MICROBES, NATURE, AND THE FEARFUL OTHER

In the late seventeenth century, a Dutch microscope enthusiast scraped white matter from an old man’s teeth and slid it under a microscope, focusing on “an unbelievably great company of living animalcules, a-swimming more nimbly than any I had ever seen . . . in such enormous numbers that all the water . . . seemed to be alive.”1 Antony van Leeuwenhoek put ink to paper to capture a likeness of the rod-shaped motile bacterium and oral cocci, reporting what he saw to the Royal Society of London. He wrote dozens more letters, describing bacteria he’d seen lurking in rainwater or dredged from a beer vat. Page by page, van Leeuwenhoek and other microscope users revealed a natural world invisibly entwined with human bodies. The new technology produced a new category of nature: “little animals” living inside the human body. Long before these microbes were connected to infectious disease, they were painted as monsters, foreign creatures moving unbidden through human spaces. A new fear was born with a few bold strokes of ink, creating a motile nature that acted for its own survival, unknown and seemingly unimpaired by human society. Depicting the microbes made social intervention necessary. Humans had to decide how they would react to these new natures, both as individuals and as part of the new social order that was rising alongside revolutions in science, industry, and government.

Microbes are monsters because they resist classification.2 From their first discovery, they challenged the social ordering of knowledge. They are hybrids, defying
categories of nature and culture, human and nonhuman. Indeed, to be human means to have a body filled with microbes, but microbes also bring conflict to human physiology. Germs emerge when microbes enter into the body and tamper with the body’s processes, and then the microbe monster grows teeth and fangs and threatens human life. We know unseen organisms carry the potential to turn our bodies into sites of turmoil, and this fact creates fear. Knowing that pathogens draw on our body’s energy to sustain their own life creates anxiety. And knowing that microbes make human life possible, even as they produce death, creates frustration. We want microbes to be the “Other”—eliminated from our homes by Clorox and our hands by Purel—even though we know they are deeply and vitally entwined with our individual and collective existence. The distress that emerges when we cannot separate the human from the monster shapes society, demanding we negotiate our fears about difference.

The twentieth century began with the rise of a domestic sanitation industry that privileged the white upper class and ended with an HIV/AIDS epidemic that stigmatized homosexuals and caused millions of people to avoid contact with toilet seats. The current millennium has created new hybrids of war and biology, where “the infected other becomes the terrorist par excellence.”

Further, microbes produce social practices that define what it means to be human and to live with other humans. Because of microbes, a kiss can convey both love and death. It is useful to remember that disease preexisted the revelation of the microbe and has long shaped society. Disease took form through the manifestation of symptoms on the body, forging associations between health and social categories such as race and class. However, understanding the pathogenic origins of disease led to disease-control practices that were more systematic and technological, creating mechanisms for a new arrangement for governing collective life. As Michel Foucault theorized, disease became another way of measuring deviance within a group of people. Health became the normal condition of society; in contrast, abnormality became calculable in terms of health, producing a new space for inscribing countless other social fears and aligning disease with difference. These expressions of deviance manifest in the many ways the human encounter with an unseen microbe is depicted for public comprehension.

We have an irresistible desire to animate the microbe. Microbes have been represented in countless ways, from van Leeuwenhoek’s first sketches, to the cartoon germs that dance through television ads for household cleaners to bio-horror blockbusters on the big screen. Such representations persist in locating microbes outside the healthy body in an environment that is equally portrayed as an unclean, racialized “Other.” Moreover, the scientific and medical work to study pathogens and inform social practices through the production of knowledge and quantification of disease relies extensively on metaphor and representation to allow us to grasp the
concept of disease. These mechanisms also function as a tool for sorting the normal from the abnormal and, according to Catherine Waldby, are an “immanent narrative of social order.”

Epidemiology and the work to impact disease is at its core the work to manage people, and it relies on metaphor to translate microbiology into human behavior. One such metaphor is the narrative of war. Bio-military metaphors abound in disease discourse, emerging from and reinforcing deep cultural fears of nature and the promise of modernity to fight, control, and conquer unpredictable natures. Donna Haraway argued that even our metaphors of immunology have shifted alongside changing mechanisms of war, showing how deeply rooted the war-like understandings of disease are, that they seamlessly shift with our new war strategies to stay relevant and useful in understanding disease.

