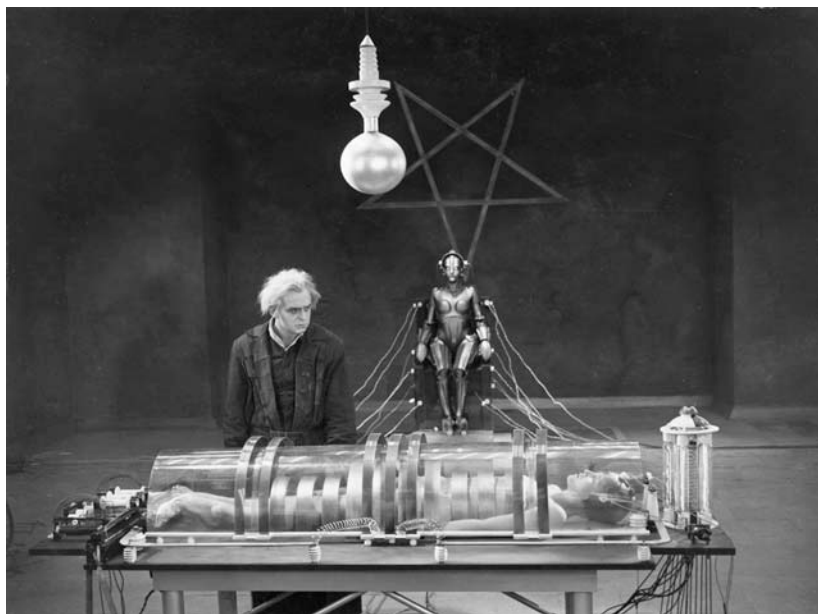


TECHNOPHOBIA!

SCIENCE FICTION VISIONS
OF POSTHUMAN TECHNOLOGY

Daniel Dinello



UNIVERSITY OF TEXAS PRESS
Austin

Frontispiece: Human under the domination of corporate science
and autonomous technology (*Metropolis*, 1926. Courtesy Photofest).

Copyright © 2005
by the University of Texas Press
All rights reserved
Printed in the United States of America
First edition, 2005

Requests for permission to reproduce material from this work
should be sent to Permissions, University of Texas Press, P.O. Box
7819, Austin, TX 78713-7819.

www.utexas.edu/utpress/about/bpermission.html

© The paper used in this book meets the minimum requirements of
ANSI/NISO Z39.48-1992 (R1997) (Permanence of Paper).

LIBRARY OF CONGRESS CATALOGING-IN-PUBLICATION DATA

Dinello, Daniel

Technophobia! : science fiction visions of posthuman technology /
by Daniel Dinello. — 1st ed.

p. cm.

Includes bibliographical references and index.

ISBN 0-292-70954-4 (cl. : alk. paper) — ISBN 0-292-70986-2
(pbk. : alk. paper)

1. Science fiction—History and criticism. 2. Technology in
literature. I. Title.

PN3433.6.D56 2005

809.3'876209356—dc22

2005019190

VIRUS HORROR: TECHNOPHOBIA AND
THE RETURN OF REPRESSED FLESH

Technophiliacs want to escape from the body—that mortal hunk of animated meat. But even while devising the mode of their disembodiment, a tiny terror gnaws inside them—virus fear. The smallest form of life, viruses are parasites that live and reproduce by penetrating and commandeering the cell machinery of their hosts, often killing them and moving on to others. “As the means become available for the technology-creating species to manipulate the genetic code that gave rise to it,” says techno-prophet Ray Kurzweil, “. . . new viruses can emerge through accident and/or hostile intention with potentially mortal consequences.”¹

The techno-religious vision of immortality represses horrific images of mutilated bodies and corrupted flesh that haunt our collective nightmares in the science fiction subgenre of virus horror. “The relocation, in technology, of many of our mental and muscular skills . . . has made the supposedly obsolete body a source of creeping anxiety, if not outright fear and loathing,” writes cultural critic Mark Dery in *The Pyrotechnic Insanitarium*.² Just as atomic anxiety infused Cold War-era pop culture, virus anxiety—in the form of plagues, epidemics, parasitized bodies, and microbe-caused mutations—permeates Digital-era pop culture. As Eric Davis puts it in *Techgnosis*, “[T]he mushroom cloud has mostly evaporated in our imaginations, dissipating into a more amorphous apocalyptic atmosphere laced with airborne viruses, biological weapons, toxic fumes and greenhouse gases.”³ Fear of the virus supplants fear of the bomb as our paramount cultural dread.

Virus horror has also become a powerful metaphor for technophobia. This is the dark obverse side of the religious vision of technology as an omnipotent God, humanity’s savior, and the source for the techno-utopian

dream of immortality. As revealed in science fiction, the virus of technology is the satanic machine, humanity's terminator, and the source of death in a techno-apocalypse. Like a viral infection, technology develops into an autonomous, invasive force that expands and fulfills its dangerous potential by flourishing in the societal medium of corporate, military, and religious sustenance. Voracious in its urge to possess and engulf, technology is a parasite that frequently undermines human integrity—invisibly infiltrating, manipulating, seizing control, and mutating its human host to support its own survival and evolution. Like a virus, technology metamorphoses itself, as a result of unintended and uncontrollable consequences, progressively transforming the human world in the wake of its own changing structure.

Science fiction often questions the notion that technology is neutral—that men control it, that they determine its benefit or harm. The technological virus undermines the techno-utopian dream of mastery, demonstrating that it exists only as a delusion. As Langdon Winner says, "Human beings still have a nominal presence in the [technological] network, but they have lost their roles as active, directing agents. They tend to obey uncritically the norms and requirements of the systems which they allegedly govern. . . . Under present conditions men are not at all the masters of technological change; they are its prisoners."⁴ The plague of technology evolves in unpredictable directions, modifying and controlling the environment and behavior of its human cells.

In this view of technology as an independent lifeform, humans are reduced to secondary status, mere carriers of the techno-disease. "Each generation extends the technical ensemble and passes it on to the next generation," observes Winner. "The mortality of human beings matters little, for technology is itself immortal and, therefore, the more significant part of the process."⁵ Like a biological species that lives and thrives even though the individual members perish, the virus of technology uses humans as a breeding medium that combines and recombines technological structures to produce new mutations that may ultimately result in the extinction of humanity. Therefore, the Technologist prophets of the future, along with their corporate and military allies, serve as pathological agents of techno-infection. Given their role in the propagation of deadly viruses—both biological and technological—and their complicity or helplessness in the face of proliferation, these corporate, military, and scientific misanthropes must face grave questions.

A GERM'S WORLD: MICROBE MANIA IN A NEW AGE OF EPIDEMICS

Not long ago, science stood on the brink of preventing infectious disease. Or so it seemed. Antibiotics thwarted bacteria-caused killers such as pneumonia and tuberculosis, and vaccines prevented the onset of virus-caused illnesses such as polio and smallpox. Cancer and heart disease still killed millions, but these maladies were not considered the result of infections. By the 1970s, we had entered a golden biomedical era. That comforting illusion got shattered by the shocking catastrophe of AIDS, which emerged worldwide in the age of genetic engineering, biochemistry, and global telecommunications. The epidemic continues to grow. In 2003, five million people were infected with HIV (the virus that causes AIDS)—the largest number since the epidemic began. Three million people died worldwide in the same year, and around 38 million live with HIV. UNAIDS, a United Nations AIDS program, expects 45 million new AIDS cases in the next five years as the disease marches swiftly across Central Asia and into China. While sub-Saharan Africa is the worst-affected region of the world, the virus currently spreads most rapidly in Asia and Eastern Europe, where almost every country is experiencing a major outbreak.⁶

AIDS not only revived virus fears but also bolstered mistrust of doctors, scientists, and drug companies. The medical community responded slowly to AIDS while often blaming and berating the victims; pharmaceutical companies made exorbitant profits on drugs that either did not work or were too expensive; and backstabbing American and French scientists both claimed to have identified the virus that causes AIDS in a bald grab for fame and money. All of this damaged confidence in the medical establishment and helped fuel what writer David Skal calls “the monstrous images of science and doctors that have flourished [in popular culture] . . . since AIDS has been with us.”⁷

As the mysterious AIDS plague spread, ghastly new microbial horrors emerged. Richard Preston's 1994 nonfiction book *The Hot Zone* raised bone-chilling fears of bizarre, highly contagious viruses such as Ebola, Marburg, and Lassa. A science journalist who writes like a horror novelist, Preston elaborates “extreme amplification” in the infected—horrific descriptions of bleeding eyeballs, dissolving flesh, and melting brains. Blaming overpopulation and the destruction of the biosphere, Preston suggests that humans and technology are responsible for the emergence of viruses: “The earth's immune system has recognized the presence of the human species . . . and is attempting to rid itself of an infection by the human parasite.”⁸ Preston's viewpoint is echoed in *The Matrix* when the agent of

machine intelligence, Mr. Smith, ends an anti-human tirade with the declaration: “Humans are viruses!”

