way they could be sure of getting another generation of us no matter how we tried to hold out” (ibid., 9). The reader soon understands the import of this passage: Tlic require human males to act as hosts for their young, and human females to reproduce future generations of hosts.

The humans suffer from a relative position of disempowerment that includes dependence on and exploitation by their Tlic protectors. Given the power imbalance and the cultural/economic difficulties they face on the alien planet, there is little doubt they depend on their patrons for survival, the cost of which can be high. Each Terran family must offer up one child (usually a male) to serve as host for Tlic eggs. At three meters long with four sets of limb bones per segment, the Tlic body is insectoid, as is its reproductive system. T’Gatoi will implant her eggs in Gan’s body where they will nourish themselves on his blood and incubate into a dangerous larval stage if not removed in time. When the eggs hatch, the partnered Tlic slices the “grubs” out of the host’s abdomen, but if delivery is accidentally delayed the voracious grubs will eat through their egg cases and begin feeding on their host’s flesh, from the inside out. Gan is shocked by a particularly brutal (because unexpected) delivery he witnesses. The N’Tlic (a human male impregnated by his alien female partner) Lomas finds himself separated from his partner when he goes into delivery. T’Gatoi must perform the Caesarean-like delivery of the grubs; she slices him open, lengthening and deepening the cut while pausing intermittently to lick his blood away<sup>25</sup> (the Tlic are bloodsuckers of a sort). Gan describes the horror: T’Gatoi “found the first grub. It was fat and deep red with [Lomas’s] blood—both inside and out. It had already eaten its own egg case but apparently had not yet begun to eat its host. At this stage, it would eat any flesh except its mother’s.” If the grub had not been removed in time, Gan reflects, it “would have begun to eat,” and “[b]y the time it ate its way out of Lomas’s flesh, Lomas would be dead or dying—and unable to take revenge on the thing that was killing him” (ibid., 15). T’Gatoi extracts the grubs (which are “thick, blind and slimy with blood”<sup>26</sup>) by probing Lomas’s flesh with her

limbs, licking them clean of his blood. Before Lomas, Gan's knowledge of Tlic delivery was merely academic; now, he stands traumatized by the alien violence of it, and can only see Lomas's "parasitized" and "crawling" flesh.

In all of her texts (and unlike the typical Astrofuturist text), Butler's human protagonists face extraordinary challenge to their prerogative to determine the parameters of life and survival, challenges that question the notion of the purely human as sole criterion for the biologically sound. Gan and Keira both are forced to inhabit bodies neither completely under their control nor granted full human status. But even given the extraordinary and limiting set of circumstances they face, they decide that humans must change in order for life to continue. They opt for a precarious exchange of functions and properties in an interspecies symbiosis that will enable all partners to benefit. The Tlic and the Clay's Ark organism may be parasites in that they provide survival for themselves by inhabiting their hosts, but the alien/human interactions in the texts are misleadingly reduced by critics to a master/slave dialectic unable to account for a far more complex and subtle range of associations (in Butler's novels, the human/alien relationship reads like the S&M relationship, where partners come together in a hard won yet vital interdependence). Firstly, the Tlic regularly give host families sterile eggs to eat for their intoxicating and life-prolonging properties. The eggs so dramatically lengthen life and increase vigor that Gan's father, who had acted as host for Tlic eggs three separate times, lived more than twice the normal human lifespan. Secondly, Gan is in love with T'Gatoi. He luxuriates lying against her "long, velvet underside" (*ibid.*, 3) with her legs wrapped tightly around him in a caress that makes others feel caged, but that makes him feel loved and secured. He also thinks T'Gatoi supremely beautiful: "when she moved...twisting,

hurling herself into controlled falls, landing running, she seemed not only boneless, but aquatic—something swimming through the air as though it were water. I loved watching her move” (ibid., 9). Understandably, Gan demurs after witnessing Lomas’s delivery, but when T’Gatoi suggests that she impregnate his sister Hoa instead (who wants to be chosen), he submits out of jealousy and love. T’Gatoi penetrates and impregnates Gan in an encounter that suggests a woman’s first sexual penetration: “I felt the familiar sting, narcotic, mildly pleasant. Then the blind probing of her ovipositor. The puncture was painless, easy. So easy going in. She undulated slowly against me, her muscles forcing the egg from her body into mine” (ibid., 27). Gan and T’Gatoi’s emotional intimacy is laced with a definite power imbalance, but Gan is more than a victim and T’Gatoi more than a victimizer. Just before he agrees to bear her young, Gan insists that his family be allowed to keep an illegal gun in their house: ““If we’re not your animals, if these are adult things,”” he tells her, ““accept the risk. There is risk, Gatoi, in dealing with a partner”” (ibid., 26).

In Butler’s work, symbiosis is not merely an adaptive mechanism but a new way of looking at life that challenges our views on evolution and science. Butler ends her afterword to the story:

There’s one more thing I tried to do in “Bloodchild.” I tried to write a story about paying the rent—a story about an isolated colony of human beings on an inhabited, extrasolar world. At best, they would be a lifetime away from reinforcements. It wouldn’t be the British Empire in space, and it wouldn’t be *Star Trek*. Sooner or later, the humans would have to make some kind of accommodation with their um...their hosts. Chances are this would be an unusual accommodation. Who knows what we humans have that others might be willing to take in trade for a livable space on a world not our own?<sup>27</sup>

Science/fiction elaborations of symbiotic processes subvert the dominant relations which hold between Darwinian imperialism and biological diversity, between science and the

world. Lynn Margulis argues that, as a significant source of evolutionary innovation, symbiogenesis confers on the genetically merged organisms the flexibility to colonize and thrive in previously uninhabitable ecological systems (in particular, it enabled the greatest migration in our planet's history—that from water to land).<sup>28</sup> As a literary device set within the context of intergalactic alien encounter, cross-species coexistences make it possible for all partners to occupy new ecological niches, in other words, it allows the adaptation of self to world, rather than world to self (as in the more typical “terraforming” Astrofuturist text). A proficient bridge between the human and the nonhuman, the symbiotic partnership allows modification of the organism in relation to its milieu, enhancing, rather than negating, the ties between living systems. As a set of dynamic interactions that radiate new properties, functions, or species, symbioses generate far more innovative tools of adaptation than do the random accumulation of mutations on which, Neo-Darwinists argue, natural selection acts based on competition. In “Bloodchild,” as well as in Joan Slonczewski's *Brain Plague* and Butler's *Xenogenesis Trilogy*, symbiotic infection effects novel corporealities, kinships, and philosophies: It emphasizes partnership rather than predation; it subverts the disease paradigm of the human/nonhuman; it facilitates genetic discontinuity and alien filiations; and it brings otherwise evolutionarily divergent species into intimate associations the essence and origin of which are mutual dependency. Finally, symbiosis posits an alien procreation/filiation that rejects purity as the surest path to both ethical and species stagnation (Gan, we should note, births T'lic progeny alien to his own genetics).

V. Consciousness Evolution (An Atomic Point of View)—Disembodied Information or Radical Incorporation?: The Case of Greg Bear's *Blood Music* and Joan Slonczewski's *Brain Plague*

We cannot fathom the marvellous complexity of an organic being; but on the hypothesis here advanced this complexity is much increased. Each living creature must be looked at as a microcosm—a little universe, formed of a host of self-propagating organisms, inconceivably minute and as numerous as the stars in heaven.

—Charles Darwin, *The Variation of Animals and Plants Under Domestication*

One of the things which distinguishes ours from all earlier generations is this, that we have seen our atoms.

—Karl K. Darrow, *The Renaissance of Physics*

With nanotechnology, physical reality—or, the horizon of life—shifts from the macroscale to the nanoscale (a billionth of a meter), from the organism to quantum waves. Nanotechnology promises to structure or copy matter with atomic precision, obliterating the distinction between original and simulacrum. Molecular machines, nanotechnology theorists insist, will base their techniques on the enormously complex engineering and reproductive processes that already occur millions of times a day within our own cells. Comprising a living intelligent network, the molecular agents of nanotechnology, like our cells, will first self-replicate by disassembling matter at the atomic level, and then structure or restructure the leftover matter according to their preprogrammed set of instructions. Molecular machines will cruise our bloodstreams, destroy malignancies, repair cells, build new tissues, and engineer human upgrades at the genetic level. In his important early work on nanotechnology, *Engines of Creation* (1986), K. Eric Drexler writes that the

technology underlying cell repair systems will allow people to change their bodies in ways that range from the trivial to the amazing to the bizarre. Such changes have few obvious limits. Some people may shed human form as a caterpillar transforms itself to take to the air; others may bring plain humanity to a new perfection.<sup>29</sup>

Knowledge of the principles of molecular physics, engineering science, and quantum

mechanics will provide the means of turning matter into software<sup>30</sup> (or the universe into “gray goo”<sup>31</sup>). Under a nanologic that flawlessly merges technology with biology, life will arise—like Frankenstein’s creature—spontaneously from dead matter.<sup>32</sup> Because their working components are atoms, the fundamental structure of the organic and the inorganic world, molecular engineers, Drexler implies, will draw “no line between living and nonliving;” they will “know nothing of ‘life’ and ‘death.’”<sup>33</sup> Work at the atomic level is the same for a marble statue as it is for human flesh.

Like the viral perspective which challenges widely accepted tenets of the logic of life and nonlife, the atomic perspective illuminated by electron microscopy and quantum mechanics distorts our understanding of ourselves as unique or autonomous biological entities distinct from the world. In his book *Metal and Flesh: The Evolution of Man* (2001), Ollivier Dyens articulates the ontological challenge wrought by the description of living matter (life) revealed by the extension of human vision. He suggests that the ultramicroscopic penetration into new physical strata reduces our ability to recognize life, and that without this ability, “we are unable to posit absolutes and define ourselves relative to them:” “At an atomic level,” he questions,

what differences are there between a living being and an artifact? At a microscopic level, how can one pinpoint exactly what is alive in a living being? Is it its blood? Its cells? Its molecules? What is intelligent in living beings? Neurons? Dendrites? At levels that do not intersect our biological reality, we cannot distinguish one phenomenon from another.<sup>34</sup>

The material reality (perhaps the last?) stripped bare by quantum mechanics has had a profound effect on a science fiction that works obsessively to make sense of or reconfigure the (post)biological boundary between human and nonhuman. In science fiction, the response to nanotechnology, or the atomic perspective, is generally three-

pronged: life splatters<sup>35</sup> (life obliterates life in the name of life), life dematerializes, or life complicates. In the first two scenarios, which are frequently combined in a two-step apocalyptic punch, nanotechnology evolves life without, and in spite of (in the sense of *hating*), the human. In the third scenario, nanotechnology proliferates life and its embodiments in far more complex and innovative coevolutionary forms with the human.

The bodies in Greg Bear's *Blood Music* and Joan Slonczewski's *Brain Plague* share a common identity as both host and disease. The novels plot the erosion of physical and psychological integrity by invasive life forms that blur the distinction between life and technology. People in the novels become colonized by and mediums for intelligent, microscopic agents that play a key role in the evolution of consciousness. The human invasion from within is so profound that it dismantles organismic integrity and the boundary between biology and the world, but this is where similarities between the novels end. *Brain Plague* uses nanotechnology and the ultramicroscopic point of view to theorize a consciousness constituted by, and coevolving with, nonhuman symbiotic organisms. *Blood Music*, on the other hand, uses nanotechnology apocalyptically to dematerialize life and enthrone information/consciousness as the only essential reality. Though Bear significantly self-corrects in his terrific nanotechnology novel *Queen of Angels* (1990), *Blood Music*—in which life decidedly splatters—was the first nanotechnology-inspired novel, and it remains the most widely discussed amongst science fiction readers and critics. In *Blood Music* (1985), scientist Vergil Ulam genetically engineers an intelligent plague that disassembles and transforms the entire North American population within eight weeks of his own initial infection. Ulam engineers human cells to merge with computer chips in the hope of inventing organic computers with a multitude of medical



applications. Much to his surprise, the biochips begin to function as autonomous units that think for themselves and evolve far more quickly than any other known species. When he injects the biochips into his own body to smuggle them out of a corporate lab, the intelligent cells do not like what they see, and they set about restructuring Vergil's body from the inside out (correcting his vision, altering his metabolism, etc.). When they break the blood-brain barrier and realize that Vergil is not the entire universe but a mere single being, the "noocytes" (based on the "Greek word for mind"<sup>36</sup>) begin to convert every new cell they meet into themselves (they are the ultimate narcissists). Like a viral agent hungry for more territory after it has converted host into itself, the noocytes begin liquefying Vergil's flesh to escape imprisonment and expand their dominion. They reproduce at a stellar rate, transforming and consuming all raw materials around them (this is the "gray goo" scenario).

In praise of *Blood Music* in his essay "Nano/Splatter: Disintegrating the Postbiological Body" (2005), Colin Milburn discusses nanobiology (a hybrid of biotechnology and nanotechnology) as an aggressive deterritorializing force through which "life disappears from the closed interior of organisms and dissolves into molecular informational processes, codes, feedback systems, and programs, but returns, undead, as the absent origin of those very scientific practices." "It is not so much that biology has been destroyed by these postvital sciences," he claims, "but rather that the biological now manifests itself 'beyond living,' a sublimation of life in excess of its reduction to technologies of information."<sup>37</sup> In *Blood Music*, the molecular components of the body, working as a conscious, living network of communication, overthrow and tear apart their host, and through such "serial disintegrations," Milburn argues, "self-reproducing

molecular entities find new possibilities for autogenesis, for tinkering and restructuring themselves out of the charnel wreckage, the scraps of an obsolete material organization called ‘biology.’”<sup>38</sup> Unbound from any fixed organic assemblage, life, in the typical nanotechnology scenario, “manifests at lower and lower levels until there is nothing left but *more life*,” “the universe as a contingent organization of space-time is now restructured by the physical transcendence of intelligent life beyond matter.”<sup>39</sup> In sum, the noocytes in *Blood Music* expand life’s horizons into smaller and smaller worlds by dissolving what was before a human into the informational quantum wave structures of space-time. Under a theoretical nanobiology typified by Bear and Milburn, life dematerializes life for the sake of more life under a logic remarkably similar to the transcendental evolutionary speculations analyzed in the chapter above. *Blood Music*, like *Childhood’s End* or *The Mind Parasites*, reads like apocalypse without a point, unless, of course, the point is to take vicarious thrill in liquefying bodies whose borders nanoplagues destroy as they leak into the world to wreak further destruction (Preston’s *The Hot Zone* owes no small debt to the nanosplatter novel). As Vergil’s friend Edward and his wife Gail splatter, Edward senses nearby “not the physical form of Gail; not even his own picture of her personality, but something more convincing, with all the grit and detail of reality, but not as he had ever experienced before.”<sup>40</sup> Gail’s mind is being digitalized into information waves and duplicated thousands of times over, spread out into “layers and layers of universes within the biologic” of the noocytes (ibid., 301). As Edward implies and Bear ultimately asserts, information is essence while materiality is delusion—one of the few human bodies to resist decorporealization in the novel is that of a young retarded girl.

Bear seems to endorse the epidemic of biological dissolution in *Blood Music* as a move away from the immaturity of embodiment towards the maturity of immaterial consciousness. We have yet another *Childhood's End*. The young retarded girl's family temporarily recorporealizes in their attempt to persuade Suzy to join them; embodiment, they argue, is for "dinosaurs" who are still "locked into being babies" (ibid., 270, 298). In the "Thought Universe" created by the noocytes, on the other hand, the human abandons flesh for an immortal omniscience: "We are in a Thought Universe," the dead-thought-alive "cellular Vergil" describes it to biophysicist Michael Bernard, "[i]n here, all we experience is generated by thinking. We can be whatever we wish, or learn whatever we wish, or think about anything. We won't be limited by lack of knowledge or experience; everything can be brought to us" (ibid., 283). Because the noocytes digitalize and duplicate each individual mind, there is no such thing as death in the Thought Universe: "So like, if I die here," Suzy's brother explains to her, "there's hundreds of others tuned in to me, ready to become me, and I don't die at all. I just lose this particular me. So I can tune in to anybody else, and I can be anywhere else, and it becomes impossible to die" (ibid., 274). In a move that N. Katherine Hayles critiques at length in her book *How We Became Posthuman* (1994), Bear, like the cyberneticists Hayles analyzes, imagines utopia as an evolutionary transcendence of the material into pure information: "There is nothing" in the Thought Universe "but information. All particles, all energy, even space and time itself, are ultimately nothing but information" (ibid., 244-5).<sup>41</sup> By disassembling all living matter beyond the molecular to its most infinitesimally small unit (the atom), the noocytes can store the memories and collective consciousness of humanity in the very folds of space-time, for "[w]hat is matter, after all, but a standing-wave of information in the

vacuum?” (Ibid., 330). Here, the posthuman seeks neither to explore new possible shapes for humanness nor to expand perception beyond the old Cartesian split between materiality and consciousness. The absorption of humanity into a synthesizing orchestral movement of information into God-like apotheosis is another metaphysical evolutionary miracle bereft of meaning.