The case study that follows, about the smallpox eradication program, considers at length how representations of disease as a fearful other turned the human-microbe relationship into a public site to negotiate citizenship in the nineteenth and twentieth centuries. When the world declared war on smallpox, new interventions into individual life became possible, ratifying the role and responsibility of governments to care for citizens by creating healthy populations. Motivated by the economic benefit to developed nations, humanitarianists entered underdeveloped nations waving banners recruiting native people to “join the fight.” The humanitarianists were bearing injection guns loaded with vaccines. The propaganda revived colonial narratives, enabling racialized political acts that managed citizens through the management of microbes. Even after the elimination of naturally occurring smallpox, the virus persisted as a mark of otherness and continues to influence governments to act on citizens’ bodies out of fear that their bodies are still vulnerable to one of the greatest human killers of all time. The fear of smallpox far exceeds the representation of the microbe itself.

**BIOLOGICAL COLONIALISM: SMALLPOX ON THE AMERICAN CONTINENT**

The smallpox was always present, filling the churchyards with corpses, tormenting with constant fears all whom it had not yet stricken, leaving on those whose lives it spared the hideous traces of its power, turning the babe into a changeling at which the mother shuddered, and making the eyes and cheeks of the betrothed maiden objects of horror to the lover.

Lord Thomas Babington Macaulay’s description of England during a smallpox epidemic captures the grim fear surrounding a disease that killed a third of the people it touched. The virus has power, not only among the infected but also over those who fearfully anticipate infection. It lingers on bodies so scarred that their most loved
ones shudder to look at them. If the high mortality of smallpox did not instill social fear, its gruesome manifestation of infection on the body might. Lesions began in the mouth, growing until they ruptured, spewing the virus into the body through one’s own saliva. Pockmarks erupted late in the course of the disease, but the marks left lifelong scars on the bodies of those who survived the infection. Indeed, the *Variola major* virus has been responsible for much of the suffering, blindness, scarring, and death in human history.

Powerful cultural ideas about disease coalesced around smallpox. Historians have credited the European conquest of the Americas to the virus that invading armies left behind on their corpses. With little genetic immunity, native populations were gravely impacted by smallpox. Scholars estimate that, along with measles and flu, smallpox killed up to 95 percent of the native population of the Americas. The native vulnerability to European diseases seemed to some an unfortunate consequence of cohabitation; to others, native vulnerability was the physical expression of divine will. As one so-called gentleman in San Francisco said in 1852, “Providence designed the extermination of the Indians and . . . it would be a good thing to introduce the small-pox among them.” The soldier with whom he spoke decried this opinion as “savage sentiment” but at the same time acknowledged the idea to be “the opinion of most white people living in the interior of the country.” This exchange shows the racial terms by which disease was known, whether in terms of the vulnerability of native people or the savagery of white populations. Historians also write of soldiers who passed blankets infested with smallpox to native residents of the Ohio Valley during the French and Indian War, though historians debate whether this strategy brought military gain because smallpox was already sweeping through native populations. The most cited account is in a 1763 letter from British general Jeffrey Amherst to one of his commanders: “You will do well to inoculate the Indians by means of blankets, as well as every other method that can serve to extirpate this execrable race.” While using a truce to pass a disease-ridden blanket to one’s enemy is a reprehensible and inhumane act, these early imaginings of bio-warfare exemplify how microbes have been manipulated throughout history to exploit vulnerability and instill fear.

Whether infected blankets were effective Trojan horses or not, the persistence of the story in the popular history of the Americas affirms the power of the narrative that says the continents were conquered not by Europeans but by their germs. Disease became a weapon of war as a result of the weak immunity of native people. Acts of nature absolved human acts of conquest when deficiencies could be located in the bodies of those who succumbed. By describing the colonization of the Americas in terms of disease, these histories ascribe power to genetics and explain conquest in terms of superior health: people of color were vulnerable because their
isolation and in-grouping had left them genetically unprepared for the global world, a state of being that can only be overcome through intermingling and by challenging their immune systems to prove survivability.

