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EXPLAINING EPIDEMICS

and Other Studies in the History of Medicine

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What is an epidemic? AIDS in historical perspective

❧ Like the previous essay, this chapter was a product of the academic world's collective response to AIDS. More generally, however, I was intrigued by the challenge of trying to define and describe an epidemic. We have come to use the term so casually and metaphorically that I felt the logical way to think about the root meaning of *epidemic* was to see it historically, to create an ideal-typical picture of an epidemic based on repetitive patterns of past events. And in the following pages I have tried to abstract and present the narrative structure of an epidemic as historically experienced.

In some ways our generation's encounter with AIDS fits nicely into the dramaturgic pattern I suggest; in other ways recent events have evolved so rapidly that it does not. Within the space of a decade America's perception of AIDS as an acute, epidemic phenomenon has shifted subtly but inexorably: the social identity of this novel ailment has shifted into that of chronic and intractable illness, more akin to tuberculosis than cholera, leukemia than plague. In either guise, however, experience with AIDS has precisely reflected the varied realities that constitute the world's health care system as well as the social-structural and attitudinal factors that have interacted to create patterns of social response to the disease. ❧

We use the term *epidemic* in a variety of ways – most of them metaphorical, moving it further and further from its emotional roots in specific past events. Even in relation to health, we employ the word in contexts decreasingly related to its historical origins. Medical historians speak of an epidemic of tuberculosis in Europe between 1700 and 1870 and of an epidemic of rheumatic fever in the century and a quarter after 1800. In the mass media every day, we hear of "epidemics" of alcoholism, drug addiction, and automobile accidents.[1] These clichéd usages are disembodied but at

1 These are endemic phenomena, and a fundamental aspect of the root meaning of *epidemic* lies precisely in its contrast with such "domesticated" phenomena. The *Oxford English Dictionary* tells us that when referring to a disease, the adjective *epidemic* denotes "prevalent among a people or a community at a special time, and produced by

the same time tied to specific rhetorical and policy goals. The intent is clear enough: to clothe certain undesirable yet blandly tolerated social phenomena in the emotional urgency associated with a "real" epidemic.

Defining aspects of that millennia-old reality are, of course, fear and sudden widespread death. It is plague and cholera, yellow fever and typhus that we associate viscerally with the experience of epidemics, not alcohol and automobiles. AIDS has reminded us forcefully of that traditional understanding. But there is another defining component of epidemics that needs emphasis, and this is their episodic quality. A true epidemic is an event, not a trend. It elicits immediate and widespread response. It is highly visible and, unlike some aspects of humankind's biological history, does not proceed with imperceptible effect until retrospectively "discovered" by historians and demographers.

Thus, as a social phenomenon, an epidemic has a dramaturgic form. Epidemics start at a moment in time, proceed on a stage limited in space and duration, following a plot line of increasing and revelatory tension, move to a crisis of individual and collective character, then drift toward closure. In another of its dramaturgic aspects, an epidemic takes on the quality of pageant – mobilizing communities to act out propitiatory rituals that incorporate and reaffirm fundamental social values and modes of understanding. It is their public character and dramatic intensity – along with unity of place and time – that make epidemics as well suited to the concerns of moralists as to the research of scholars seeking an understanding of the relationship among ideology, social structure, and the construction of particular selves.

For the social scientist, epidemics constitute an extraordinarily useful sampling device – at once found objects and natural experiments capable of illuminating fundamental patterns of social value and institutional practice. Epidemics constitute a transverse section through society, reflecting in that cross-sectional perspective a particular configuration of institutional forms and cultural assumptions. Just as a playwright chooses a theme and manages plot development, so a particular society constructs its characteristic response to an epidemic.

Contemporary America's experience with AIDS has already provided materials in abundance for analysis based on such assumptions. In many

some special causes not generally present in the affected locality." Epidemics have a unity of place as well as time – and even worldwide epidemics are experienced and responded to at the local level as a series of discrete incidents.

In addition to fellow authors in *Daedalus* 118/2 (1989), in which this essay first appeared, I should like to thank Drew Gilpin Faust, Chris Feudtner, Renee Fox, Elizabeth Long, Harry Marks, and Rosemary Stevens for helpful comments on an earlier draft.

ways we have reenacted traditional patterns of response to a perceived threat. But if we are to understand our contemporary reaction to a traditional stimulus, we must distinguish between the unique and the seemingly universal, between this epidemic at this time and this place and the way in which communities have responded to episodic outbreaks of fulminating infectious disease in the past. We have become accustomed in the last half-century to thinking of ourselves as no longer subject to the incursions of such ills; death from acute infectious disease has seemed – like famine – limited to the developing world. Life-threatening infectious ills had become, almost by definition, amenable to therapeutic or prophylactic intervention. AIDS has reminded us that this sense of assurance might have been premature, the attitudinal product of a particular historical moment. AIDS has shown itself both a very traditional and a very modern sort of epidemic, evoking novel patterns of response and at the same time eliciting – and thus reminding us of – some very old ones.

Epidemic incident as dramaturgic event

The narrative of Camus's *The Plague* begins on a strikingly circumstantial note.

> When leaving his surgery on the morning of April 16, Dr. Bernard Rieux felt something soft under his foot. It was a dead rat lying in the middle of the landing. On the spur of the moment he kicked it to one side and, without giving it a further thought, continued on his way downstairs.[2]

The dead rat symbolizes and embodies the way in which epidemics seemingly begin with minor events – little noticed at the time, yet often revealing in retrospect. The rat's plague-stricken body suggests as well the way in which man is bound in a web of biological relationships not easily comprehended or controlled. From a very different point of view, it also illustrates the way in which the implacable circumstantiality of an epidemic coexists with – in fact necessarily invokes – larger frameworks of meaning. The peculiar texture of any epidemic reflects continuing interaction among incident, perception, interpretation, and response.

No matter what Camus's philosophical intentions, he chose to embed that intellectual agenda in the morally and historically resonant structure of an ongoing epidemic. And his narrative in fact follows closely the

2 Albert Camus, *The Plague*, trans. Stuart Gilbert (New York: Alfred A. Knopf, 1952), p. 7.

archetypical pattern of historical plague epidemics.[3] Like the acts in a conventionally structured play, the events of a classic epidemic succeed each other in predictable narrative sequence. The first of these acts, which I term progressive revelation, turns on the initial appearance and gradual recognition of the intruding disease.[4]

Act I. Progressive revelation

Like the citizens of Camus's plague-stricken Oran, most communities are slow to accept and acknowledge an epidemic. To some extent this is a failure of imagination; perhaps even more, acknowledgment would threaten interests – specific economic and institutional interests and, more generally, the emotional assurance and complacency of ordinary men and women. Merchants always fear the effect of epidemics on trade; municipal authorities fear their effect on budgets, on public order, on accustomed ways of doing things.

Only when the presence of an epidemic becomes unavoidable is there public admission of its existence. Bodies must accumulate and the sick must suffer in increasing numbers before officials acknowledge what can no longer be ignored. The pattern has repeated itself in century after century. Whether in early modern Italy, seventeenth-century London, or nineteenth-century America, whether the unwelcome visitor was plague, yellow fever, or cholera, the first stage of an epidemic acts itself out in predictable fashion. Physicians find a few "suspicious" cases and then either suppress their own anxiety or report their suspicions to authorities, who are usually unenthusiastic about publicly acknowledging the presence of so dangerous an intruder.