\_\_\_\_\_ Safe in Wales after the total decorporealization of the North American population, theoretical physicist Sean Gogarty lectures to his colleague and friend Heinz Paulsen-Fuchs on the nature of the noocytes:

“they are microscale. They have a hard time even conceiving of the stars. So they look inward. For them, discovery lies in the very small. And if we can assume that the North American noocytes rapidly created an advanced civilization—something that seems obvious—then we can assume they found a way to investigate the very small.” (ibid., 329-30)

“Smaller than themselves?” Paulsen-Fuchs questions Gogarty, to which he responds

“[s]maller by an even greater factor than our smallness compared to a galaxy” (ibid.).

When the noocytes penetrate the final horizon of materiality, they weave the memories of humanity into a superorganismic being that exists in the very fabric of quantum space-time. In *Blood Music*, Bear ultimately suggests that knowledge gleaned from the ultramicroscopic world will eventuate in man’s evolutionary apotheosis—immortality through epidemic disembodiment. Here, the microscopic perspective breaches the boundaries of the human in the name of assimilation and synthesis rather than hybridization and multiplicity. Overwhelming desire for a final abstraction from physical existence is, however, only one possible response to the alienating discoveries of the microcosms within and around us.

Rather than invoking dematerialization into quantum space/time, the physical

realities revealed by electron microscopy as elaborated by Lynn Margulis and others reveal a humanness so hybrid in genesis and essence that any epistemological notion of “the individual” must be left permanently behind as intellectual illusion, and the very condition of possibility for future theoretical biology. Lynn Margulis and Dorion Sagan’s microscope unveils the human organism as an “ornately elaborated mosaic of microbes”<sup>42</sup> whose ontogenesis (the sequence of events in the evolution of the organism) and ontology is one of interspecies infection, symbiosis, and alien contact. Margulis rejects the Pasteurian vision of an aggressive individuality at war with an invisible world teeming with pathological enemies of life. She argues instead for the centrality of microbial symbiotic processes to every living ecosystem, especially our own bodies. If we accept that all organisms larger than the single bacterium (all eukaryotes) are composites of coevolving species, then health becomes a matter not of eradicating other species from our bodies, but of maintaining equilibrium with our associates who, after all, outnumber us by the trillions and do a lot of our dirty work (at ninety trillion cells bacteria “outnumber our own body cells by a factor of nine to one”<sup>43</sup>). Bacteria inhabit our skin, live in our blood, skate across our eyes, wreath our eyelashes, and line our nasal passages and mouths (the total number of bacteria “in anyone’s mouth is greater than the number of people who have ever lived”<sup>44</sup>). But the most renowned bacteria are the millions of benign creatures who congregate in our gut and line our intestines, chemically transforming (digesting) the food that we eat and synthesizing vitamins integral to our survival that we alone cannot produce. Not at all the deadly killers Pasteur and anti-bacterial manufacturers would have them be, bacteria that inhabit our bodies in fact work manically to keep us healthy by inhibiting the growth of the few disease causing microbes

that penetrate our network. Those rare humans born without their native bacterial symbionts can only be kept alive, and usually not for long, in an intensely controlled sterile environment (the famous “bubble boy”). Aseptic life is deadly life.

Most fascinating, Margulis hypothesizes consciousness itself as originating from and unfolding through an evolutionary hybridization of interspecies infections. In other words, she offers a radically different take on the alien invasion and colonization of the mind, suggesting individual thought may be “a collective phenomena:”

We and all beings made of nucleated cells are probably composites, mergers of once different creatures. The human brain cells that conceived these creatures are themselves chimeras—no less fantastic mergers of several formerly independent kinds of prokaryotes that together coevolved.<sup>45</sup>

“I hypothesize,” she writes, “that all these phenomena of mind, from perception to consciousness, originated from an unholy microscopic alliance between hungry killer bacteria and their potential archaebacterial victims.”<sup>46</sup> In effect, Margulis snuffs out any remaining notion of a metaphysical consciousness. In fact, she implies that the human mind may be the most *illuminating* of cross-species mergers in evolutionary history. Such a microscopic perspective sees a penetrated self so dramatically absorbed into the world that any attempt to distinguish a biological invader from an invaded is utterly pointless. Margulis’s work and the science fiction inspired by it enchant readers with a view of the body-brain as an infinitely complex living system that flourishes through the strange partnerships birthed in the microscopic world.

A compelling elaboration of the new biology, Joan Slonczewski’s *Brain Plague* (2000) engineers the most intricate symbiosis in contemporary science fiction. In an unrecognizable science fiction future, artist Chrysoberyl of Dolomoth chooses to be

implanted with highly intelligent microorganismic life forms; she cultures—“becomes a walking petri dish”<sup>47</sup> for—a line of brain enhancers that are the most dangerous yet potentially revolutionary strain of biological life on the planet. The “micros” evolved symbiotically alongside and within a human population that inhabited a planet choked with arsenic, a toxin that alone the humans could not digest but partnered with the microbial allies they could survive. The original micros migrated out of the planet Prokaryon to settle new human territory, and over an expanse of time “the microbial symbionts evolved into many different strains” (ibid., 27). Like viral entities, the micros require human hosts to reproduce and survive. They do not live directly within the brain, but “just beneath the skull, in the arachnoid, a web of tissue between the outer linings of the brain” (ibid., 32). Though only the size of a white blood cell, each micro is densely packed with ten trillion units of polymers that “transmit information, as surely as human neurons, or sentient circuits” (ibid., 58). Each micro is a uniquely independent mind that, when in communication with its thousands of sisters (all micros are thought of as female<sup>48</sup>), fires Chrys’s creative fervor and aesthetic vision.

The micros enhance human health and longevity, but like all other microorganisms they possess a superior evolutionary advantage over the “higher” life forms they inhabit; they can adapt to a fluctuating environment within days, while for humans equivalent change would take eons. Micros live thousands of times faster than their human hosts, trading longevity for a kind of unfathomable intensity. But the creative effects of the human/alien merger are overshadowed by a human population in fear of the perceived contagion embodied by the microscopic Others. The anti-carrier hate group the “Sapiens” (human supremacists) loathe “any intermingling of human and other.” They see it as

“[p]ollution of the blood” (ibid., 100). Some restaurants refuse to serve carriers, and even Chrys’s friends are shocked to hear of her newly infected status (“[w]ould she lose every friend and acquaintance she had, for what lived in her brain?” she wonders<sup>49</sup>). Chrys’s situation is particularly precarious in that her micros are the most creative and perilous of all strains—they are extremely intelligent and dangerously independent. The carrier enters into an emergent biological partnership both tenuous and addictive in nature; it is a matter of attaining, and maintaining, an equilibratory physiological interdependence. This is difficult as renegade “master micros” in search of “Endless Light” seek to cajole comrades to penetrate the blood-brain barrier, flood the host with dopamine, and enslave the carrier to the micros’ will. These are the eponymous brain plagues (“[t]he brain plague was a plague of brains”<sup>50</sup>). While the brain plagues and the brain enhancers are genetically kin, pro-micro rights advocates warn Chrys not to condemn a whole population of micros for the crimes of a few. A far greater threat is the anti-carrier movement amongst humans who see them as an infected menace to society. In fact, Chrys cultivates brain-enhancing micros who managed to survive the death of their original human host, the brilliant “dynatect” (nanotechnology architect) Titan whose death was an anti-carrier hate crime. “If micros were people,” Chrys muses, “then Titan’s murder was more than a hate crime; it was genocide” (ibid., 46).

Though Chrys’s micros prey to her as their one true omnipotent God who offers life or death (ibid., 35), with such a very delicate balance and the potential for encounter with bad strains, there is a real possibility for the host to lose control of her micros. A number of humans have been infected by a virulent strain that invades the central brain tissue and overdoses the body with dopamine, subverting the humans’ will and enslaving



them to the whims of the master micros. Those “late-stage slaves with jaundiced eyes and broken veins” (ibid., 15) are abject before the micros’ will, and beyond aid. Their brains consumed by the fanatic life forms, the slaves turn to vampirism, sucking the blood of other carriers for arsenic, rabidly transmitting the plague to fresh territory (in *Brain Plague*, vampirism metaphorizes an unequal dominance/submission relation). Chrys herself narrowly escapes enslavement when Rose, an egoistic vampire-defector micro whom Chrys adopts and keeps for her brilliant creativity and the “vital genetic diversity” she introduces into the population, forsakes her in leading a rebellion in the service of Endless Light—a state of sublime ecstasy that would culminate in Chrys’s death. Rose sees through the sham of Chrys’s Godhead, believing her destined to serve the micros, but in Rose’s anarchy she breaks the cardinal rule of physiological symbiosis: The aggressor destroys both itself and its host if it rules without check. Kill your host, and you kill yourself.

Surviving Rose’s rebellion, however, and utterly charmed (as is the reader) by the immodest egos and talents of her microscopic associates, Chrys becomes the most radical supporter of micro-sentient rights. For her, as for other carriers, the benefits of symbionts far outweigh any potential pitfalls. In league with nanotech dis/assemblers that cruise the bloodstream, eradicating malignancies or disarming infections, the micros help to engineer an almost limitless array of posthuman embodiments. Gender, build, color, textuality, shape—all physical attributes are made infinitely malleable when molecular agents structure tissues, hormones, and even genes from the inside of the body out. Also, akin to the millions of benign strains of *E. Coli* in our guts, the micros provide vital protection against more virulent pathogens, while working to inhibit the harmful

multiplication of homegrown organisms. Chrys's associates equip her with microbe-mediated immunity against the brain plague (she and other carriers are better protected than are "virgin" humans without micros). But ultimately, it is the brilliant intensity and emotional intimacy the micros offer that carriers cannot do without. Once joined, neither species can survive separation. Of those carriers who lose their micros, some die but all go insane; to have them taken away is like excising part of the brain, it threatens a wilderness of isolation that for carriers make virgins seem tragically incomplete. But for those who marginalize the infected as sick, carriers and plagues alike are slavishly addicted to their microbial masters. Sapiens look upon carriers with horror as they deem the perceived loss of purity within the body as nothing other than a degenerate condition. On the contrary, *Brain Plague* (in line with new biological theory) counters that adulteration of the body by alien cohabitation is only falsely conceptualized as contamination. Rather, pathology results from what scientist and poet Lewis Thomas defines as *failed* symbiosis, "an overstepping of the line by one side or the other, a biological misinterpretation of borders."<sup>51</sup> Terror at being physically or mentally invaded blinds the virgins to the truth that penetrative, symbiotic modes of embodiment may actually be the evolutionary key to higher states of consciousness.

Slonczewski's novel of consciousness evolution is as different from Bear's *Blood Music* as Cordwainer Smith's "Scanners Live in Vain" is different from Arthur C. Clarke's *2001: A Space Odyssey*. Rejecting the teleology of disembodiment that controls the trajectory of human consciousness in *Blood Music*, as in *2001, The Mind Parasites*, and dozens of cyberpunk dreams of uploading the mind into immortality, *Brain Plague* literally *paints* an evolution of the mind so marvelously complex and aggressively

embodied that to call the micros “mitochondria” would represent the ultimate of ethnic slurs. For the micros, “to be bred into mitochondria” (Slonczewski, *Brain Plague*, 327) would be death by absorption, when they seek more life by coexistence. Partnered with Chrys, the micros transfix the art world with their magnificent nanotechnology buildings, their pyrotechnic paintings, and their explosively controversial 3-D images of the life cycle of micros. The micros do not merely intensify emotion or enhance detail, they project the artist’s original vision into electric cascades of complexity and beauty. In her posthuman infection narrative, Slonczewski envisions an evolution of mind that augments rather than transcends the exchanging of properties between human and nonhuman, asserting the illusory nature of any pure consciousness disarticulated from flesh and blood.

*Brain Plague*’s intensely embodied mind recalls Humberto Maturana and Francisco Varela’s autopoietic theory of the body as an incorporation embedded in interactive processes and in active relation with the world. Autopoiesis (literally, *self-making*) counters a mechanistic Neo-Darwinism that reduces the organism to the sum of its component parts, treats it as a discrete unit in isolation from the environment, and evaluates its fitness according to a parochial definition of reproductive success. As Maturana and Varela see it, the emphasis on evolution and reproduction as the twin primary biological approaches to life does not, ironically, deal with the question of what life actually is. What matters for life is not what defines the properties of an organism’s components (the physical/chemical approach of molecular biology), but what the living complex does *in existing*. Thus, the biological “problem” for Maturana and Varela is the organization and the processes of living systems. Biological phenomena, they argue,

cannot be explained by reproduction or evolution alone (incidental theories of biological change), but by the phenomenon of “processes and relations between processes realized through components.”<sup>52</sup> The details of autopoietic theory are complicated and beyond the scope of this project; I merely wish to emphasize a biologic philosophy which approaches life as a unit of interactions that exists in an ambience, and “whose organization is defined by a particular network of processes,” and “not by the components themselves or their static relations.”<sup>53</sup> Life as a process destabilizes past scientific narratives that bank on the individual as the coherent unit of selection, and on predatory and competitive ecological interactions. Maturana and Varela’s autopoiesis and Margulis’s symbiogenetic theory of the origin and evolution of the mind argue for the body-brain as a dramatically emergent and distributed entity. As N. Katherine Hayles argues, when the human is seen as part of a distributed cognitive system where the emphasis falls on circular interactions (autopoiesis) as opposed to evolutionary speciation (clearly defined lineage), then “subjectivity is emergent rather than given, distributed rather than located solely in consciousness, emerging from and integrated into a chaotic world rather than occupying a position of mastery and control removed from it.”<sup>54</sup>

*Brain Plague* seems to me a provocative elaboration of an autopoiesis and symbiogenesis that deny the alleged uniqueness or inviolability of human consciousness. As I write above, Margulis speculates that perception, thought, memory, and even speculation itself are not at all unique, *a priori*, immaterial properties of the autonomous individual, but are in fact “the large-scale manifestations of the small-scale community ecology of the former spirochetes and archaebacteria that comprise our brain.”<sup>55</sup> She urges her readers to see the human as intimately entwined with microbial biotic complexity:

“The microbes are not just metaphors; their remnants inhabit our brain, their needs and habits, histories and health status help determine our behavior.” “If we feel possessed and of several minds,” she concludes, “if we feel overwhelmed by complexity, it is because we are inhabited by and comprised of complexities.”<sup>56</sup> The “absurd little people” in Chrys’s head “that want...to build buildings” (Slonczewski, *Brain Plague*, 84) undermine any notion of artistic genius as unmediated or perception as unbound from physical being. When at the end of the novel a reporter implies Chrys is not responsible for the design of Silicon (a new architectural masterpiece), that she is merely a “culture dish for those who did” (ibid., 89), she proudly asserts that Silicon was built by the “lights of Eleutheria,” her strain of micros who embody neither a “genetic race, nor a physical place” (ibid., 372), but “a way of being, a path of endless light” (ibid., 384). If the capacity to dynamically reproduce and self-organize are the determining factors in whether a system is alive, then Slonczewski’s *Brain Plague* configures a fundamentally creative, hybrid body-brain that literally evolves by autopoiesis—*self becoming through poetry*.

It is difficult to say to what extent particular scientific theories influence particular science fiction writers or texts. But given the intimate relationship between the history of evolutionary thought and the history of science fiction, it is safe to suggest that contemporary science fiction that deals with the body in all of its manifestations is, at the very least, conversant with the fallout of the new biological knowledge set forth by people like Lederberg and Fleck, Margulis and Sagan. This is certainly easy to argue in the case of Slonczewski, who is a microbiology professor by day, but science fiction texts by genre writers like Richard Matheson and Walter M. Miller, and science fiction oeuvres like that

of Octavia Butler, all engage the manifold repercussions of a new approach to life that emphasizes process and relation, symbiosis and infective partnership, rather than pedestrian notions of evolutionary autonomy or reproductive success. Dismantling the abstraction implicit within the dominative relation between science and the world, these texts use new biological evidence for the increasingly untenable atomistic model of the human to delight in life patterns and bodies inappropriately hierarchized and neither completely human nor nonhuman.

And as Octavia Butler's masterpiece *The Xenogenesis Trilogy* amply demonstrates, normality may no longer be defended as the standard device for measuring the humanity of a body that fails to breed true...

## Notes

\_\_\_\_\_. 1. Here I quote from Ilana Löwy's analysis of Macfarlane Burnet's work on immunology. "The Immunological Construction of the Self," in *Organism and the Origins of Self*, ed. Alfred I. Tauber (Dordrecht: Kluwer Academic Publishers, 1991), 63.

2. Jan Sapp, *Evolution by Association* (Oxford: Oxford University Press, 1994), 208.

3. Tom Wakeford, *Liaisons of Life: From Hornworts to Hippos, How the Unassuming Microbe Has Driven Evolution* (New York: John Wiley & Sons, 2001), 17.