**Vaccination: Creating Security by Fighting Vulnerability**

Other social practices mitigated contagion before microbes were identified as the sources of infectious disease. Quarantine, funeral rites, and religious traditions prevented infection from dead bodies, food, and other human beings. Because the risk of dying of smallpox was already extraordinarily high, it is no surprise that smallpox motivated the development of some of the earliest medical preventions of disease. Variolation became a common practice. This method produced some level of smallpox immunity by rubbing the liquid from a smallpox pustule over a scratch made on the arm with a needle. The procedure was fatal for 1 percent to 2 percent of those treated. Only in a society so dramatically shaped by disease could an apprentice physician named Edward Jenner inject the neighborhood children with liquid from a cowpox blister on a milkmaid’s hand and then variolate them with smallpox to see if they developed the disease. Jenner experimented on folklore claiming that milkmaids wouldn’t get smallpox after they’d had cowpox, a bovine cousin to the human strain of poxvirus. He self-published the results of his ethically and scientifically questionable study in 1798, and although his peers looked on his work with skepticism, within a decade his “vaccination” technique had spread throughout Europe, Asia, and the Americas.

With its lower fatality rate, vaccination quickly replaced variolation as the preferred immunization technique for smallpox. By 1801, 100,000 people had been vaccinated in Britain. However, they had to extract the smallpox vaccine from an active rash, and this strategy limited viability in storage, creating problems of distribution. For the first half of the nineteenth century the vaccine was passed through human bodies, drawing live virus from the blister created by the vaccination and injecting it into the next individual. Around 1800, an expedition to take the smallpox vaccine to Spanish America set sail with twenty-two orphans onboard, two of whom were vaccinated every ten days to keep the virus alive during the Atlantic voyage. Around 1840, a technique for producing large amounts of vaccine in cows became popular, and doctors brought infected calves into their offices and scraped the live vaccine right off the animals’ flanks. The natural source of immunity was never so apparent as when disease was transferred from cow to human in a doctor’s office. Notably, the smallpox vaccine was administered for generations before the *Variola* virus was first seen through an electron microscope. Knowing how to contain the spread of smallpox did not depend on detailed scientific knowledge of
the virus itself but on the cultural acceptance of medical practices that seemed to increase human survival. The years following Jenner’s discovery saw proposals for mandatory vaccination programs put forth in chambers of government around the globe. The smallpox question became a public platform to negotiate the terms of citizenship in the nineteenth century, raising questions about what governments can and should do to regulate disease in the name of public health and security.

In his lectures on security in the late 1970s, Foucault used the case of smallpox to explain how disease control functions as a mechanism of security. He proposed that despite the radical-ness of the idea, one could infect oneself with disease in hopes of creating immunity. He said vaccination was accepted as common practice because it was reliably safe and statistically successful, evidence that could only be created because of emerging ways of thinking about collective life in terms of a population. Quantitative analysis transformed generalities about the disease prevailing in a town or region into calculations of success and failure within a bounded group of people. The inclination to categorize disease as a problem emerging from “that other” township persisted, now rationalized by statistical evidence. “Cases” of disease could be understood in terms of distribution among the population, making the disease both more and less personal. It also became possible to calculate the risk that any one individual might contract the disease, making smallpox a probability, not a certainty. Moreover, the risks are not the same for all people, aligning disease risk with categories of difference. The outcome of the population, Foucault argued, is the production of mechanisms to keep all forms of deviance, including disease, within the acceptable “normal” conditions of the population. What work will the state do to maintain normal health within a population? As disease control became the responsibility of governments, new interactions between citizens and the state emerged, rationalizing governing acts at the most intimate sites of human life in the name of public health and security for the population as a whole.20

Over time, problems of smallpox vaccine distribution were overcome by new technologies that produced air-dried and freeze-dried vaccines, bringing to the surface a quiet hope that the scourge of smallpox could be eliminated from the planet. Indeed, the use of vaccine rapidly reduced the abundance of smallpox across the globe, and mandatory vaccination programs eliminated the disease in most countries by the mid-twentieth century. However, millions of people still suffered from the scourge, and in 1967, the World Health Organization (WHO) began an Intensified Smallpox Eradication Program to eliminate the disease. The WHO campaign is often lauded as an example of innovative thinking, cooperation, and goodwill coming together to alleviate worldwide suffering without regard to borders or politics. Disparagers claim smallpox was already on its way out and that the campaign capitalized on the dwindling incidence of the disease to expand the reach
of public health. For whatever ends, the WHO campaign mobilized people to act against disease, using technology to create masses of immunized bodies and destroy the viable habitat of the smallpox virus. The campaign created the microbe as an enemy to be fought, controlled, and eliminated. The effort established the rites of a modern war against a germ, producing the weapons, strategies, tools, and attitudes that continue to characterize health practice as a battle against invasive pathogens.

