

## Introduction

When the World Health Organization (WHO) issued a global alert on 12 March 2003, the especially virulent and “unexplained atypical pneumonia” soon to be known as severe acute respiratory syndrome (SARS) had already crossed a dozen national borders.<sup>1</sup> The disease had surfaced in China’s Guangdong Province during the previous November, and a worldwide research effort soon identified “the first novel infectious disease epidemic of the 21st century, caused by a brand-new coronavirus.”<sup>2</sup> Epidemiologists rushed to identify its source and the means and routes of its transmission; journalists scrambled to inform the public of the danger; and medical researchers labored to find a cure or at least produce a vaccine. Through their accounts of the outbreak, they quickly turned SARS into one of the “emerging infections” that had been identified as a phenomenon two decades earlier.<sup>3</sup>

While the coronavirus was new to medical science, the scenario of disease emergence was entirely familiar, and it facilitated the worldwide response to SARS. Accounts of prior disease outbreaks helped epidemiologists identify and respond to the problem. Such accounts also supplied points of reference for journalists seeking to inform the lay public about the spreading infection. Even medical researchers relied on their knowledge of similar microbes as they worked to understand the unfamiliar one. As these precedents allowed experts to make sense of a new situation, they also shaped what they saw and how they responded. The question simmering beneath even the most sedate of accounts was whether this disease, with its unknown origins and alarming mortality rate, might be “the coming plague”: the species-threatening event forecast by scientists and journalists and dramatized in fiction and film in the closing decades of the twentieth century.<sup>4</sup>

That possibility informs what I call “the outbreak narrative,” an evolving story of disease emergence that I will chronicle herein.<sup>5</sup> Following the introduction of the human immunodeficiency virus (HIV) in the mid-1980s, accounts of newly surfacing diseases began to appear with increasing frequency in scientific publications and the mainstream media worldwide. These accounts put the vocabulary of disease outbreaks into circulation and introduced the concept of “emerging infections.” The repetition of particular phrases, images, and story lines produced a formula that was amplified by the extended treatment of these themes in the popular novels and films that proliferated in the mid-1990s. Collectively, they drew out what was implicit in all of the accounts: a fascination not just with the novelty and danger of the microbes but also with the changing social formations of a shrinking world.<sup>6</sup>

Contagion is more than an epidemiological fact. It is also a foundational concept in the study of religion and of society, with a long history of explaining how beliefs circulate in social interactions. The concept of contagion evolved throughout the twentieth century through the commingling of theories about microbes and attitudes about social change. Communicable disease compels attention—for scientists and the lay public alike—not only because of the devastation it can cause but also because the circulation of microbes materializes the transmission of ideas. The interactions that make us sick also constitute us as a community. Disease emergence dramatizes the dilemma that inspires the most basic of human narratives: the necessity and danger of human contact.

The outbreak narrative—in its scientific, journalistic, and fictional incarnations—follows a formulaic plot that begins with the identification of an emerging infection, includes discussion of the global networks throughout which it travels, and chronicles the epidemiological work that ends with its containment. As epidemiologists trace the routes of the microbes, they catalog the spaces and interactions of global modernity. Microbes, spaces, and interactions blend together as they animate the landscape and motivate the plot of the outbreak narrative: a contradictory but compelling story of the perils of human interdependence and the triumph of human connection and cooperation, scientific authority and the evolutionary advantages of the microbe, ecological balance and impending disaster. The conventions of the paradigmatic story about newly emerging infections have evolved out of earlier accounts of epidemiological efforts to address widespread threats of communicable disease. While I use “the outbreak narrative” to refer to that paradigmatic story, which followed the identification of

HIV, I use “outbreak narratives” broadly to designate those epidemiological stories. I return to the early years of bacteriology and public health in the United States to trace the impact of the discovery of the microbe on attitudes toward social interactions and collective identity that characterize the outbreak narrative of disease emergence.

Outbreak narratives and *the* outbreak narrative have consequences. As they disseminate information, they affect survival rates and contagion routes. They promote or mitigate the stigmatizing of individuals, groups, populations, locales (regional and global), behaviors, and lifestyles, and they change economies. They also influence how both scientists and the lay public understand the nature and consequences of infection, how they imagine the threat, and why they react so fearfully to some disease outbreaks and not others at least as dangerous and pressing. It is therefore important to understand the appeal and persistence of the outbreak narrative and to consider how it shapes accounts of disease emergence across genres and media. That is the project of this book. I am motivated in this work by my conviction that an analysis of how the conventions of the outbreak narrative shape attitudes toward disease emergence and social transformation can lead to more effective, just, and compassionate responses both to a changing world and to the problems of global health and human welfare.

## WHEN MYTH MEETS MEDICINE

The terms of the familiar story surfaced in the earliest media accounts of “the first novel infectious disease epidemic of the 21st century.”<sup>7</sup> A *New York Times* article promising to explain “How One Person Can Fuel an Epidemic” began, typically, with the dramatis personae of an unfolding tragedy: “A child in China so infectious that he is nicknamed ‘the poison emperor.’ A Chinese doctor who infects 12 fellow guests in his Hong Kong hotel, who then fly to Singapore, Vietnam and Canada. An elderly Canadian woman who infects three generations of her family.”<sup>8</sup> Their unwitting role in the spread of the new virus turned these unfortunate sufferers into stock characters of a familiar tale. The epidemiological precedent of an “index case” responsible for subsequent outbreaks quickly transformed these figures from victims to agents—and embodiments—of the spreading infection. A twenty-six-year-old Singaporean flight attendant, for example, became infamous for “importing” the disease from China. It killed her parents and pastor, sickened other members of her family and community, and

turned her into a national scapegoat when Singapore's minister of health announced at a press conference in early April that she "infected the whole lot of us."<sup>9</sup>

She was one among the SARS "superspreaders," as the media termed the "hyperinfective" individuals who ostensibly fostered infection by "spewing germs out like teakettles."<sup>10</sup> The media treatment of superspreaders survived the scientific refutation of the concept, fueled by the regular appearance of their more notorious predecessors. The *Times* piece, for example, explained that "Gaetan Dugas, the gay airline attendant blamed for much of the early spread of AIDS in North America who was dubbed Patient Zero in Randy Shilts's book 'And the Band Played On,' would be considered a superspreader like Typhoid Mary because he willfully infected others" (A1). This description attributed intentionality to the superspreader, a term that was meant to refer only to someone who infects large numbers of people. The metamorphosis of infected people into superspreaders is a convention of the outbreak narrative, in which human carriers rhetorically (or, in some of the fiction, literally) bring the virus itself to life.