Like a germ dropped into a ready petri dish, microbe mania flourished in our cultural consciousness throughout the 1990s and into the twenty-first century. Following in the wake of the best-selling *The Hot Zone* came an epidemic of disturbing nonfiction horror-of-the-virus books. Laurie Garrett’s *The Coming Plague* (1995) blames modern medical science—especially the careless use of antibiotics—for creating hordes of drug-resistant microbes, thus emphasizing another technophobic aspect of virus anxiety. Ed Regis’s *Virus Ground Zero* (1996) chronicles the reemergence of Ebola in Kikwit, Zaire. Richard Rhodes’s *Deadly Feasts* (1997) explores the emergence of “stealth” or prion maladies, including mad cow disease, which makes eating burgers and steak frightening. Michael Oldstone’s *Viruses, Plagues, and History* (1998) shows how the story of humanity and the story of viruses have intertwined since the dawn of history and takes us into the era of AIDS and the relation of biotechnology to mad cow disease. Carl Zimmer’s *Parasite Rex: Inside the World of Nature’s Most Dangerous Creatures* (2000) reveals parasites as a dominant force that rules the world by penetrating ecosystems and turning their hosts into slaves, drinking their blood, controlling their behavior, and managing to change the balance of nature. Recently, *Secret Agents: The Menace of Emerging Infections* (2003) by Madeline Drexler and *The New Killer Diseases: How the Alarming Evolution of Mutant Germs Threatens Us All* (2003) by Elinor Levy and Mark Fischetti warn of an onslaught of new microbes poised to destroy us. This media assault—which itself might be described as a media virus—stokes cultural fear by emphasizing the killer microbe’s monstrous power, ubiquity, and resiliency while providing pop-culture plague tales with the weight of real-world plausibility.

A fatal scourge, the smallpox virus reemerged as a potent demon in 2002 when fears arose that terrorists had acquired the pathogen. This ancient, highly contagious disease has killed more people than any other infectious disease. In what was considered one of humanity’s greatest victories in the battle against disease, smallpox was declared eradicated in the early 1980s.⁹ Since the virus was wiped out in its natural form, health officials stopped vaccinating against it. As a result, the world’s population is now vulnerable. In 2002, President Bush announced a plan to vaccinate all Americans by 2004, but this did not happen.

Focusing on smallpox, Richard Preston’s *The Demon in the Freezer* (2002)—the third book in his trilogy of dark biology, following *The Hot Zone* and *The Cobra Event* (1999)—horrifies with the science and history of the disease and its bioterrorism potential. He tells of Russian scientists who

bioengineered a potent strain of smallpox in huge quantities—enough for every person on the planet to be infected more than two thousand times. They even devised missile warheads for long-range delivery of the virus. When the Soviet Union fell, the Russians lost track of their researchers, the warheads, and the tons of frozen smallpox virus. Preston suggests that some may have fallen into the hands of Iraq, Iran, Israel, Pakistan, India, China, North Korea, and the terrorist group Al Qaeda.¹⁰

After the September 11 attacks, the threat of bioterrorism became reality when several people died as a result of anthrax-infected envelopes sent through the mail. A bacterium rather than a virus, anthrax—while not itself contagious—engendered a fear epidemic.¹¹ “Suddenly a hypothetical threat was all too real, and fears that had been bubbling under the surface for the past month burst into the open,” said *Newsweek*.¹² Whether perpetrated by external or internal enemies, the bioterrorist attack resulted in fear, panic, and economic fallout. It raised the specter of relatively cheap and easily produced biological weapons as powerful and insidious agents of terror.

In recent summers, the West Nile virus spread across the United States. In 2003, a total of 9,862 cases, including 264 deaths, had been reported, according to the Centers for Disease Control (CDC).¹³ In 1999, this mosquito-borne virus made its American debut in New York. The discovery unnerved many bio-defense scientists and government officials who saw the New York outbreak as a test for a terrorist attack, unleashing a disease not typically found in the United States. Scientists eventually discounted the idea that the outbreak was a germ assault, but were unable to trace precisely how the virus had made its way from the Middle East to North America.

In late 2002, a mysterious new viral epidemic, SARS (Severe Acute Respiratory Syndrome), terrorized the world. Sprung up in China and facilitated by the reluctance of Chinese medical authorities to cooperate with the World Health Organization (WHO), SARS—by July 2003—had afflicted more than 8,000 people in twenty-seven countries, causing 774 deaths.¹⁴ WHO official David Heymann called SARS “the first severe new disease of the 21st century with global epidemic potential.”¹⁵ While SARS dominated disease attention in 2003, an outbreak of Ebola in Central Africa killed sixty-four people. In the United States, monkeypox—a smallpox-like illness previously documented only near the rainforests of Central and West Africa—made a surprise appearance, sickening nineteen people in the Midwest. In 2004, WHO scientists suspected a new and possibly milder strain of Ebola struck southern Sudan, killing four and sickening nineteen.

The proliferation of old and new viruses confirms that humanity lives at the mercy of the microbe. While technology and progress have helped

eradicate some diseases, they have exacerbated others. Some pathologists believe that simian virus 40 (SV-40), which crossed from monkeys to humans as a contaminant of the Salk polio vaccine, causes cancer.¹⁶ New pathways to infections have been opened by factory farms, megacities, airplanes, and blood banks. “Some 30 new diseases have cropped up since the mid-1970s—causing tens of millions of deaths—and forgotten scourges have resurfaced with alarming regularity,” reports *Newsweek*.¹⁷ Ecologists suggest that blindly altering ecosystems can create health hazards. For example, suburban development creates a habitat for tick-carrying mice, highly efficient spreaders of Lyme disease. Modern farming practices, such as feeding livestock the remains of other animals, helped spread Creutzfeldt-Jakob disease throughout England. Medical technologies such as transplants and transfusions increase the possibilities of spreading blood-borne pathogens. In this literal sense, technology causes disease and contributes to an atmosphere of technophobia.

GERM WARFARE: MILITARIZATION OF THE VIRUS

Disease as a technological weapon of war boasts a long, revolting history. Early Persians, Greeks, and Romans contaminated the enemy’s water by tossing rotting corpses into their wells—a darkly inventive technique copied in the American Civil War and the Boer War.¹⁸ To increase the deadliness of their weapons, Scythian archers dipped arrowheads in feces as well as the always popular rotting corpses. Tatars catapulted plague-infected cadavers over the walled city of Kaffa, and the Crusaders similarly deposited contaminated corpses in the camps of heretics and pagans.¹⁹ In the eighteenth century, British soldiers generously gave American Indians blankets laced with smallpox. In World War I, the Germans spread glanders, a horse disease, among enemy cavalries. In World War II, the Japanese killed thousands of Chinese by dropping grain and cotton that carried bubonic plague-infected fleas.²⁰ During the Cold War, both the Soviet Union and the United States produced enough germ weapons to sicken or extinguish everyone. “Pound for pound, germ weapons were seen as potentially rivaling nuclear blasts in their power to maim and kill,” say Miller, Engelberg, and Broad in *Germes*, “and some were considered even more destructive.”²¹

U.S. spending on biological weapons increased after John F. Kennedy took office in 1961. Corporate involvement in military research also rose dramatically as “General Electric, Booz-Allen, Lockheed, Rand, Monsanto,

Goodyear, General Dynamics, Aerojet General, North American Aviation, Litton Systems, and even General Mills, makers of Cheerios and Wheaties, joined the germ program.”²² Later that decade, hoping to keep war expensive and halt the spread of the poor man’s nuclear bomb, President Richard Nixon ordered the scrapping of offensive bioweapons research. Persuaded by the United States, the major powers signed the Biological and Toxic Weapons Convention accord in 1972, followed by most of the rest of the world in 1975. They agreed not to acquire, produce, or stockpile germs that had no “prophylactic, protective or other peaceful purposes.” The signatory nations, including Russia, also promised not to develop or purchase weapons designed to deliver “these agents or toxins for hostile purposes or in armed conflict.”²³

Despite their promises, signatory countries secretly contravened the treaty. The Soviets expanded their program on a vast, industrial scale and built a “germ empire”—devoting entire cities to developing biological weapons.²⁴ The United States engages in secret bioweapons research that may stretch the limits of the treaty. It produced a potent strain of anthrax to test a vaccine and created a germ factory in the Nevada desert.²⁵ Critics argue that while offensive biowarfare research may have officially ended, defensive bioweapons research continues, and that this research requires an offensive capability.²⁶ An international effort to strengthen restrictions on biological weapons was rejected by the Bush administration in 2001 as being not in the United States’s interest.