The push for global eradication followed successes in creating “herd immunity” that inhibited the spread of smallpox by dramatically reducing its incidence in the population. Vaccinating masses of people in endemic countries held much appeal from the perspective of governance: increasing the number of vaccinations would provide an economic boost and a clear show of government engagement in a public health situation. Mass vaccination, however, proved to be expensive and time-consuming, and for decades these programs waned, with little popular support. The 1967 resolution gained momentum, not on moral grounds but by laying out an equation where smallpox-free countries could save billions of dollars on policing their borders against the disease by wiping the virus from the earth. It also allocated 5 percent of the WHO budget, roughly $2.4 million annually, to the work and established a headquarters for the campaign. That was the extent of what the United Nations could do to intervene. As program director Donald A. Henderson explained, “WHO had no authority, other than that of moral suasion, to compel any country.”

To eliminate the virus, the campaign would have to touch the bodies of millions of people living in more than forty countries. In addition to that hurdle, many of these regions were also tormented by poverty, civil war, and a range of other health concerns.

**THE WAR ON SMALLPOX**

The decision to declare worldwide war on smallpox might be framed as an act of “humanitarian biomedicine,” but it was also a decision to destroy another species. While species extinction is not an uncommon outcome of human-nonhuman interactions, the purposeful work of the smallpox campaign presumed that nature could be managed to achieve a culturally desired outcome. However, managing the nonhuman smallpox organism required managing human bodies, blurring boundaries between that which was human and that which was not human. The fight against smallpox was not a war against a disease or even the management of nonhuman nature; it was a deliberate system of governance that relied on tactics of fear and persuasion to create behaviors among the population. The microbe itself was monster-ized in propaganda to establish it as the nonhuman enemy. Echoing the patriotic refrains of the earlier world wars, the campaign described the duty of all world citizens to submit their bodies to the war against smallpox.
Though Henderson denied that the campaign employed military tactics (or at least that it had similar financial backing, authority, and popular support as a war campaign), the language of war pervaded all aspects of the work. For example, when it became clear that the mass vaccination strategy was not producing lasting results, a new “war plan” was proposed to target and break the chain of transmission. One WHO official recalled, “It was on a hot, blistering June afternoon in 1973 that the ‘war plan’ that eventually spelt victory over smallpox in India was set in motion. Till then, the relentless war against an enemy that knew no mercy had not been going on too well. If anything, it had become a general’s nightmare. Though there was no dearth of ‘troops’ or ‘ammunition,’ the problem was to get them to the right place at the right time. Naturally, the casualties were heavy—over 16,000 reported dead and more than five times this number maimed and disabled.”

This account overflows with language of war, as the official describes how the new “ring approach” would use quarantine and vaccination to encircle infected areas and block the spread. India’s Smallpox Eradication Programme officer chose the following military metaphor: “We decided then that instead of expending our resources against the entire enemy forces simultaneously, we would concentrate on their strongholds.” The restructured program recruited “officers” and “advance teams” who were put through “highly intensified training courses” to become “experts” in detecting smallpox. These teams conducted “reconnaissance trips” to identify “enemy” areas. When an outbreak was reported, the team would “blitz” the area with “vaccination devices and vaccine—the guns and bullets of the campaign.”

These reports from the field suggest that both WHO officials and local workers felt like they were at war with an enemy, though they themselves were immune and need not fear infection. In reality, the fight with the virus took place inside human bodies because the vaccine stimulated immune systems to produce antibodies. The primary tactic of the WHO campaign was largely an appropriation of militant ideals to access bodies and control populations. As a vital security mechanism, disease eradication affirmed human relationships with microbes as antipathetic and hostile.

For more than a decade, the WHO and national governments watched populations with an eye focused on disease and deviance. Swift containment of breakouts required that citizens report the disease to authorities. People had to be persuaded to act on a moral imperative, often violating relationships of trust and privacy associated with the sick and dying on behalf of some greater good. Jitendra Tuli reported going into classrooms to ask children to disclose any diseases at home to their teachers. In later years, officials offered a monetary reward to individuals who reported cases of smallpox. No wonder this method turned up hundreds of false leads in poverty-stricken countries, but the strategy successfully cultivated a climate in which people would expose their neighbors’ disease. Self-reporting was encouraged in posters and
pamphlets and even in hand-srawled messages painted on the backs of buses or slung over elephants. The message was consistently a call to war.