4. Peter W. Price, "The Web of Life: Development over 3.8 Billion Years of Trophic Relationships," in *Symbiosis as a Source of Evolutionary Innovation: Speciation and Morphogenesis*, ed. Lynn Margulis and Rene Fester (Cambridge: The MIT Press, 1991), 263.

5. Lynn Margulis and Dorion Sagan, *Microcosms: Four Billion Years of Evolution from Our Microbial Ancestors* (New York: Summit Books, 1986), 15.

6. Though beyond the scope of this project (and popular immunological conceptions), the current network theory of immunology subverts traditional conceptions of the Self as a static, *a priori*, given whole, and emphasizes instead a dialectical self arising out of interactive processes. Proponents of the network theory of immunity, such as Ludwik Fleck, Francisco Varela, and especially Niels Jerne (who won the Nobel Prize for his work in immunology), posit an "organismic view of dynamic selfhood" as an "historic and changing entity, altered by each immune encounter;" "[c]hallenged by constant engagements between self and nonself," Alfred I. Tauber writes, the immune self has now "come to be viewed analogously to a living entity, continually redefined, reasserted, and redetermined." *The Immune Self: Theory or Metaphor?* (Cambridge: Cambridge University Press, 1997), 8. But it was Niels Jerne's publication in the 1970s of the network theory of immunity that marked "the beginning of the end of nearly 100 years of 'horror autotoxicus.' Self-nonsel self discrimination [was] no longer the central question in immunology." Quoted in Leon Chernyak and Alfred I. Tauber, "The Dialectical Self," in *Organism and the Origins of Self*, 113. In "The Promises of Monsters," Donna Haraway writes that Jerne "deviates radically from notions of the body victorious and the defended self." The immune self is embedded in a dynamic system that "would never be passive, 'at rest,' awaiting an activating stimulus from a hostile outside." "In a sense," then, "there could be no *exterior* antigenic structure, no 'invader,' that the immune system had not already 'seen' and mirrored internally." "The Promises of Monsters: A Regenerative Politics for Inappropriate/d Others," in *Cultural Studies*, ed. Lawrence Grossberg, Cary Nelson and Paula Treichler (New York: Routledge, 1992), 323. In terms of the network theory, Ilana Löwy writes, "The Immunological Construction of the Self," the "immune response results from a complex interplay between external and internal antigens," and in "such a complex network, it is not easy any longer to decide what the 'self' and what the 'nonself' is." "The Immunological Construction of the Self," 65. Finally, the traditional

concept of infectious disease, Ludwik Fleck argues in *Genesis and Development of a Scientific Fact*, assumes a “notion of the organism as a closed unit and of the hostile causative agents invading it. The causative agent produces a bad effect (*attack*). The organism responds with a reaction (*defense*). This results in a conflict, which is taken to be the essence of disease. The whole of immunology is permeated with such primitive images of war” (ibid., 59). However, in light of the dramatic discoveries revealed by the microscopic world, “man appears as a complex to whose harmonious well-being many bacteria, for instance, are absolutely essential. Intestinal flora are needed for metabolism, and many kinds of bacteria living in mucous membranes are required for the normal functioning of those membranes” (ibid., 60-1). In light of such profound symbiosis, “[i]t is very doubtful whether an invasion in the old sense is possible, involving as it does an interference by completely foreign organisms in natural conditions. A completely foreign organism could find no receptors capable of reaction and thus could not generate a biological process” (ibid., 61). *Genesis and Development of a Scientific Fact*, ed. Thaddeus J. Trenn and Robert K. Merton, trans. Fred Bradley and Thaddeus J. Trenn (Chicago: University of Chicago Press, 1981).

7. Dorion Sagan and Lynn Margulis, “The Riddle of Sex,” in *Slanted Truths: Essays on Gaia, Symbiosis, and Evolution*, ed. Lynn Margulis and Dorion Sagan (New York: Copernicus, 1997), 286. See also Margulis and Sagan, *Microcosms*, 165.

8. Lynn Margulis, *Symbiotic Planet: A New Look at Evolution* (New York: Basic Books, 1998), 89.

9. Mary Pharr, “Vampiric Appetite in *I Am Legend*, *Salem’s Lot*, and *The Hunger*,” in *The Blood is the Life: Vampires in Literature*, ed. Leonard G. Heldreth and Mary Pharr (Bowling Green, OH: Bowling Green State University Popular Press, 1999), 93.

10. Kathy Davis Patterson, “Echoes of *Dracula*: Racial Politics and the Failure of Segregated Spaces in Richard Matheson’s *I Am Legend*,” *Journal of Dracula Studies* 7 (2005): par. 9, [http://www.blooferland.com/drc/index.php?title=Journal\\_of\\_Dracula\\_Studies](http://www.blooferland.com/drc/index.php?title=Journal_of_Dracula_Studies).

11. Here I adapt the language of immunology as critiqued by Emily Martin in her excellent survey of popular scientific and lay conceptions of the immune system as a “military defense system.” *Flexible Bodies: The Role of Immunity in American Culture from the Days of Polio to the Age of AIDS* (Boston, MA: Beacon Press, 1994), 100.

12. Herbert Marcuse, “Social Implications of Technology,” in *Readings in the Philosophy of Technology*, ed. David M. Kaplan (Lanham, MD: Rowman and Littlefield, 2004), 77. See also Crawford Brough Macpherson, *The Political Theory of Possessive Individualism: Hobbes to Locke* (Oxford: Oxford University Press, 1964). Macpherson defines “possessive individualism:” “Its possessive quality is found in its conception of the individual as essentially the proprietor of his own person or capacities, owing nothing to society for them...The human essence is freedom from dependence on the wills of others, and freedom is a function of possession” (ibid., 8).



13. Richard Matheson, *I Am Legend* (New York: Tom Doherty Associates, 1954), 16. Hereafter cited in text.

14. Patterson, "Echoes of *Dracula*," par. 9.

15. See biological arguments on specialization and extinction. For example, Marjorie Grene and David Depew cite and discuss Sewall Wright's theory of "genetic drift:" "the smaller the breeding population...the more likely it is that 'the tendency toward complete fixation of genes, practically irrespective of selection, will lead in the end to extinction.'" Marjorie Grene and David Depew, *The Philosophy of Biology: An Episodic History* (Cambridge: Cambridge University Press, 2004), 252.

16. Eric Avila, "Dark City: White Flight and the Urban Science Fiction Film in Postwar America," in *Liquid Metal: The Science Fiction Film Reader*, ed. Sean Redmond (London: Wallflower Press, 2004), 94.

17. Octavia Butler, *Clay's Ark* (New York: Warner Books, 1984), 4. Hereafter cited in text.

18. Heather Schell, "Outburst! A Chilling True Story about Emerging-Virus narratives Pandemic Social Change," *Configurations* 5, no.1 (1997): 119.

19. Donna Haraway, "Cyborgs at Large: Interview with Donna Haraway," in *Technoculture*, ed. Andrew Ross and Constance Penley (Minneapolis: University of Minnesota Press, 1991), 11.

20. Octavia Butler, afterword to "Bloodchild," in *Bloodchild: And Other Stories* (New York: Seven Stories Press, 1996), 30.

21. Octavia Butler, interview by Larry McCaffery, in *Across the Wounded Galaxies: Interviews with Contemporary American Science Fiction Writers*, ed. Larry McCaffery (Chicago: University of Illinois Press, 1990), 56.

22. Dorothy Nelkin and M. Susan Lindee, *The DNA Mystique: The Gene as a Cultural Icon* (New York: W.H. Freeman and Company, 1995), 194.

23. On galactic colonialism in science fiction see De Witt Douglas Kilgore, *Astrofuturism: Science, Race, and Visions of Utopia in Space* (Philadelphia: University of Pennsylvania Press, 2003).

24. Butler, "Bloodchild," 3. Hereafter cited in text.

25. *Ibid.*, 15.

26. *Ibid.*, 16.

27. Butler, afterword to "Bloodchild," 31-2.
28. See especially Margulis and Sagan, *Microcosms*.
29. K. Eric Drexler, *Engines of Creation* (Garden City, NY: Anchor Press/Doubleday, 1986), 234.
30. Damien Broderick *The Spike: How Our Lives are Being Transformed By Rapidly Advancing Technologies* (New York: Forge, 2001), 97.
31. This is Tony Miksanek on the "gray goo" scenario: "How can it [nanotechnology] be controlled? A technology that is capable of self-replication and sustenance by picking apart the very atoms of matter and then reassembling them would surely represent the greatest threat imaginable if nanotech assemblers somehow became uncontrolled. The threat of out-of-control self-replicating molecular machines unleashed, accidentally or deliberately, has come to be known as the "gray goo problem." Just as nanomachines can assemble virtually anything from the common atoms that compose all matter, they might also be capable of disassembling all matter (humans included) and utilizing the atoms to replicate themselves. It would be an unparalleled epidemic—nightmarish, unrestrained, omnipresent microscopic machines devouring everything in their path and recycling the material to create more of themselves." "Microscopic Doctors and Molecular Black Bags: Science Fiction's Prescription for Nanotechnology and Medicine," *Literature and Medicine* 20, no. 1 (Spring 2001): 59. See also Drexler, *Engines of Creation*, 172-3.
32. Colin Milburn, "Nanotechnology in the Age of Posthuman Engineering: Science Fiction as Science," in *Nanoculture: Implications of the New Technoscience*, ed. N. Katherine Hayles (Bristol, UK: Intellect Books, 2004), 125.
33. Drexler, *Engines of Creation*, 103.
34. Ollivier Dyens, *Metal and Flesh: The Evolution of Man: Technology Takes Over*, trans. Evan J. Bibbee and Ollivier Dyens (Cambridge, MA: MIT University Press, 2001), 10.
35. See Colin Milburn: "With the promise of postvital molecularities embedded in the narrational experiments of nanobiology, the era marked by the reflexive construction of the 'human' and biological 'life' vaporizes into history as life in the coming nanotech era explodes, bursts, spreads, and disseminates across striations of the machinic phylum. In a word, life 'splatters.'" "Nano/Splatter: Disintegrating the Postbiological Body," *New Literary History* 36, no.2 (Spring 2005), 289.
36. Greg Bear, *Blood Music* (New York: Simon & Schuster, 1985), 100.
37. Milburn, "Nano/Splatter," 287.

38. Ibid., 292.

39. Ibid., 299, 298.

40. Bear, *Blood Music*, 139. Hereafter cited in text.

41. See also N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: The University of Chicago Press, 1999).

\_\_\_\_ 42. Dorion Sagan, "Metametazoa: Biology and Multiplicity," in *Zone 6: Incorporations*, ed. Jonathan Crary and Sanford Kwinter (Cambridge: Zone Books, 1992), 369.

43. Wakeford, *Liaisons*, 104.

44. Margulis, "Power to the Protocists," in *Slanted Truths*, 79.

45. Margulis and Sagan, *Microcosms*, 120.

46. Margulis, "Speculation on Speculation," in *Slanted Truths*, 115.

47. Joan Slonczewski, *Brain Plague* (New York: Tom Doherty Associates, 2000), 124. Hereafter cited in text.

48. "Micros were always 'her,' Chrys noticed. Unlike humans and sentients, they hadn't invented gender. They had other obsessions" (ibid., 103).

49. Ibid., 72.

50. Ibid., 28.

51. Lewis Thomas, *The Lives of a Cell: Notes of a Biology Watcher* (New York: Viking Press, 1974), 71, quoted in Jan Sapp, *Evolution by Association: A History of Symbiosis* (Oxford: Oxford University Press, 1994), 193.

52. Humberto R. Maturana and Francisco J. Varela, *Autopoiesis: The Organization of the Living*, in *Autopoiesis and Cognition: The Realization of the Living* (Dordrecht, Holland: D. Reidel Publishing Co., 1980), 75.

53. Maturana and Varela, *Autopoiesis: The Organization of the Living*, 79.

54. N. Katherine Hayles, *How We Became Posthuman*, 291. See also 151.

55. Margulis, "Speculation on Speculation," in *Slanted Truths*, 119.

56. Ibid., 120. Margulis elaborates on her theory of the “spirochete origin of microtubules of brain cells:” “Our nerve cells are the outcome of an ancient, nearly immortal marriage of two archenemies who have managed to coexist: the former spirochetes and former archaeobacteria that now comprise our brains.” “I continually play with an idea,” she writes, that “the origin of thought and consciousness is cellular, owing its beginnings to the first courtship between unlikely bacterial bedfellows who became ancestors to our mind-brains” (ibid., 119).

## CHAPTER FOUR

### Heredity, Kinship, and Immortality in Genetics and Science Fiction

For it is quite certain that in terms of merely mechanical principles of nature we cannot even adequately become familiar with, much less explain, organized beings and how they are internally possible. So certain is this that we may boldly state that it is absurd for human beings even to attempt it, or to hope that perhaps some day another Newton might arise who would explain to us, in terms of natural laws unordered by any intention, how even a mere blade of grass is produced. Rather, we must absolutely deny that human beings have such insight.

—Immanuel Kant, *Critique of Judgment*

#### Heredity

I am the family face;  
Flesh perishes, I live on,  
Projecting trait and trace  
Through time to times anon,  
And leaping from place to place  
Over oblivion.

The years-heired feature that can  
In curve and voice and eye  
Despise the human span  
Of durance—that is I;  
The eternal thing in man,  
That heeds no call to die.

—Thomas Hardy, 1917

#### I. The Immortal Gene

Twentieth-century science shook the foundations of Kant's philosophy: Quantum physics and Heisenberg's Uncertainty Principle relativized space and time (Kant's *a priori* categories collapsed into space/time), and the Human Genome Project decrypted (and gave access to) the fundamental blueprint of life itself. Newtonian certainty failed in physics, but it triumphed in biology. The search for the "Holy Grail" of biology that began in earnest with the rediscovery of Gregor Mendel's laws of genetic transmission in the early part of the century<sup>1</sup> seemed to come to fruition in 1953 when Watson and Crick unraveled the helical structure of DNA as the ruling unit of hereditary transmission (their discovery made possible by the unauthorized use—some would say theft—of British

biophysicist Rosalind Franklin's work, particularly, her first X-ray photographs of DNA). The brilliant successes in physics could now be paralleled in the life sciences, where molecular geneticists borrowed from physics the explanatory power of a methodological *reductio ad simplicitatem*.<sup>2</sup> The decoding of the mechanism of genetic replication solved the central problem of biology; life and heredity, or, the expression and transmission of traits, could be understood as a mechanistic physico-chemical set of interactions. Alas, there was a Newton of a blade of grass, and it was the immortal gene. When Watson and Crick announced that the code of life could be deciphered in terms of physics, some believed science to be on the brink of a Grand Unifying Theory that would fuse all the forces (animate and inanimate) of the world under a single mechanical principle or equation from which all other theories would be deduced—the apotheosis of the Enlightenment scientific project. Despite space/time relativity and the probabilities rather than absolutes of quantum mechanics (a science that had already assimilated chemistry), the reduction of life to physics promised to fulfill dreams of the unity of science, while putting the final nail into the coffin of vitalism (or, Kant's "natural purposes"). What Kant saw as the unresolvable conflict between a mechanistic Newtonianism and the "purposiveness" of life was finally dissolved by the shockingly simplistic mechanics of heredity.

Three major scientific forces of the twentieth-century shifted the subject of biology from the living organism to the gene, from the largely irrelevant, transitory flesh (the phenotype) to the omnipotent, immortal gene (the genotype): Physicist Erwin Schrödinger's publication in 1944 of *What is Life?*, molecular biologists Watson and Crick's unraveling in 1953 of the helical structure of DNA (and the subsequent use of

information theory to articulate DNA as a pattern or message that outlived its host), and evolutionary/sociobiologist Richard Dawkins's publication in 1976 of *The Selfish Gene*. Francis Crick credits Schrödinger as providing the theoretical and methodological inspiration for his own pursuit of the physico-chemical basis of life, for, as he argues, "[t]he ultimate aim of the modern movement in biology is in fact to explain *all* biology in terms of physics and chemistry."<sup>3</sup> Schrödinger opens his hugely popular book (intended for a lay audience) by posing a question: "How can the events *in space and time* which take place within the spatial boundary of a living organism be accounted for by physics and chemistry?" "The preliminary answer," he cheekily replies, "which this little book will endeavor to expound and establish can be summarized as follows: The obvious inability of present-day physics and chemistry to account for such events is no reason at all for doubting that they can be accounted for by those sciences."<sup>4</sup> In her astute reading of *What is Life?*, Evelyn Fox Keller declares that Schrödinger's central concern is obvious, given the second law of thermodynamics (which holds that all living systems tend inexorably towards entropy and decomposition): How can "one account for the extraordinary stability of genetic memory in a world in which everything else [is] mere grist for the relentless forces of dissipation?"<sup>5</sup> "By what process does [the organism] free itself from entropy, always drawing, sucking, drinking, concentrating order from its environment?"<sup>6</sup> "For Schrödinger," Fox Keller argues,

the miracle of life [is] not birth but the staving off of death; it [is] the [and here she quotes Schrödinger] 'organism's astonishing gift of concentrating a 'stream of order' on itself...—of 'drinking orderliness' from a suitable environment.' This—and the parallel mystery of genetic immortality, the ability to 'keep going' through progeneration—is at once the miracle of life, and the enigma Schrödinger had to solve.<sup>7</sup>

For the eminent physicist turned biologist, the *vital* distinction between life and nonlife is

the miraculous immunity of the gene to the ravages of entropy.