The rapid pace of the biotechnology revolution has intensified the germ warfare danger. Until recently, bioweapons have been viewed as indiscriminate weapons of mass destruction. This is a deterrent: using them can easily backfire, killing your own people. However, advances in gene identification and engineering make possible designer germs that are ethnically discerning. As early as 1951, the U.S. Navy supposedly initiated a bioweapons project using valley fever, a disease that is more lethal to blacks than any other group.²⁷ South Africa sought such a weapon during the days of apartheid. In Nancy Kress’s novel *Stinger* (1998), racist scientists bioengineer malaria that induces strokes among carriers of the sickle-cell trait, mostly African Americans. The human genome project has already identified some genetic differences between ethnic groups. “This would bring a new and horrifying sophistication to ethnic cleansing,” says Wendy Barnaby in *The Plague Makers*.²⁸

Genetically engineered bioweapons are a deadly reality. Scientific publications report the creation of enhanced, lethal microbes.²⁹ According to Russian scientist defector Sergei Popov, the Soviet Union created a super-plague—a genetically improved version of the Black Death. Just as omi-

nously, artificial viruses can now be created. Recently, a synthetic polio virus—agent of the horrific paralyzing disease—was assembled from mail-order materials and a genetic blueprint downloaded from the Internet. “The reason that we did it is to prove that it can be done and it now is a reality,” says microbiologist Dr. Eckard Wimmer. “Progress in biomedical research has its benefits and it has its down side. There is a danger inherent to progress in sciences.”³⁰ Not surprisingly, the Pentagon funded the \$300,000 study as part of its program of basic research on human pathogens.³¹ While creating synthetic smallpox and other lethal plague viruses will be much more complex and difficult than creating the synthetic polio virus, researchers believe it will likely be possible in the near future.

Even if a deliberate act of biowarfare does not occur, the sheer number of unregulated and secret research facilities all over the world increases the likelihood of a major accident. The worst known accident occurred near the Soviet city of Sverdlovsk (now Ekaterinburg), an industrial complex nine hundred miles east of Moscow, killing sixty-eight people in 1979. An explosion at a secret military base propelled a cloud of deadly anthrax microbes over a nearby village. Newspapers described it as a calamity of agonizing deaths, cremated bodies, and extensive decontamination work.³² The potential for an accident, the lack of an effective treaty, the great strides in biotechnology, and the rise of militarism and terrorism deepen fears about the deadly potential of killer microbes and the spread of biological weapons.

MILITARY GERMS SPREAD FEAR: THE RISE OF VIRAL PARANOIA IN SCIENCE FICTION

As the horrific potential of germ warfare emerged, virus horror and the military became strongly associated in popular culture. In one of the earliest virus movies—John Sturges’s 1965 thriller *The Satan Bug*—flasks of a deadly virus created as a bioweapon by the military are stolen by a lunatic. The dictatorial madman wants to control the world. To demonstrate his ambition and seriousness, he first kills the population of a small town and then threatens to destroy Los Angeles. After a nerve-racking chase, authorities stop him.

With anti-Vietnam War fervor rising, thousands of scientists signed a 1967 petition attacking the government’s germ warfare program and its support by university researchers.³³ Public anxiety was reflected in Michael Crichton’s 1969 debut novel, *The Andromeda Strain*. Crichton imagines the

eruption of a biological crisis when the military sends a satellite into space to gather new and deadly organisms. Project Scoop backfires when the contaminated satellite crashes to earth, spreading germs that threaten humanity. More suspicious of the biowarfare program than *The Satan Bug*, *The Andromeda Strain* condemns the military for its obsession with biological weapons and cold disdain for innocent lives.

Inspired by the post-Vietnam, post-Watergate distrust of the establishment and the explosion of cinematic horror, George Romero's 1973 epidemic movie *The Crazies* boosted the gore factor while mutating the virus into an expansive metaphor for corrupt military, scientific, and governmental policies. As in Robert Wise's film adaptation of *The Andromeda Strain* (1971), the military causes the outbreak in *The Crazies*. A raving ego-maniacal scientist is ordered to find a cure or vaccine, but cannot procure the right equipment and ultimately fails. A colonel flies in from Washington, takes control of the local militia, imposes a news blackout, conspires with government officials, and concocts a cover-up to hide the Army's responsibility. He persuades the U.S. president to give him authority to nuke the town, if necessary, and orders a nuclear-armed plane to circle overhead. Despite the possibility of killing a number of uninfected people, the mayor agrees with the decision: "This is a war and there's always innocent casualties."

The military's attempt to protect citizens turns violently oppressive. The title of the film—*The Crazies*—refers not only to the victims of the madness-inducing virus but to the soldiers enforcing the quarantine. Soldiers machine-gun people who wander past the quarantined perimeter and burn not-quite-dead bodies in street pyres. Though often grim, the movie plays like a black comedy, as when a smiling old granny uses her darning needle to stab an invading soldier in the eyeball. Citizens hide out in a church—usually an inviolate place in such movies, but the soldiers even ignore God and burst inside. The pastor protests by setting himself on fire.

This image of self-immolation evokes the famous anti-U.S. protests in Vietnam, when Buddhist monks doused themselves with gasoline and set themselves ablaze. The film also works as an anti-Vietnam War allegory: malevolent black helicopters hover omnipotently overhead, blowing up cars and people; the U.S. government threatens a nuclear bombing while lying and covering up the true reasons for involvement; the military invades the town, but soldiers can't tell the difference between the infected and the uninfected. The uninfected citizens revolt and start killing soldiers. As it turns out, the infection has already spread beyond the town, so the fascistic enforcement of the quarantine served no purpose. The colonel



The Crazies: Innocent mom is dragged from her home as biological soldiers enthusiastically enforce quarantine (Courtesy Photofest).

helicopters out of the town, escaping safely from the chaos, disease, and death that he's unnecessarily caused.

Borrowing from *The Crazies* and Richard Preston's book *The Hot Zone*, the movie *Outbreak* (Wolfgang Peterson, 1995) further intensifies the graphic visceral terror and paranoid hysterics by showing human bodies crashing and bleeding out from an Ebola-like virus while emphasizing the ease of passing the bug. The film opens with an ominous quote from geneticist and Nobel laureate Joshua Lederberg: "The single biggest threat to man's continued dominance on the planet is the virus"; this opening provides the film an air of plausibility. *Outbreak* echoes *The Hot Zone* in its eco-consciousness and its expression of fear that deep within the rain forests, deadly viruses lurk—ready to escape their jungle lairs, enter civilized human bodies, and destroy humankind. Like *The Crazies*, *Outbreak* blames the military and government for their role in discharging the deadly pathogen.

When the virus turns a peaceful California town into a contagious hot zone, Colonel Sam Daniels (Dustin Hoffman) and his estranged wife, Robby Keough (Rene Russo), arrive to battle the pathogen in the labora-

tory while squabbling over which of them gets to keep the dogs in the divorce settlement. “I can’t believe you’re taking a deadly virus and turning it into a family matter,” says Colonel Daniels. Evil army general Donald McClintock (Donald Sutherland) wants the virus as a weapon, but after it mutates and gets out of control, he decides to firebomb the infected town. The ostensible motive behind the bombing is that it will contain the disease, but *Outbreak* suggests that, except for pyromaniacs and neglected children, no one loves to ignite a blaze more than an army general, especially one covering up his mistakes.