The stakes have always been high, for to admit the presence of an epidemic disease was to risk social dissolution. Those who were able might be expected to flee contaminated neighborhoods, while men and women

3 There is an important parallel, moreover, between the biologically determined chronology of an epidemic and its social chronology. I refer, on the one hand, to the increasingly steep curve of case incidence, the exhaustion of susceptible individuals, and the gradual decline in mortality and morbidity, and on the other, to the social pattern of gradual recognition, negotiated response, and gradual decline.

4 One might contend that there is a prior first act, or prologue, at the biological level. In the case of plague, this would have been acted out in the linked relationship among rats, fleas, and bacteria. The existence of these events prior to human awareness of them communicates the chastening moral message that humankind exists in an intricate web of biological relationships. In periods with well-developed channels of communication such as the nineteenth century, another sort of prologue takes place "offstage," as particular communities follow the gradual spread of a pandemic and anticipate its arrival.

remaining in stricken communities could be expected to avoid the sick and the dying. And disruption of trade and communication was certain. Ever since the fourteenth century, the institution of quarantine has provided a feared yet politically compelling administrative option for communities during an epidemic. Even when – as has frequently been the case – physicians have questioned the contagiousness of a particular disease, most laypersons have simply assumed that epidemic disease was almost by definition transmissible from person to person and have shunned those who might be potential sources of infection. In the United States, this pattern was regularly acted out during epidemics of yellow fever and cholera in the late eighteenth and early nineteenth centuries. Yet physicians then were often skeptical about contagion.[5]

In any severe epidemic, inexorably accumulating deaths and sicknesses have brought ultimate, if unwilling, recognition. If we were in fact writing the story of an epidemic in conventional dramatic form, that recognition might be an appropriate conclusion to a first act increasingly ominous in mood.

Act II. Managing randomness

Accepting the existence of an epidemic implies – in some sense demands – the creation of a framework within which its dismaying arbitrariness can be managed. Collective agreement on that explanatory framework may be seen as the inevitable second stage in any epidemic. For most previous centuries that framework was moral and transcendent; the epidemic had to be understood primarily in terms of man's relationship to God; consolation was grounded in submission to the meaning implicit in that framework. In plague-stricken London in the seventeenth century, for example, and in New England villages afflicted with diphtheria in the eighteenth century, most individuals construed an ongoing epidemic in just such otherworldly terms.[6] The sudden outbreaks of mortal illness were epiphenomena, force-

5 On the vexing question of contagion in these ills, see E. H. Ackerknecht, "Anticontagionism between 1821 and 1867," *Bulletin of the History of Medicine* 22 (1948): 562–593; J. H. Powell, *Bring Out Your Dead, The Great Plague of Yellow Fever in Philadelphia in 1793* (Philadelphia: University of Pennsylvania Press, 1949); Margaret Pelling, *Cholera, Fever and English Medicine 1825–1865* (Oxford: Oxford University Press, 1978); Charles E. Rosenberg, "The Cause of Cholera: Aspects of Etiological Thought in Nineteenth-Century America," *Bulletin of the History of Medicine* 34 (1960): 331–354; William Coleman, *Yellow Fever in the North, The Methods of Early Epidemiology* (Madison: University of Wisconsin Press, 1987).

6 Ernest Caulfield, *A True History of the Terrible Epidemic Vulgarly Called the Throat Distemper Which Occurred in His Majesty's New England Colonies between the Years 1735 and 1740* (New Haven, Conn.: Yale Journal of Biology and Medicine, 1939).

ful reminders of more fundamental realities. Since at least the sixteenth century, however, such spiritual assumptions have always coexisted with – and gradually yielded in emphasis to – more secular and mechanistic styles of explanation.[7]

Men and women have often expressed moral convictions as they have sought to explain and rationalize epidemics, but such values have ordinarily been articulated in terms of those mundane biological processes that ordinarily result in sickness or health. Individual and community sins could invite or prolong an epidemic – but only through the body's physiological mechanisms, not through miracles or God's direct interposition. This eclectic mixture of moral assumption and mechanistic pathology provided a style of explanation that has been fundamental to the social management of epidemics in the West for the past three centuries.

When threatened with an epidemic, most people seek rational understanding of the phenomenon in terms that promise control, often by minimizing their own sense of vulnerability. Not surprisingly, such consolatory schemes have always centered on explaining the differential susceptibility of particular individuals – what was ordinarily termed predisposition in the eighteenth and nineteenth centuries, or what might be discussed today under the rubric of risk factors. How else explain why one person or class of persons succumbed while others did not? If susceptibility was not to be seen as a random accident or as the result of constitutional idiosyncrasy alone, it had to be understood in terms of physiological mechanisms suggesting the physical – and risk-enhancing – effects of behavior, style of life, and environment. Such hypothetical schemes constituted a framework within which moral and social assumptions could be at once expressed and legitimated.

Particularly important was belief in the connection of volition, responsibility, and susceptibility. During nineteenth-century cholera epidemics, for example, alcoholism, gluttony, sexual promiscuity, and filthy personal habits were widely accepted as predisposing to the disease. Such behavior was seen as increasing susceptibility (and the likelihood of a poor outcome) even in smallpox, where contagion had been accepted for centuries.[8] It was hardly conceivable that such behaviors could be anything other than debilitating physically as well as morally; that an inveterate whiskey drinker

7 See, for example, the present author's *The Cholera Years: The United States in 1832, 1849, and 1866* (Chicago: University of Chicago Press, 1962; 2d ed., 1987), which sought to trace that growing secularism.

8 After the adoption of inoculation for smallpox in the eighteenth-century West, few physicians or laypersons doubted that this endemic and often fatal disease was transmitted from person to person. Contagion was also assumed in venereal disease. In this instance, the connection between willed behavior and the incidence of disease was obvious.

might escape cholera by avoiding water could hardly have been accepted or understood. Bad was bad, culpable culpable, in every dimension of life. Even if one conceded that an epidemic might originate in some general environmental influence such as the atmosphere, selective susceptibility still demanded explanation. Everyone in a community breathed the same contaminated air; not everyone succumbed to the epidemic. Believers in contagion could entertain parallel views; infected individuals might encounter a good many people, only some of whom became ill.

Although such etiological views may in retrospect seem occasions for the expression of a crude and class-oriented moral hegemony, the eighteenth- and nineteenth-century debates about the cause of epidemics were in actuality rather more nuanced. Epidemics did tend, for example, to be associated with place of residence and occupation as well as behavior. And the environmentalist – and thus determinist and morally exculpating – implications were there to be drawn: people who worked overlong hours and lived in tenement apartments without adequate ventilation or access to water would necessarily be less able to fight off a disease.[9] The managing of response to epidemics could serve as a vehicle for social criticism as well as a rationale for social control. The same author might casually incorporate both elements; victims were predisposed by their environment to indulgence in such habits as drinking and sexual promiscuity yet could still be held responsible for the physical consequences of such indulgence. But this assumption hardly constituted a logical inconsistency for most individuals who thought about public health. Views in this field have always been murky and conflicting, and it is hardly surprising that such ambiguity should have been expressed during the course of past epidemics.

For the poor and inarticulate, other mechanisms might be invoked to impose a certain order on an epidemic. Whether it was Jews poisoning wells, doctors seeking anatomical subjects, or the landlords and employers who forced them to live in unventilated hovels, poor people often found their own structure of blame – and meaning – in which to place an epidemic. The layperson's almost universal association of epidemic with contagious disease played a parallel role. At least a presumed knowledge of the epidemic's mode of transmission could provide a measure of understanding and thus promise control.

9 The environmentalist emphasis fundamental to anticontagionist views of yellow fever and cholera provided a natural rationale for critical attitudes toward inattentive local government and exploitative landlords and employers.