In *What is Life?*, Schrödinger locates the source of immortality in the chromosomes, which “contain in some kind of code-script the entire pattern of the individual’s future development and of its functioning in the mature state.”<sup>8</sup> The “all-penetrating mind” of the chromosomatic “code-script” is the very soul of the self, the “law-code and executive power,” the “architect’s plan and builder’s craft—in one.”<sup>9</sup> With his book, Schrödinger cleared the way for scientists to conceive of the gene (or the laws of physics) as the causal entity capable of elucidating all biological phenomena. For Watson and Crick, the gene is the master molecule of life that defines what it means to be human; it is the crystal ball, the code of codes, the mother molecule, the Eighth Creation, the Holy Grail of the human.<sup>10</sup> Neither the machine nor its mechanics, DNA is a message, a program, a blueprint, the agent of life and death. Both abstract and material, immortal and immanent, the gene is, above all else, an informational molecule that withstands the ravages of contingency to transmit signals that emanate from the past and radiate into the future. Within this hermeneutic, the individual is insignificant; as long as the code endures there is a species of genetic immortality. “We used to think our fate was in our stars,” Watson famously stated, “[n]ow we know, in large measure, our fate is in our genes.”<sup>11</sup> One danger of bestowing the “master molecule” with an almost messianic power over the production and transmission of information is to marginalize material existence (embodiment) as the superfluous by-product, or even slave, of the code. In this informational hermeneutic, the individual is incidental to life and inessential to its evolution. A molecule of information that holds the key to life and death, DNA both inspires and executes its own cryptic message.



Lastly, Richard Dawkins's *The Selfish Gene* (the book biologists love to hate or hate to love) plots the macabre victory of rationality over bodies and evolution—from a gene's eye point of view. In unparalleled fashion, Dawkins evokes the explanatory power of molecular biology's *reductio ad simplicitatum*. Like many before him, Dawkins argues that evolution operates most efficiently and forcefully at the level of the genome (the total hereditary material of an organism). Natural selection cares not a whit for the individual organism. But for Dawkins, the real mystery of evolution is that all activities of the organism exist to serve the genome, which cares only for its own replication. He argues provocatively, and perhaps absurdly, that the genome evolved the individual body as the means of its own perpetuation. In other words, we are the genome's evolutionary tool, but past reproductive age and we are no longer of any use to our master. Driven by its overwhelming desire to self-replicate through younger, more fertile bodies, the genome allows our dissolution. The individual (who exists to serve the parts) is merely a medium for the transmission of genetic information. It is a "survival vehicle" and pawn for the genome's unfolding immortality:

The genes are the immortals, or rather, they are defined as genetic entities which come close to deserving the title. We, the individual survival machines in the world, can expect to live a few more decades. But the genes in the world have an expectation of life which must be measured not in decades but in thousands and millions of years.<sup>12</sup>

In his extremely reductionist theory, Dawkins defines the human as a programmed machine constructed for the sole purpose of gifting the genome with a first-class ticket to immortality. As the "immortal coil" of DNA,<sup>13</sup> the genome manipulates and disposes each body it inhabits as an unfortunate, yet necessary stop, on the route to hereditary immortality. Amoral master of life and death, DNA is the scientific equivalent of the

omnipotent soul.<sup>14</sup>

## II. Eugenics and Genetic Engineering

The evolutionary synthesis of Darwin and Mendel accorded scientists an explanation of the control mechanism in heredity and how it conducted its activities at the deepest level of the living organism. Mendel's explanation for the stability in the transmission of traits largely replaced folk notions of blood as the conduit for hereditary (i.e. racial) transmission. By mid-century, molecular genetics had legitimized earlier popular assumptions that the heredity complex (blood, the germplasm, chromosomes, genes, what have you) was the primary locus of activity that determined both organismic development ("fidelity" to the species) and the stable transmission from past to future of a potentially immortal information pattern. As the elucidation of the principles of hereditary variation, genetics promised to conquer the final frontier of man's dominion over nature. The will to knowledge/mastery shifted decidedly (and perhaps finally) to defining and securing the boundaries of the human as an essentially genetic being. Understanding the transmission services of the hereditary mechanism opened the door to a new conception of human immortality *and* individuality. The gene was the trick for staving off mortality and securing a permanence independent of the body; it was also the key to illuminating human identity (species' uniqueness) and the differences between humans. The genetic routes to understanding the human highlighted genetic immortality on the one hand, and specificity—how each of us is a unique genetic value—on the other. But as Thomas Hardy's poem suggests, even by the turn of the century lay people had begun to buy a messianic notion of heredity not only as the dominant factor in understanding and predicting human nature (as the history of eugenics in the West demonstrates), but as an

invisible yet material prime mover independent of bodies and potentially immortal.<sup>15</sup> The science of human heredity was an anti-entropic force in the midst of an uncertain universe ruled by the second law of thermodynamics (which dictated the ultimate “heat death” of the universe).

Gaining access to the primary agent of life provided hereditary scientists with the tools to reinterpret humanity’s evolutionary past, and to predict or control its evolutionary future. Science historian Nancy Stepan argues that the science of human heredity in fact received its clear mandate under the sway of a burgeoning eugenic consciousness in the early part of the twentieth-century. Between 1900 and 1920, “it was faith in eugenics and the importance of racial improvement that led many biologists to the study of human heredity.” “Eugenics and genetics,” she argues, “were...two sides of the same science.”<sup>16</sup> Though neither Schrödinger nor Watson, Crick nor Dawkins played even a remote role in the sordid past of Western eugenics, the history of the study of human genetics since Darwin has been haunted by the specter of breeding human bodies. For the father of eugenics, Francis Galton, the introduction of breeding logic into the study of the improvement of the human race took on an almost religious intensity. With a science of human difference man could rationalize political and social structures—the very future itself. A decidedly forward-looking scientific and social program, eugenics would work to improve the human stock by giving “the more suitable races or strains of blood a better chance of prevailing speedily over the less suitable than they otherwise would have.”<sup>17</sup> Because natural selection was inefficient (it took too long and was thwarted by modern social institutions that allowed the mentally or physically unfit to breed), Galton argued that man had to seize the forces of evolution and apply mathematics, statistics, and

genealogy to improve the quality of the human race through selective breeding. The growing faith in heredity and the purity of bloodlines as the essential components of modern progress coincided with a sense of man's duty to shape the course of future events.

From Gobineau to the Final Solution, the West has been mesmerized by the application of Darwinian theories to actual bodies through eugenical processes. Eugenics was the technological bridge between an ersatz evolutionary theory and racial hygiene. Belief in the fixity, essence, and hierarchy of human differences supplied the life sciences with a standard set of eugenic principles for measuring and making predictions about human bodies. As I argue in chapter one, for over a century the core enterprise of the science of human heredity was the division of *homo sapiens* into higher and lower species of life, a division that almost always fell along the line of race. Race was the key explanatory framework through which one could understand temperament, mental ability, health, crime, and social structures, but above all else, the very movement of history and the rise and fall of civilizations. Race, or, the purity or impurity of blood and lineage, was used to theorize the history and health of a nation. Under a newly emergent eugenical and historical consciousness (as if race itself spurred the field of historical methodology—see especially Gobineau's *Inequality of the Human Races*), the decline of civilizations was imputed to miscegenation. Endogamy and the avoidance of foreign bodily substances could account for the vigor and promise of a nation; hybridization, on the other hand, sapped the vitality out of the superior race and violated the hope of the future (in 1918 the anti-immigration activist Madison Grant argued that uncontrolled immigration/migration would “produce many amazing racial hybrids and some ethnic horrors” that would “be

beyond the powers of future anthropologists to unravel”<sup>18</sup>). In the racist imaginary, the “natural history” of the human races revealed an evolutionary gulf between black and white that was so great as to prevent hygienic union: Hybrid offspring were thought sterile or otherwise degenerate. Strangely, hybridity itself was used as evidence for racial essence. According to Kant,

Negroes and whites are clearly not different species of human beings (since they presumably belong to one line of descent), but they do comprise two different races. This is because each of them perpetuate themselves in all regions of the earth and because they both, when they interbreed, necessarily produce half-breed children, or blends (Mulattoes).<sup>19</sup>

The assumption that heredity/race (they are seamlessly conflated in the eugenical and neo-eugenical consciousness) is the key determinant of human identity and social progress may not be a thing of the past. The last three decades have witnessed a groundswell of interest in the deterministic powers of heredity to shape individual behavior, aptitude, and life chances. The measure of our value and the patterns of our lives are increasingly being explained through the prism of genetics; and its use to essentialize the human and reinforce rather than deemphasize difference suggests the facility with which even modern science is susceptible to commercial or ideological interests. In 1969, educational psychologist Arthur Jensen (a former Berkeley professor) argued that differential IQ scores between whites and blacks were due to innate hereditary differences in mental capacity. In 1994, behavioral psychologist Richard Herrnstein (a former Harvard professor) and neo-conservative Charles Murray (of the American Enterprise Institute) followed suit to argue for the genetic inferiority of American blacks in their controversial best-selling work, *The Bell Curve*, bankrolled in part by the neo-eugenical Pioneer Fund. Murray and other runt offspring of neo-eugenical thought seek to

advance their own political agendas like the eradication of welfare programs by attributing social problems to a false biology. As Fox Keller argues in “Nature, Nurture, and the Human Genome Project” (1992), culture is once again being subsumed under biology through the political/commercial use of a “eugenics of normalcy.”<sup>20</sup> Those who advance the geneticization of human nature explain socioeconomic inequality as an unfortunate but inescapable biological fact.

Confidence in genetic determinism fosters interest in and desire for the domestication of human evolution: You rationalize the human and you control the future. When Watson and Crick unveiled the most fundamental dynamic of the living world—the expression and transmission of hereditary traits by DNA—scientists at last had the knowledge they could use to direct human evolution and realize its perfection. In the last three decades, molecular geneticists have labored to acquire the skills to directly engineer an organism’s biological software: In 1973, scientists cut and spliced DNA from two different organisms to form recombinant DNA, new hereditary material that could freely multiply once inserted into a new host;<sup>21</sup> in 1990 and 1991, the first successful human gene therapy was performed by injecting healthy DNA via a retrovirus into a young female patient whose unhealthy T cells (part of the immune system) were replaced with effective DNA.<sup>22</sup> In the last ten years, molecular engineers have learned to manipulate how genetic instructions are passed from one generation to the next, cloning offspring genetically identical to their parents. Access to the core material determinant of biological structure, function, and heredity has theoretically given scientists the tools to engineer life in a laboratory.

For some, molecular genetics now yields an unparalleled level of order that can be

used to eradicate human imperfections or undesirable aberrations. In the past three decades, references to “genetic health,” “optimizing genetic excellence,” “hereditary endowment,” and “managing the gene pool” have again crept into mainstream scientific and journalistic literature.<sup>23</sup> With the implied baseline norm of *The Human Genome* against which health will be defined, and with the unparalleled successes in the direct manipulation of genetic material, scientists will soon have the means to engineer biological processes according to a eugenical standard of normalcy. Libertarian technophiles see the possibilities of a biotechnology that could be used to scientifically engineer reproduction in a way that would enhance genetic inheritance and purge organisms of their impurities or bad habits. Eugenic mechanisms of normalcy or health are emerging out of a biotechnology/informational matrix that dresses the irrational desire to conquer unpredictability in the guise of a liberatory free-market right to choose health over sickness for a child. Influential biotechnology critics such as Jeremy Rifkin argue that the revival of genetics/heredity as the ultimate arbiter of human fate has much to do with an economy increasingly based on biotechnology and its corporatization of life (genes are now the “green gold”).<sup>24</sup> For Rifkin, dramatic biotechnology advances in recombinant DNA and reproductive technologies provoke fear over the advancing rationalization of the human. Luddites and/or biotechnology critics from across the political spectrum perceive a creeping quality-control mentality taking root (in pre-natal genetic screening, embryonic manipulation, genetic counseling, “designer babies”), especially amidst the nuclear family where concerns over the quality of reproduction is a timeworn anxiety.<sup>25</sup> While in the Victorian period, science discovered in race and miscegenation the crucial concepts of human classification and contamination, many fear

that in the coming biotechnology century science may discover equivalent concepts in genetic purity and pathology.

Left-wing critics like Rifkin attack biotechnology from an anti-corporate, anti-globalization, and anti-racist perspective. Right-wing critics like Francis Fukuyama, however, attack biotechnology from a technophobic humanistic perspective that condemns artificial reproductive processes or technological manipulation of the gene line as a sacrilegious violation of human nature. In “Computing the Human” (2005), N. Katherine Hayles argues that Fukuyama defends human nature (particularly, I would add, in relation to reproduction and the family) as “the natural basis for social, cultural, and political institutions, arguing that those institutions that accommodate human nature will be more stable and resilient than those that do not.” For Fukuyama, a sacred, normative human nature must be protected against manipulative technoscientific practices,<sup>26</sup> but humanists and Luddites alike invoke a “Frankenscience” poised to contaminate the nuclear family and the ontological hygiene of the human, either by messing with the sanctity of life or polluting species’ boundaries.<sup>27</sup> As Dorothy Nelkin and M. Susan Lindee write, in conservative attacks against biotechnology (which always harken back to *Frankenstein* and *Brave New World*), DNA “is sacralized or forbidden territory, to be transgressed at a very high cost.”<sup>28</sup> To deem human nature or genetic endowment sacrosanct, right-wing critics indulge in yet another brand of biological deterministic thought horrified by the specter of alternative kinships or cross-species miscegenation.

Interestingly, both the right and the left warn of the lurking Gattacas or Brave New Worlds behind every dream of genetic perfection or the rationalization of reproduction. Those on the left turn more frequently to Andrew Niccol’s movie *Gattaca* (1997) to warn



of the future polarization of society into the genetically rich and genetically poor.<sup>29</sup> The world of *Gattaca* is structured along a genetocracy where the genetically poor constitute a new underclass disenfranchised by their biology and marginalized into working society's menial jobs. They are the new untouchables, "invalid" humans whom the genetically rich see as ultimately expendable. *Gattaca*, the narrator tells us, has "discrimination down to a science." But popular culture at large invokes the *Brave New World* (1932) of Aldous Huxley to envision a horrifying future organized around the genetic manipulation of the human. Huxley takes the utopian promise of Enlightenment science and twists it into a nightmare world where biotechnology engineers humans to perform specialized tasks. In a society that worships Fordism/Taylorism as the single ruling value system, scientists standardize the production of men and women in bulk, eliminating any single factor (like independent thought or love) that may hinder the operational efficiency of the machine. Though separated by over half a century, *Brave New World* and *Gattaca* extrapolate the effects of a science that displaces the individual with the genome as the locus for the discourse of normative humanity,<sup>30</sup> plotting the oppressive and dehumanizing effects of an order maintained by the geneticization of life chances. Under the total rationalization of organic processes, science mechanizes life and vitalizes the machine.

### III. Polluted Genes, Impure Species, and Alternative (Evolutionary) Kinships in the New Genetics

A transgenic organism contains genes transplanted from one strain or species—or even across taxonomic kingdoms, for example, from fish to tomatoes, fireflies to tobacco, bacteria to humans, or vice versa—to another. Transgenic border-crossing signifies serious challenges to the "sanctity of life" for many members of Western cultures, which historically have been obsessed with racial purity, categories authorized by nature, and the well-defined self. The distinction between nature and culture in Western societies has been a sacred one; it has been at the heart of the great narratives of salvation history and their genetic transmutation into sagas of secular progress. What seems to be at stake is this culture's stories of the human place in nature, that is, genesis and its endless repetitions...It is a

mistake in this context to forget that anxiety over the pollution of lineages is at the origin of racist discourse in European cultures as well as at the heart of linked gender and sexual anxiety. The discourses of transgression get all mixed up in the body of nature. Transgressive border-crossing pollutes lineages—in a transgenic organism's case, the lineage of nature itself—transforming nature into its binary opposite, culture. The line between the acts, agents, and products of divine creation and human engineering has given way in the sacred-secular border zones of molecular genetics and biotechnology. The revolutionary continuities between natural kinds instaurated by the theory of biological evolution seems flaccid compared to the rigorous couplings across taxonomic kingdoms (not to mention nations and companies) produced daily in the genetic laboratory.