The movie then turns into a huge chase as Colonel Daniels tracks down the source of the infection to find a serum, races to stop the bombing, and reunites with his now infected ex-wife, whom he saves with a virus antidote that gets developed in about five minutes. *Outbreak* capitalizes on mass audience fears about AIDS—the infection spreads through blood and tainted needles—and on conspiracy theories that the HIV virus was made as a germ weapon by the U.S. Army at Fort Detrick. Unlike *The Crazies*’ indictment of a corrupt system, *Outbreak*—while still pointing a finger at the military—puts most of the blame for the mess on a single crazy individual, scapegoating one really rotten general. After he’s eliminated, a cure is found and human extinction is averted.

APOCALYPTIC PLAGUE: THE EXTINCTION OF HUMANITY

While a human-destroying epidemic is avoided, *Outbreak* and other virus horror stories gain, in the words of film critic Dennis Lim, “an ominous biblical resonance” by association with the God-ordered doomsday pestilence, prophesied in Revelation (21:9), which signals the end of humanity.³⁴ Whether sent by God or Satan, the plagues that ravaged Europe in the Middle Ages—caused by the bacterium *Yersinia pestis*, transmitted to man by the fleas of rats—were the first force seen as a possible threat to human existence. The horror of the Black Death still echoed in 1826 when Mary Shelley published her second science fiction novel, *The Last Man*, in which humanity is wiped out by a virulent disease in 2073. While Shelley imagines no futuristic technology, *The Last Man* reverberates with a contemporary atmosphere of desperation, alienation, and horror.

Twisting the last-man-on-earth narrative into an epidemic science fiction/horror story, Richard Matheson turns a viral pestilence into a plague of vampires in his novel *I Am Legend* (1954). Neville is the only person



28 Days Later: *Viral apocalypse makes London a zombie town*
(Courtesy Photofest).

immune to a vampire virus that turns its victims into blood-drinking zombies. In an evolutionary struggle for survival with these slow, dim-witted, disorganized undead, Neville hunts and stakes them in the daytime while they repose helplessly, and repels them with garlic when they attack. Always hopeful for an ally, he meets Ruth, but she tests positive for the microbe that causes vampirism. Worse, she's a super-vampire with lots of undead friends like her. The posthuman order of vampires inherits the future. In this horror vision, humans have self-destructed.

I Am Legend formed the basis for two weak but highly amusing movies: *The Last Man on Earth* (1964)—a low-budget effort that clearly inspired George Romero's cannibal zombie-fest *Night of the Living Dead* (1968)—and *Omega Man* (1971), with Charlton Heston as the last man on earth, battling light-sensitive vampiric albinos that wear hooded monk's robes and sunglasses. While warning of a future where humanity loses the evolutionary battle with the virus, *I Am Legend* adds another mythical resonance—vampirism—to the biblical pestilence. A killer virus is like a vampire, with its undead, parasitic lifestyle of preying on the living to survive and reproducing itself through its victims. According to James B. Twitchell in *Dreadful Pleasures*, "he [the vampire] entered popular culture in the seventeenth century as a logical way to account for the geometric progression of deaths caused by the fast-acting plague bacteria."³⁵ Vampirism—through infection-by-blood—also links the medieval plague with the future plague of AIDS.

Danny Boyle's apocalyptic *28 Days Later* (2002 in Britain, 2003 in the United States)—a fusion of *I Am Legend*, Stephen King's *The Stand*, *The Crazies*, and *Resident Evil* computer games—opens in a London research lab crowded with screeching monkeys that have been subjected to horrific experiments. One animal lies limp on a table with its chest ripped open while others smash against their glass cages in a frenzy of rage. The quietest monkey is restrained on a table, stretched out crucifixion-style, its head pierced with electrodes and pointed at a bank of television monitors. The formerly happy primate is forced to watch violent human atrocities—burning forests, burning cities, burning bodies, and police savagery. Animal-rights protesters burst inside. Despite the warnings of a hysterical scientist, anti-vivisectionist activists liberate an experimental monkey contaminated with the human-destroying “rage” virus.

Twenty-eight days later, Jim (Cillian Murphy) awakens in an empty hospital where he's been in a coma since before the scourge struck. Confused and incredulous, he staggers into the streets and finds London empty, the population devastated by the rage plague, which causes the infected to immediately turn into rabid murderous zombies. Rasping demonically, and so fearsome that rats flee in terror, these ghouls survive on the flesh of the living. Yet it later turns out that a platoon of military men, holed up in an armed compound and offering safety to Jim and his straggling family of survivors, are more disgusting and evil than these blood-spurting zombies. Capturing the technophobia of the moment with a mood of utter desperation, *28 Days Later* evokes AIDS, SARS, biowarfare, male militarism, and the deadly consequences of viral experimentation.

Driven by greed masquerading as utopianism, corporate science gets indicted in Margaret Atwood's 2003 novel *Oryx and Crake*, a funny but horrible version of the apocalyptic last-man story. Aligned with Mary Shelley, Atwood—the daughter of a biologist—vividly imagines a future world decimated by a man-made viral cataclysm. “Too much hardware, too much software, too many hostile bioforms, too many weapons of every kind,” laments Atwood.³⁶ The apparent lone human survivor of the apocalypse—Snowman—plays reluctant prophet to a race of genetically messed-up humanoids. Gentle, grass-eating, defenseless, virus-immune posthumans, the Crakers were engineered as a successor species by Snowman's friend, the genius geneticist Crake. Snowman captivates the childlike tribe with scriptural tales of their now-dead creator Crake and teacher Oryx. The Crakers believe their god Crake will return. But he's dead like the rest of humanity.

As Snowman, formerly Jimmy, scavenges for food on the plague-devoured landscape, he looks for the origin of the outbreak in his memo-

ries. Snowman/Jimmy's genographer dad worked for an organ replacement company, OrganInc. As part of Operation Immortality, he created the pigoon, a transgenic pig designed to grow an assortment of human organs, including brain tissue. These smart pigoons get loose and hunt humans like lions after deer. Genetic engineering is portrayed as a power-mad addiction.

Jimmy's unhappy mother hates her husband's avarice and technoutopian hypocrisy. "What you're doing—this pig brain thing. You're interfering with the building blocks of life," she asserts. "It's immoral. It's . . . sacrilegious."³⁷ Rebellng against corporate control, she escapes the compound, leaving Jimmy with nothing but her scorn toward techno-science. Corporate police assassinate his mother just as corporate scientists scorch the earth. Like Stephenson in *The Diamond Age*, Atwood expresses the importance of mother-love/mother-earth and the pain of losing it. But this is the human foundation of a story dominated by dark humor and sarcastic disdain toward genetic engineering—the science of the absurd.

In a world of viral terrorism, science-caused diseases, and violent transgenics, Crake—Jimmy's friend and the Dr. Frankenstein of the future—creates a fast-food venture, ChickieNobs. These are living, headless, legless breast-meat tubes derived from chickens. Funny, but not so farfetched in the context of McDonald's Chicken McNuggets and current transgenic experiments. Modified animals already exist, such as cows that produce allergen-free milk. Engineered for cancer research, the poor OncoMouse—human oncogene fused into a mouse embryo—is the first transgenic animal to be patented. Aqua Bounty Farms applied for FDA approval for a salmon with human growth hormone. The fish grows ten times faster than normal. It would be the first genetically modified animal approved for human consumption.³⁸

"The world is now one vast uncontrolled experiment . . . and the doctrine of unintended consequences is in full spate . . . the rats have taken over," thinks Jimmy.³⁹ Atwood imagines a surrealistic world of biological chaos. Gene-spliced house-mice, addicted to the insulation on electric wiring, overrun Cleveland, setting the city on fire. A tiny rodent spliced with porcupine and beaver genes creeps under car-hoods and consumes fan belts and transmission systems. A tar-eating microbe turns highways to sand. "Human society . . . was a sort of monster, its main by-products being corpses and rubble," mourns Atwood. "It never learned, it made the same cretinous mistakes over and over, trading short-term gain for long-term pain. It was like a giant slug eating its way relentlessly through all the other bioforms on the planet."⁴⁰

Viewing this bio-horror as acceptable collateral damage, Crake works

on immortality and a grand plan for posthuman evolution at Paradise, an offshoot of the HelthWyzer conglomerate. He develops the BlyssPlus Pill, designed to protect users from diseases, prolong youth, improve sexual prowess, and sterilize people without their knowing it. As the techno-prophets of today urge, Crake creates a “superior” genetically designed successor species. Like the biotech aliens of *Dawn*, he will decide the evolutionary upgrades. Crake genetically defines the self-reproducing Paradise people—later known as Crakers. Perfectly adjusted to their environment, they would never create houses or tools or weapons. He designs them for beauty, docility, virus immunity, and the ability to digest grass. Best of all, they efficiently recycle their own excrement. Programmed to drop dead at thirty suddenly without getting sick, the Crakers have a mating ritual scientifically calculated to prevent bad feelings, lust, or any emotion. There’s no unrequited love because there’s no love. To Atwood, engineered happiness is a demented, destructive vision. Despite their cheerful, optimistic disposition, the Crakers are shown as the mindless mutant culmination of the 1950s life-is-a-machine cybernetic/behaviorist philosophy.