Act III. Negotiating public response

Recognition implies collective action. One of the defining characteristics of an epidemic is in fact the pressure it generates for decisive and visible community response. The contrast with a disease such as tuberculosis is instructive; although far more significant demographically in the nineteenth century, tuberculosis did not elicit the sense of crisis that accompanied epidemics of yellow fever and cholera. Nor did it elicit moral and political pressure for immediate and decisive measures. In the stress of an epidemic, on the other hand, failure to take action constitutes action.[10] An epidemic might in this sense be likened to a trial, with policy choices constituting the possible verdicts.

This similarity suggests another dramaturgic aspect of an epidemic: measures to interdict an epidemic constitute rituals, collective rites integrating cognitive and emotional elements. In this sense the imposition of a quarantine, let us say, or the burning of tar to clear an infected atmosphere, the gathering of people in churches for days of fasting and prayer, all play a similar role – the visible acting out of community solidarity. At the same time, these collective rituals affirm belief – whether in religion, in rationalistic pathology, or in some combination of the two – while those beliefs promise a measure of control over an intractable reality. It is hardly surprising that communities should in moments of fear and incipient social disorganization seek the reassurance of familiar frames of explanation and logically consequent policies that provide both meaning and the promise of efficacy.

Since the eighteenth century, our rituals have been of a diverse sort. We have appealed in an eclectic way to a variety of sources of authority; days of prayer and fasting might be proclaimed along with the simultaneous enactment of procedures to cleanse and disinfect. For the historian and the social scientist, of course, the content of public rituals provides insight into social values at particular times, while conflicts over priorities among them provide insight into structures of authority and belief. Thus in the 1832 cholera epidemic, inconsistencies between lay and medical views of contagion shaped policy throughout Europe and North America; laypersons almost unanimously assumed the new disease to be contagious, while medical opinion was divided. In America, to cite another attitudinal variable, hostility toward immigrants and Roman Catholics played a sig-

10 The action need not be efficacious by late twentieth-century standards but does imply a choice among intellectually and institutionally available options. In 1832, for example, American assumptions of inherently limited federal power meant that a truly national quarantine against the threatened importation of cholera was not a real option, while municipal and state quarantines were.

nificant role in shaping responses to the epidemic, while in England class hostility and endemic suspicion of medical men and their motives played a larger role in defining policy options.[11] Nevertheless, as I have argued elsewhere, the picture of a consistent if occasionally awkward coexistence between religious and rationalistic or mechanistic styles of thought was characteristic of mid-nineteenth-century Anglo-American society and was sharply delineated in the response to epidemic cholera.

The adoption and administration of public health measures inevitably reflect cultural attitudes. The poor and socially marginal, for example, have historically been labeled as the disproportionately likely victims of epidemic illness, and they have been traditionally the objects of public health policy. Often, indeed, good empirical evidence has supported such assumptions; experience as well as ideology has enforced the association. Such views have manifested themselves in a variety of ways. Nineteenth-century quarantines and disinfection were, for example, imposed on the poor and their possessions, not on the wealthy – on the steerage, not the cabin-class, passenger – even after the germ theory was well established. Polio provides another pertinent example. In New York's 1916 epidemic, prophylactic measures were enforced in the dirty and densely populated immigrant slums, which in the past had bred typhoid and typhus, and not in the more prosperous, less crowded, and seemingly salubrious suburbs and middle-class areas that in fact produced so many of the cases.[12]

Act IV. Subsidence and retrospection

Epidemics ordinarily end with a whimper, not a bang. Susceptible individuals flee, die, or recover, and incidence of the disease gradually declines. It is a flat and ambiguous yet inevitable sequence for a last act.

But it also provides an implicit moral structure that can be imposed as an epilogue. How had the community and its members dealt with the epidemic's challenge? Not only during its reign but, most importantly, afterward? Historians and policymakers concerned with epidemics tend to

11 See, for example, R. J. Morris, *Cholera 1832: The Social Response to an Epidemic* (New York: Holmes & Meier, 1976) and Ruth Richardson, *Death, Dissection and the Destitute* (London: Routledge & Kegan Paul, 1987), pp. 223–228.

12 New York City Department of Health, *A Monograph on the Epidemic of Poliomyelitis (Infantile Paralysis) in New York City in 1916* (New York: New York City Department of Health, 1917); Naomi Rogers, "Screen the Baby, Swat the Fly: Polio in the Northeastern United States, 1916" (Ph.D. diss., University of Pennsylvania, 1986). In the 1920s and 1930s, on the other hand, a rather different social picture was created; polio-stricken children were romanticized.

look backward and ask what "lasting impact" particular incidents have had and what "lessons" have been learned. Have the dead died in vain? Has a heedless society reverted to its accustomed ways of doing things as soon as denial became once more a plausible option? This implicit moral agenda has often accompanied – and in some cases no doubt motivated – the more self-conscious and pragmatic concern of scholars with the evolution of public health policy, let us say, or the demographic transition.[13] Epidemics have always provided occasion for retrospective moral judgment.

AIDS in historical perspective: Remembering to remember

Our experience with AIDS during the past decade has reminded us of some very traditional truths. Most strikingly, we seem not to have conquered infectious disease. Death is not associated exclusively with a particular – and advanced – age. AIDS has reminded us as well that managing death has been traditionally a central responsibility of the physician (though by no means of the physician alone). We have not, it seems, freed ourselves from the constraints and indeterminacy of living in a web of biological relationships – not all of which we can control or predict. Viruses, like bacteria, have for countless millennia shared our planet and our bodies. In some ways AIDS is a very traditional phenomenon indeed.

Nor have we revolutionized the framework within which we respond as a community to epidemic disease. In a good many ways the AIDS experience has reenacted the traditional dramaturgic structure of earlier epidemics. One, of course, is the gradual and grudging acceptance of the epidemic as reality – and the resentment expressed toward bringers of bad tidings, the physicians and activists who demand a response to this new threat.[14] Equally obvious is the way in which coping with randomness provides an occasion for reaffirming the social values of the majority, and for blaming victims. Framing and blaming are inextricably mingled; the details vary, but

13 For a recent attempt to evaluate studies of cholera's social and institutional impact, see Richard J. Evans, "Epidemics and Revolutions: Cholera in Nineteenth-Century Europe," *Past & Present* 120 (1988): 123–146.

14 One might also note the desire to specify implausibly explicit beginnings – and clothe them with moral meaning. Compare the expository and narrative function of Camus's rat with the role played by "Gaetan Dugas," the antisocial and hypersexual airline steward of Randy Shilts's recent best-seller *And the Band Played On: Politics, People, and the AIDS Epidemic* (New York: St. Martin's Press, 1987). A rodent vector obviously provides the occasion for a rather differently nuanced moral agenda. One can hardly blame a rat.

the end is similar. The peculiar mixture of biological mechanism invested with moral meaning is equally traditional.

Most Americans prefer to deal with a threat that they do not see as "meant" for them. The search for a reassuring connection of volition, behavior, and pathological consequence is as much alive today as it was in Philadelphia in 1793 and New York in 1832. Transgression implies punishment; affliction implies prior transgression. The historic circumstances and epidemiological peculiarities of AIDS have made such connections unavoidable in the public mind – and in their seemingly empirical character have obscured the social and psychological functions implicit in the apparent confirmation of those connections.