Yet even the most determined superspreaders could not do the work of infection without a conducive environment; SARS coverage dramatized the danger of human contact in an interconnected world. Photographs featured the fearful image of human interdependence in the masks sported by shoppers, store owners, flight attendants, and pilots, even by small children as they walked to school or pirouetted in ballet class. The masks depicted what SARS threw into relief: human beings' futile efforts to defend themselves against the threat of illness in the daily interactions made global by contemporary transportation and commerce. Human networks became the conduits of viral destruction. As one Singapore newspaper reported in early April 2003, it "took only a few dry coughs in Hongkong to spread the deadly Sars virus to seven people and kill the World Health Organisation (WHO) doctor who first identified it. And it took only a few air passengers for the illness to reach about 20 countries in Asia, North America and Europe" and for the WHO to declare the disease "'a worldwide health threat.'"<sup>11</sup> The Singaporean woman identified as a SARS superspreader was, like Gaetan Dugas, a flight attendant. The Chinese doctor traveled by bus from Guangzhou (in Guangdong Province), where he had been treating pneumonia patients, to Hong Kong, where he stayed in the Hotel Metropole. Other guests at the hotel who became infected included a businessman, who brought the disease to Vietnam, and the elderly Canadian woman mentioned in the *Times* piece, who brought it to Toronto.<sup>12</sup> The long incubation

period was, according to one chronicler of the outbreak, “one of [the] most sinister aspects” of SARS, transforming infected individuals into “precisely [the] mechanism of contagion that caused panic in afflicted cities. That man next to you on the train, that lady coughing across the aisle—suddenly the means and modes of transit were rife with potential superspreaders.”<sup>13</sup>

In these accounts superspreaders and worldwide interdependence turned the simplest interactions potentially fatal on a global scale. “A Shrinking World Raises the Risk for Global Epidemics,” announced the *South China Morning Post* in the early days of SARS coverage; in the *New York Times* the author and physician Abraham Verghese blamed the threat of a pandemic on the interconnected “Way We Live Now.”<sup>14</sup> A May 2003 article in *Newsweek*, “The Mystery of SARS,” helped tell the story with photographs. A shared caption turned adjacent shots of a masked Lufthansa crew in an airport and a duck pen just outside of Guangzhou into an account of the changing spaces of globalization and their intrinsic dangers: “Fear of SARS prompts a Lufthansa crew to wear masks in the Hong Kong airport; the virus may have been born on a farm like the one above in Guangzhou, China, where animals and people live close together.”<sup>15</sup> The conjoined images narrate the journey of SARS from its alleged origins on a “farm” in the midst of a metropolis to the routes of global commerce and transportation through which it spread. The juxtapositions supply the connections, plotting the routes of the disease from the duck pen, which suggests a lack of cleanliness and propriety—human beings living in close proximity to their animals, as in preindustrial times—to the airports and cities of the global village.<sup>16</sup>

Speculation shades into explanation, as the visual authority of the images obscures the caption’s “may have.” An accompanying article in the same issue of *Newsweek*, entitled “How Progress Makes Us Sick,” reinforces the narrative of the photographs in its account of the new disease:

The novel coronavirus that causes the syndrome emerged from Guangdong, the same Chinese province that delivers new flu viruses to the world most years. Pigs, ducks, chickens and people live cheek-by-jowl on the district’s primitive farms, exchanging flu and cold germs so rapidly that a single pig can easily incubate human and avian viruses simultaneously. The dual infections can generate hybrids that escape antibodies aimed at the originals, setting off a whole new chain of human infection. The clincher is that these farms sit just a few miles from Guangzhou, a teeming city that mixes people, animals and microbes from the countryside with travelers from around the world. You could hardly design a better system for turning small outbreaks into big ones.<sup>17</sup>



“Fear of SARS prompts a Lufthansa crew to wear masks in the Hong Kong airport . . .

The description locates the problem of SARS less in its novelty than in its familiarity as one among many “frightening new maladies” awaiting imminent release into the circuits of a global infrastructure. The piece offers HIV/AIDS as an important precedent of how “we placed ourselves in the path of the virus, we moved it around the world, and we’re well poised to do it again” and explains that what turned a virus “into a holocaust was not just a new infectious agent but a proliferation of roads, cities and airports, a breakdown of social traditions, and the advent of blood banking and needle sharing.”<sup>18</sup> Specific diseases blur together as emerging infections map the changing spaces, relationships, practices, and temporalities of a globalizing



... the virus may have been born on a farm like the one above in Guangzhou, China, where animals and people live close together.” *Newsweek*, 5 May 2003, 28–29. © Peter Parks/Getty Images and Matthieu Paley/paleyphoto.com.

world. Guangdong exports disease as a commodity in the dangerously promiscuous spaces of a global economy conceived as an ecology.

The images and storyline of the *Newsweek* articles exemplify how social interactions, spaces, and practices as well as the public understanding of a communicable disease are all conceptually reconfigured by their association with one another. The “primitive farms” of Guangzhou, like the “primordial” spaces of African rainforests, temporalize the threat of emerging infections, proclaiming the danger of putting the past in (geographical) proximity to the present. The airport makes Hong Kong, New York, Toronto, and any other major city as much as Guangzhou the backdrop of the

photograph. The *Newsweek* pieces expressed concern about the stigmatizing of groups and spaces that characterized what some critics believed was an exaggerated response to the threat of SARS; the admonition was in fact a refrain in some of the media coverage worldwide that speculated about the role of xenophobia in the tradition of “the Yellow Peril,” in what one headline denounced as an “Epidemic of Fear.”<sup>19</sup> Yet the depiction of Guangzhou in *Newsweek* fueled those very biases.

The *Newsweek* accounts fostered “medicalized nativism,” a term coined by the historian Alan Kraut to describe how the stigmatizing of immigrant groups is justified by their association with communicable disease; it implies the almost superstitious belief that national borders can afford protection against communicable disease.<sup>20</sup> As the *Newsweek* images show, medicalized nativism involves more than superimposing a disease threat on an unfortunate group. Rather, the disease is associated with dangerous practices and behaviors that allegedly mark intrinsic cultural difference, and it expresses the destructive transformative power of the group. Representing the “primitive practices” on the Guangzhou farms as expressive of cultural identity exemplifies medicalized nativism—in effect, the contagious nature of those practices.

The temporal frame implicit in the description of certain practices as “primitive” obscures the understanding of those practices as expressions of poverty. While the social and spatial transformations of global modernity exacerbate this poverty, the intrinsic temporality provided by the use of “primitive” enables contradictory representations of global modernity in media accounts of SARS: global networks as both threat and solution. It was “thanks to technology and a spirit of global cooperation” that the virus was rapidly identified and impeded, according to the first *Newsweek* article, and the second reported the “good news . . . that the forces making microbes so mobile are also making them easier to track.”<sup>21</sup> SARS was “only the latest reminder of how powerful [the new global] connections can be,” and danger was only one expression of that power.<sup>22</sup> Displacing the problem of poverty onto the danger of “primitive practices” allowed these accounts to offer modernization as a promised solution to, rather than part of the problem of, emerging infections. In the process, they turned the duck farms of Guangzhou into relics of an antiquated past rather than spaces of global modernity.