One poster called on citizens to “Join the fight,” as if recruiting troops for battle (figure 3.1). The poster shows three Africans in various modes of traditional attire facing off against a personified smallpox giant. Marked with an identifying “SP” on its chest, the monster has distinct human features: arms, legs, fingers, toes, eyes, and hair. Its skin is black with white pockmarks, imitating the way smallpox marks the skin, and it holds a spiked club. Visually, the virus is rendered human or at least human-like but even larger than the people it fights. The individuals facing the monster wield bows and arrows, one of which has been driven into the “heart” of the disease, squarely between the S and P. The scene is of a battle with a monster, in which people armed with primitive weapons hurl projectile points at a foreign body. At the public health clinic, however, the projectile is turned on one’s own body, for the fighting behavior promoted by the poster is to “be vaccinated today.”

Many posters published between 1968 and 1977 show the vaccination act itself (examples shown in figures 3.2 and 3.3). The injection gun is clearly displayed, poised

**Figure 3.1.** Public health poster from the worldwide smallpox eradication campaign in Africa. *Courtesy*, CDC/Stafford Smith, taken from the Public Health Image Library, Centers for Disease Control and Prevention (#2587), Atlanta, GA.
to shoot a vaccine into the victim’s arm. Sometimes a stethoscope or a red cross labels the person holding the gun as a medical professional; sometimes a uniformed officer wearing a hat or badge holds the gun. Typically, the vaccine giver is a man and the recipient is a woman, often carrying a small child. These images depict a critical moment in smallpox eradication, when vaccine is forced into the human body. Such one-on-one meetings between healthy citizens and officials bearing vaccine were the daily work of smallpox eradication. These illustrations of that moment show a power structure in which the unvaccinated individual is under the control of the person administering the vaccine, underlining the vulnerable state of the unvaccinated body. The recipients are women and children wearing some form of “native” attire; the vaccinators are men wearing uniforms. The official holds a gun to the exposed flesh of the recipient, exercising the authority of the state and the medical profession.
Though written as an invitation to be vaccinated, the poster in figure 3.4 affirms the larger system of social control created through the vaccination program. Race and gender are on display in these clinical encounters, where the body of a woman of color is a target of governance (generally) and a target of a gun (in particular). Repeated depictions of vaccine recipients dressed in robes, headscarves, and other traditional attire associate vulnerability with poor people of color. Such representations suggest that these populations are more susceptible to disease or at a minimum are more in need of being educated and persuaded to be vaccinated. Though vaccines are only effective in people who have not been infected and healthy individuals were the target of the ring approach, the propaganda of the campaign established women and poor, traditional cultures as the greatest obstacle to smallpox eradication. It appeared that these people were the greatest risk to the health of the world’s population and therefore most in need of being controlled.

In addition to the voluntary submission to vaccination, smallpox containment required citizens to relinquish cultural practices and social norms to sustain public health. Human social behaviors are not readily relinquished, particularly during times of collective suffering, despite evidence that those practices may be risky.
WHO officers arrived at outbreak sites to find scores of people traveling between towns as they paid their respects to the dead and dying, carrying the virus from a relation’s deathbed to their own homes. In India, the spring outbreak of smallpox was welcomed as the annual tribunal of the goddess Shitala Mata, by which she would decide who was strong enough to live. Positive outcomes from collective vaccination, including the end of an epidemic, could be easily attributed to many unrelated factors, including divine intervention. Religious beliefs regarding animals, including the cow, drew skepticism toward the medicine rumored to have bovine origins. The vaccine does have risks and complications, including death, and produces an open wound that must be properly cared for to be effective. In communities with little exposure to modern medicine, a needle with a promise was a hard sell. Field officers employed creative strategies to persuade citizens to participate, including jabbing themselves with the needle to demonstrate that it did no harm, an act that mimicked the scenes depicted on many program posters.

Containment also depended upon identifying and marking both the source of infection and the immune population. WHO officials “read” human bodies to distinguish the “at-risk” population. There are no invisible carriers of smallpox; people who are infected wear the symptoms on their bodies. People who are immune can prove their immunity by showing scars on their arms (from the vaccine) or the scars left on their bodies from the disease itself. Officials traveling from house to house would mark houses where smallpox was present with a number and then vaccinate everyone who lived within a quarter mile, moving outward in concentric rings until they got ahead of the disease. (House marking is shown in figure 3.5.) At the bull’s-eye of the ring was a house marked with disease and a number telling anyone who passed by just that. The home became a place to be feared, stigmatized by the presence of an unseen organism.