Crake is so enthralled with his posthuman children that he wants to hasten their evolutionary succession. He encrusts a super-virulent hemorrhagic virus into the BlyssPlus pills. By extinguishing humanity, the Paradise People will become the successor species—unless, as seems likely, they fall prey to the wild pigeons and wolvoogs, the former security pit bull/wolf transgenics. While not a literal forecast, Atwood’s comic nightmare vision gains great power and relevance from our current scientific/corporate obsession with biotechnology, cloning, evolution engineering, and the potential of genetic splicing. With dark humor disguising her pessimism, she challenges us to reflect on the virulent virus as a dark metaphor for utopianism as propaganda, biotechnology as addictive blind power, and corporate greed as a devouring monster.

VIRAL DEHUMANIZATION AND PARASITE PARANOIA

During the 1950s and 1960s, ancient fears of disease lessened as science conquered one disease after another, including smallpox and the childhood scourge, polio. In *War of the Worlds* (1956), a virus even saves humanity when beleaguered scientists accidentally discover that a germ somehow kills the seemingly invincible Martian robot machines that have invaded earth. Released in the same year as *War of the Worlds*, a more insidious alien attack movie, *Invasion of the Body Snatchers* (1956), is the ar-

chetyral epidemic movie as well as one of the earliest “evil clone” films. *Invasion* is based on Jack Finney’s novel *Body Snatchers* (1953), which owes much to Robert Heinlein’s *The Puppet Masters* (1951). Unseen alien invaders kill and gradually replace sleeping human victims with pods that turn into zombie-like physical duplicates. In this way, *Invasion of the Body Snatchers* (remade in 1978 and 1994) makes explicit another horrific aspect of microbial/technological invasion—its power to dehumanize, possess, and insidiously mutate a person.

Extending the process of dehumanization, transformation, and technologizing to political ideology, *Invasion of the Body Snatcher’s* pod people evoke the bland conformist utopia that stands as a metaphor for communism in the 1950s. The duplicated humans are emotionless, godless automata that secretly take over the society. This ideological implication is made even more directly in Heinlein’s *The Puppet Masters*. A spaceship full of aliens—intelligent, hive-minded, pulsating, jellyfish-like parasites—travel from Saturn’s moon Titan, land near Kansas City, and latch onto peoples’ spines. Hiding underneath the clothes of their hosts, they tap into their brains—possessing them, enslaving them, and forcing them to spread more parasites across the planet. Heinlein’s narrator compares them to communists—“Stalinism seemed tailor-made for them. . . . the people behind the Curtain had had their minds enslaved and parasites riding them for three generations.”⁴¹ No one can be trusted. Paranoia runs rampant as the parasitic slugs control the minds of their human hosts. “Heinlein may not have known that parasites can take over the behavior of their hosts,” Carl Zimmer says in *Parasite Rex*, “but he nailed the essence of their control.”⁴² As in *War of the Worlds*, humanity is saved when a virus is discovered that can kill the aliens. Since they communicate by physical contact, which involves an exchange of bodily fluids, they infect each other with the disease. The story closes with a fleet of spaceships leaving Earth for Titan to exterminate the vile communistic parasites for good.

Parasites, viruses, and other vile microbes found a network television home on *The X-Files* (1994–2001). Exploiting mass paranoia for commercial entertainment, *The X-Files* twisted a labyrinth of conspiracies involving government, corporate, and scientific complicity with aliens to infect humans with a black oil virus and spawn a viral apocalypse. This conspiracy threads through the entire series as well as *Fight the Future* (1998), the *X-Files* feature film. In addition, individual *X-Files* episodes center on other aggressive, invasive organisms: the worm-like, psychosis-inducing virus in “Ice” (1993), the parasitic Fluke Boy in “The Host” (1994), the repulsive parasites in “Firewalker” (1994), and the deified parasite in “Roadrunner” (2000). In “Erlenmeyer Flask” (1994), government scientists test unsuspect-

ing humans with an extraterrestrial virus, and later murder them to cover up the experiments. In “F.Emasculata” (1995), Pinck Pharmaceuticals experiments on prisoners, infecting them with a parasitic insect that disfigures the face before it destroys the immune system. Like most epidemic narratives, *The X-Files* blames the government, the military, and their scientific and corporate co-conspirators for the microbial monsters.

The smallpox virus plays an especially significant role within the series’ mythological conspiracy arc, which progresses toward preparing Earth for alien colonization. When the black oil virus infects people, it turns the whites of their eyes black, one of the characteristics of hemorrhagic smallpox. In “Paper Clip,” Mulder and Scully stumble onto a huge genetic database on every person born since the 1950s, suggesting the genetic data were secretly collected during global smallpox inoculations, implicating many governments in the conspiracy. The Cigarette-Smoking Man (William B. Davis) masterminds large-scale biotechnological pandemonium in “Zero Sum” (1995), genetically engineering smallpox, combined with alien DNA, so that it can be transmitted to the human population through the sting of a bee. The result would be the eradication of humanity, or its transformation and enslavement. Exuding an unsettling mood of doomsday chic with its flashlight-in-fog ambiguity, *The X-Files* is fueled by paranoia. While “the truth is out there,” Mulder and Scully routinely discover that the truth is covered up by government, military, corporate, and medical authorities.

MAD SCIENCE: INVASIVE TECHNOLOGICAL ASSAULTS

Corporate techno-science and viral invasion fuel the films of David Cronenberg. In his surreal and disturbing movies, he envisions bodies violated, distorted, transfigured, and exploded by technological and viral invasion. While his obsession with grotesque, created-by-science monstrosities echoes 1950s atomic mutation films, he looks to the future in exploring the tension between scientific rationality and primitive instincts. As David Skal puts it: “The late 20th century medical man, despite his technological toys still engages us on the level of the aboriginal medicine man.”⁴³ In *Rabid* (1977), after receiving experimental skin grafts following a disfiguring motorcycle accident, Rose (Marilyn Chambers) develops a phallic growth in her armpit that infects her sex partners with rabies, causing a diseased city to erupt in chaos. In *The Fly* (see Chapter Seven), after an accident during his teleportation experiment, a scientist is transformed into a fly/human transgenic, mutating his body and his mind. In *Videodrome*

(see Chapter Six), after an electronic virus—embedded in a television signal by a corporate media scientist—penetrates his eyes, a cable station owner develops a brain tumor that causes hallucinations, violence, and physical deformity. The further these scientists and doctors⁴⁴ push their disciplined, rational science, the more uncontrollable and irrational its consequences become.

A sexual death-lust takes over his debut feature, *Shivers* (1975)—also known as *The Parasite Murders* and *They Came from Within*. Before AIDS, Cronenberg casts a sexually transmitted parasite as a killer. Operating in a state-of-the-art, sterile high-rise complex, a utopian scientist wants to create an organic machine that lives inside the body and automatically replaces malfunctioning organs by transforming itself. He engineers a parasite that turns his neighbors into brain-dead, lust-driven maniacs. Reflecting real-world parasites that transform their hosts' behavior to ensure their own propagation, these posthuman sexual predators infect others by transforming their hosts, even children, into rapists.