AIDS has reminded us as well of the apparently inevitable juxtaposition of suffering and death with a search for meaning that has always characterized epidemics. Meanings vary, but the need to impose them does not. Most Americans find reassurance in their accustomed faith in the laboratory and its products; they see AIDS as a time-bound artifact of that unfortunate but essentially transitional period between the discovery of this new ill and the announcement of its cure. Others, of course, see its primary meaning in the realm of morality and traditional piety. Many of us, of course, impose multiple frames of meaning on these biological events. The majority of Americans retain their faith in the laboratory but at the same time believe that AIDS points variously to truths about government, the political process, and personal morality.[15] The linked sequence of biological event and its moral management seems unavoidable.

But there is another aspect of public health history that AIDS also recalls. For the sake of convenience diseases can be divided into two categories: diseases whose prevention demands individual behavioral change, like syphilis, AIDS, and lung cancer; and diseases that can be prevented by collective policy commitments, like typhoid fever, where the aggregated knowledge and decisions of bacteriologists, civil engineers, administrators, and elected officials have protected individuals whose habits need not have changed at all.[16] AIDS reminds us of the difficulty of inducing changes in behavior and thus of the intrinsic complexity of the

15 Even scientists can, and doubtless do, understand seemingly objective statements at several levels simultaneously. "When certain immunologists suggest that predisposition to AIDS may grow out of successive onslaughts on the immune system, it may or may not prove to be an accurate description of the natural world. But to many ordinary Americans (and perhaps a good many medical scientists as well) the meaning of such a hypothesis lies in another frame of reference. . . . the emphasis on repeated infections explains how an individual had 'predisposed' him- or herself. The meaning lies in behavior uncontrolled." And suitably punished. See Chapter 12.

16 The spread of AIDS through the blood-banking and processing system represents an instance of this category of intervention – one in which the transmission of a disease can be limited or halted without inducing behavioral change in prospective victims.

decisions facing local governments and public health authorities.[17]

Contemporary sensitivity to individual rights only underlines the centrality of this dilemma, as does our novel public willingness to openly discuss sexual behavior. Despite these characteristic aspects of today's social scene, parallels with earlier health campaigns are obvious. During the first decades of this century, for example, public health workers who urged the use of condoms and prophylactic kits to prevent syphilis met some of the same kind of opposition their successors in the 1980s faced when they advocated distributing sterile needles to intravenous drug users. In both cases ultimate values came into conflict. In both cases debate turned on distinctions between "deserving" and "innocent" victims: in the case of syphilis, the presumed innocents being the wives of erring husbands and their infants; in the case of AIDS, the recipients of contaminated blood or the offspring of infected mothers.[18]

These cases remind us as well of the need for ritual, even in a fragmented modern society. It is a need that is recognized in the AIDS memorial patchwork quilt that has recently circulated throughout the United States. It is recognized, I suggest, even in the whimsically self-conscious and public distribution of condoms on college campuses and in other public spaces. It is also recognized in the calling of conferences graced by individuals representing various agencies of social authority – scientists, administrators, even the odd historian. Each ritual implies collective responsibility and communal identity. Each invokes a differentially nuanced frame of meaning: in the case of the quilt, a commitment to egalitarian compassion; in the distribution of condoms, a commitment to the potential of applied science. If science and technology allow us to control and predict, it is a realm of value worth invoking collectively.

AIDS, a modern epidemic

In a number of obvious ways, however, AIDS does not fit easily into the traditional pattern I have outlined. One, for example, is the rapidity of

17 The layperson's persistent belief in contagion through casual contact despite the reassuring words of medical authority reenacts another traditional element in the history of epidemic disease.

18 Compare Allan M. Brandt, *No Magic Bullet: A Social History of Venereal Disease in the United States since 1880, with a New Chapter on AIDS* (New York: Oxford University Press, 1987). On "syphilis of the innocent," see L. Duncan Bulkley, *Syphilis in the Innocent... Clinically and Historically considered, with a Plan for the Legal Control of the Disease* (New York: Bailey & Fairchild, 1894). There are a good many other parallels between AIDS and syphilis, such as the proposed criminalization of the knowing transmission of the disease. Changed attitudes toward female sexuality have, however, altered presumptions of female "innocence" and responsibility.

its geographic spread and the parallel rapidity of its identification as a unified clinical entity.[19] It might well be described as modern, and even postmodern, in its relationship to scientific medicine and institutional structures. AIDS is postmodern in the self-conscious, reflexive, and bureaucratically structured detachment with which we regard it. Countless social scientists and journalists watch us watch ourselves; that reflexive process has become a characteristic aspect of America's experience with AIDS.

More generally the epidemic has existed at several levels simultaneously, mediated by the at first uninterested, then erratically attentive media. For most Americans – insofar as this epidemic can be construed as a national phenomenon – it is a media reality, both exaggerated and diminished as it is articulated in forms suitable for mass consumption. The great majority of Americans have been spectators, *in* but not *of* the epidemic.

Another significant difference between this and earlier epidemics grows out of the novel capacities of late twentieth-century medicine. Without its intellectual tools, the epidemic would not have been understood as an epidemic; we could not easily have determined that it is a clinical entity with protean manifestations. Providing substantive cognitive change during the course of an ongoing epidemic, the laboratory and its intellectual products have played a novel role in the narrative structure of our encounter with AIDS. Without the option of serological screening, for example, the intense and multifaceted debate over the imposition of such tests could hardly have been framed. Without knowledge of an infectious agent, the options for public policy would necessarily have been defined differently.

Another modern characteristic of America's experience with AIDS mirrors the institutional complexity of our society. That structured complexity has in scores of ways shaped responses to this crisis. (Response to epidemics has, of course, always been constrained by preexisting institutional forms and prevailing values, but twentieth-century institutional structures seem categorically different – if only in scale.)

Institutional complexity implies institutional interest – and thus conflict. Certainly we have seen this in the case of AIDS. Blood banks, hospitals, the National Institutes of Health and its several components, and state and municipal departments of public health have all played particular yet necessarily linked and interactive parts. Similarly, the not always consistent interests of local and national government, and of political parties, have also helped shape the nature and pace of our society's response to AIDS.

19 The contrast with the very gradual elucidation of such protean clinical entities as syphilis, tuberculosis, and rheumatic fever is instructive. Although AIDS may seem to have appeared suddenly in the public consciousness, as a biological phenomenon it has been extremely slow in developing, certainly in comparison with other virus diseases such as measles and influenza.

Even patients and their advocates have become public activists in a generation newly conscious of individual and group rights. Perhaps least surprising is the way in which our courts have provided a mechanism for resolving the difficult policy choices posed by AIDS. As we are aware, American courts have become the residuary legatee of a variety of intractable social problems. Recently, a judge in Florida, for example, decided that a child with AIDS should not be excluded from the classroom, but would have to remain within a glass-enclosed cubicle while in attendance.[20] As in many other instances in our society, conflicting attitudes and interests find their way into courts where judges and juries must of necessity make ad hoc decisions.

Finally, Americans have created a complex and not always consistent health care system, and AIDS has been refracted through the needs, assumptions, and procedures of that system. The epidemic might be seen as a socio-assay of that system. Just as costs have been problematic in the system, so have they in the case of AIDS. AIDS has, in particular, forcefully reminded us of the difficulty of providing adequate care for the chronically ill in a system oriented disproportionately toward acute intervention – and of the complex linkages between disease categories, hospital policies, and reimbursement formulas. In this sense, AIDS might be seen as an exacerbation of a chronic pathology.[21]

The gap between isolating an infectious agent in a laboratory in Paris or Bethesda and imposing a preventive program for altering the behavior of particular people in particular places is difficult and problematic. But this is no more than characteristic; clinical application does not follow inevitably from technical consensus. AIDS provides a powerful *de facto* argument for an integrated system-oriented approach to public health and health care; neither the laboratory's contributions nor the social contexts in which that knowledge is employed can be seen in isolation.[22]

AIDS as a postmodern epidemic

The role of the media and social scientists in our contemplating ourselves is obvious enough, but AIDS can be seen as postmodern in other ways as

20 *New York Times*, August 23, 1988, p. A14.