Like a marker on a home or a scar on a body, the cultural production of disease marks bodies of color as bearers of disease risk. Such associations at the level of the individual and the population allow white people to contain their fear because the threat is located in geographically distant countries and biologically different bodies. By pinpointing “other” bodies as the source of risk, public health practice expresses racial politics and naturalizes the control of bodies as the management of microbial natures.

As the blight of smallpox began to fade, WHO officials combed the planet for signs of any outbreak. Tentatively at first, then more emphatically, they began to suggest the disease had been contained. In 1977, a man in Somalia became the last person to catch contagious smallpox from the body of another human being. His antibodies fought off the virus, and without another vulnerable body to infect, the disease succumbed. The chain of contagion had been ruptured, and the 10,000-year-old virus
no longer passed freely from host to host. WHO president Dr. Abdul Rahman Al-Awadi signed the death certificate for smallpox on May 8, 1980, declaring solemnly that “the world and its peoples have won freedom from smallpox, which was the most devastating disease sweeping in epidemic form through many countries since earliest time.” Not only were people’s bodies freed from the disease, but the global economy was freed from the cost of smallpox. WHO declared that the total expense of the campaign was $112 million, and they predicted a worldwide savings of $1 billion annually through the eradication of smallpox. Fieldworkers were recognized as the “heroes who conquered smallpox.” At a celebratory parade in Sierra Leone, “The vaccination team members wore their field uniforms and displayed their jet injector guns for the public to see.” Such military-like parades helped people commemorate a victory that was largely invisible: the elimination of a threat to which much of the population was already individually immune.

In the end, perhaps the most significant outcome of the WHO campaign was not the elimination of a disease that was on decline but the worldwide expression of how humans could impact infectious disease. The war-like campaign established disease as an oppressive enemy that could and should be battled with all the weapons of modern medicine and government. Even WHO’s final victory shout, “Smallpox
Is Dead,” echoed in headlines around the globe, reaffirmed that the war had been against a living enemy. Clearly, success was to be marked not in healthy bodies but in the obliteration of the smallpox virus. Such approbation further ratified the body checks, quarantines, and bounties for exposing your neighbor as necessary displays of force to kill the virus. Moreover, the smallpox campaign has enduring outcomes in global understandings of disease and the production of biological citizens. The global campaign expressed colonial power in the terms of the modern era, in this case the global spread of public health and the advancement of medical technology. Abiding fears of disease, largely in the developed nations where vaccination was an economic burden and long life a cultural expectation, rationalized the extension of state power over foreign nations, particularly nations where people of color lived according to their own cultural understandings of disease. The depiction of the war on smallpox as a battle against microbes naturalized the colonial work as a necessary practice. It had been necessary to manage fearful natures, creating racialized subjects. These subjects, then, must depend on foreign governments to create health and security. As in the colonization of the Americas, native people’s vulnerability to disease is at the crux of the conquest, though four centuries later the colonial encounter is not explained as an expression of divine will but is produced as an opportunity to use modern technology to overcome nature to achieve a perceived advancement of society.

CONCLUSION: THE POLITICS OF SMALLPOX IN THE TWENTY-FIRST CENTURY

Though the world commemorated the death of smallpox more than two decades ago, Variola major is still alive, held hostage in freezers in the United States and Russia. WHO’s post-eradication program called for all countries to send their laboratory stocks of the smallpox virus to two repositories, where after a ten-year window for scientific study, all remaining live virus would be destroyed. A series of UN resolutions has since delayed the destruction of the stockpiles. The reluctance to destroy a microbe—even the most deadly germ to present itself in human history—expresses a strong cultural belief that scientific study will ultimately extract social benefits from the germ, even as citizens concurrently acknowledge mistrust of the nation-state. Some people speculate that countries may be harboring live virus in secret violation of international diplomacy. The existence of the virus stocks creates an arena for debates about the calculation of risk, trust in government, and the value of every organism, even a deadly virus.