Cronenberg rebukes techno-utopian biotechnology, showing its engineered outcome as a repulsive, stubby, half-phallic, half-turd parasite-worm that passes from mouth to mouth during a kiss or uses other orifices to seize control of people and turn them into mindless sex-crazed disease vectors. Like the virus-infected vampires of *I Am Legend* and *28 Days Later*, the parasite-invaded fiends of *Shivers* have been reduced to a purely predatory state with no values or goals beyond survival and the spread of the infection. The film ends with the parasite people streaming out of the apartment building to contaminate the rest of the city and the world. As in most of Cronenberg's films, black humor plays a part, but *Shivers* is intensely pessimistic as a parable of techno-viral manipulation and control.

The most disturbing and influential parasite fiction, *Alien* (see Chapter Four), connects 1950s nuclear technophobic monster movies, such as *Them* and *It Came from Outer Space* (1953), to AIDS-era fears of corporate biotechnology, invasive microbes, and body-mutating techno-parasites. In *Alien*, the treacherous Company uses humans as bait to ensure the capture of the alien for research and development as a weapon. Sent by the ship's corporate-programmed computer to investigate an apparently lifeless planet, the crew discovers an alien ship and a clutch of eggs in a womb-like chamber. Crew member Kane foolishly takes a close look at one of the pulsating eggs and a tentacled thing bursts out of it—gripping his face, wrapping a tail around his neck, and inserting the end into his mouth in a male rape. His reentry to the ship is forbidden by Ripley, but facilitated by android science officer Ash, who—like the computer, Mother—has been programmed by the Company. The horrific alien symbolizes the parasiti-

cal system, the corporation, and its technology—all of which manipulate, control, transform, and ultimately destroy the humans.

The “face-hugger” has disappeared by the next day. Kane seems fine. But his body serves the parasite as a womb. After a short gestation, the alien bursts out of Kane’s body. Combining mechanical and organic parts, the monstrous alien metamorphoses at an alarming rate—from a squid-like parasite to an upright carnivorous humanoid monster with metallic teeth. The techno-surrealist monster “evoked futuristic machinery, skeletons, and verminous insects: a necrotechnological nightmare and one of the most dismaying illustrations of science equals death ever attempted on the plane of popular entertainment,” says David Skal.⁴⁵ Combined with its corporate/science symbolism, the parasitic monster represents the organic adaptability and technological persistence of a virus—the invisible invader



Them: No insect spray can stop this irradiated mutant ant from breeding atomic anxiety (Courtesy Photofest).



Alien: Malignant techno-parasite bursts forth, primed to evolve and wreak havoc (Courtesy Photofest).

that can seize control of your body and transform it into something grotesque and malignant. Like a virus, the alien is not interested in humans for their special wonderfulness; rather, it uses the human species merely as a source of nourishment and a biological host for reproduction. Though Ripley eventually defeats the monster, she fails to defeat the techno-viral system that still dominates her environment and her mind.

COBRA VIRUS: ENGINEERING TRANSGENIC TERRORISM

Virus paranoia infuses the novels of Dr. Robin Cook, king of the microbe-driven thriller with *Invasion* (1991), *Contagion* (1995), and *Toxic* (1998). *Outbreak* (1987)—adapted into a silly made-for-television movie called *Robin Cook's Virus*—centered on the deliberate spreading of the deadly Ebola virus by malevolent, HMO-hating doctors. The threat of biological terrorism adds a ghastly new dimension to plague fear. In Cook's *Vector* (1999), neo-Nazi skinheads assault New York with weaponized anthrax. A non-suspenseful thriller, *Vector* still demonstrates the ease of fashioning devastating bioweapons at low cost with available technology. “Few threats have the capability of killing so many so fast,” says Cook in *Vector*. “For years we lived under the fear of nuclear winter annihilating the human race. Now there is a similar threat from biology.”⁴⁶

Genetic technologies with profit potential encourage scientists to cre-

ate a new generation of deadly pathogens—more lethal versions of existing microbe killers or horrific hybrid diseases with no immunity or antidote. Author of *The Hot Zone* and *Demon in a Freezer*, Richard Preston writes to horrify. In *The Cobra Event* (1997), his nasty portrait of biological terrorism even scared President Bill Clinton. Clinton said that of all the new threats, the one that “keeps me awake at night” is the possibility of germ attack as described in *The Cobra Event*.⁴⁷

In *The Cobra Event*, a mad genetic engineer wants to reduce the world’s population, for environmental reasons, by infecting New York City with a designer disease. His “brainpox” fuses an obscure moth virus that destroys nerves with a highly contagious and lethal smallpox virus. Writing elaborately bloody and bizarre descriptions, Preston paints the gruesome horrors of brainpox, which not only melts the brains of its victims but compels otherwise staid people to chew their own lips, bite off their fingers, and in extreme cases to spontaneously pop out their eyeballs. “Ebola is horrible enough,” says Preston, “but scientists are white-knuckled scared about the possibilities of engineered viruses created in a bioreactor.”⁴⁸ In fact, cobras provided the basis for an actual hybrid virus, engineered as part of the Soviet Union’s disease empire. Imaginative but deranged scientists combined genes from otherwise innocent viruses and cobra snakes to create a real cobra virus that would produce a deadly venom inside the cells of a victim’s body.⁴⁹

In the fictional thriller *The Cobra Event*, Preston raises disturbing political and moral questions about how the mainstream media fail to focus attention on the threats of foreign biological weapons development and renewed U.S. participation in such research. Preston’s real-world agenda gets temporarily submerged in a ready-for-Hollywood ending that includes FBI helicopters, ninja assault soldiers, a chase through a subway, shots ringing out in the darkness, and a confrontation between the intrepid heroine—a young doctor with the Centers for Disease Control—and the mad scientist. The psychopath behind the killings eventually falls victim to the bug he created—a plot twist microbiologist Joshua Lederberg suggested to Preston “to make germ weapons seem less attractive to a potential terrorist.”⁵⁰ The book’s positive ending hardly dispels its nightmarish implications about biotechnology and the horrific plausibility of genetically engineered pathogens that makes literal the metaphor of a technological virus.

MECHANICAL PLAGUE:
THE ARTIFICIALLY
INTELLIGENT DISEASE

Fusing nanotechnology, biogenetics, networking, artificial intelligence, and the behavioral science of socially organized insect communities, a military-funded corporation, Xymos, builds a secret weapon for the Pentagon in Michael Crichton's novel *Prey* (2002). Of course, Xymos cloaks itself in techno-utopian promises that its research will eventually be used to diagnose human illness. But in fact, the company has inadvertently created an artificial disease. Manufactured partly from bacteria, a swarm of microscopic surveillance cameras not only provides detailed photographic information but has also been programmed—by short-sighted techno-scientists—to learn, reproduce, and hunt like jungle predators. From the point of view of the nanobot technology, the military, the corporation, and the scientists have foolishly and obediently carried out technology's agenda to survive, thrive, replicate, and improve. Humans serve as the metaphorical hosts for technological reproduction. Even when the techno-swarm gets loose and the potential disaster becomes clear, the corporate suits let the situation spiral out of control, afraid to call the Army for help because they might lose their funding.

Science fiction corporations of the future never use their technological inventiveness to feed the world, improve the environment, or supply vaccines to poor people. Like Xymos in *Prey*, the Company in *Alien*, the Tyrell Corporation in *Blade Runner*, and the Umbrella Corporation in *Resident Evil*, they tend to rape the earth, create invasive surveillance systems, or devise techno-weapons that sicken or destroy people. Like Vice President Dick Cheney's company, Halliburton, in war-torn Iraq, science fiction corporations often work closely with the military and make profits from taxpayer money. The world of the imagined future is secretly run by multinational corporations motivated by profit and power.

Prey warns about human complicity in the empowerment of autonomous technology and how that empowerment is facilitated by the dangerous marriage of weapons manufacture, utopian propaganda, and corporate profit-making despite enormous safety risks. Like the evolving nanobot swarm, technology—viewed as an artificial, self-optimizing lifeform—evolves independently of human design and control and then begins to parasitize its creator and potentially dominate it.