21 Of course, AIDS has also revealed the often less-than-adequate preparation of medical personnel for dealing with fatal illness. That AIDS is infectious as well as so frequently fatal provides an exacerbating element that differentiates it from the great majority of chronic life-threatening ills.

22 The epidemic has illustrated the geographical integration of society as well; AIDS has made clear North America's relationship with other countries and continents. Our traditional habit of largely ignoring African health conditions may be a luxury we can no longer afford.

well. Perhaps most strikingly, it is a postrelativist phenomenon.[23] After a generation of epistemological – and political – questioning of the legitimacy of many disease categories, AIDS has exposed the inadequacy of any one-dimensional approach to disease, either the social constructionist or the more conventional mechanistically oriented perspective. AIDS is socially constructed (as society perceives and frames the phenomenon, blames victims, and laboriously negotiates response) yet at the same time fits nicely into a one-dimensionally reductionist and biologically based model of disease. AIDS can hardly be dismissed as an exercise in victim blaming, even if it is an occasion for it. It is no mere text, words arranged to mirror and legitimate particular social relationships and perceptions. On the other hand, we can no longer remain unaware that biopathological phenomena are framed and filtered through such agreed-on texts.

Of course, a good many Americans never succumbed to the relativist mood of the late 1960s and 1970s, while others have always regarded the social claims of medicine with skepticism, even if they did not question the legitimacy of its disease categories. Others of us have tried to steer a more tentative course. We live in a fragmented society, and not even the most myopic cultural anthropologist would find it easy to impose a neatly coherent and unified cultural vision on the diverse group of individuals who inhabit the continental United States.

Yet AIDS has reminded us that we all share at least some common fears and ways of responding to social crisis. "They fancied themselves free," as Camus wrote of the citizens of the soon-to-be-plague-stricken Oran, "and no one will ever be free so long as there are pestilences." At the end of his narrative, Camus's physician-narrator reflects, even as he listens to the cries of joy that greet the opening of the city and the official conclusion of the epidemic, "that perhaps the day would come when, for the bane and the enlightening of men, it would rouse up its rats again and send them forth to die in a happy city."[24] Plague reminds us that human beings will not so easily escape the immanence of evil and the anxiety of indeterminacy. Mortality is built into our bodies, into our modes of behavior, and into our place in the planet's ecology. Like other epidemics, AIDS has served well to remind us, finally, of these ultimate realities.

23 See Chapter 12.
24 Camus, *The Plague*, pp. 35, 278.

14

Explaining epidemics

❧ This essay is intended to serve as a companion piece to Chapter 13, which sought to describe an archetypical pattern of response constituting the historical phenomenon we have come to call an epidemic. That chapter generalized about events; this generalizes about modes of explanation. It suggests that there are two fundamental styles of explanation that have been conceptually "available" since classical antiquity – materials with which to construct the reassurances demanded by an epidemic's otherwise apparently random incursions. I have chosen to label these alternative styles *contamination* and *configuration*.

There is always a danger in creating such general categories; lumpers versus splitters, hedgehogs versus foxes, vitalists versus mechanists – few individuals fall neatly into one ideal type or the other. Yet such categories remain valuable as analytical tools for the historian; and I argue in the following pages for the analytic relevance of the configuration – contamination alternatives. Although rarely articulated in pure form, these styles of explanation have served in a variety of mixtures and dilutions to provide hypothetical etiologies for successive generations of physicians and laypersons. Modern-day descendants of these styles of explanation remain viable – as we have seen in our past decade's experience with AIDS. ❧

An epidemic is almost by definition frightening; numbers of unfortunates are seized with grave illness, one after another exhibiting similarly alarming and alarmingly similar symptoms. Since classical antiquity – and in all likelihood before that – people have construed epidemics as constituting a natural category, a grouping of phenomena resting on the perceived differences between one set of phenomena and its binary opposite. Epidemic illness is not, of course, the only such aspect of humankind's experience with sickness. Acute versus chronic, traumatic as opposed to nontraumatic, epidemic as opposed to sporadic, are differentiations made almost instinctively; it is not surprising that we have Hippocratic treatises on acute diseases, on internal diseases, on epidemics, on wounds, and on fractures. Each represented a distinct kind of phenomenon, accessible in that distinctiveness to laypeople and physicians when these texts were composed more than 2,000 ago.

Perception implies explanation. Certainly this is the case during

epidemics, when fear and anxiety create an imperative need for understanding and thus reassurance. Such explanatory efforts necessarily reflect a particular generation's cultural and intellectual assumptions, its repertoire of available intellectual tools. Each generation in its particular cultural setting has found somewhat different materials at hand with which to fashion an understanding of epidemic disease. Climate, sin, disordered air or water, bacteria – in the recent past, retroviruses – have all played roles in those generation-specific efforts through which people have sought to explain, and in explaining control, outbreaks of infectious disease. This is not to suggest a democracy among hypothetical etiologies; some explanations approximate the natural world a great deal better than others (and thus provide different real-world choices).[1] But the continuity that I seek to emphasize relates to function, not specific content; and that function is the unavoidable act of explanation itself.

A key building block in such efforts to provide an understanding of epidemics has been, logically and historically, the fundamental distinction between individual and collective illness. "When a large number of people all catch the same disease at the same time," the Hippocratic treatise on the *Nature of Man* observed, "the cause must be ascribed to something common to all and which they all use.... However, when many different diseases appear at the same time, it is plain that the regimen is responsible in individual cases."[2] Diversity of illness reflected the inevitable diversity of human lives; uniformity of illness implied some – time- and place-bound – uniformity of cause.

Since most pre-nineteenth-century Western models of disease causation were individual, based that is on the unique interaction of constitution, lifestyle, and life course, they were of necessity different from those rationalistic speculations that served to explain epidemics. The origin of sporadic, endemic, and chronic ills were seen in what might be referred to as longitudinal terms, corresponding to the individual life course.[3] On the

1 In our postrelativist generation, it needs to be emphasized that similarity of social function does not mandate equality in ontological status – or dictate policy choice. "Knowledge may be provisional, but it is not arbitrary.... some ideas do approximate nature better than others – and thus provide different options for social policy. We must not underestimate the role of systematic cognitive activity in the making of nineteenth and twentieth century society simply because we disapprove of some of its contemporary consequences. Knowledge does not dictate the social forms of its use but can create the possibility of such social use." Charles E. Rosenberg, "Medicine and Community in Victorian Britain," *Journal of Interdisciplinary History* 11 (1981): 684.

2 Hippocrates, *Nature of Man*, ch. 9, in G. E. R. Lloyd, ed., *Hippocratic Writings* (London: Penguin, 1978), p. 266.

3 For relevant background from this point of view, see Chapters 1 and 4 of this volume, on traditional therapeutics and on mind and body in clinical medicine.

other hand, explanations of epidemics had necessarily to be collective and transverse (sited in a particular time and place). An ailment was the outcome of an individual's life course, the cumulative consequence of patterned interactions with his or her environment. Epidemic ills, on the contrary, had to be seen in terms of a moment in time – in cross section – and as the result of causes that would impinge on a good many individuals at once.

Before physicians had any knowledge of specific infectious agents, medical explanations of epidemic disease tended to be holistic and inclusive: an epidemic was the consequence of a unique configuration of circumstances, a disturbance in a "normal" – health-maintaining and health-constituting – arrangement of climate, environment, and communal life.[4] A vision of health as a balanced, integrated, and value-imparting relationship between humankind and its environment constituted one major building block in traditional explanations of epidemic disease. Let me refer to this as the *configuration* view.