The transformations, however, exert an insistent pressure partly through the figure of the disease carrier, who embodies them. Superspreaders “aren’t just interesting because they’re atypical,” observes Nicholas Thompson of



the *Boston Globe*, “but because they serve as network hubs connecting everyone to everyone else, in a few short hops.”<sup>23</sup> They are figures of fascination as well as of fear because of the connections they elucidate. The routes traveled by communicable disease light up the social interactions—the spaces and encounters, the practices and beliefs—of a changing world. That was as true at the beginning of the twentieth century, when healthy human carriers were first identified, as it is at the beginning of the twenty-first. Ideas about contagion register the intrigue and possibility as well as the anxiety generated by those changes.<sup>24</sup> The physiological metamorphosis of human carriers turns them into representational figures of the fact, the danger, and the possibilities of human interdependence in a shrinking world. Their lived experience of the impact of changing social interactions on individuals explains the hold they have had on the public imagination since the identification of the first healthy human carriers of disease in the early years of the twentieth century. An article about scapegoating and SARS in the *Irish Times* acknowledges the power of the figure in a description of the most notorious carrier, “Typhoid Mary,” as a “mythic archetype of the pestilent immigrant infecting a healthy Western society.”<sup>25</sup> “Typhoid Mary” was the first healthy human carrier of a communicable disease to be identified in the United States, and with “mythic archetype” the author conveys how her routine invocation as a point of reference has turned her into a stereotype, the paradigm of the superspreader. Critical of the stigmatizing, he uses “mythic” synonymously with false belief, but the more specialized meaning of the term aptly describes the representational potency of this paradigmatic figure and of the outbreak narrative to which the figure is central.

A myth is an explanatory story that is not specifically authored, but emerges from a group as an expression of the origins and terms of its collective identity. Its strong emotional appeal derives from and affirms the fundamental values, hierarchies, and taxonomies that are the preconditions of that identity. Mircea Eliade identifies myths by mood and plot: the sense of timelessness and renewal, of a connection to origins and sacredness, associated with “a periodic re-entry into Time primordial,” where a primal struggle between destruction and endurance is repeatedly reenacted, and Claude Lévi-Strauss locates their appeal in their structure, which enables the coexistence of powerful social contradictions.<sup>26</sup> While “myth” is frequently a term associated with “primitive” cultures or used colloquially, as in the *Irish Times* article, to refer to a fictitious belief, myths remain a significant expression of theologically or supernaturally inflected collec-

tive identity in the contemporary moment. I follow Bruce Lincoln in defining myth as “a small class of stories that possess both credibility and *authority*,” which they derive from their expression “of paradigmatic truth” and through which they “evoke the sentiments out of which society is actively constructed,” and Joseph Mali in his use of the term to describe “the narratives that express and explain the beliefs in the common origins and destinies that alone turn the new ‘imagined communities’ into real, because very old, ones.”<sup>27</sup> Especially prevalent during times of rapid social transformation, those stories articulate the “moral norms and social forms of life” as enduring truths.<sup>28</sup> Microbial invasions take a mythic turn when they are cast as the response of the Earth itself to human beings who have ventured into primordial places they should not disturb. Understood alternatively as defensive and vengeful, this primal reaction is a recurring feature of outbreak accounts not only in fiction and film but also in scientific and journalistic descriptions (where the term *primordial* appears frequently).

The carrier is the archetypal stranger, both embodying the danger of microbial invasion (most explicitly in the human-viral hybrids with whom I end this study) and transforming it into the possibility for rejuvenation and growth. “An ancient Muslim proverb has it that anyone who stays in a land where there is epidemic disease is a martyr and blessed,” notes a writer in the *Boston Globe*.<sup>29</sup> Even more so the carrier, who both suffers and represents the sins of the modern world. This figure embodies not only the forbidden intrusions, the deep connections, and the most essential bonds of human communion but also the transformative power of communicable disease. Figures such as Typhoid Mary and Patient Zero become mythic in these accounts because of the simultaneous demonic and representative, even redemptive, but also distinctly social—one might even say, theosocial—functions that they perform.

Contemporary narratives of emerging infections register the influence of earlier accounts of plagues and theories of contagion, contemporary scientific explanations and social concerns. These narratives are critiques of socioeconomic inequities and titillating tales of apocalyptic struggles with primordial earth demons, hard-headed analyses of environmental exhaustion and hopeful stories of timeless renewal. As they simultaneously forecast the imminent destruction and affirm the enduring foundations of community, they offer myths for the contemporary moment, which explains the imaginative hold and the persistence of the story that I am calling “the

outbreak narrative.” The consequences in all of these realms when medicine meets myth is the subject of this book.

## CONTAGION AND BELONGING

Across epochs and cultures, plagues have been formative in human existence and speculation. *The Iliad* and *Oedipus Rex* begin with plagues brought on by the transgressions of a king.<sup>30</sup> Plagues are the language of the gods’ displeasure, and in learning to read that language, the kings come to understand themselves to be the unwitting source of their peoples’ suffering. The plagues force them to assume responsibility for their actions, as they illustrate the relationship between the group and an anomalous individual.

The public-health historian George Rosen documents the development of “scientific” theories of epidemics as they suffused explanations of the sacred in Greece, culminating in a “great liberation of thought . . . during the fifth and fourth centuries B.C.”<sup>31</sup> Observation suggested the transmissibility of certain diseases, but their source remained a mystery and was attributed to an imbalance between human beings and their environment.<sup>32</sup> Religious, social, and environmental explanations of communicable disease intermingled, and they were joined, gradually, by contagionist theories. Girolamo Fracastoro first articulated these theories in his 1546 book *De contagione, contagiosis morbis et eorum curatione* (*On Contagion, Contagious Diseases, and Their Treatment*), wherein he introduced the idea of seeds (*seminaria*) of disease.

For its earliest chroniclers—the physician Hippocrates, the historian Thucydides—plague ravaged the social order as much as it did individual bodies. The collapse of social relations, rituals, and institutions was the focus as well of later literary treatments, from Boccaccio’s *The Decameron* (ca. 1350) to Daniel Defoe’s *A Journal of the Plague Year* (1721), Charles Brockden Brown’s *Arthur Mervyn* (1799), and Mary Shelley’s *The Last Man* (1826). When communicable disease makes it dangerous to congregate and life threatening to minister to the sick, such collapses are not surprising. And the psychological numbing attendant on disasters of great magnitude compounds the dissolution of social organization. Boccaccio describes a lack of mourning and observes that “no more respect was accorded to dead people than would nowadays be shown towards dead goats. For it was quite apparent that the one thing which, in normal times, no wise man had ever learned to accept with patient resignation (even though it struck so seldom

and unobtrusively), had now been brought home to the feeble-minded as well, but the scale of the calamity caused them to regard it with indifference.”<sup>33</sup> And Defoe laments that the “Danger of immediate Death to ourselves, took away all Bowels of Love, all Concern for one another.”<sup>34</sup>

Yet these same depictions also suggest that the experience of a communicable-disease epidemic could evoke a profound sense of social interconnection: communicability configuring community. In *The Decameron* the plague insists on the connections from which people hope to flee: “Whenever those suffering from it mixed with people who were still unaffected, it would rush upon these with the speed of a fire racing through dry or oily substances that happened to be placed within its reach.” Before concrete evidence of microbes, the spread of disease appeared to be a mystical force as “it also seemed to transfer the sickness to anyone touching the clothes or other objects which had been handled or used by its victims” (51). These bonds cannot be refused, and recognition of their indissolubility motivates the youthful protagonists of *The Decameron* to affirm basic social principles both in the ritualized society that they design and in the stories that they tell.