—Donna Haraway, *Modest\_Witness*

Given the intensely racist and misogynist history of eugenical dreams of engineering and rationalizing the human, why are so many feminist philosophers enticed by the possibilities of technoscience? If, contrary to popular opinion, science fiction—“[f]ar from being the expression of a simple-minded positivism”—is the “very form of modern scientific anxiety,”<sup>31</sup> why are so many feminist science fiction writers intrigued (in the sense of plotting something illicit) by the prospective bodies of future science? Donna Haraway argues that left-wing attacks against the biotechnology/informational matrix are vital in the fight against corporate patenting of life, particularly, the “appropriation of the commons of biological inheritance as the private preserve of corporations,”<sup>32</sup> most notably illustrated in the Icelandic government's decision in 2003 to sell its people's genetic information to a U.S. funded corporation that, given the relative homogeneity of the Icelandic population due to almost nonexistent immigration for centuries, believes the nation's genetic heritage will help it to better understand genetic disease (while allowing international drug companies to mine the information for profit). Using the blond-haired, blue-eyed Icelandic population as the template for the genetic blueprint of the human is unsettling, to say the very least. But in opposing the genetic engineering of fetuses or the gene-prospecting of indigenous lands and peoples by international drug companies, biotechnology critics frequently lapse into a

rhetoric of “purity of type, natural purposes, and transgression of sacred boundaries” that makes Haraway uncomfortable.<sup>33</sup> Rejection of the hybrid entities and cross-bred species produced by biotechnology based on appeals to “the integrity of natural kinds and the natural *telos* or self-defining purpose of all life forms,”<sup>34</sup> dovetails too nicely and problematically with Fukuyama-type purist arguments for the inviolate, sacred quality of human nature. Haraway cannot help but “hear the dangers of racism in the *opposition* to genetic engineering” based on dire predictions of the impure entities and unnatural kinds that emerge from transgenic practices: “I cannot hear discussion of disharmonious crosses among organic beings and of implanted alien genes,” she writes, “without hearing a racially inflected and xenophobic symphony.”<sup>35</sup> She finds the “discourses of natural harmony, the nonalien, and purity unsalvageable for understanding our genealogy in the New World Order, Inc.”<sup>36</sup>

Feminist historians of science like Haraway and science fiction writers like Butler pause at any discourse that purports to define the legitimately human or to narrow human bonds to molecular kinship. As such, they reject humanist as well as libertarian (“positive eugenic” or quality-control) approaches to the control of reproductive processes as covert attempts to protect the status quo and reproduce the same. For them, technophobes and technophiles alike seek to control and purify an illusory human norm; both insist on a homogenous or standardized continuity of genetic inheritance (like technological libertarianism, humanist arguments like those of Francis Fukuyama imply definite ideas about the qualities and traits that should be passed down to the next generation—definite ideas, in other words, about who should reproduce and control reproduction); both are systems intolerant of imperfection that prioritize an unambivalent kinship based on

genetics; and both narcissistically indulge in dreams of immortality through genetic replication. While the humanists attempt to realize genetic immortality through the stable transmission of “rights” via the nuclear family, libertarians envision immortality through their technological end-game, which is always the separation of mind from body. In short, fundamentalist hereditarian discourses can dress themselves in various garbs, but in an age of genetic fetishism where anxieties over bloodlines, lineages, legitimacy, and progeny are played out within the sphere of reproduction, humanists and libertarians alike agree that if you control the production of bodies you control the future.

Idealized abstractions of exemplary human nature or genetic individuality are only made possible, however, through the systematic misrepresentation of new findings in the field of molecular genetics, and/or the denial of minority theories in the fields of evolution and microbiology. For example, when scientists at the Human Genome Project announced in 2003 that they had sequenced a complete human genome, they left more questions unanswered than answered. Less than five percent of human DNA actually codes for identifiable proteins; over ninety-five percent of our DNA is either “junk” (which serves no current purpose but may be stored away for future evolutionary use) or serves a function that we do not yet understand.<sup>37</sup> Rather than enhancing essential *homo sapien* difference from other animals, the project revealed humans differ from chimpanzees in less than two percent of their genetic makeup. In fact, most of the 25,000 or so genes we do have are also shared by sloths, slugs, gnats, and bacteria, strengthening rather than weakening the ties between humans and the rest of the animal kingdom. In *Philosophy of Race and Science* (2002), Naomi Zack writes that new genetical findings reveal humans differ from one another in 0.2% (1/500) of genetic material, and of that variation, “no less

than 90 percent...occurs locally, between any two people who happen to be neighbors.”<sup>38</sup>

This is most important: Take any random neighbor of your “race” and you are as likely to differ from her in genetic material as you are to differ from a random person of a different “race.” Though we must never deny (environmentally determined) human diversity or real biological variety, Zack argues, “[t]here is no room in the current Mendelian account” (which emphasizes non-racial, population genetics) “for a concept of racial essences or specifically racial genes.”<sup>39</sup> For Zack, as well as for others, the new genetics suggests that the distribution of variety amongst humans cannot and never will support a racial taxonomy. In the most profound sense, race is false biology.

For many decades American geneticists upheld an autonomous genome in total command of the organism’s evolution, activities, and life chances. All creative evolutionary information lay within a single distinct genome intrinsically stable and isolated from the body’s physiology. Wired to believe in integrity/autonomy as the sine qua non of the evolutionary process, Neo-Darwinist molecular geneticists argued that an organism *by definition* was a genetically authentic value distinct from the world. In his book *Evolution by Association: A History of Symbiosis* (1994), Jan Sapp contends that it was no coincidence early geneticists used the language of jurisprudence and the transmission of economic wealth to analyze the hereditary process (the replication of the self). The passage is worth repeating at length:

Throughout the first half of the twentieth-century, geneticists had restricted the concept of heredity to suit their practice. Inheritance as borrowed from jurisprudence was the transmission of rights and properties from parents to offspring. Geneticists transformed the metaphor to the transmission of genes from one generation to the next. According to the evolutionary synthesis of the 1930s and 1940s, evolution resulted from a gradual accumulation of almost imperceptible differences between individuals of a species. Undirected gene mutations and genetic recombination represented the primary sources of

evolutionary variation. The individual organism was well defined and protected against invaders. Infection was opposed to inheritance, as disease was to health, as poverty was to wealth, discontinuity to continuity. The true germ line was pure, protected from the mundane realities of life and free from the kinds of contaminations that might invade otherwise healthy tissue. An infectious agent was at best a harmless foreigner, carrying out special duties in certain circumstances; most often, it was a thief which wormed its way in to rob one of one's rightful inheritance.<sup>40</sup>

In these early discourses, “genetic endowment” or “birthright” provides a definitive individuality, an unambiguous kinship, and, perhaps most importantly, the proper accumulation of biological/economic capital as the central motor of modern progress and civilization. As a “classificatory technology,”<sup>41</sup> genetic kinship defines meiotic sex within the nuclear family as the sole legitimate method of endowing “wealth”—everything else is infection, disease, foreign, thief. Today, genetic kinship persists in functioning as a segregatory discourse that literally *banks* on the technology of connection and disconnection, inclusion and exclusion.

Genetic investigations into the microscopic world in the 1950s, however, began to reveal staggering implications for the study of the relations between infection, heredity, and evolution. Joshua Lederberg (the first significant proponent of “exobiology,” the study of extraterrestrial life forms) won the 1958 Nobel prize in physiology for proving that bacteria reproduce horizontally as well as vertically. Bacteria exchange genetic materials in a process he calls “conjugation,” where one bacterium pipes genes directly into another. He also proved that (in the words of Horace Freeland Judson) bacteria exchange genes by another, more “indirect method” called “transduction,” where “a virus mediates...by snaring bits of DNA while multiplying in one bacterial cell and transporting the bacterial genes into the next cell it infects.”<sup>42</sup> The bacteriophage (a virus that infects a bacterium) integrates foreign DNA into a host genome, essentially acting as a vector for

new heritable traits. No longer merely an agent of contamination, then, the virus is a crucial recombinatory vehicle that crosses species' boundaries willy nilly, capturing genes here, transporting genes there, recombining genes with host genes, and so on. Most importantly, what Lederberg discovered and future biologists elaborated was that bacteria routinely practice a myriad of gene-trading forms of sex which enables them to exchange genetic materials horizontally between and within bacterial species ("sex" as recognized by biologists means simply the union or mixing of genetic materials from more than one separate source—it has nothing intrinsically to do with copulation or reproduction<sup>43</sup>). Bacteria, Dorion Sagan writes, are "so genetically promiscuous, their bodies are so genetically open" (due to lack of an immune system) "that the very concept of species falsifies their character as a unique life form."<sup>44</sup> Bacteria trade genetic material across species boundaries, or simply pick up discarded genes from the environment to make use of the infusion of new DNA to perform novel functions. In short, Margulis and Sagan argue that "[b]acteria trade genes more frantically than a pit full of commodity traders on the floor of the Chicago Mercantile Exchange."<sup>45</sup>

The discovery of what microbiologists now refer to as "bacterial omnisexuality" yields drastic implications for the study of heredity and evolution (implications Octavia Butler will take a decade to explore in her science fiction). Firstly, microscopic recombinatory techniques (now exploited by biotechnologists) allow bacteria to freely mix genes at any time without reproduction. While the "higher" life forms have no opportunity to mix or lend their genes to the production of a new individual apart from vertical transmission, a single bacterium within the same generation can splice, cut, and exchange genes to the point where the "new" individual may now carry a majority of fresh

genes independent of the reproductive cycle.<sup>46</sup> In other words, a single bacterium in the microscopic world may have sex a thousand times a day *without reproducing itself*.

Secondly, bacteria so rapidly and promiscuously exchange genes that any concept of fixed or final species boundaries between microscopic organisms has no significance. Because bacteria freely trade heritable traits with virtually no regard for species barriers, the very idea of genetically distinct species within the bacterial world is untenable: “unlike other life,” Margulis writes, “all the world’s bacteria have access to a single gene pool and hence to the adaptive mechanisms of the entire bacterial kingdom;”<sup>47</sup> if “all strains of bacteria can potentially share all bacterial genes,” she contends, “then strictly speaking there are no true species in the bacterial world. All bacteria are one organism, one entity capable of genetic engineering on a planetary or global scale.”<sup>48</sup> Thirdly, and perhaps (for Butler at least) most importantly, bacterial omnisexuality/symbiogenesis subverts the idea that genetic individuality or self-equality is the very condition of evolutionary possibility. “The fact that ‘individuals’—as the countable unities of population genetics—do not exist,” Margulis argues, “wreaks havoc with ‘cladistics,’ a science in which common ancestors of composite beings are supposedly rigorously determined.”<sup>49</sup> Because bacteria have “only a limited expression of individuality [and] no circulating antibodies to guard them...an ‘infection,’ far from being rejected as it might be in an animal with [an] immune system, can thus become the basis for life long association, a mutual evolution.”<sup>50</sup>

Bacterial omnisexuality—or symbiogenesis—is a bridge to *messy evolutionary lineage and progeny*. Bacteria are so masterful at forging gene-trading relationships, so skillful in trespassing on the genetic “property” of species that, far from being an exception to the evolutionary rule (of the random accumulation of mutations), bacterial symbiogenesis



may in fact explain the origin of new biological properties, structures, and even species in the macroscopic world.

New theories within the fields of genetics, microbiology, and evolution thwart dreams of purity, deny the existence of genetic specificity, deconstruct biological differences between humans, and denaturalize kinship structures based on biological purity or anthropological structures based on species purity. For science historians like Haraway, scientists like Margulis, and science fiction writers like Slonczewski and Butler, the question is this: What if science were used to delight in rather than fear diversity?

#### IV. The Hybrid Immortalities of Octavia Butler: *The Xenogenesis Trilogy*

How does a deadly infection become a bodily part?

—Lynn Margulis & Dorion Sagan, *What is Life?*

To survive even a dozen more generations we must keep the genes mixing, mixing, mixing.

—Samuel Delany, *The Einstein Intersection*

Some science fiction critics accuse Octavia Butler of engaging in an historical or genetic determinism. Most of her novels (including *Clay's Ark*, *The Xenogenesis Trilogy*, and *Parable of the Sower*, *Parable of the Talents*, and *Kindred*—the latter a time-traveling neo-slave narrative) are set against a grim postapocalyptic backdrop of violence, racism, rape, and economic exploitation. Instead of using the plot device of postapocalypse or galactic colonization as a chance to reinstate conservative 1950s American values and social structures (like David Brin's *The Postman* or Pat Frank's *Alas, Babylon*), Butler's human characters flail amidst a depraved world that replays sociobiological narratives of man and human culture based on innate territoriality, aggression, hierarchical structures, and survival of the fittest.<sup>51</sup> In her Patternist Series (including *Patternmaster*, *Mind of My*

*Mind*, and *Wild Seed*<sup>52</sup>), Butler seems to be particularly haunted by the enforced breeding of human bodies, the loss of reproductive freedom typical of feminist dystopias.<sup>53</sup> In one of the few good critical pieces on her work, Cathy Peppers argues that Butler uses the postapocalyptic terrain in *The Xenogenesis Trilogy* to “retell the story of human evolution”<sup>54</sup> through competing discourses of becoming and being. She puts master narratives of the human in dialogical conversation with the alien to challenge Biblical, anthropological, and evolutionary narratives that reproduce “the logics of domination” and the “reification of humanist, essentialist notions of identity” and origins.<sup>55</sup> Pepper’s essay, entitled “Dialogic Origins and Alien Identities in Butler’s *Xenogenesis*” (1995), is a rare and fine antidote to the bulk of Butler scholarship which demonstrates little understanding of her postmodern/posthuman use of minority religious, scientific, and evolutionary narratives to critique impoverished notions of selfhood and kinship. For example, in *The Xenogenesis Trilogy*, instead of Adam and Eve we have the alternate Biblical narrative of the rebellious Lilith, whose “‘fate’ was to couple with demons and give birth to a monstrous brood of children;”<sup>56</sup> set against “Man the Hunter,” an anthropological culture “built on innate aggression, dominance structures, and xenophobia, reflected in hunting, weapon-making, and traffic in women,” is “Woman the Gatherer,” an anthropological culture that, as Peppers notes, in its emphasis on agriculture and gathering “obviates the sexual division of labor, weapons production, aggression and hierarchy, and leads to the displacement of the nuclear family.”<sup>57</sup> Those who resist the transition into the posthuman in Butler’s *Xenogenesis* replay the old sociobiological narratives that violence and aggression are behaviors naturally selected for by evolution (sociobiologists seek to use evolutionary theory to account for psychological or behavioral

qualities, to explain something like xenophobia, for example, as granting an evolutionary advantage). In their resistance to the alien culture, values, and kinships of the Oankali, the humans in the trilogy reenact the Darwinian logic of the survival of the fittest, where the overriding interaction between individuals is based on competition and predation. But this already well-trod narrative of racism, guns, Bibles, and the nuclear family, Peppers suggests, is “in dialogue with an ‘alien’ story of another evolution,” one that asserts “humans are not biologically determined to restore the sacred image of the same.”<sup>58</sup>

If the engineering of human evolution is our next great scientific frontier, then few cultural activities are more important than debate over evolutionary master narratives of the past (survival of the fittest), the present (sociobiology), and the future (genetic engineering), and I daresay Octavia Butler would agree. In *The Xenogenesis Trilogy*, she uses the human “Resisters” to argue for the parochial and self-aggrandizing view of a Neo-Darwinism based on genetic specificity and reproductive fidelity. In contrast, in her depiction of the gene-trading alien Oankali Butler works creatively to broaden the concept of heredity and evolution (life) to include transgenic organisms, disease partnerships, cross-species mergers, unnatural hybrids, and infective (or extrachromosomal) hereditary elements. The study of the rampant genetic trespassing in the microscopic world had a profound effect on Butler’s science fiction imagination: Her aliens pollute fixed gene and species lines by transferring biological materials across taxonomic boundaries; the Oankali reject the meiotic reproductive sex of humans as an inherently stabilizing, and thus anti-evolutionary, impulse; they require hybridization as the primary mechanism for generating heritable difference (reproductive purity would spell their extinction); and like their microscopic counterparts, Butler’s aliens appreciate the adaptive significance of

symbiogenesis, the evolution of biotic flexibility through cross-species partnership.