I would like to use the term *contamination* to refer to a second and necessarily contrasting emphasis. It is a style of explanation logically alternative to configuration, although historically the two have often been found in relatively peaceful, if not always logical, coexistence.

Contamination often reduced itself to the idea of person-to-person contagion, of the transmission of some morbid material from one individual to another; and for many laypeople throughout history the terms *epidemic* and *contagious* were synonymous. But contamination could also imply disorder in a more general sense: any event or agent that might subvert a health-maintaining configuration. There is a stark contrast between these alternative styles of thought. The configuration theme is holistic and emphasizes system, interconnection, and balance, while the contamination theme foregrounds a particular disordering element. The configurational style of explanation is interactive, contextual, and often environmental; the emphasis on contamination reductionist and monocausal. Much of epidemiological thought between classical antiquity and the present can be usefully understood as a series of shifting rearrangements of these thematic building blocks. In the great majority of instances, both styles of explanation were employed in combination, with one element or another figuring more prominently.

4 Smallpox constituted something of an exception. Although eighteenth-century physicians did not understand the nature of the "virus" that was passed from individual to individual during inoculation (introduced in Europe and the British Isles in the 1720s), it was clear that the epidemics of this great killer were caused by a specific, reproducible "matter."

There was and is a third element as well, necessary to both or either style of explanation. This is *predisposition*. Healers and laypeople have always needed to explain the immunity of some individuals from the epidemic "influence" surrounding them. Why would so many succumb, yet others remain healthy? Predisposition flexibly bridged the logical and emotional gap between individual and collective models of disease phenomena. Differential susceptibility explained an epidemic's otherwise frighteningly arbitrary selection of victims.

In most historical instances, of course, all three elements – configuration, contamination, and predisposition – were brought to bear in creating culturally appropriate explanatory frameworks. Fourteenth-century theories of bubonic plague, for example, illustrated the persistent functional utility of such conceptions. Astrological and climatological-geographical factors are, of course, quintessentially configurational, and were used widely by contemporaries in explaining the Black Death. At the same time, fear and hatred directed toward contagion bearers, or hypothetical Jewish well poisoners, illustrate the power and persistence of contamination models. Within either formulation, of course, predisposition helped explain the plague's often arbitrary incursions.

Let me cite another example from a more recent historical period. Late eighteenth- and early nineteenth-century debates over contagionist as opposed to noncontagionist models of disease causation can be understood within the same bipolar framework. Although by no means all physicians were committed to an unqualified version of either position, many prominent individuals did express "strong" versions in the course of a half century's heated and polarizing debates over yellow fever and (to a lesser extent) cholera, the most visible and frightening of the epidemics that visited Europe and the Americas in the century before the germ theory. In the terminology I have suggested, advocates of contagionism expressed their generation's version of the contamination tradition, while anticontagionists emphasized the configuration theme.

Yellow fever elicited a particularly sharp and forceful assortment of such contrasting views. The debate turned on the disease's portability. Physicians who pointed to local origins for yellow fever tended to see the disease as arising out of pathogenic environmental circumstances, ordinarily poor sanitation and a consequent accumulation of rotting filth that in its decomposition produced a disease-inducing atmospheric miasma. That miasma might, of course, be viewed as a contaminant, but it was those disordered environmental circumstances that engendered it. A particularly dramatic local debate took place during Philadelphia's invasion by yellow fever in 1793, when contagionists and environmentalists articulated re-

vealingly polarized versions of epidemiological positions normally presented with more caution and less intensity.[5]

Physicians advocating contagionism emphasized the specificity of the ailment's symptoms and the seeming ability of a particular person or perhaps inanimate object to "inoculate" a larger environment. In support of this position they pointed to the "transportability" of yellow fever, which seemed always to flare up after the arrival of ships from fever-infested ports. From either the configuration or the contamination perspective, predisposition explained the selective deaths of those constitutionally at risk: the poor, the "immoral," and the frail. The seeming transportability of yellow fever remained the strongest empirical basis for contagionists. Yet it was easy enough for those emphasizing local circumstances to counter that argument – even conceding the necessity of some imported "influence" to trigger the outbreak of yellow fever. The key issue lay elsewhere. Whatever the mysterious influence that might have arrived on a yellow fever-infested ship, they emphasized, it would not infect communities that maintained civic cleanliness. Without appropriately debilitating local conditions, the "morbid material" would remain harmless.[6] Similarly, in the debates over cholera, many physicians avoided ruthlessly "simple" versions of either contagionist or anticontagionist positions, but chose to construct their etiologies selectively, emphasizing both the need for a specific inoculant and an environment in which it could reproduce itself.[7]

5 J. H. Powell's *Bring Out Your Dead. The Great Plague of Yellow Fever in Philadelphia in 1793* (Philadelphia: University of Pennsylvania Press, 1949) still remains the most readable account of this epidemic and the contemporary controversies surrounding its interpretation.

6 By mid-nineteenth century there was a clear epidemiological consensus. Yellow fever seemed undeniably transportable, even if person-to-person communication was difficult to prove. In retrospect, of course, such conclusions seem quite understandable, given our knowledge of the role played by mosquitoes in its transmission. See, for example, William Coleman, *Yellow Fever in the North. The Methods of Early Epidemiology* (Madison: University of Wisconsin Press, 1987).

7 Nineteenth-century physicians energetically debated the possibly contagious nature of cholera. In the more recent past, historians of medicine have sought to understand and interpret that debate; they have not always been consistent in their views. I have described the controversy in greater detail in *The Cholera Years. The United States in 1832, 1849, and 1866* (Chicago: University of Chicago Press, 1962; 2d ed., 1987). The locus classicus for the modern debate about the social determinants of the debate over contagionism is Erwin H. Ackerknecht, "Anticontagionism between 1821 and 1867," *Bulletin of the History of Medicine* 22 (1948), 562–593. But see these more recent criticisms: Roger Cooter, "Anticontagionism and History's Medical Record," in Peter Wright and Andrew Treacher, eds., *The Problem of Medical Knowledge. Examining the Social Construction of Medicine* (Edinburgh: Edinburgh University Press, 1982), pp. 87–108; and Margaret Pelling, *Cholera, Fever and English Medicine 1825–1865* (London: Oxford University Press, 1978). Pelling may underestimate the intensity and polarization of the debate as an international phenomenon. The debate was, I feel,

Debates over typhus fever reflected a somewhat different, less polarized, explanatory consensus. Typhus had always been associated with war and famine, with crowding, with dirt and poor ventilation (as indicated by its variety of common appellations such as camp fever, jail fever, and ship fever). A mid-nineteenth-century etiological consensus turned on the acceptance of what contemporaries termed "contingent contagion," that is, the transferability of a disease from the sick to the well, but only in certain circumscribed situations. Contingent contagion represents a conceptual building style superficially different from contagionism and anticontagionism, but one that nevertheless incorporated the same building materials. An unnatural configuration of circumstances contaminated the confined environment through metabolic changes induced in people exposed to such pathogenic conditions. The aggregate of local circumstances – inadequate ventilation and light, putrefying organic material, crowding, malnutrition – interacted to create a particularly malignant microenvironment, one that detracted from the vitality of individuals and concentrated the increasingly disordered organic exudates from both sick and well. Thus both contamination and configuration were woven together so as to fashion a plausible explanation for the occurrence of typhus epidemics in military camp, asylum, or hospital.[8]

It is fair to say that the emphasis in epidemiological thought from the eighteenth through the mid-nineteenth century was on configurational – that is, environmental, additive, and aggregate – models of health and disease. A growing awareness of the morbidity and mortality associated with industry and urban population densities constituted a compelling *de facto* argument for the holistic, configurational point of view.[9] The widely observed contrast with demonstrably healthier conditions in rural areas seemed only to document the instinctive truth of this environmental perspective.