An epidemic was a shared experience on multiple levels. The narrator of Mary Shelley’s *The Last Man* describes how the disasters of the plague “came home to so many bosoms, and, through the various channels of commerce, were carried so entirely into every class and division of community.”<sup>35</sup> Contagion was the color of belonging, social as well as biological. The common susceptibility of all people attested to the common bonds of humanity, and the idea of a plague as a great equalizer, affecting rich and poor, worldly and devout, was a regular theme in the literature. Grief itself could mark those bonds, as in Shelley’s description of how a young mother’s response to her child’s slight illness “proved to her that she was still bound to humanity by an indestructible tie” (388).

Literary depictions of plague-ridden societies evince the complex vocabulary through which members of a ravaged population both respond to epidemics and experience the social connections that make them a community. The word *contagion* means literally “to touch together,” and one of its earliest usages in the fourteenth century referred to the circulation of ideas and attitudes. It frequently connoted danger or corruption. Revolutionary ideas were contagious, as were heretical beliefs and practices. Folly and immorality were more often labeled contagious than were wisdom or virtue. The medical usage of the term was no more and no less metaphorical than its ideational counterpart. The circulation of disease and the cir-

culuation of ideas were material and experiential, even if not visible. Both displayed the power and danger of bodies in contact and demonstrated the simultaneous fragility and tenacity of social bonds.

Theories of communicability and ideas about the social implications of epidemics circulated together through the many stories told about plagues in history, science, and fiction. In different places and at different times, one or another of the theories would dominate, but they remained more or less in flux until bacteriology, which emerged in the late nineteenth century, demonstrated how specific microbes caused communicable diseases and documented routes of transmission that had hitherto only been suspected. Calling it “the most radical revolution in the history of medicine,” Mary Douglas laments that the rise of bacteriology not only altered theories of contagion, but also subsequently affected theories about the earliest religious rituals and social organization. As an anthropologist, she is troubled that the lessons of bacteriology have made it “difficult to think of dirt except in the context of pathogenicity.”<sup>36</sup> And she complains that the study of comparative religion, with disciplinary roots in the same moment, has “always been bedeviled by medical materialism” (29), a term that she adapts from William James to name the fallacy of attributing a primarily hygienic explanation to the earliest religious rituals. Analyses performed through the bacteriological lens, she argues, miss the point of prohibitions, which are designed not to forestall disease, but to mark dangerous transgressions—“a symbolic breaking of that which should be joined or joining of that which should be separate” (113)—that result in disease and other forms of divine retribution. Prohibitions light up the margins, where categories get murky; they make social organization both visible and appealing. Hygienic explanations occlude the fact that prohibitions offer symbolic expressions of social organization. Such explanations also obscure how much the social meaning of prohibitions affects the representation and experience of disease and the idea of contagion. “Even if some of Moses’s dietary rules were hygienically beneficial,” Douglas quips, “it is a pity to treat him as an enlightened public health administrator, rather than as a spiritual leader” (29).

The new science supplied a vocabulary that shaped contemporary ideas not only about the distant past but also about interactions and practices in the current moment. Yet, as Douglas suggests, attitudes toward communicable disease and contagion continued to register their dense history, and dirt and disease remained (and remain) symbolically powerful. Hygienic motivations not only failed to tell the story of ancient religious rituals, but they were also not the full story of more contemporary public-health theo-

ries and practices. Public-health administrators in the early twentieth century were not quite the heirs of Moses, but, especially in the midst of an epidemic (or threat of one), they were in their fashion high priests of contagion and community, dispensing the principles of social cohesion through the practices of disease prevention.

For public-health officials, communicable disease was both a medical and a social problem, and they promoted the mutual influence of scientific and social theories of contagion as they drew on the two fields of inquiry. The growth of cities gave rise to what they saw as “promiscuous” social spaces: people literally and figuratively bumping up against each other in smaller spaces and larger numbers than ever before. Microbes thrived in such environments, producing widespread infections that, in turn, provided researchers with the opportunity to study them. At the same time, new cultural encounters inspired social theorists to study group interactions and social ties. Scientists and social theorists often read each other’s work, but, more important, they were motivated in their work by related phenomena: the social and medical consequences of the changing spaces and interactions of an increasingly interconnected world. Conceptual exchange between them was inevitable.

Two especially influential theories of the source of social bonds register the conceptual impact of contemporary scientific research. Émile Durkheim and Sigmund Freud both wrote their studies of totemic religion and the origins of social organization—*Elementary Forms of Religious Experience* (1912) and *Totem and Taboo* (1913), respectively—at the height of the bacteriological revolution when microbes were making headlines, and in the two countries, France and Germany, that pioneered work in the field.<sup>37</sup> An interest in the power of contemporary prohibitions and social organization sent both in search of the origins of that organization, and both found in the concept of contagion the principle through which to describe how the mystical force of the sacred inexorably spills into the profane through physical contact or through symbolic association. With *contagion*, they named a sacred force so powerful, Durkheim explained, that even the most “superficial similarity” between objects or ideas was enough to initiate the process.<sup>38</sup> Contagion was a principle of classification that displayed the rationale of social organization and was, therefore, the force that bound people to the relationships that constituted the terms of their existence. It supplied the logic of totemic belonging and allowed the theorists to explain social cohesion. With these accounts, they sought to make the routes of cultural transmission as visible as bacteriologists of their own moment had

made pathways of disease transmission. Durkheim believed that with its elucidation of categories, the concept of contagion laid the groundwork “for the scientific explanations of the future” (365). Categories of belonging and theories of microbial infection came together in that most mythic—and most scientific—figure, the human carrier, who formed a link in Freud’s study between his patients and “primitive” culture.