Butler's use of symbiogenesis counters an evolutionary theory that measures progress by the degree to which an individual exhibits autonomy from its environment. Alien/human symbioses in her novels transgress the boundaries of the individual altogether, merging different species into abrupt new associations built on the sharing of bodies. These lessons from symbiogenesis, Lynn Margulis argues, contradict the "view of evolution as a chronic, bloody competition among individuals and species." "Life did not take over the globe by combat," she argues, "but by networking. Life forms multiplied and grew more complex by co-opting others, not just by killing them."<sup>59</sup> The trans-species bodies and alien humanities that accrue from symbiotic fusions in Butler's fiction diverge from the genealogical lines of each contributing organism, generating the genetic *discontinuity* by and through which evolution works ("xenogenesis" means the generation of offspring completely and permanently different from the parents). As Jan Sapp writes in his analysis of Joshua Lederberg, symbiogenesis is akin to hybridization in that it is a "way of bringing phylogenetically distinct genomes into intimate associations,"<sup>60</sup> making it possible for new organisms to colonize previously uninhabitable ecological niches. In Butler's science fiction, hybridization permits species to adapt to vastly different galactic and intergalactic ecologies, forging striking new evolutionary pathways to the past and to the future. Not merely an adaptive evolutionary mechanism, then, xenogenesis—Butler's counter-evolutionary narrative—is a new way of looking at life that challenges our views on purity, individuality, and human bonds.

In *The Xenogenesis Trilogy* [which includes the novels *Dawn* (1987), *Adulthood*

*Rites* (1988), and *Imago* (1989)], the alien Oankali have rescued the few remaining humans to survive a poisoned Earth devastated by nuclear war. Lilith Iyapo (Yoruban for “many trials” or “difficult situations”) is one of the few humans to survive the near annihilation of the species. She awakens from prolonged unconsciousness on an alien spacecraft that has orbited Earth for some 250 years, during which time the Oankali have labored to make the planet again habitable. Their plan is to reclaim Earth by awakening the humans and preparing them for recolonization, but they require something in return. The Oankali are gene-traders who scour the galaxy for new life (often on the brink of destruction) to hybridize and coevolve with; their evolutionary imperative is to collect and merge with the new life forms they find, transforming others while transforming themselves. Lilith is awakened and tasked to guide the first group of humans who will recolonize the postapocalyptic Earth. She must help them overcome their hatred of alien difference, for the Oankali set the terms for humanity’s survival: Coevolve with the alien or face extinction as a unique species. Neither human nor Oankali will remain unaltered by the encounter, but while the Oankali live to become other, the humans are nearly incapable of accepting biological alteration or the fact of their impending obsolescence. Those humans who wish to propagate and can accept alien evolution must allow the Oankali to engineer them and their children into something partly human and partly alien. They exchange species autonomy for an alien/human hybrid future that will ensure long life and lasting youth, as well as increased strength, enhanced memory, and freedom from disease. A self-destructive species at an evolutionary dead-end, humanity will no longer have the means to reproduce itself.

Even Lilith is initially repulsed by the “literal unearthliness”<sup>61</sup> of the Oankali and

has difficulty in the face of alien alterity. Instead of hair, the Oankali are covered by sensory tentacles that writhe independently like a “nest of snakes,” reminding Lilith of the mythological Medusa<sup>62</sup> (*the* figure for absolute gender and sexual difference). Late in the novel *Dawn*, Lilith starts as she climbs into bed with her alien partner Nikanj: “For a moment, she saw Nikanj as she had once seen Jdayha—as a totally alien being, grotesque, repellant beyond mere ugliness with its night crawler body tentacles, its snake head tentacles, and its tendency to keep both moving, signaling attention and emotion.” The very next moment Lilith wonders “how she had lost her horror of such a being” (*ibid.*, 191). Such is the change demanded by alien encounter. But before she loses her terror of “the unbridgeable alienness” of the Oankali (*ibid.*, 97), Lilith feels a “true xenophobia—and apparently she wasn’t alone in it” (*ibid.*, 23). This biological fear of the Other is compounded by the Oankali’s early treatment of the humans on the orbiting spaceship, which several critics of the novel note eerily echoes the abduction of Africans and the “middle passage” into slavery<sup>63</sup> (in his analysis of African-American use of science fiction, Mark Dery writes that “African Americans, in a very real sense, are the descendants of alien abductees; they inhabit a sci-fi nightmare in which unseen but no less impassable force fields of intolerance frustrate their movements; official histories undo what has been done; and technology is too often brought to bear on black bodies...branding, forced sterilization, the Tuskegee experiment, and tasers come readily to mind”<sup>64</sup>). When Lilith is first awakened, the Oankali refuse her access to books or writing materials. She is also shocked to see a large scar across her abdomen, and wonders if she has been the victim of alien experimentation: “What had been lost or gained, and why? And what else might have been done? She did not own herself any

longer. Even her flesh could be cut and stitched without her consent or knowledge” (Butler, *Dawn*, 6). Angered by what she sees (in the words of critic Eric White) as the coercive and compulsory nature of the alien “‘invitation’ to acculturate to the Oankali way of life,”<sup>65</sup> Lilith feels like an “experimental animal” in a “captive breeding program:” “She was intended to live and reproduce, not to die...Forced artificial insemination. Surrogate motherhood? Fertility drugs and forced ‘donation’ of eggs?...Removal of children from mothers at birth...Humans had done these things to captive breeders—all for a higher good, of course” (Butler, *Dawn*, 60). In *Adulthood Rites*, Lilith’s Oankali/human hybrid son Akin muses that one controls “both animals and people by controlling their reproduction—controlling it absolutely” (447).

Though the surviving humans initially have little say in the Oankali’s imperialistic biological speculation, Lilith and others come to believe that humanity’s best hope for the future lies in species miscegenation. Alien evolution is in their best interest. After all, humanity has not made a very good go of it: Infected by bigotry, intolerance, and racism, “[h]umanity in its attempt to destroy itself had made the world unlivable” (*Dawn*, 15). The Oankali plan to evolve themselves using human genetic material, but Nikanj argues with Tino (a new member to Lilith’s human/Oankali “trader village” in *Adulthood Rites*) that biological fusion is as necessary for human survival as it is for Oankali. After Tino (a Latino originally from the U.S.) admits to Nikanj that he is unsure how he recognized him because he “still can’t tell [his] people apart,” he angrily argues that “trade” is not what the Oankali are doing to them, to which Nikanj simply responds “[w]e have something you need. You have something we need” (*Adulthood Rites*, 289). Nikanj also points out the obvious, that humans were dying when they found them:

We're hard to kill, but your people had made their world utterly hostile to life. If we had not helped it, it couldn't have restored itself so quickly. Once it was restored, we knew we couldn't carry on a normal trade. We couldn't let you breed alongside us, coming to us only when you saw the value of what we offered...We needed to free you—the least dangerous of you anyway. But we couldn't let your numbers grow. We couldn't let you begin to become what you were. (Ibid., 290-1)

The Oankali assert that hierarchical social structures have brought humans to an evolutionary dead-end (they are overspecialized, or, genetically isolated). In Oankali eyes, the “Human Contradiction”—intelligence at the service of hierarchical structures—is a fatal conflict wired in their genetics that renders them unfit for survival. Intelligence is essentially, and inevitably, self-destructive once yoked to its evolutionary bond with “ancient hierarchical tendencies” (ibid., 378). As a race “genetically inclined to be intolerant of difference” (*Imago*, 710), humanity needs an infusion of alien genes, values, and life patterns if the future is not to be an endless cycle of betrayal and mutually assured destruction.

Butler scathingly condemns racism and sexism in her depiction of the “Resisters,” humans who opt to live in villages isolated from the Oankali with whom they refuse to hybridize. In their struggle to remain genetically unadulterated, to get “things as much like they used to be as possible” and to “bring back civilization” (*Adulthood Rites*, 279), the Resisters lapse into typical patterns of violence and self-destruction: They *devolve* into patriarchal heterosexual partnerships, even though they are sterile; they segregate into villages along ethnic lines; and resister men attack and plunder neighboring villages, trading in, stealing, and raping women. Anti-Oankali feelings arise from racial and sexual hatred, but above all else, from the Oankali drive to engineer purity out of the human gene pool. Unaltered Resisters cannot brook the erosion of species authenticity entailed by Oankali hybridization. Until he undergoes “metamorphosis” into adulthood, Lilith’s



“construct” (human/Oankali hybrid) son Akin looks human, provoking resentment amongst the Resisters for his “not being completely Human” (ibid., 259). As the first construct male (whose parents include an Asian human male, an African human mother, a female and male Oankali, and an ooloi—the Oankali “third sex”), Lilith fears that he may not survive human male speciesism: “He isn’t Human. Un-Human women are offensive to them, but they don’t usually try to hurt them, and they do sleep with them—like a racist sleeping with racially different women. But Akin...They’ll see him as a threat. Hell, he is a threat. He’s one of their replacements” (ibid., 259-60). In this postapocalyptic world, men—especially white men—most violently resist the Oankali for they have the most to lose, including legitimate vehicles for their reproduction. But even human women fear what they see as Oankali “mongrelization” of their children—crossing species’ boundaries is to them a fearful contamination. Akin helps two young female Oankali constructs escape their mutual captivity when a female captor garners support for her plan to surgically remove the girls’ sensory tentacles so they will look more human. Though the tentacles would simply grow back, the violence would be akin to amputating a human limb.

For the Oankali, on the other hand, violence is anathema to their biophilic evolutionary imperative. Whereas humans “had evolved from hierarchical life, dominating, often killing other life,” the Oankali “had evolved from acquisitive life, collecting and combining with other life. To kill was not simply wasteful to the Oankali. It was as unacceptable as slicing off their own healthy limbs” (*Imago*, 564). For a species that collects and integrates new life into their living ships and their own bodies,<sup>66</sup> “[l]ife was treasure...[t]he only treasure” (*Imago*, 564). So instead of colonization through

predation and competition, our evolutionary master narrative, Oankali evolutionary origins and ways of living compel them to annex fresh territory through a symbiosis that threatens species autonomy and genetic individuality. What begins as an invasion, infection, or contamination, leads to a complex coexistence of formerly independent entities. As critic Brigitte Scheer-Schazler writes, it is “a parasitism performed and transformed by mutual consent,”<sup>67</sup> a compulsion to exchange rather than hierarchize rooted in the genes. The ooloi Oankali Nikanj (Lilith’s partner and a parent to Akin, and later Jodahs) parallels human mitochondrion evolution with Oankali symbiogenesis.

“Examine Tino,” Nikanj lectures to an Oankali kin:

Inside him, so many very different things are working together to keep him alive. Inside his cells, mitochondria, a previously independent form of life, have found a haven and trade their ability to synthesize proteins and metabolize fats for room to live and reproduce. We’re in his cells too now, and the cells have accepted us. One Oankali organism within each cell, dividing with each cell, extending life, and resisting disease. Even before we arrived they had bacteria living in their intestines and protecting them from other bacteria that would hurt or kill them. They could not exist without symbiotic relationships with other creatures. Yet such relationships frighten them...I think we’re as much symbionts as their mitochondria were originally. They could not have evolved into what they are without mitochondria. Their earth might still be inhabited only by bacteria and algae. (*Adulthood Rites*, 427).

(Butler had certainly read Margulis, who argued that “the ancestors of mitochondria invaded and reproduced within our bacterial ancestors [but the] invaded victims and tamed mitochondria recovered from the vicious attack and have lived ever since, for 1,000 million years, in dynamic alliance”<sup>68</sup>). Every living form, Nikanj implies, acquires an adaptive advantage when it augments its becoming with xenic biological material. The evolutionary importance of symbiosis for adapting to hostile environments requires each partner to become something other than what they were. This is the price of alien contact, that both sides transform in order to live in dynamic ecological alliance, to transform

hierarchy into exchange, coercion into choice.

The Oankali rely on organic technology to collect new life, arbitrate their symbiotic relations, and engineer their progeny (they use little machinery in the traditional sense, for in the inorganic there is no genetic trade<sup>69</sup>). As in all aspects of their symbiosis with the gene-trading aliens, human sexual contact with the Oankali is terrifically ambiguous: It promises unearthly pleasure and a subjection that leaves each partner unable to survive separation (the definition of biological symbiosis). The ooloi is a kind of third neuter sex, neither male nor female nor hermaphroditic—“a different sex altogether” (*Imago*, 524)—which mediates the sexual relationship between male and female human and Oankali alike. The ooloi give blissful sexual pleasure by connecting the nervous systems of the partners so that each may experience not only her own physical pleasure but that of her partner as well.<sup>70</sup> The deep attachment forged in the midst of sexual contact between ooloi and human or Oankali is biochemical, and thus deeply addictive. The ooloi’s need for direct and sustained physical contact with others is a hunger that compels it to chemically mark its mates, leaving each partner unable to break connection (it tortures them physically and psychologically) or to endure physical contact with another without ooloi mediation. In this sense, the ooloi “owns” its human mate; once a human is partnered in such a way, she finds even the touch of another human repellant (*Imago*, 540).

During sex or healing, the ooloi uses its two sensory arms (which look like “elephant trunks”) to penetrate the male and female bodies of its partners to collect the genetic material with which it will engineer a new individual. Though all Oankali collect and store viable genetic material from exogenous life forms, the ooloi (meaning “bridge,”

“weaver,” or “life trader” in Oankali<sup>71</sup>) mixes the DNA of the human and Oankali parents in a womb-like organ called the “yashi,” where it engineers the cross-species offspring. The Oankali are at pains to differentiate what they do—genetic engineering—from “crossbreeding” or “interbreeding.” Reproduction occurs through genetic engineering and never through sex (typical of feminist science fiction, Butler breaks the tie that binds sex with reproduction). The origin, essence, and life patterns of the ooloi make them natural genetic engineers. Jodahs, the first human-born construct ooloi (and protagonist of the final novel *Imago*), contemplates Oankali evolutionary origins in the initial invasion/infection of a virus-like organelle. As the very essence of the Oankali’s being, the organelle obliges them to “acquire new life” and to symbiotically evolve: “We must do it,” Nikanj tells Lilith soon after she has awoken,

“[i]t renews us, enables us to survive as an evolving species instead of specializing ourselves into extinction or stagnation...We’re not hierarchical, you see. We never were. But we are powerfully acquisitive. We acquire new life—seek it, investigate it, manipulate it, sort it, use it. We carry the drive to do this in a tiny minuscule cell within a cell—a tiny organelle within every cell of our bodies.” (*Dawn*, 40-1)

Jodahs muses that the organelle “made or found compatibility with life-forms so completely dissimilar that they were unable even to perceive one another as alive” (*Imago*, 544). In stark contrast to the Resister humans who frantically maintain species purity and wish only to “go back to the prewar days” (*Adulthood Rites*, 271), the Oankali have no understanding of where they came from or where they are going. When Lilith asks Jdahya (the first Oankali whom she meets on the ship) whether the Oankali desire or have the ability to return to their homeworld, he tells her “that’s the one direction that’s closed to us” (*Dawn*, 36). Any notion of original unity or species origins is for the Oankali unthinkable restrictive.

However, the Oankali's unusual brand of genetic determinism becomes increasingly suspect in the second and third books of the trilogy. Though even the Oankali admit there is more to explaining terrestrial violence and hierarchical structures than mere genes (they are the "result of a tangled combination of factors that only begins with genes"<sup>72</sup>), they pay lip service only to the idea that a "good trade" requires "cultural as well as genetic diversity" (*Adulthood Rites*, 289). The Oankali may embrace a biophilic *in potentia* as their ontology, but they need an equivalent psychological transformation to become truly symbiotic. As the first human-born male construct, Akin (the protagonist of *Adulthood Rites*) is a fully realized Oankali/human hybrid, and thus the most significant step in the maturing of the new species. As a "very Human" alien who is "more Oankali" than he thinks (*ibid.*, 475), Akin finds himself torn between an Oankali philosophically superior in its lust for biological diversity, and a Human irrationally bound to an obsolete authenticity, yet somehow noble in its resistance to Oankali domination. Akin expresses deep angst over his hybridity: "What are we that we can do this to whole peoples? Not predators? Not symbionts? What then?" Will humans only be "something the Oankali consumed?" (*Ibid.*, 443). Disgusted by what he sees as the lack of human options ("either union with the Oankali or sterile lives free of the Oankali"<sup>73</sup>), Akin begins to agitate for human survival as a "separate, self-sufficient species" (*ibid.*, 471). By the end of *Adulthood Rites*, Akin has convinced the Oankali to grant humans a third option of emigrating to Mars (a planet made habitable by the Oankali). With their fertility restored, those humans who wish to preserve species purity may flee to Mars where they will be free, in the non-construct Oankali opinion, to destroy themselves all over again. The majority of Oankali ardently believe that restoration of human fertility and liberty is

“profoundly immoral” and “antilife” (ibid., 475)—giving humans the chance to “create more life only to destroy it” (ibid., 470) is a cruelty tantamount to genocide. But Akin argues that, given an expanded set of choices (coevolve with the Oankali, stay on Earth sterile, or join the Human colony on Mars), humans have a chance for life as a free and autonomous species, a future entirely of their own making.