Moreover, modern biotechnologies and the public imagination have made smallpox into a twenty-first-century monster, preying upon the fears of a population
no longer vaccinated and therefore vulnerable to the smallpox virus. In 2002, scientists successfully created a polio virus from 70-letter bits of its DNA sequence. While the smallpox virus is more complex (185,000 letters in smallpox virus to polio’s 7,000), the possibility of artificially manufactured viruses has been realized, and smallpox may live forever through its DNA. Much of the smallpox DNA sequence has become publicly available, as pieces have been doled out for research on vaccines and antidotes. In fact, in 2006, a Guardian reporter ordered a smallpox sequence over the internet using a fake company, a cell phone, and a residential address. Others fear that the virus might be captured in glaciers or cemeteries, set to reemerge in nature as global temperatures climb. In 2003, a librarian in New Mexico discovered smallpox scabs in an envelope inside a library book. Though the material contained no live virus, the genetic technologies of the twenty-first century might allow the production of smallpox from such matter. Today, it may be impossible to “kill” smallpox.

Because smallpox still exists in all these forms, it continues to produce vulnerable bodies. Perhaps, even if the stockpiles were destroyed, the possibility that the virus could be revived would continue to sustain the cultural fear of smallpox. Medical professionals are now discouraged (and at times prohibited) from vaccinating individuals against smallpox, on the grounds that the risks associated with the vaccine pose a greater threat than the disease. An entire generation—in some countries, two or three generations—has not been vaccinated against smallpox. Unvaccinated bodies can be perceived as vulnerable. As so frequently in the history of the disease, smallpox is still used to manage vulnerable bodies and create categories of difference.

In the last moments of a 2005 hearing in the US Congress, Representative John Linder provoked a panel of bio-terror experts with this question: “What would you say if I told you a scientist from Sweden said that Iranian children emigrating with their parents from Iran to Sweden have all been vaccinated for smallpox; what would that mean to you?” The question asked scientists to assess a political threat by reading marks on human bodies. Children’s bodies would be too young to carry a scar left by vaccines administered pre-eradication. Their bodies exist in a social context that also labels them as Middle Eastern, Iranian, emigrant, and foreign—categories that might be read as risky. The scar links them to larger political meanings of disease and the possibility that Iran is immunizing its citizens against a terrorizing release of smallpox. Cultural fears of Iran and the Middle East converged with fears of disease on the body of a child with a scar. One scientist on the panel presented an alternative reading, saying that people in Iran are not convinced that smallpox has been eradicated, insinuating that Iranians are either uneducated and ignorant or brainwashed by the state. Here, rumors of vaccination can be read as both an act of personal control and an act of state dominance and international warfare.
The exterminated smallpox virus continues to produce meanings about nationhood, terrorism, and fear—not only of disease but of the wide range of politics and practices that align with the care of human bodies in a world of microbial monsters. Narratives of race and difference continue to be naturalized through the production of microbes as a nonhuman “other” that threatens a normal society. Military rule and other extremes of social control emerged for smallpox eradication, and these forms of control are refined in public health practice today. Though smallpox scars are fading on the bodies of the population, the possibility that the virus could emerge again sustains fear in society; along with this fear come all the markers of difference in race, class, and gender that can be used to explain risk and manage human bodies. Thus the politics of the modern microbe are politics of difference, rationalized for the survival of the human species.

NOTES

3. Latour, *We Have Never Been Modern*.
8. Wald, *Contagious*, 42.
12. For a cultural history of smallpox and detailed biological information, see Hopkins, *Princes and Peasants*.
22. Lakoff, “Epidemic Intelligence.”
23. Tuli, “India’s ‘War Plan.’”
24. Tuli, “India’s ‘War Plan.’”
26. Tuli, “India’s ‘War Plan.’”
27. Henderson, “A Victory for all Mankind.”
28. Tuli, “India’s ‘War Plan.’”
30. Notably, the vaccine is only effective for a decade, though the scar will last much longer. Only about 80 percent of smallpox cases leave facial scars, so this surveillance could not be considered to be foolproof.
32. Henderson, “A Victory for All Mankind.”
34. A Federation of American Scientists fact sheet on smallpox, for example, sustains the rumor of countries harboring smallpox reserves: http://www.fas.org/programs/bio/factsheets/smallpox.html. See also Tucker, *Scourge*.
35. Cello et al., “Chemical Synthesis of Poliovirus CDNA.”
37. “Century-Old Smallpox Scabs in N.M. Envelope,” *USA Today*.
38. US Congress, “Reducing Nuclear and Biological Threats at the Source.”

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