Freud wrote *Totem and Taboo* to explain the prevalence of the incest taboo across cultures in social and psychoanalytic rather than medical terms. The story of Oedipus gives his account its narrative frame. Freud begins this story of social origins with the premise that the “two crimes of Oedipus”—incest and patricide—are the source of what “forms the nucleus of perhaps every psychoneurosis.”<sup>39</sup> Asserting that these crimes find open expression in “primitive” cultures and early childhood, he fashions his analysis into a myth about social belonging and organization for the modern age. The connection he makes between neuroses and human history begins with what he calls Charles Darwin’s “historical” explanation of the incest taboo: his hypothesis, based on observation of animals, of a primitive horde in which the sons’ sexual jealousy prompts the father to expel the sons, who eventually band together to kill the father and take his women, their mothers and sisters (125). But Darwin, he explains, did not offer sufficient proof of his hypothesis to establish its authority over other theories. For that proof, Freud turns to psychoanalytic observations of children and analysts and to the story of Oedipus, which is foundational to his theories of both childhood development and psychoneuroses. Attributing to the sons the ambivalence that he had identified in his analysts, Freud slips from his account of Darwin’s speculation into past-tense narration to create a scenario in which the sons alleviated their remorse for their deed by animating the father in a totem that they were then forbidden to kill. They also denied themselves their prize by prohibiting sexual relationships with the women of the horde. The hypothesized “primitive horde” becomes the posited “primal horde” (142 n. 1) as Freud transforms Darwin’s musings into a story of the origins of religion and society in which the “totem meal” becomes “a repetition and a commemoration of this memorable and criminal deed, which was the beginning of so many things—of social organization, of moral restrictions and of religion” (142).<sup>40</sup>

The story of the primal horde is, of course, the Oedipal drama writ large. Freud’s patients’ neuroses are the keys to his transformation of the myths—of human origins and of Oedipus—into a theory of civilization. The influence of bacteriology on Freud’s thinking surfaces in a figure that recurs

in his obsessive patients' fantasies. Describing the resemblance between taboos and the contagious (associational) thinking characteristic of neurosis, Freud notes that certain people or things become "impossible" for his "obsessional patients [who] behave as though the 'impossible' persons and things were carriers of dangerous infection liable to be spread by contact on to everything in their neighborhood" (27). He explains that these persons are "impossible" because of their association (often accidental) for the obsessive patients with forbidden ideas, desires, and even spaces, but he does not address why this impossibility takes the form of communicable disease.

The idea of a healthy human carrier of disease was one of the most publicized and transformative discoveries of bacteriology. It was widely discussed in both the medical literature and the mainstream press in Europe and North America in the early decades of the twentieth century. The identification of such people clarified the routes of disease transmission and revolutionized epidemiology and the practice of public health. Carriers were the dangerous strangers one encountered with alarming frequency in an increasingly interdependent world, and they were the most precious intimates dangerously estranged by the discovery of their carrier state. They made visible the contact that people did not necessarily know they had had—items shared, spaces frequented—as well as those they may not have wished to make known. Carriers were also at the center of the public debates about social responsibility. They put on display, and even helped to foster, changing ideas about the relationship of the individual to the group and to the state as the lessons of bacteriology animated the tension between the right to privacy and the responsibility of the state in the maintenance of public health.<sup>41</sup> When carriers unwittingly caused an outbreak of a communicable disease, the nature of the violation was as uncertain as the locus of blame. They represented the question of culpability in the absence not only of intention but more fundamentally of self-knowledge. It is no wonder, then, that such figures would be available for symbolic appropriation to mark the transgressive associations of Freud's patients.

The question of culpability leads Freud back to Oedipus, who makes his earliest direct appearance in the text in a footnote in which Freud explains that unwitting transgression of a taboo does not mitigate guilt: "The guilt of Oedipus was not palliated by the fact that he incurred it without his knowledge and even against his intention" (68). In Sophocles' play, despite Oedipus' ignorance of his crimes, the plague caused by his transgression necessitates his punishment. In that sense, he anticipates the superspreader: the Singaporean flight attendant who infected a nation, or Typhoid Mary, who



made her epidemiological debut just several years prior to the publication of *Totem and Taboo*. Human carriers teach the shared lesson of psychoanalysis and bacteriology: that human beings lack self-knowledge. Like Oedipus, we do not know who—or what—we are. It is what makes us dangerous, and it mandates new codes of conduct.

The nature of the transgression of Freud's Oedipus is at the heart of his punishment; he enacts primal fantasies that are so socially destructive that he must be transformed into a figure of pity and disgust before he can be redeemed. His crimes place him at the portals of civilization, where violence and sexuality must be carefully ritualized. The earliest identified human carriers analogously dramatized the need for new ways of being in a world of newly identified microbes and increasing human contact. The spread of infection required rituals of cleanliness that were implicitly sexualized as well. Human carriers readily became scapegoats: examples of the transgressions of the group for which they symbolically suffered.<sup>42</sup> But they were even more important and exemplary for what they displayed. As they became reintegrated (through punishment, treatment, or both), the human carriers, like Oedipus, bore witness to the workings of a transformative social and epidemiological power. Freud's retelling of the Oedipus story mythologizes the lessons of the bacteriological revolution, and it illuminates the mythic features of healthy human carriers as they cast the drama of disease outbreaks in terms of a continuing struggle for human survival against the destructive forces of nature and hubris. Nancy Tomes sees in "the tones of awe and apprehension so frequently apparent in early accounts of the microbial world . . . the lingering influence of religious and magical views of disease."<sup>43</sup> These views sound more than just the echo of past beliefs. They are the pitch of contagion as it constitutes mythic social bonds that hum with the exquisitely tenacious fragility of an ever-present threat.

Those social bonds are reinforced by the institutional legacy of communicable disease: the policies and practices set in place to prevent or manage devastating outbreaks. Epidemics dramatize the need for regulation with, as George Rosen puts it, "terrifying urgency," and they set in motion what he calls "the administrative machinery for disease prevention, sanitary supervision, and, in general, protection of community health."<sup>44</sup> They paint the pathways of interdependence with the brush of mortality and can help to overturn or reinforce governing authority. The memory of epidemics, however, is typically harnessed in the service of reinforcement. Rosen shows how epidemics, among other health concerns, fostered the parallel growth

of the state and the idea of public health by helping to fashion the concept of a population. A cohesive collection of people offered a way to represent, measure, and enact the increasing centralization of power in the state.

Rosen chronicles the gradual sense, beginning in the sixteenth century, that the supervision and regulation of the health of that population should be the responsibility of the state, and the corresponding alignment of the welfare of the population with the welfare of the state. Different state forms produced a variety of regulatory bodies. Especially influential was the German idea of “the medical police” (*Medizinischepolizei*), a term coined in the mid-eighteenth century, which registered the responsibility—and authority—of the government to create and implement health policy.<sup>45</sup> The slightly later French term *hygiene publique* further developed the idea, firmly establishing, in Michel Foucault’s words, “the politico-scientific control of [the] environment.”<sup>46</sup> Foucault extends Rosen’s analysis into a theory of power that he calls “biopolitics” and describes as “the endeavor . . . to rationalize the problems presented to government practice by the phenomena characteristic of a group of living human beings constituted as a population: health, sanitation, birthrate, longevity, race. . . .”<sup>47</sup> He argues that the concept of public health was formative for modern society, and epidemics were important because they manifested the need for protection in the form of regimented social behavior. Only war could inflict devastation on such a scale, but the violence of war could not rival the inescapability or level of destruction of the worst epidemics that history had recorded. Late-eighteenth-century sanitary practices and public-health policies, which had emerged from the quarantine procedures in Europe of the late Middle Ages, left a spatial legacy as well in the physical organization of cities during this period.<sup>48</sup>

Biopolitics concerns the emergence of institutions, policies, and practices that shaped the contours of a “population.” While the language of “social welfare” suggests how and why members of a population might identify with the state, Foucault does not offer a sustained account of the affective experience of a sense of belonging that turns people into “a people.” As narratives such as *The Decameron* demonstrate, the social experience of disease, the image of communicability, and the materialization of interdependence that characterize depictions of epidemics suggest an epidemiology of belonging through which people might experience their emergence as “a population.” The idea of contagion was demonstrably formative for the experience of “community” in the early years of bacteriology, when Freud and Durkheim were writing.