TECHNOLOGICAL MONSTERS: RETURN OF THE MUTATED CREATURES

With viral fear on the rise in the twenty-first century, even 1950s-style, mutated creatures—caused by techno-viruses rather than nuclear radiation—are making a comeback. In Dean Koontz's best-selling novel *Seize the Night* (1999), a retrovirus—caused by the inevitable military biowarfare experiment gone awry—transforms people into shrieking, malicious monstrosities. Paul Anderson's *Resident Evil* (2002) focuses on a military biowarfare lab ominously named the Hive, infected with the fictional T virus, which mutates dead humans and animals into grotesque, blood-thirsty zombies. The movie and its sequel *Resident Evil: Apocalypse* (2004) were adapted from a popular video game series. Originators of the "Survival Horror" genre, the *Resident Evil* games (1998–2004) boast an elaborate plot that centers on a virus epidemic caused by the evil Umbrella Corporation—the largest commercial entity in the United States. Umbrella sells computer technology, medical products, and health care, but most of its profits come from biological weapons. In this splatterfest, the player wanders through post-apocalyptic Raccoon City, searching out and destroying zombie mutations while trying to unravel a convoluted conspiracy involving corporate deception.

Extermination (2001), like *Fear Effect* (2000) and *Syphon Filter* (1999–2003), repeats the survival horror/virus formula, but distinguishes itself by incorporating elements of a 1951 monster movie, *The Thing from Another Planet*, remade in 1982 as *John Carpenter's The Thing* and adapted into its own digital game in 2002. As special forces soldier Dennis Riley, the player investigates mysterious events on a secret South Pole military base. Experimentation with DNA results in a viral outbreak. Again, the science-created virus causes the base's inhabitants to mutate into hideous monsters that the player must gruesomely destroy before being fatally infected. An infection meter, on the game's interface, gets triggered if Riley is bitten or comes in contact with the virus in a puddle of water. The progressing infection is reflected in the meter indicating that death nears, adding a sense of urgency. The player must find a cure before tentacles and bio-organic weapons sprout from his flesh, mutating him into a Thing-like monster.

Just as low budget B-movies in the 1950s—with their radioactive monster chills and world-in-peril thrills—captivated audiences jittery with nuclear anxiety, today's digital games reflect and reinforce current virus paranoia and technophobia. Their apocalyptic stories of humans exposed to military biowarfare experiments, endangered by corporate techno-science, mutated by ubiquitous infections, and hunted by bizarre transgenic crea-

tures make clear the pervasive horror of invasive microorganisms and biotechnological experiments. Unlike the monster movies of the 1950s that glorified religion, government, and the military, the virus horrors of today often attack these same forces.

THE TECHNOLOGICAL VIRUS: ELECTRONIC INFECTION

Organic viruses wreak havoc on our vulnerable human bodies. But even a highly evolved posthuman, who escapes the flesh by fusing with a computer, will still be susceptible to electronic viruses. In the real world, the SQL Slammer virus spread through the world's computers in January 2003, destroying files and causing \$1 billion in damage.⁵¹ Later in the summer, computers were infected with the Blaster or LovSan worm, which caused diseased Windows computers to shut down and restart without user control.⁵² The worm attack forced some government agencies to close and kicked Swedish Internet users offline.⁵³ A couple of weeks after this invasion, computers were attacked by Sobig.F, the fastest spreading e-mail virus ever. It stopped some businesses, confused a railroad telecommunications network, and slowed down the Internet. In February 2002, more than fifty scientists wrote President Bush a letter expressing grave concern about a cyber-attack "that could devastate the national psyche and economy more broadly than did the Sept. 11 attack."⁵⁴ Cyber-security experts warn that the critical infrastructure of the United States—including electrical power, finance, telecommunications, health care, transportation, water, and defense—is highly vulnerable.

In science fiction, *Videodrome* (see Chapter Six) imagines a television signal as a viral disease and as a medium for social control. In *The Cassini Division* (see Chapter Four), Earth is devastated by a computer virus generated from deep space by vicious posthumans. In *Ghost in the Shell*, both human and robot brains can be hacked and infected with electronic viruses. In *The Matrix Reloaded* and *Matrix Revolutions*, evil electronic entity Agent Smith has learned to replicate himself like a virus. In *Terminator 3: Rise of the Machines*, Skynet—created by a corporation for the military—turns out to be not a mainframe computer but an artificially intelligent virus that shuts down global communications, disables defense systems, and launches a nuclear assault on the world. But the most elaborate vision of an electropathogen haunts Neal Stephenson's novel *Snow Crash*.

The snow crash virus exists in both a biological and an electronic form. People are infected by swallowing it as a drug, absorbing it from contami-



The Matrix Reloaded: *After replicating, technological virus Mr. Smith tries to infect everyone and everything* (Courtesy Photofest).

nated bodily fluids, or even seeing it as programming code. As with the videodrome informational virus, infection can enter through the eyes to strike the brain directly, altering its DNA. The virus “crashes” the mind and degrades the individual’s humanity—reducing consciousness and autonomy to such a primitive state that the victim becomes susceptible to mind control. This suggests the penetration of technology into our lives and its invisible consequences—humans regressed to automata that robotically obey technology’s imperatives. Stephenson proposes a cybernetic model of the human brain, suggesting that there is a primitive level of the mind where free will, rationality, and consciousness do not exist. As N. Katherine Hayles writes in her analysis of *Snow Crash*: “If human consciousness can be co-opted by hijacking its basic programming level, we are plunged into Norbert Wiener’s nightmare of a cybernetics used for tyrannical ends.”⁵⁵

Using the Metaverse (see Chapter Six)—*Snow Crash*’s futuristic fusion of the Internet and virtual reality—the virus is secretly spread, by power-mad millionaire and religious fanatic L. Bob Rife, as a mechanism of social control and world domination. His plan is enacted by dehumanized, snowcrashed lackeys, implanted with antennae that enable Rife to communicate his orders through direct transmission. With their antennae and hive-like behavior, Rife’s automata resemble insects as well as microbes. Strangely, new research suggests that bacteria, like insects, possess a kind of collective mind. Molecular biologist Bonnie Bassler proposes that germs communicate and “collectively track changes in their environment, con-

spire with their own species, [and] build mutually beneficial alliances with other types of bacteria.”⁵⁶ Microbes strategize collectively, similar to bees, ants, and Rife’s insect-like mind slaves.

Fighting Rife is hero hacker Hiro Protagonist, whose independence, imagination, and inventiveness dramatize the human alternative to the posthuman, robotic insect people. In the end, the conflict comes down to a physical fight between the human and the posthuman. Rife and his technovirus are defeated by low-tech, jungle-warfare techniques as well as by a cyborg dog named Rat Thing, which—motivated by love—overcomes the programming of its neural circuitry.

Snow Crash, in a sense, relegates the cybernetic brain to the garbage dump of evolutionary history, suggesting that it belongs to a pre-human state rather than being the foundation for a posthuman evolution. The snow crash virus reverses the higher development of the mind, converting humans to a lower primitive cybernetic level. Stephenson therefore warns against the mind’s susceptibility to control through brain-altering viral technology. This is symbolically similar to Paul McAuley’s notion, in *Fairyland* (see Chapter Eight), of a nano-designed virus, or fembot, that could literally invade a person’s brain and change its chemical structure, in a programmed manner, to alter that person’s belief system.

In another potent symbol of humanity’s techno-domination, information itself is seen as a viral disease of the mind in the science of memes. A contagious idea replicates like a virus, passing from mind to mind, frequently through technological media. Again, Cronenberg’s *Videodrome* is the paradigmatic cinematic visualization. The television medium, or any other form of communication, is the replicating environment, the carrier, and the transmitter of the meme. “When you plant a fertile meme [or idea] in my mind you literally parasitize my brain, turning the brain into a vehicle for the meme’s propagation in just the way that a virus parasitizes the genetic mechanism of a host cell,” writes Richard Dawkins in *The Selfish Gene*.⁵⁷ Examples of memes include catch-phrases, crazes, fads, icons, fashion statements, and political buzzwords. A potent meme might alter long-held beliefs, suggesting its mind-control potential. In 2002, the war meme, or, more specifically, the concept of preemptive war, promulgated by the government through a docile media, swept through the United States and reversed hundreds of years of war-only-in-defense tradition. This war meme can also be seen as an interrelated part of a massive and complex technological agenda that employs patriotic, religious, and utopian propaganda to further itself.