A particularly forceful version of such thinking is illustrated dramatically and prominently by the great German pathologist Rudolf Virchow's study of an Upper Silesian typhus epidemic in 1848. Assigned to report on the epidemic, Virchow, a political radical, framed his explanation of the outbreak and suggestions for preventing recurrences in terms of an eclectic, critical, and holistic vision of society. Biting the hand imprudent enough

more polarized earlier in the nineteenth century; it was more confrontational in regard to yellow fever than to cholera, and more marked in cholera than in typhus, about which, as Pelling emphasizes, a rough and ready consensus existed.

8 For a somewhat more extended discussion, see Chapter 5 of this volume for its account of Florence Nightingale and contagion.

9 For a discussion of the eighteenth-century growth in such epidemiological environmentalism, see James C. Riley, *The Eighteenth-Century Campaign to Avoid Disease* (New York: St. Martin's Press, 1987), esp. chs. 3 and 4, pp. 54–88.

to put him to work on this survey, Virchow blamed the Prussian government itself for tolerating oppressive conditions that bred disease among the largely Polish workers beset by fever. He suggested not specific medical or therapeutic interventions, but a greater degree of political participation, improved education, and measures to raise income levels. His recommendations included separation of church and state, acceptance of Polish as an official language, road building, agricultural reform, and a shifting of the tax burden from the poor. "Medicine is a social science," Virchow contended in a much-quoted aphorism, "and politics nothing else but medicine on a large scale."[10] Health and disease could, that is, be thought of as indicators – to employ an anachronistic but useful term – reflecting the moral and material character of the society in which they occurred. The incidence of preventable disease served as an index of the way in which a society treated its least fortunate members. At mid-century, when Virchow conducted his investigation, such sentiments were widespread – if rarely expressed with his thoroughgoing ideological zeal. But this style of sociological epidemiology was soon to be confronted by the emergence of a new body of data and a new way of thinking about infectious disease.

The germ theory helped swing medical opinion toward contamination in its modern, laboratory-oriented guise, but it did not banish the configurational impulse. A continuing concern for what is often called social medicine and an interest in environmental determinants of health and disease remained alive and in continued dialogue with the new bacteriological etiology. It was hard for many physicians to give up the well-understood, almost unquestioned, and seemingly causal association between inimical states of the environment and increased incidence of infectious – and especially epidemic – disease. One of the key conceptual dilemmas for the world of medicine in the last quarter of the nineteenth century (the generation following the articulation and dissemination of the

10 For Virchow's key statements in this period, see his *Collected Essays on Public Health and Epidemiology*, Leland Rather, ed., 2 vols. ([Canton, Mass.]: Science History Publications, c. 1985), esp. I: 205–319, which reproduces the text of his report; his recommendations appear on pp. 307–319. The definition of medicine as a "social science" appears in an editorial he wrote in the fall of 1848. *Collected Essays*, I:33. For background, see Erwin H. Ackerknecht, *Rudolf Virchow. Doctor Statesman Anthropologist* (Madison: University of Wisconsin Press, 1953), pp. 15, 46. Cf. Ackerknecht, *Beiträge zur Geschichte der Medizinalreform von 1848...* (Leipzig: Johann Ambrosius Barth, 1932). Virchow's sentiments were by no means unique in tone and implication, even if atypically forceful, radical, and eloquently argued. They were clearly part of a tradition that associated exploitative – and necessarily unnatural – conditions with sickness and premature death. "The People's Misery: Mother of Diseases," was, for example, the title of an often-cited 1790 address by Johann Peter Frank, Virchow's eminent predecessor in the study of social medicine. Cf. Henry E. Sigerist, "The People's Misery: Mother of Diseases. An Address, delivered in 1790 by Johann Peter Frank," *Bulletin of the History of Medicine* 9 (1941), 81–100.

germ theory) lay in maintaining a balance between the new and old, between the role of a specific microorganism in causing a particular disease and the sick person's total environment, both internal and external. It was this particular generation's version of the much older tension between contamination and configuration.

The subsequently much-ridiculed theory of cholera's etiology advocated in this period by Max von Pettenkofer nicely illustrates this point. A founder of modern public health, Pettenkofer occupied a pioneering chair of hygiene in Munich; but he is more famous (or perhaps notorious) for one of his less successful accomplishments: his *Grundwasser* or groundwater theory of cholera. Even after Koch's discovery of the cholera organism in 1883, Pettenkofer contended that the vibrio was a necessary but not sufficient cause of the disease. It had to "mature" in subsoil water for an appropriate length of time before becoming virulent. As proof, Pettenkofer referred to records of local groundwater levels and the geological and climatological variables that altered these levels. This clearly seems an attempt to maintain the balance between contamination and configuration that was an accustomed part of his generation's epidemiological preconceptions. Pettenkofer's formulation conceded the new etiological emphasis on a specific cause, but retained an important and interactive role for the environment. Equally important, it was an eclectic and inclusive view of that environment; groundwater conditions were the outcome of a complex and interrelated set of circumstances.[11] His theory illustrates a tenacious desire to retain an older, holistic, environmentally oriented framework while incorporating a role for the specific microorganismic mechanism. He sought, that is, the intellectual benefits of a newly fashionable reductionism while avoiding its more radical implications.

Although Pettenkofer's academic prominence and intellectual ingenuity were obviously atypical, his desire to incorporate and integrate these par-

11 See, for example, Pettenkofer, *Zum gegenwartigen Stand der Cholerafrage* (Munich and Leipzig: R. Oldenbourg, 1887); Edgar Erskine Hume, *Max von Pettenkofer. His Theory of the Etiology of Cholera, Typhoid Fever and other Intestinal Diseases. A Review of the Arguments and Evidence* (New York: Paul B. Hoeber, Inc., 1927); Alfred S. Evans, "Pettenkofer Revisited. The Life and Contributions of Max von Pettenkofer (1818–1901)," *Yale Journal of Biology and Medicine* 46 (1973), 161–176; Alfred S. Evans, "Two Errors in Enteric Epidemiology: The Stories of Austin Flint and Max von Pettenkofer," *Reviews of Infectious Diseases* 7 (1985), 434–440; Richard J. Evans, *Death in Hamburg. Society and Politics in the Cholera Years. 1830–1910* (Oxford: Clarendon Press, 1987).

Pettenkofer's somewhat quaint niche in the history of medicine is also associated with his attempt to prove the truth of his *Grundwasser* theory by personal experiment. The Munich professor drank a beaker of fresh cholera excretions in 1892 in order to prove that such freshly excreted organisms were incapable of transmitting the disease. He survived.

ticular analytical styles was entirely typical. His medical contemporaries routinely backed away from unflinching reductionism; despite the germ theory's powerful influence, physicians sought instinctively to place these new actors in a traditional narrative, one that saw epidemic disease as the outcome of a variety of interactive factors.