The discoveries of bacteriology did not emerge through the pure culture of a laboratory. They were, rather, filtered through these complex, even perverse and contradictory, ideas about contagion as they circulated in communicable-disease narratives. Although they found expression in a variety of genres and fields, the narratives were formulated in the terms of epidemiology.<sup>49</sup> Arising originally from the observation of outbreaks of disease, epidemiology supplies the methodology and the story of public health, incorporating data collection and statistical analysis into a narrative that makes sense of the calculations. “As epidemics occur across time and in different places,” explains the epidemiologist Thomas C. Timmreck, “each case must be described exactly the same way each time in order to standardize disease investigations. As cases occur in each separate epidemic, they must be described and diagnosed consistently from case to case, using the same diagnostic criteria.”<sup>50</sup> Epidemiologists build on precedents from previous outbreaks that they hope will make future outbreaks comprehensible, and ultimately preventable, or at least containable. When epidemiology turns an outbreak of communicable disease into a narrative, it makes the routes of transmission visible and helps epidemiologists anticipate and manage the course of the outbreak. In that transformational capacity, the epidemiological narrative is, like the microscope, a technology, and it is among the epistemological technologies that delineate the membership and scale of a population.

From precedents and standardization a recognizable story begins to surface. Epidemiologists look for patterns. For Timmreck, the job of epidemiologists is to characterize “the distribution of health status, diseases, or other health problems in terms of age, sex, race, geography, religion, education, occupation, behaviors, time, place, person, etc.” (2). The scale of their investigation is the group, or population, rather than the individual, and they tell a story about that group in the language of disease and health. “‘An outbreak,’” observes the virologist Philip Mortimer, “‘like a story, should have a coherent plot.’”<sup>51</sup> In their investigations epidemiologists rely on and reproduce assumptions about what constitutes a group or population, about the definition of pathology and well-being, and about the connections between disease and “the lifestyle and behaviors of different groups” (21). These classifications inform the epidemiological narratives, and they can thereby import cultural assumptions that are substantiated by the authority of medical science and the urgency of a public health threat.

Heather Schell notes that the “statistical techniques for describing a pattern in seemingly disparate incidents” that epidemiology offers make it “an

extremely powerful tool for creating master narratives about the world.”<sup>52</sup> When done with attention to narrative detail and to the rhythms by which stories unfold, epidemiological accounts can harness the appeal of detective stories. Such accounts were conspicuously fashioned with that appeal in mind by journalists and scientists in the years following World War II. Both groups saw in epidemiology the chance to tell a good story, and in those stories, the opportunity to promote an important field of inquiry. Paul de Kruif had demonstrated the market for tales of scientific discovery in his bestselling 1926 book, *Microbe Hunters*. Although their work took many of his heroic scientists into the field, de Kruif, a bacteriologist, glorified laboratory research.

It was not a scientist, but a graduate of the first class of Columbia University’s school of journalism who first explained the storytelling appeal of epidemiology for a broad audience. Geddes Smith, like de Kruif, had been born in the 1890s, during the early years of bacteriology, and had come of age with the unfolding of the promises of the new science. He saw in epidemiology “the biological drama that lies behind the Black Death—and Mary Lou’s snuffle.”<sup>53</sup> His instinct for the drama of epidemiology sent his book, *Plague On Us*, into three printings within a decade. In this book Smith exploited the narrative structure and logic of epidemiology, anticipating by nearly half a century the formula that would turn the epidemiological account into an outbreak narrative of disease emergence. *Plague On Us* demonstrates how formulaic—and formative—that story is.

#### “OF BACTERIA, MOSQUITOES, MICE AND MEN”

Smith is first of all a storyteller, and the brief prologue to his book displays his craft as it establishes the theme of the book: communicable disease is at once (and paradoxically) a foe to be conquered and a fact of life to be accepted. On one hand, Smith lionizes the contemporary scientist and chronicles the victories of modern medicine; on the other hand, he punctuates his account with reminders of the fields still unconquered. Of the “men in search of knowledge,” he notes that “nothing is too small for them, nothing (save influenza, perhaps) too large” (1). The ability to track microbes around the globe has conquered at least the superstition that viewed “pestilence” as “something visited on sinners by the angry gods” (1). With the clear-sightedness of science comes the catalog of victories, the epidemics of history that seem consigned to the past. But if the superstitions

woven into the formative myths of the Western tradition by Homer, Sophocles, Boccaccio, and others have passed, the lessons of classical tragedy emerge in the reminder framed in the question that follows the catalog: “Are we then so wise that we have beaten our parasites?” (1). Hubris, as is well known to most historians and tragedians—especially when, as so often, they are one and the same—always precedes a fall.<sup>54</sup> In the end, writes Smith, “to seek sustenance, multiply, and die is the common lot of bacteria, mosquitoes, mice and men” (156).

Epidemiology dramatizes human beings’ mortal struggle with their environment, social and biological. The qualification in the parenthetical “save influenza, perhaps” resurfaces more forcefully in the concluding paragraph of Smith’s prologue, the seed of defeat in the flower of victory: “Influenza kept step with the last war. If it came tomorrow we could not stop it. The lords of Europe are fighting again. Masses of men are bombed out of their homes and cities, hounded into exile, driven hither and thither in a greater dislocation of ordered living than any rational man would have thought possible. Such a world is in peril of pestilence. It is early to boast” (2). The heroic account of epidemiology is inflected by the shadow of the tragic and familiar tale of hubris and human ambition. It is the shadow tale that comprises the drama of the spread and containment of communicable disease.

No figure better embodied the tension between scientific achievement and the uncontrollable human factor than the healthy human carrier, who was the linchpin of the bacteriological theory of contagion.<sup>55</sup> “It was hard to believe unreservedly in contagion,” writes Smith, “when A was sick while B, at his elbow, stayed well, but C, at B’s elbow, fell sick of A’s disease; men turned naturally enough to the air and stars to explain how infection fell upon both A and C” (130). So the discoveries of bacteriology that allowed scientists to identify and explain the healthy carrier turned superstition to science. Smith equivocates, however, when he observes that “like God in Voltaire’s epigram the carrier or missed case would have had to be invented if he had not existed, and now we postulate B—as in the spread of poliomyelitis—even before we prove him” (130).<sup>56</sup> A discovery of the science and an invention of the (narrative) art of epidemiology, the carrier lives Smith’s observation that the “chief source of infection for mankind . . . is mankind itself. Most of the communicable diseases from which men suffer are kept in circulation, *like original sin*, by the human race” (129, emphasis added). The metaphor is revealing; communicable disease retains its religious associations despite the discovery of the microbe. As communicability person-

ified, carriers are its (human) figures, its agents, running the gamut of human agency from unwitting germ disseminators to intentional dispensers of contagion. Human recalcitrance is animated for Smith in the figure of “Typhoid Mary, of dismal fame” (180). As the solution to the puzzle of contagion, carriers also promise a salvation that they finally cannot deliver.