In the real world, malignant self-replicating viruses present grave dangers to human health; in science fiction, they function not only to reflect

that threat but to serve as potent symbols of technophobia. Monumentally fearsome in its anti-human attacks, the virus—like technology—horripifies with its insidious invasiveness, parasitism, and control. In the form of plagues and epidemics, viruses provoke ancient fears of biblical vengeance, disease, dehumanization, and vampirism while inciting futuristic fears of human extinction. A mortal menace even to digital posthumans, electronic viruses can invade, infect, and corrupt cyber-heaven. The ultimate horror, the virus symbolizes the dark side of twenty-first-century technologies and our anxiety about the dangerous consequences they deliver.

46. Drexler, *Engines of Creation*, 174–175.
47. Michael Heim, *Virtual Realism* (New York: Oxford University Press, 1998), 41.
48. Forster, “The Machine Stops,” 13.
49. For an analysis of these novels, see Bernie Heidkam, “Responses to the Alien Mother in Post-Maternal Cultures: C. J. Cherryh and Orson Scott Card,” *Science Fiction Studies* 23 (November 1996).
50. Kurzweil, *The Age of Spiritual Machines*, 141.
51. The 1983 novella version of *Blood Music* won both the Hugo and the Nebula.
52. Bukatman, *Terminal Identity*, 268.
53. Greg Bear, *Blood Music* (New York: Ace, 1985), 14.
54. *Ibid.*, 18.
55. *Ibid.*, 117.
56. Winner, *Autonomous Technology*, 208.
57. Bear, *Blood Music*, 199.
58. *Ibid.*, 219.
59. *Ibid.*, 204.
60. *Ibid.*, 197.
61. Drexler, *Engines of Creation*, 172–173.
62. Regis, *Mambo Chicken*, 137.
63. Kurzweil, *The Age of Spiritual Machines*, 142.
64. *Ibid.*, 141.
65. First published in Europe under the title *Necroville* (1993).
66. Ian McDonald, *Terminal Café* (New York: Bantam, 1994), preface.
67. *Ibid.*, 11.
68. *Ibid.*, 133.
69. *Ibid.*, 137.
70. *Ibid.*
71. Winner, *Autonomous Technology*, 227.
72. McDonald, *Terminal Café*, 20.
73. Bill Joy, “Why the Future Doesn’t Need Us,” 248.
74. Monastersky, “The Dark Side of Small,” A12.

CHAPTER 9

1. Kurzweil, *The Age of Spiritual Machines*, 257.
2. Dery, *The Pyrotechnic Insanitarium*, 255–256.
3. Davis, *Techgnosis*, 78.
4. Winner, *Autonomous Technology*, 29, 55.
5. *Ibid.*, 59–60.
6. Gautam Naik, “HIV Infections Surged Last Year,” *Wall Street Journal* (July 7, 2004), 2.
7. Skal, *Screams of Reason*, 263.

8. Richard Preston, *The Hot Zone* (New York: Anchor, 1994), 407.
9. Laurie Garrett, *The Coming Plague: Newly Emerging Diseases in a World Out of Balance* (New York: Penguin Books, 1994), 40–47.
10. Richard Preston, *The Demon in the Freezer* (New York: Random House, 2002), 88–95.
11. In this chapter, I am using the term *virus* as an overall designation for dangerous invasive microbes and parasites.
12. Sharon Begley and Michael Isikoff, “Anxious about Anthrax,” *Newsweek* (October 22, 2001), 28.
13. Centers for Disease Control (CDC), http://www.cdc.gov/ncidod/dvbid/westnile/surv&controlCaseCount03_detailed.htm (December 2004).
14. CDC, <http://www.cdc.gov/ncidod/sars/faq.htm> (December 2004).
15. Jeremy Manier, “Scientists Unravel SARS’ Gene Code,” *Chicago Tribune* (April 13, 2003), 18.
16. Peter Gorner, “Mystery of the Monkey Virus,” *Chicago Tribune* (June 24, 2004), 1.
17. Geoffrey Cowley, “How Progress Makes Us Sick,” *Newsweek* (May 5, 2003), 34.
18. Charles Piller and Keith R. Yamamoto, *Gene Wars: Military Control over the New Genetic Technologies* (New York: Beech Tree Books, 1988), 29.
19. Andrew Goliszek, *In the Name of Science: A History of Secret Programs, Medical Research, and Human Experimentation* (New York: St. Martin’s Press, 2003), 34–35.
20. Judith Miller, Stephen Engelberg, and William Broad, *Germs: Biological Weapons and America’s Secret War* (New York: Simon and Schuster, 2001), 37–38; see also Wendy Barnaby, *The Plague Makers: The Secret World of Biological Warfare* (New York: Continuum, 2000), 20–21.
21. Miller, Engelberg, and Broad, *Germs*, 40.
22. *Ibid.*, 52.
23. The Biological and Toxic Weapons Convention, <http://projects.sipri.se/cbw/docs/bw-btwc-text.html> (December 2004).
24. Miller, Engelberg, and Broad, *Germs*, 136.
25. Judith Miller, Stephen Engelberg, and William J. Broad, “Next to Old Rec Hall, a ‘Germ-Making Plant,’” *New York Times* (September 4, 2001); <http://www.nytimes.com/2001/09/04/international/04BIO.html> (December 2004).
26. Goliszek, *In the Name of Science*, 49.
27. *Ibid.*, 260.
28. Barnaby, *The Plague Makers*, 15.
29. *Ibid.*, 147–148.
30. Paul Recer, “Researchers Create a Virus from Scratch,” *Chicago Sun-Times* (July 12, 2002), 23.
31. David Robinson, “Vying over a Virus,” *Time* (July 22, 2002), 13.
32. Barnaby, *The Plague Makers*, 109.
33. Miller, Engelberg, and Broad, *Germs*, 61.
34. Dennis Lim, “The Object of My Infection,” *Village Voice* (May 19, 1998), 78.

35. James B. Twitchell, *Dreadful Pleasures: An Anatomy of Modern Horror* (New York: Oxford University Press, 1985), 105–106.
36. Margaret Atwood, *Oryx and Crake* (New York: Doubleday, 2003), 28.
37. *Ibid.*, 57.
38. Joanna Marchant, “Future Farm,” <http://www.futuretalk.org/01/quarter2/05211033.html> (December 2004).
39. Atwood, *Oryx and Crake*, 228–229.
40. *Ibid.*, 243.
41. Robert Heinlein, *The Puppet Masters* (New York: Ballantine, 1951), 205.
42. Carl Zimmer, *Parasite Rex: Inside the Bizarre World of Nature’s Most Dangerous Creatures* (New York: Free Press, 2000), 115.
43. Skal, *Screams of Reason*, 251.
44. In his films, Cronenberg—who studied biology and biochemistry—becomes a doctor or a scientist, such as a neurologist, virologist, oncologist, gynecologist, dermatologist, and epidemiologist.
45. Skal, *Screams of Reason*, 215.
46. Robin Cook, *Vector* (New York: Putnam, 1999), 2.
47. Judith Miller and William J. Broad, “Clinton Describes Terrorism Threat for the 21st Century,” *New York Times* (January 22, 1999), 1.
48. Richard Preston, interview by the author, 1999.
49. Miller, Engelberg, and Broad, *Germ*, 81.
50. *Ibid.*, 225.
51. Peter Rojas, “How Bad Movies Can Save America,” *Wired* (August 2003), 32.
52. The term *worm* derives from John Brunner’s 1975 science fiction novel *Shockwave Rider*, in which “tapeworms” are injected into the “data net” to delete information.
53. Anick Jesdanun, “Worm Infects Global Systems,” *Chicago Sun-Times* (August 13, 2003), 68.
54. “CyberWar,” *Frontline*, PBS (May 6, 2004).
55. Hayles, *How We Became Posthuman*, 276.
56. Steve Silberman, “The Bacteria Whisperer,” *Wired* (April 2003), 106.
57. Dawkins, *The Selfish Gene*, 192.

EPILOGUE

1. Winner, *Autonomous Technology*, 191, 237.
2. T. J. Matheson, “Marcuse, Ellul, and the Science-Fiction Film: Negative Responses to Technology,” *Science Fiction Studies* no. 58, vol. 19, part 3 (November 1992); <http://www.depauw.edu/sfs/backissues/58/matheson58art.htm> (December 2004).
3. Noble, *The Religion of Technology*, 208.
4. Jaron Lanier, “One-Half of a Manifesto,” *Wired* (December 2000), 179.