Debate over tuberculosis was shifted, for example, but not revolutionized by Koch's discovery of the causative organism in 1882. Perhaps it is inappropriate to discuss tuberculosis as an epidemic, since we now see it as a chronic, endemic ailment. To physicians and public health authorities at the end of the nineteenth century, however, it was in fact an epidemic, but a uniquely omnipresent one. The very universality of the tuberculosis organism seemed in fact to argue for its dependence upon interaction with a variety of predisposing factors; more than random contact with Koch's bacillus was needed to explain the development of a full-blown case of the disease. Tuberculosis seemed so context- and constitution-dependent that clinical experience had long placed this ailment firmly at the configuration end of the explanatory spectrum. To anyone concerned with tuberculosis – especially in urban and industrial settings – this clinical truth was too obvious to be shaken by Koch's discovery of what seemed a perhaps necessary, but not sufficient, cause.

It is not surprising that tuberculosis – like infant mortality – has served as a crucial source of data in twentieth-century policy debate. Both have been used as indicators of social health or malaise, with both serving as evidence for inclusive, holistic, and multicausal approaches to public health. Since the late nineteenth century, when observers first noted a decline in tuberculosis mortality, up through the work of more recent critics such as René Dubos and Thomas McKeown, that decline – in the absence of effective therapeutics – has constituted evidence for modern versions of configurationism in a twentieth century increasingly dominated by a narrowly biopathological understanding of infectious disease.[12]

A relationship to public policy is clear as well; the configurationist view has tended to be most strongly represented in public health and in specialties such as pediatrics and occupational medicine where contextualized views of clinical realities continued to be important. But it was not only in the area of social medicine and public health that this anti-

12 See, for example, Arthur Newsholme, *The Prevention of Tuberculosis* (New York: E. P. Dutton, 1908); René and Jean Dubos, *The White Plague, Tuberculosis, Man, and Society* (New Brunswick, N. J.: Rutgers University Press, 1987; orig. published in 1952); Thomas McKeown, *The Role of Medicine. Dream, Mirage or Nemesis?* ([Princeton, N. J.]: Princeton University Press, 1979); F. B. Smith, *The Retreat of Tuberculosis. 1850–1950* (London: Croom Helm, 1988); Linda Bryder, *Below the Magic Mountain. A Social History of Tuberculosis in Twentieth-Century Britain* (Oxford: Clarendon Press, 1988).

reductionist style retained a twentieth-century vitality. Self-consciously oppositional movements such as constitutional medicine, psychosomatic medicine, and the related emphasis on stress can all be seen as constituting efforts to restore elements of the configurationist perspective.[13] Connected with related interests in the roles of class, gender, and race in the shaping of disease incidence, these antireductionist positions have constituted a vigorous minority voice throughout a twentieth century dominated by the inexorably increasing status of mechanism-oriented perspectives. These general positions, one reductionist, the other holistic and inclusive, have – in other words – asserted and reasserted themselves in differing guises in different times and places.

The microhistory of AIDS

And that process is very much alive. Our still-brief experience with AIDS has already demonstrated the continued relevance of these explanatory styles. Much of the short history of our encounter with the disease can be seen as a negotiation between contamination and configuration, between the laboratory and the clinic, the virologist and the public health worker. And as we are well aware, predisposition has remained central throughout these debates.

On the American scene, the role of predisposition was the first aspect of AIDS to impinge on the public consciousness in the early 1980s; it occupied a similarly prominent place in the epidemiologist's fieldwork. For the first time a large proportion of America's population became familiar with the epidemiologist's technical use of the term *risk*. But as we are well aware, the line between risk and blame is a thin one. It is an obvious and continuing – but highly functional – ambiguity. *Risk* seems a concept originating in the world of value-free science; but that technical identity, and the status connected with it, make the concept's implicit moral content only more plausible. It does not explicitly blame victims, but points to correlations between behavior and subsequent pathology – between sin and punishment.

The history of AIDS has also illustrated another enlightening sequence. This is a shift in the course of the 1980s from the comparative prominence accorded the epidemiologist's global and multicausal – configurational – strategies to the laboratory worker's necessarily technical and reductionist –

13 See, for example, the revealingly titled *Beyond the Germ Theory. The Roles of Deprivation and Stress in Health and Disease* (New York: Health Education Council, 1954). Edited by Iago Galdston, it was based on a conference sponsored by the New York Academy of Medicine.

contaminationist – orientation. Without the knowledge of a specific causal agent and in a period of confusion and even panic, epidemiologists played a prominent role. In the first months after AIDS was identified as a discrete clinical phenomenon, epidemiologists explored a variety of ecological and environmental variables. But the epidemiologist's conclusions are often treated as contingent and provisional, descriptive not definitive – the most adequate explanation society enjoys until the laboratory's higher truth provides a more satisfying closure.

And in the case of AIDS this was to take place with remarkable speed. The discovery of the HIV retrovirus quickly changed the balance of emphasis within society's understanding of AIDS.[14] The contaminationist style of thought with its implicitly reductionist and narrowly technical vision grew more prominent, and the social context in which the disease proliferated – or failed to – began to seem less immediately relevant (and in any case far less amenable to solution).

Our experience with AIDS has illuminated a reality that was in danger of being obscured during the first three-quarters of the twentieth century – when inclusive and holistic models of disease causation remained at the periphery of medical status and concern. Put simply, a monolithic version of neither position remains intellectually adequate. Without the laboratory scientist, we would have no understanding of the mechanism underlying the protean manifestations of AIDS and thus no blueprint for rationalizing preventive measures. On the other hand, a knowledge of the mechanism – as we have seen – does not constitute a policy, or even a guarantee of effective modes of prevention. AIDS reflects in its etiology as well as in its clinical course an environment-sensitive, interactive quality that reveals the need for understanding the human, organizational, and cultural contexts in which AIDS has either thrived or failed to gain a foothold.

The more we have come to understand the disease as both a biological and social phenomenon, the more we understand that our interaction with it reflects a complex and multidimensional reality – and an international and multicultural one at that. First, the history of AIDS demonstrates the arbitrariness of our habitual distinction between culture and biology. When a believer travels to Mecca, for example, that act of volition reflects a particular cultural history. Yet at the same time that believer is a biological entity whose decision may contribute to the pathological history of cholera and typhoid. We need, that is, an ethnography as well as an ecology to explain the network of interactions underlying the appearance, diminution,

14 For a valuable analysis from a parallel point of view, see Gerald M. Oppenheimer, "In the Eye of the Storm: The Epidemiological Construction of AIDS," in Elizabeth Fee and Daniel M. Fox, eds., *AIDS. The Burdens of History* (Berkeley: University of California Press, 1988), pp. 267–300.

or recrudescence of particular infectious ills. To give a concrete example, it is difficult to deal with AIDS in places like the South Bronx without an understanding of the behavior of drug users and the social-structural realities that make such communities what they are. Without history and political economy, in other words, we can have neither a meaningful ethnology nor a meaningful ecology. And certainly we cannot have an effective epidemiology.

In thinking about infectious disease, contemporary epidemiologists make a conventional distinction between agent, host, and environment. And in some sense, that distinction parallels the categories of contamination, predisposition, and configuration. But it cannot, of course, be more than analogy; late twentieth-century ways of thinking would hardly have been available to the writers of the Hippocratic treatises. History has changed the terms of each style of analysis and invested each with a particular, historically differentiated content. *Environment* means something quite different from what it did in the eras of Galen, Thomas Sydenham, or even Louis Pasteur. And so does disease.

But there remain, I think, two important morals to be drawn from the parallels between traditional and contemporary versions of these alternative emphases. One is the way in which the configuration and contamination models – even in their late twentieth-century guises – mirror and imply policy choice. They are not only ways of thinking about a specific disease or diseases, but ways of thinking about the world and sets of directions for acting in it. The other is the way in which these perspectives represent emphases, not answers – elements in a complex discourse about humankind, fate, and social organization that is never answered, but only reconfigured by each new generation.