Communicable disease is a function of social interactions, and Smith emphasizes the potential for epidemics that attend the commercialization of air travel. The unprecedented mobile carrier makes especially apparent the intricate networks of human existence and human interdependence. But the carrier does not need literally to travel in a world that has come to rely on the circulation of all kinds of goods. A story of tainted oysters leads Smith to meditate on how “the elaborate system by which” the appetites of fifteen hundred people “were titillated might become the means of broadcasting infection. Some of them inherited the ills of strangers a thousand miles away. It’s a complicated world, and only endless vigilance on the part of people we never see makes it tolerably safe to live in” (228). The networks of daily existence have transformed the herd into an amorphous entity constituted through airwaves as well as air travel. Communicable disease marks the increasing connections of the inhabitants of the global village as both biological and social, the communicability of germs and ideas “broadcast” together in an ever more elaborate network of human existence. The explosion of a disease outbreak into an epidemic or pandemic marks, in this formulation, the tragic consequences of human behavior amplified by the web.

Communicable disease illustrates the logic of social responsibility: the mandate to live with a consciousness of the effects of one’s actions on others. The idea of a healthy human carrier means that it is possible to constitute a threat without knowing it, making the mandate especially urgent. In the earliest accounts the carrier is frequently a stranger, a figure conventionally marked as an object of desire and fear. But the carrier might also be the uncanny figure of the familiar estranged. Like Oedipus, unaware of who and what he is, and therefore the unwitting source of plague, the carrier confounds categories. In an especially surprising illustration of such confounding, Smith defines children as “immigrants into the human herd—immigrants whose susceptibility dilutes herd resistance and so helps to keep certain diseases in circulation” (141). The observation captures the chaotic and recombinatory nature of communicable disease, as the ultimate familiars become the ultimate strangers. Ironically, they are threatening because of their own susceptibility—because, that is, they are threatened—and the

future agents of the community's reproduction carry the threat of its annihilation. By casting children as immigrants, Smith identifies the fundamental instability of community. Communicable disease marks both the potential destruction of the community and the consequences of its survival. It is the figure of a necessary and even generative disequilibrium.

It is also the alibi for the governance mechanisms of the community, which must safeguard its charges against disease. For Smith, anticipating Rosen and Foucault, those efforts are best exemplified by quarantine, particularly at seaports and airports, which marks the "effort to put a fence around an entire nation" (192). With such a barrier, the state imagines the disease as a foreign threat and in fact, in a strategy I explain in chapter 1, uses the disease to imagine the nation as a discrete ecosystem with its own biological as well as social connections. To the model it provides for spatial organization, quarantine imparts the imperative of public health. Healthy carriers pose a particular challenge to quarantine efforts, and therefore to the nation thus conceived (as I discuss in more detail in chapter 2). Bacteriology fashioned a biological explanation of a mythic figure, but the science could not fully shake the mythic inflection.

The unpredictability led epidemiologists, in Smith's account, to look for "a formula for epidemics" (158) or to unravel "the plot of an epidemic" (206). These formulations projected a narrative logic onto epidemics, and the role of epidemiology was at once to read and to write the epidemic as a story of detection with predictive value. Narrative was thus central to epidemiology, which marked the conjunction of art and science, where it epitomized the most profound faith in human achievement. The disease detective stories that Smith places in the middle of *Plague On Us*, although rudimentary, manifest his insight into the assumptions of an emerging field and his prescience about its entertainment value.

## DISEASE DETECTIVES

The contours of these epidemiological detective stories began to fill out in the 1950s with the appearance in the popular media of accounts that featured the work of the newly formed and provocatively named Epidemiological Investigation Service (EIS) of the Communicable Disease Center (CDC). *Time* and *Newsweek* published brief articles with the same title, "Disease Detectives," on the same day, 19 January 1953. Both described the formation of the EIS (in 1951) under the leadership of an ambitious public-

health officer, Alexander D. Langmuir, who had joined the CDC two years earlier, in 1949. The creation of the EIS was fueled by the anxieties surrounding biological warfare that had intensified with the beginning of the Korean War in 1950. Langmuir, a key player in the politics of institutionalized public health, used those anxieties to argue for the importance of epidemiology and contributed significantly to the building of the CDC.<sup>57</sup> With his flair for public relations, Langmuir may well have initiated stories such as the ones that appeared in *Time* and *Newsweek*, which he viewed as excellent publicity for the EIS and for epidemiology generally. With titles designed to evoke Arthur Conan Doyle's most celebrated detective—"The Case of the Camp Sewage" or "The Case of the Carrot Salad"—they offered brief accounts of mysterious outbreaks solved by Langmuir's disease sleuths.

Similar accounts appeared over the next two decades in such journals as *Reader's Digest* and *Parents' Magazine*, but no one did more to popularize and develop the genre than an enterprising *New Yorker* writer named Berton Roueché.<sup>58</sup> The author of a column entitled "The Annals of Medicine," Roueché had been drawing material from the New York City Health Department when the EIS caught his attention. He approached Langmuir, who quickly recognized the opportunity that Roueché's columns provided to recruit and even train officers for the EIS, as he noted in his introduction to a 1967 collection of Roueché's essays, *The Annals of Epidemiology*.

Both Roueché (in his preface) and Langmuir call attention to the significance of the narrative form of Roueché's stories. Roueché specifically invokes Conan Doyle as his model, but he is quick to point out that his progenitor "derived the Holmesian method from that of the great Edinburgh diagnostician Dr. Joseph Bell." Langmuir also locates "the origins of the science . . . in the narrative descriptions and historical accounts of epidemics."<sup>59</sup> The narrative springs naturally, as he explains it, from the systematic thinking of scientific observers; it represents the discovery and expression of the epidemic's own logic. Langmuir identifies "an attention-winning pattern" that makes Roueché's stories so useful as well as engaging, and, in doing so, he articulates the formula of an outbreak narrative from "a single patient placed in an exact time and location, and with vividly described symptoms" to "the main epidemiological question" of the source, means, and routes of transmission "until all of the pieces of the puzzle fall into logical place and the problem is solved" (xvii). Thus is the epidemiological narrative of the outbreak written. Asserting the derivation of this "pattern" in scientific observation, Langmuir establishes it as intrinsically scientific (hence authoritative): science inherent in the narrative act. The stories



derive their authority from their predictability and, in turn, establish the scientific validity of the approach they describe.