When Lilith’s human partner Tino first enters the trader village in *Adulthood Rites*, he is shocked to find a “menagerie” of alien humanities and human alienities: There were

Human; nearly Human with a few visible sensory tentacles; half-Human, gray with strangely jointed limbs and some sensory tentacles; Oankali with Human features contrasting jarringly with their alienness; Oankali who might possibly be part Human; and Oankali like the ooloi who had spoken to him, who obviously had no Humanity at all. (Ibid., 285)

But by the end of the third and final novel of the trilogy, *Imago* (in entomology, the final and perfect stage of evolutionary metamorphosis), it is the first human-born construct ooloi that marks a new level of perfection for the emerging species. It is, ironically, the human genetic inclination to cancer that is responsible for Jodahs’s metamorphosis into the “premature adulthood of a new species” (*Imago*, 742). From a genetic point of view, the Oankali find human cancer fascinating: it is a goldmine that “suggests abilities [they] have never been able to trade for successfully before” (*Dawn*, 40). From the aberrant cancer cells they remove from Lilith’s body (thus her mysterious scar when she first awakens) the Oankali acquire the skills to regenerate limbs, brain, and nerve tissue, and to reshape themselves at will to suit their purposes, and their desires. Before his final metamorphosis Jodahs looks both human and male, but when a former human Resister expresses surprise at how human he looks, Jodahs smiles and simply replies he’s a child

who is unfinished<sup>74</sup> (here, Butler toys with the idea of recapitulation—that “higher” life forms pass through the adult stages of “lower” life forms, i.e. a human male<sup>75</sup>). After its final metamorphosis into ooloi, Jodahs—now a master genetic engineer—can reprogram its DNA at will: “What we can do from one generation to the next—changing our form, reverting to earlier forms or combinations of forms,” Nikanj tells Jodahs, “you’ll be able to do within yourself” (*Imago*, 547). As “the most extreme version of a construct,” Jodahs will use its body in ways that “neither Human nor Oankali could”<sup>76</sup> (for example, when it becomes attracted to a male Human it shapeshifts into a woman he will find attractive). Jodah’s emergence into full species maturity evokes an alien *in potentia* that threatens any neat ontological divisions of being. Hierarchies of gender, sexuality, and race become increasingly untenable as the opposition between human and nonhuman breaks down.

In a marvelous *tour de force* for science fiction fans, Octavia Butler complexly tropes real human variety through a miscegenate evolutionary narrative that begins with a parasitic colonization, but ends in a symbiotic post-colonial alien/human hybridity. As in so many post-colonial narratives, the hero of *The Xenogenesis Trilogy* is neither the alien nor the human, the colonizer nor the colonized, but the hybrid who so dramatically disrupts norms or recognition systems that it eradicates the need for such language as human, subhuman, or alien. Donna Haraway argues for the significance of the hybrid/cyborg as a non-natural illegitimate offspring “trans” to its species’ identity and “exceedingly unfaithful” to its origins.<sup>77</sup> The hybrid defies evolutionary and biological narratives that hierarchize difference and bind questions of legitimacy to the faithful reproduction of the patriarchal line. In *The Xenogenesis Trilogy*, even Lilith (an African-American woman who is, presumably, more sensitive to the human fear of difference) is

initially repulsed by what she sees as cross-species contamination and its implications for human genetic purity. She articulates anxiety over hybridization through the language of a polluting miscegenation: She accuses an ooloi of making “mules of [their] children—sterile monsters” (*Dawn*, 55). As she will in her final novel *Fledgling*, Butler here recalls the racist argument that hybridity suggests the inability of races distant from one another to successfully cross (a horse and donkey must be different species, so the argument goes, because their offspring, the mule, is sterile; thus, a person of mixed race heritage is referred to as “mulattoe”<sup>78</sup>). But tired of human violence and her species’ fear of genetic competition as a spur to racism and sexism, Lilith comes to see hope in Oankali xenophilia and its alien contact with and immersion in the world. In the midst of his frightful captivity by a group of Resister humans, Akin recalls a conversation with his mother: “‘Human beings fear difference,’ Lilith had told him once.

“Oankali crave difference. Humans persecute their different ones, yet they need them to give themselves definition and status. Oankali seek difference and collect it. They need it to keep themselves from stagnation and overspecialization. If you don’t understand this, you will. You’ll probably find both tendencies surfacing in your own behavior...When you feel a conflict, try to go the Oankali way. Embrace difference.” (*Adulthood Rites*, 329)

The Oankali appetite for genetic diversity transforms Lilith’s vision of invasion, infection, and disease into the promise of a radically alternative order of difference that shifts the framework for how we think about relationships between bodies and between science and the world.

In *Clay’s Ark*, “Bloodchild,” and *The Xenogenesis Trilogy*, Butler mobilizes the new biology to envision illegitimate kinships outside of the heteronormative family and its bonds of pure blood. She invites her readers to dislocate themselves outside of the obsessive narrative of genetic kinship: What if your children bore no greater likeness to



you than to an unrelated stranger? What if heredity as we know it—a conservative, stabilizing, genetic transmission of wealth, property, and resemblance—did not exist? Imagine! What would happen to our vision of relatedness, connection, kinship, human bonds? This is Butler’s central science fiction concern, one Lilith echoes as she shows Tino around the trader village: “They change us and we change them...The whole next generation is made up of genetically engineered people...whether they’re born to Oankali or to Human mothers...Look at the children here, Tino. Look at the construct adults. You can’t tell who was born to whom” (ibid., 282). Butler undermines naturalized kinship by taking to task the two dominant scientific systems that account for evolutionary bonds—molecular genetics and Neo-Darwinism. Symbiogenesis, gene-trading organisms, infective partnerships, viral mutations, cross-species miscegenations—these are the biological phenomena that lie at the root of our origins and being, and they hopelessly confuse genetic specificity and thwart biological continuity. The hereditary material that Nikanj “endows” upon its child Jodahs is as different from our sense of hereditary endowment as gene-trading bacterial sex is different from egg and sperm meiotic sex. When Nikanj recognizes Jodahs’s maturity, it transfers its massive storage of genetic information to its child. The “genetic memories” and “viable cells that Nikanj had received from its own ooloi parent or that it had collected itself or accepted from its mates and children” represent Jodahs’s “birthright,” Nikanj’s “final gift/duty/pleasure” to its child: “All my senses turned inward,” Jodahs narrates,

as Nikanj used both sensory hands to inject a rush of individual cells, each one a plan by which a whole living entity could be constructed. The cells went straight into my newly mature yashi. The organ seemed to gulp and suckle the way I had once at my mother’s breast. There was immense newness. Life in more varieties than I could possibly have imagined. (*Imago*, 692-3)

Jodahs will draw from this “immense newness” to engineer the next generation of hybrids and *alien filiations*—in the sense of inheritances *and* kinships. “Families will change, Lilith—are changing,” Nikanj speaks to the mother of a new race of alien/human hybrids, “[t]rade means change. Bodies change. Ways of living must change. Did you think your children would only *look* different?” (*Adulthood Rites*, 260).

#### V. Conclusion: Nature, Kinship, and Culture: Octavia Butler’s *Fledgling* and the Anthropology of Impure Blood

The genome lives in the realm of the undead...

I am sick to death of bonding through kinship and “the family,” and I long for models of solidarity and human unity and difference rooted in friendship, work, partially shared purposes, intractable collective pain, inescapable mortality, and persistent hope. It is time to theorize an “unfamiliar” unconscious, a different primal scene, where everything does not stem from the dramas of identity and reproduction. Ties through blood—including blood recast in the coin of genes and information—have been bloody enough already. I believe that there will be no racial or sexual peace, no livable nature, until we learn to produce humanity through something more and less than kinship. I think I am on the side of the vampires, or at least some of them. But, then, since when does one get to choose which vampire will trouble one’s dreams?

—Donna Haraway, *Modest\_Witness*

In their introduction to *Relative Values: Reconfiguring Kinship Studies* (2001), Sarah Franklin and Susan McKinnon refer to the groundbreaking work of Marilyn Strathern, who critiques the Euro-American experience of kinship as a “‘hybrid’ between nature and culture, or biology and society.”<sup>79</sup> In this sense, Franklin and McKinnon argue, kinship is “a cultural technology not only for naturalizing relationships but also, and at the same time, for the reverse—for transforming naturalized relations into cultural forms.”<sup>80</sup> Those who study contemporary kinship structures stress the importance of modern science—in the form of blood, heredity, genetics, and evolutionary theory—in shaping the understanding of selfhood and the relatedness of bodies. Kinship, it is argued, is the conceptual bridge between nature and science/culture: It is the cultural site for producing

appropriate connections and disconnections between bodies; it is the economic site for producing and transmitting biocapital; and it is the scientific site for the biologization of forms of inclusion and exclusion. As a set of political practices transmitted through blood—rights, lineage, property, race, heredity, individuality, legitimacy, and immortality—kinship connects the order of nature to the order of culture.<sup>81</sup> But as the oppositional science/fictional practices I’ve analyzed in the last two chapters demonstrate, genetics and evolutionary theory, the two dominant scientific systems for understanding biological bonds, can be mobilized to transgress oppressive kinship structures and their embodiments, to *denaturalize biology itself*, and once this happens there are few limits to what can be transformed in the human experience.

In Octavia Butler’s final novel *Fledgling* (2005), Shori Matthews awakens naked, starving, badly burned, and with no memory of herself or how the village in front of her burned to the ground. When she can’t help but suck the blood of the helpful passerby Wright Hamlin, the seemingly young girl realizes that she is not quite human. As Wright and Shori unravel her true “nature”—that she is a 53 year-old Ina vampire, a species that has evolved alongside yet separate from humans—they bond physiologically, psychologically, and sexually through a blood exchange that will leave neither partner able to survive separation (as in symbiogenesis, the novel kinship forged in *Fledgling* is the dramatic result of an organism that acquires a new *metabolic* activity from the incorporation of the other—this is the art and science of mutualism). As Shori feeds, she floods Wright’s body with a venom that gives exquisite pleasure yet chemically addicts them to one another’s bodies. Like the bond forged between human and Oankali in *The Xenogenesis Trilogy*, the bond between vampire and her “symbiont” is unbreakable

without severe mental and physiological trauma. They need each other like humans need food. Unfazed by her species' uniqueness, Shori is nonetheless taken aback when she meets her father, for while she is brown-skinned Iosif Petrescu is a tall, wiry man with blonde hair and very pale skin—"white as the pages in Wright's books,"<sup>82</sup> Shori reflects. Iosif confirms the vampire's suspicion that she is an experiment: For decades her female vampire kin labored to genetically engineer a human/vampire hybrid that could withstand exposure to the sun. DNA from an African-American human female was spliced into Ina DNA to produce Shori, whose added melanin affords her relative protection from the sun. Unlike her white male and female vampire kin, Shori's humanness (i.e. her brown skin) enables her to remain awake during the day and survive the sun, qualities she desperately needs as a vampire supremacist group led by the centuries-old Silk family seeks to destroy her as an abomination.

In his book *Gothic Images of Race in Nineteenth-Century Britain* (1996), H.L. Malchow notes the anxious imaginative conflation of racial hybridity and the liminality of the vampire. "[T]here is...lurking in the vampire," he writes,

the powerful suggestion of an explicitly racial obsession—that of the 'half-breed.' Both vampire and half-breed are creatures who transgress boundaries and are caught between two worlds. Both are hidden threats—disguised presences bringing pollution of the blood. Both may be able to "pass" among the unsuspecting, although both bear hidden signs of their difference, which the wary may read.<sup>83</sup>

This is the terror that strikes at the heart of the white male protagonist of the biological warfare novel: that the sick, degenerate, or contaminated is in our midst but indecipherable from the human. The fear that the Self is not entirely Self is allied politically and historically in the West to the fear of racial impurity. In *Modest\_Witness*, Donna Haraway writes that "[m]iscegenation is still a national racist synonym for

infection, counterfeit issue unfit to carry the name of the father.” An “unholy alliance” between bodies, miscegenation is “the bloodsucking monster at the heart of racist and misogynistic terror.”<sup>84</sup> Butler’s vampire fledgling Shori is akin (bonded by blood) to the human/vampire hybrid comic-book hero Blade who is also biracial: His African-American mother is bitten by a white male vampire in the ninth month of her pregnancy, mixing his vampire genes into her unborn son. Shori is loathed by the “pure blood” vampires as a half-breed who, like Blade, is a “Daywalker”—an epithet used by the Anglo-European vampire aristocracy to degrade Blade’s genetic/species impurity.<sup>85</sup> For the vampire aristocrats, as for the Silk family in *Fledgling*, “one drop” of human blood is an irreversible contamination, a loathsome coupling. At their trial for the slaughter of Shori’s vampire kin, the Silk family accuses Shori of being neither Ina nor human, but a “[m]urdering black mongrel bitch” who promises to give their children “fur” and “tails.”<sup>86</sup>

But like so many other science fiction infection narratives, at the end of *Fledgling* a new world order is about to be born out of a chaos that will render purity obsolete—in the postplague apocalyptic terrain, the unevolved is an anomaly that stagnates. By the end of *Fledgling* Shori extracts a measure of justice against the Silks, though Butler’s readers are left mourning the end of both Shori and Butler’s stories in that the novel reads like the first in a series cut short by the author’s unexpected early death in 2006. But Shori and her illegitimate trans-species offspring are the vampires’ future, for her mothers engineered a very different breed of immortality within the heritable gene line. Like many of the science fiction bodies and posthuman biologies analyzed in this project, Shori and the genetically engineered alien/human hybrids of *The Xenogenesis Trilogy* disrupt oppressive categories of kinship through a subversion of nature; similar in kind to Haraway’s

OncoMouse, the scene of their evolution is the laboratory—they inhabit the “nature of no nature.”<sup>87</sup> The denatured alien/human hybrid bodies of the science fiction text threaten unanticipated and promiscuous blood connections between bodies that destabilize kinship structures built on the genetic ties that bind. The centrality of blood/genes to political and scientific uses of notions of invasion, reproduction, alien contact, race, immortality, impurity, heredity, origin stories, rationality, exobiology, and legitimacy make it a primary science fiction site for the forging of new bodies and relationships between bodies that connect through unfamiliar uses of past, present, and future evolutionary bonds. De-authenticate genetics, pollute lineages, and disrupt biological conservatism (in the sense of inheritance/continuity) and you have the making of a future that at the very least breaks with a view of the world as a bloody competition in which one species serves as another’s food.<sup>88</sup> If, as Georges Canguilhem notes, “contemporary biology is, somehow, a philosophy of life,”<sup>89</sup> then the evolutionary importance of hybridization (and its novel bodies and blood kinships) signals the emergence of an alien self immersed in the world, absorbed by impurity, and inseparable from other bodies. The posthuman/postinfection bodies of contemporary science/fiction are an invitation, even an imperative, to relentlessly imagine and reimagine futurity in a postcolonial mode—for, as H.G. Wells’s centuries-long sleeper warns in the novel *The Sleeper Awakes*, “We were making the future...and hardly any of us troubled to think what future we were making. And here it is!”

## Notes

1. Daniel J. Kevles, "Out of Eugenics: The Historical Politics of the Human Genome," in *The Code of Codes: Scientific and Social Issues in the Human Genome Project*, ed. Daniel J. Kevles and LeRoy Hood (Cambridge: Harvard University Press), 3.

2. See Evelyn Fox Keller, *Refiguring Life: Metaphors of Twentieth-Century Biology* (New York: Columbia University Press, 1995), 81 and 92.

3. Francis Crick, *Of Molecules and Men* (Seattle, WA: University of Washington Press, 1966), 10.

4. Erwin Schrödinger, *What is Life?* with *Mind and Matter & Autobiographical Sketches* (Cambridge, England: Cambridge University Press, 1992), 3-4.

5. Fox Keller, *Refiguring Life*, 46.

6. *Ibid.*, 72.

7. *Ibid.*, 69.

8. Schrödinger, *What is Life?*, 21.

\_\_\_\_\_ 9. *Ibid.*, 21, 22.

\_\_\_\_\_ 10. See titles such as Horace Freeland Judson's *The Eighth Day of Creation: Makers of the Revolution in Biology* (1979), James D. Watson's *DNA: The Secret of Life* (2001), and Darlene R. Stille's *DNA: The Master Molecule of Life* (2006).

11. James Watson, quoted in Leon Jaroff, "The Gene Hunt," *Time*, March 20, 1989, 67.

12. Richard Dawkins, "Nature Red in Tooth and Claw," in *From Gaia to Selfish Genes: Selected Writings in the Life Sciences*, ed. Connie Barlow (Cambridge: MIT University Press, 1998), 211.

13. *Ibid.*, 204.

14. See for example John C. Avise, *The Genetic Gods: Evolution and Belief in Human Affairs* (Cambridge, Massachusetts: Harvard University Press, 1998). "During the development of an individual, genes influence not only bodily features at microscopic and macroscopic levels and the metabolic and physiologic conditions underlying medical health, but also the more ethereal aspects of human nature, including emotions, psychologies, personalities, and even ethical and religious predilections" (vi); "In the last thirty years, molecular geneticists have learned how to read the *genetic scriptures* of humans and other species directly. Not only do these *DNA scrolls* provide the coded

prescriptions for life, but they also contain detailed *sagas* of the evolutionary histories of genes. A close reading of the *genomic scriptures* of humans and other primates has revolutionized understanding of the recent genealogical past of *Homo sapiens*" (italics mine, 32).