They also establish a national context for the disease detectives. *Parents' Magazine* calls them “our national ‘disease detectives’” and compares the CDC to the FBI, as does *Reader's Digest* with its article “Medicine's FBI.”<sup>60</sup> Microbes are dubbed “public enemies far more dangerous” than the criminals on the FBI's Most Wanted lists.<sup>61</sup> The EIS is the CDC's “surveillance unit” that “keeps watchful eyes on disease outbreaks throughout the world” (21). Global surveillance is here configured as a national public-health necessity born of increasingly global interdependence: because of plane travel, “cholera in Bombay can be an immediate threat to San Francisco, yellow fever in West Africa a potential danger to New Orleans” (21). Thus were the conventions set for the narrative of disease emergence that would surface three decades later.

In the intervening years, as communicable diseases had become increasingly less of a threat, as the widely publicized polio vaccine brought one of the most devastating of them under control, and as epidemics of life-threatening communicable diseases began to fade from historical memory in North America and Europe, epidemiologists increasingly turned their attention to noncommunicable diseases such as cancer and autoimmune conditions, to detrimental collective behavior such as smoking and violence, and to environmental hazards. The global eradication of smallpox led by Donald A. Henderson of the CDC (now named Centers for Disease Control) during the 1970s ushered in a general sanguinity about the threat of communicable-disease outbreaks. It was a short-lived sanguinity, however, and the Cassandras among the tropical- and infectious-disease specialists, who had never ceased their warnings, were proved all too right as the earliest of the so-called emerging diseases burned through entire villages, scarcely noticed until they began to appear in the world's metropolises.

With that appearance came accounts of emerging infections that generated the concept of disease emergence. Globalization was indeed the source of the spread. As foretold, microbes circulated through air travel, commerce, and the circuits of capital, and they materially expressed the predictable contact anxieties. But, as I have suggested, the experience of communicable disease and the idea of contagion evident in these accounts was not new. I offer in chapter 1 an anatomy of emerging-infection accounts in the late twentieth century in the United States. While the United States lagged behind Western Europe both in public-health initiatives in the nineteenth century and in scientific developments in bacteriology in that field's ear-

liest years, the twentieth century witnessed increasing U.S. economic and political dominance in the institutionalization of ideas about global health worldwide. By the end of the century, cultural production would reinforce the importation of these ideas. The “outbreak narrative,” while not exclusively a U.S. phenomenon, is part of that production.<sup>62</sup> Its circulation across genres and media makes it at once the reflection and the structuring principle of scientific and journalistic accounts, novelistic and cinematic depictions of communicable-disease outbreaks, and even the contemporary proliferation of historical studies of the central role of communicable disease in human history.

I have described the importance of the identification of the healthy human carrier to the stories and history of epidemiology. None is more summoned than Typhoid Mary, and I chronicle in chapter 2 the story of this notorious figure as it was written in the scientific literature and journalism of the early twentieth century. The transformation of Mary Mallon into “Typhoid Mary” was a public-health story that fashioned a vocabulary of social responsibility from the lessons of bacteriology. It reflected a new way of thinking about social relationships and individual responsibilities in the United States in an increasingly interconnected world. And it has become a signature example of the dilemma of public health. In chapter 2 I consider its narrative legacy.

The city was the location of most such public-health stories, and changing ideas about social interactions and urban environments formed their backdrop. Those changes were the subject of the nascent field of urban sociology. I describe in chapter 3 the mutual evolution of theories of cultural and microbial transmission in the work of the sociologist Robert Park and his colleagues in the early years of the Department of Sociology and Anthropology at the University of Chicago. Central to what they called their “science of society” was the concept of “social contagion,” which described how the circulation of ideas and attitudes turned individuals into social groups and eventually into cultures. Their explanatory principles of social formations included an ecological vision of interdependence and the figure of the stranger as an agent of dangerous and productive change. With their ideas about social contagion, urban ecologies, and assimilation cycles, Park and his colleagues imagined the transformation of local into national communities in a global context as they formulated what I call a “Communicable Americanism.” I show in chapter 3 how the intermingling of social and scientific theories of contagion led to the articulation of a form of collective identity and a principle of belonging that is at the heart of the outbreak narrative.

The image of a cultural “invasion” that Park borrowed from botany and zoology for his study of human ecology would take on a more sinister cast in the paranoid climate that followed World War II. The language of both internal threat (“public enemies”) and imminent threat from abroad, as well as the need for surveillance, featured in the *Reader’s Digest* article “Medicine’s FBI,” exemplifies the vocabulary of 1950s virology as it fused with the politics of the Cold War. In chapter 4 I document the impact of both the science and the politics on the idea of contagion and the evolution of the outbreak narrative. Surfacing routinely in outbreak accounts, this language established disease outbreaks as “foreign” or “alien” agents that posed a national threat. In the mainstream media as well as in policy documents the threat found literal expression in invocations of germ warfare; it is evident in the assurance at the conclusion of *Time*’s “Disease Detectives” that “public health officers who have had a year’s duty in the E.I.S. would be the best-equipped disease detectives if biological warfare should come.”<sup>63</sup>

The carrier gained renewed attention in these case studies, embodying both the importance of social responsibility and the need for disease detectives trained to identify such people. These ideas as well as the narrative form were fleshed out in the popular fiction and film of the period, in which the animated virus took a variety of shapes, among them, as Kirsten Ostherr argues, the invading alien of 1950s science fiction.<sup>64</sup> The pod people of Jack Finney’s oft-told tale, *The Body Snatchers*, had an especially strong hold on the public imagination and, as I will show, exemplified the epidemiological horror story that would come to endow the outbreak narrative with the conventions of horror. The many retellings of Finney’s story demonstrate how it evolved with the changing scientific theories and social concerns, from its novelistic and cinematic incarnations in the 1950s culture of paranoia to its animation in the 1978 film that uncannily forecast the early years of the HIV/AIDS epidemic, which would come to public attention just a few years after its release.

The tempering of the Cold War and the precipitous eulogies for the global threat of communicable disease had made the viral pod people somewhat anachronistic and campy by 1978, but their heirs would resurface with a vengeance, literally, with the identification of HIV and the failure of containment efforts worldwide. HIV/AIDS brought the idea of emerging infections to public consciousness. The devastating epidemic had all the makings of an outbreak narrative, except one: it could not be contained. It is surely the most documented epidemic of all time, but, as I argue in chapter 5, it cannot be directly incorporated into the mythic dimensions of communicable-disease outbreak narratives. Indirectly, however, the HIV/

AIDS epidemic is an informing presence in those narratives in their many manifestations, and the sinister viruses incarnated in the scientific, journalistic, and fictional Patients Zero are among its legacies. These figures look back to the pod people of the 1950s as they herald the bioterrorists of contemporary fiction and film. Tracing the evolution of these characters and the narratives that feature them is central to my aim in this project, which is to understand the appeal and consequences of stories about disease outbreaks and disease emergence generally. The outbreak narrative is conventional and formulaic, but it is also always evolving. Stories of disease emergence in all their incarnations are so powerful because they are as dynamic as the populations and communities that they affect.