15. See Avise, *The Genetic Gods*. "The genetic material in organisms alive today traces back generation by generation through an unbroken chain of descent (with modification) from ancestral molecules that have copied and replaced themselves ever since the origin of life on earth, about 4 billion years ago" (3).

16. Nancy Stepan, *The Idea of Race in Science: Great Britain, 1800-1960* (Hamden, CT: Archon Books, 1982), 117.

17. Francis Galton, *Hereditary Genius and Inquiries into Human Faculty and Its Development* (Whitefish, MT: Kessinger Publishing, 2005), 17.

18. Madison Grant, *The Passing of the Great Race or The Racial Basis of European History* (New York: Charles Scribner's Sons, 1918), 92.

19. Immanuel Kant, "Of the Different Human Races," trans. Jon Mark Mikkelsen, in *The Idea of Race*, ed. Robert Bernasconi and Tommy L. Lott (Indianapolis, IN: Hackett Publishing Company, 2000), 9.

20. Evelyn Fox Keller, "Nature, Nurture, and the Human Genome Project," in *The Code of Codes: Scientific and Social Issues in the Human Genome Project*, ed. Daniel J. Kevles and Leroy Hood (Cambridge: Harvard University Press, 1992), 20.

21. Lois N. Magne, *A History of the Life Sciences*, 2<sup>nd</sup> ed. (New York: Marcel Dekker, 1994), 472.

22. Andrew Ede and Lesley B. Cormack, *A History of Science in Society: From Philosophy to Utility, Volume II* (Peterborough, Ontario, Canada: Broadview Press, 2004), 285.

23. Even more disturbing, Dorothy Nelkin critiques comments by geneticist Marjorie Shaw that indicate the increasing *epidemiological* analysis of genetic disease: "Geneticist Marjorie Shaw...has asserted that 'the law must control the spread of genes causing severe deleterious effects, just as disabling pathogenic bacteria and viruses are controlled.' In effect, she is adapting a public health model to genetic disease, referring to biologically vertical rather than horizontal contagion. She calls for the police powers of the state to prevent genetic risk by controlling reproduction in families informed about potential genetic disorders." "The Social Power of Genetic Information," in *The Code of Codes*, 182.

24. Jeremy Rifkin, *The Biotech Century: Harnessing the Gene and Remaking the World* (New York: Jeremy P. Tarcher/Putnam, 1998), 37.



25. Critical Art Ensemble, "Eugenics: The Second Wave," in *Flesh Machine: Cyborgs, Designer Babies, and New Eugenic Consciousness* (New York: Autonomedia, 1998), 124.

26. N. Katherine Hayles, "Computing the Human," in *Inventive Life: Approaches to the New Vitalism*, ed. Mariam Fraser, Sarah Kember and Celia Lury (Thousand Oaks, CA: Sage Publications, 2006), 143.

27. See Russell Blackford, "Beyond the Frankenscientist: Biotech and Biomedical Themes in Australian Science Fiction," in *Biotechnological and Medical Themes in Science Fiction*, ed. Domna Pastourmatzi (Thessaloniki: University Studio Press, 2002), 335-350.

28. Dorothy Nelkin and M. Susan Lindee, *The DNA Mystique: The Gene as Cultural Icon* (New York: W.H. Freeman and Company, 1995), 55.

29. There are several fine articles on Niccol's *Gattaca*, including David A. Kirby's "The New Eugenics in Cinema: Genetic Determinism and Gene Therapy in *Gattaca*," *Science Fiction Studies* 27, no. 2 (2000). <http://www.depauw.edu/sfs/essays/gattaca.htm>. Kirby argues that the movie is a "bioethical text" that "focuses on three prominent concerns: 1) genetic discrimination against those who are not enhanced, 2) the cultural implications of predictive genetics (genetic prophecy), and 3) the eradication of "undesirable" traits and human imperfections" (par. 16).

30. Elaine L. Graham, *Representations of the Post/human: Monsters, Aliens and Others in Popular Culture* (Manchester: Manchester University Press, 2002), 226.

31. Marie-Hélène Huet, "Anticipating the Past: The Time Riddle in Science Fiction," in *Storm Warnings: Science Fiction Confronts the Future*, ed. George E. Slusser, Colin Greenland and Eric S. Rabkin (Carbondale, IL: Southern Illinois University Press, 1987), 41.

32. Donna Haraway, *Modest\_Witness@Second\_Millennium.FemaleMan\_Meets\_OncoMouse: Feminism and Technoscience* (New York: Routledge, 1997), 60.

33. Ibid., 61.

34. Ibid., 60.

35. Ibid., 62.

36. Ibid., 62.

37. In "Medical Sciences, Infectious Diseases, and the Unity of Humankind," Joshua Lederberg writes that "[o]ur own genome carries hundreds or thousands of...stowaways. The boundary between them and the "normal genome" is quite blurred.

Not much more than 1% of our DNA can be assigned specific physiological functions; most of it is assumed to be a “fossil” legacy of our prior evolutionary history, DNA that is today parasitic on the cell.” *JAMA* 260, no. 5 (1988): 684-5.

<http://www.garfield.library.upenn.edu/essays>. Ann Giudici Fettner writes that “[o]ne of the problems inherent in the genome project, as Lederberg explains, is that the majority of genes have no function: They are merely fossils that have been left behind from millennia of viral infections and passed on from one generation to the next. This happens because a virus has to install part of its own genetic program in order to infect a cell. If these viral sequences are incorporated into the cellular genetic pattern, they can be transmitted along with functional genes.” *Viruses: Agents of Change* (New York: McGraw-Hill, 1990), 75. The best science fiction elaborations of these ideas, as well as “punctuated equilibrium,” are Greg Bear’s *Darwin’s Radio* (1999) and *Darwin’s Children* (2003).

38. Naomi Zack, *Philosophy of Science and Race* (New York: Routledge, 2002), 60.

39. *Ibid.*, 62.

40. Jan Sapp, *Evolution by Association: A History of Symbiosis* (Oxford: Oxford University Press, 1994), 155-6.

41. Sarah Franklin and Susan McKinnon, “Relative Values: Reconfiguring Kinship Studies” in *Relative Values: Reconfiguring Kinships Studies* ed. Sarah Franklin and Susan McKinnon (Durham, NC: Duke University Press, 2001), 15.

42. Horace Freeland Judson, “A History of the Science and Technology Behind Gene Mapping and Sequencing,” in *The Code of Codes: Scientific and Social Issues in the Human Genome Project*, 55.

43. Lynn Margulis and Dorion Sagan, *Microcosms: Four Billion years of Evolution from Our Microbial Ancestors* (New York: Summit Books, 1986), 156.

44. Dorion Sagan, “Metametazoa: Biology and Multiplicity,” in *Zone 6: Incorporations*, ed. Jonathan Crary and Sanford Kwinter (New York: Zone, 1992), 378. In the same essay, Sagan writes that “[i]f eukaryotes could trade genes as fluidly as do bacteria, it would be a small matter for dandelions to sprout butterfly wings, collide with a bee, exchange genes again and soon be seeing with compound insect eyes. Bacteria are able to trade variable quantities of genes with virtually no regard for species barriers” (378).

45. Lynn Margulis and Dorion Sagan, *What is Life?* (New York: Simon & Schuster, 1995), 73.

46. Margulis and Sagan, *Microcosms*, 82-83.

47. Lynn Margulis, “Power to the Protocists,” in *Slanted Truths: Essays on Gaia*,

*Symbiosis, and Evolution*, ed. Lynn Margulis and Dorion Sagan (New York: Copernicus, 1997), 77.

48. Margulis and Sagan, *Microcosms*, 89. See also Sorin Sonea, "Bacterial Evolution without Speciation," in *Symbiosis as a Source of Evolutionary Innovation: Speciation and Morphogenesis*, ed. Lynn Margulis and Rene Fester (Cambridge, MA: The MIT Press, 1991), 95-105.

49. Lynn Margulis, "Symbiogenesis and Symbiogenesis," in *Symbiosis as a Source of Evolutionary Innovation: Speciation and Morphogenesis*, 10. In the same essay, Margulis writes that in "representations of standard evolutionary theory, branches on 'family trees' (phylogenies) are allowed only to bifurcate. Yet symbiosis analyses reveals that branches on evolutionary trees are bushy and must anastomose" (10).

50. Margulis and Sagan, *What is Life?*, 96-7.

51. Butler's oeuvre works within the vein of the "critical dystopia," a science fiction that Jim Miller describes (in his analysis of *The Xenogenesis Trilogy*) as "motivated out of a utopian pessimism in that [it] force[s] us to confront the dystopian elements of postmodern culture so that we can work through them and begin again." "Post-Apocalyptic Hoping," *Science Fiction Studies* 25, no.2 (1998): 337. See Raffaella Baccolini and Tom Moylan's *Dark Horizons: Science Fiction and the Dystopian Imagination* (New York: Routledge, 2003), for the best collection of work on the dystopian tradition in science fiction.

52. In my view these are Butler's most dystopian novels, though I am in the critical minority.

53. See especially Katharine Burdekin, *Swastika Night* (Old Westbury, NY: The Feminist Press, 1985), originally published in 1937. On the feminist dystopia, see Raffaella Baccolini, "Gender and Genre in the Feminist Critical Dystopias of Katherine Burdekin, Margaret Atwood, and Octavia Butler," in *Future Females, the Next Generation: New Voices and Velocities in Feminist Science Fiction*, ed. Marleen Barr (Lanham, MD: Rowman & Littlefield, 2000), 13-34.

54. Cathy Peppers, "Dialogic Origins and Alien Identities in Butler's *Xenogenesis*," *Science Fiction Studies* 22, no. 65 (1995): par. 28, <http://www.depauw.edu/sfs/backissues/65/peppers65art.htm>.

\_\_\_\_ 55. *Ibid.*, par. 3, 6.

56. *Ibid.*, par. 11.

57. *Ibid.*, par. 32, 33.

58. Ibid., par. 31, 36.

59. Margulis, "Power to the Protocists," 78.

60. Sapp, 161. See Joshua Lederberg, "Cell Genetics and Hereditary Symbiosis," *Physiological Reviews* 32 (1952): 403-30.

61. Octavia Butler, *Dawn*, in *Lilith's Brood* (New York: Warner Books, 2000), 13. *Lilith's Brood* consists of the novels *Dawn* (1987), *Adulthood Rites* (1988), and *Imago* (1989). The three novels were published as *The Xenogenesis Trilogy* in 2000.

62. Ibid., 13. Hereafter cited in text.

63. Donna Haraway, "Biopolitics of Postmodern Bodies: Determinations of Self in Immune System Discourse," in *American Feminist Thought at Century's End: A Reader*, ed. Linda S. Kauffman (Cambridge, MA: Blackwell Publishers, 1993), 224.

64. Mark Dery, "Black to the Future: Interviews with Samuel R. Delany, Greg Tate, and Tricia Rose," in *Flame Wars: The Discourse of Cyberculture*, ed. Mark Dery (Durham, NC: Duke University Press, 1994), 180. In the same work, Dery writes: "The condition of alienation that comes from being a black subject in American society parallels the kind of alienation that sf writers try to explore through various genre devices, transporting someone from the past into the future, thrusting someone into an alien culture, on another planet, where he has to confront alien ways of being. All of these devices reiterated the condition of being black in American culture. Black people live the estrangements that sf writers imagine" (ibid., 212).

65. Eric White, "The Erotics of Becoming: *Xenogenesis* and *The Thing*," *Science Fiction Studies* 20, no.3 (1993): par. 24, <http://www.depauw.edu/sfs/backissues/61/white61art.htm>.

66. Butler, *Adulthood Rites*, 410. The Oankali are also in symbiosis with their living ship.

67. Brigitte Scheer-Schazler, "Loving Insects Can Be Dangerous: Assessing the Cost of Life in Octavia Estelle Butler's Novella "Bloodchild" (1984)," in *Biotechnological and Medical Themes in Science Fiction*, ed. Domna Pastourmatzi (Thessaloniki: University Studio Press, 2002), 319.

68. Margulis and Sagan, *Microcosms*, 130.

69. Butler, *Dawn*, 35.

70. Alien sex with the Oankali distributes erotic intensity across the surface of the body, privileging tactility over sight, distributed sensation over genital fixation.

71. Butler, *Imago*, 527.

72. Butler, *Dawn*, 39.

73. *Ibid.*, 475.

74. Butler, *Imago*, 528.

75. In racist terms, the idea of recapitulation meant that “primitive cultures represented an ancestral stage in the evolutionary development of more advanced cultures.” Contemporary “savages,” in other words, were “living examples of a level of material culture, organization, and thought which European peoples had passed through millennia earlier.” Michael Adas, *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance* (Ithaca, NY: Cornell University Press, 1989), 164.

76. Butler, *Imago*, 549.

77. Donna Haraway, “A Manifesto for Cyborgs,” in *The Haraway Reader* (New York: Routledge, 2004), 10.

78. This argument was first put forth by Georges-Louis Leclerc, Comte de Buffon in his massive *Histoire naturelle, générale et particulière* (1749-1778). On the “horrors” of racial hybridization see Nancy Stepan, *The Idea of Race in Science: Great Britain, 1800-1960* (Hamden CT: Archon Books, 1982); and Josep R. Llobera, *The Making of Totalitarian Thought* (Oxford: Berg Publishers, 2003).

79. Franklin and McKinnon, “Relative Values,” 16. See Marilyn Strathern, *Reproducing the Future: Anthropology, Kinship and the New Reproductive Technologies* (New York: Routledge, 1992), 16-17.

80. *Ibid.*

81. Stefan Helmreich, “Kinship in Hypertext: Transubstantiating Fatherhood and Information Flow in Artificial Life,” in *Relative Values: Reconfiguring Kinship Studies*, 139.

82. Octavia Butler, *Fledgling* (New York: Warner Books, 2005), 61.

83. H.L. Malchow, *Gothic Images of Race in Nineteenth-Century Britain* (Stanford, CA: Stanford University Press, 1996), 168.

84. Haraway, *Modest\_Witness*, 258.

85. See *Blade*, DVD, directed by Stephen Norrington (1998), and *Blade II*, DVD, directed by Guillermo del Toro (2002). Blade made his first appearance in Marvel Comics’ *Tomb of Dracula*, #10-21 and #24 & #28 (ranging from July 1973-1974). He

continued to appear in *Adventure into Fear* (Oct. 1974), *Vampire Tales* (Dec. 1974), *Marvel Preview* (Sept. 1975 and Fall 1976), *Ghost Rider* (Aug. 1992), *Midnight Sons Unlimited* (July 1993 & Oct. 1994), *Blade: The Vampire Hunter* (July 1994-April 1995), *Marvel: Shadows and Light* (Feb. 1997), *Blade: Crescent City Blues* (March 1998), *Blade* (Nov. 1998-Jan.1999), *Blade: Vampire Hunter* (Dec. 1999-May 2000), and *Blade*, vol. 2 & vol. 3 (Sept. 2006-Aug. 2007).

86. Butler, *Fledgling*, 300.

87. Haraway, *Modest\_Witness*, 255.

88. Mark Rose, *Alien Encounters: Anatomy of Science Fiction* (Cambridge, MA: Harvard University Press, 1981), 72.

89. Georges Canguilhem, *Etudes*, in *A Vital Rationalist: Selected Writings from Georges Canguilhem*, ed. Paul Rabinow, trans. Arthur Goldhammer (New York: Zone Books, 1994), 319.

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## Curriculum Vitae

Laura A. Diehl

**Education**

- Spring 1996                      Ohio University. B.A. in English (minors in history and political science)
- Spring 1999                      The University of Maryland. M.A. in English
- Fall 2008                         Rutgers, The State University of New Jersey, New Brunswick.  
Ph.D. in Literatures in English

**Employment**

- 1997-1999                        Instructor, English Department, University of Maryland.  
Introduction to Academic Writing (6 courses)
- Fall 2000-Spring 2001        Instructor, English Department, Rutgers University.  
Expository Writing (3 courses)
- Spring 2002                      Instructor, English Department, Rutgers University.  
Principles of Literary Studies: Introduction to Prose  
Narrative (1 course)
- Spring 2003                      Instructor, English Department, Rutgers University.  
Research in the Disciplines: Popular Culture (2 courses)
- Fall, 2004                        Instructor, English Department, Rutgers University.  
Research in the Disciplines: Ethnic Identities (2 courses)
- Fall, 2005                        Instructor, English Department, Rutgers University  
(Camden)  
Contemporary Women's Literature (1 course)
- Fall, 2006                        Instructor, English Department, Rutgers University.  
Basic Composition (2 courses)
- Fall, 2008                        Instructor, English Department, Temple University.  
Analytical Reading and Writing (2 courses)