

RELIGIOUS RESPONSES TO EPIDEMIC DISEASE: A ROUNDTABLE*

THANKS TO THE SEMINAL WORK OF WILLIAM MCNEILL and Alfred Crosby, historians pay much more attention to the impact disease has had in history. Historians, however, have been slower to consider the nature and variety of religious responses to epidemic disease. To help readers think about this relatively neglected topic, we invited Andrew Cunningham to comment in general terms about reli-

gion and widespread disease in the West. We also asked David Arnold and Howard Phillips to explore two specific cases outside of Europe—one from India, the other from South Africa. Then we commissioned Duane Osbeim to use these essays to comment on the overall topic of religion and epidemic disease in history.

EPIDEMICS, PANDEMICS, AND THE DOOMSDAY SCENARIO†

Andrew Cunningham

Sudden and fierce outbreaks of disease have always proved traumatic to societies, and one of the major responses has customarily been apocalyptic fear and the search for scapegoats or divine messages. This was true of the Black Death of 1348 as it was still true of AIDS in the late 20th century.

For centuries in Christian society people have made direct connections between the outbreak of epidemic disease and Doomsday. Not only were epidemics and pandemics thought to herald the end of the world, in the sense that they were punishments for the sinful, but pestilences had been among the signs of the Second Coming that Christ himself had warned his followers to watch for (Matthew 24.3-13). It is not only the pain, suffering, and many sudden deaths that make people so afraid in an epidemic, but also the accompanying disruption of civil society, especially as the food supply often breaks down, the living cannot cope with burying the dead, and those who can flee fast and far.

An epidemic is a disease that literally “falls on the mob” (*demos* in Greek). The term has been current since antiquity. An epidemic is any disease that kills many people, kills them quickly, kills them in an unpleasant way, and which usually is arbitrary in its manner of action, not being choosy as to whether the victims are old or young, fit or unfit. The apparently arbitrary manner in which epidemics kill is one of their most important features, because it renders most precautions irrelevant.

A pandemic, by contrast, is a term coined from the Greek in the 19th century to characterize an epidemic that is everywhere (*pan* in Greek), or at least all over the known world at a given time. It is



"Vigil of the dead." A 14th-century miniature from Paul Durrieu, *Les Heures à l'usage d'Angers de la collection Martin Le Roy* (Pour les Membres de la Société, 1912).

an epidemic writ large. The term is meant to convey the scale and spread of the outbreak, not its greater severity or mortality. Journalistic usage of the term is much looser, however, and primarily, I think, because of the resonance of “pandemic” with “panic,” English-speaking journalists tend today to use the term without discrimination for any major outbreak of disease. But strictly speaking the great pandemics of the past of which we have any record are only these:

1. 541 A.D.: the so-called “Plague of Justinian.”

2. 1348-49: plague, known since the 19th century as the Black Death.

3. 1490s: the sexually-transmitted disease known in the past as “the pox” or “the French disease.” It is today usually assumed to have been syphilis.

4. 1490s: typhus, the deadly disease of those crowded together in unsanitary conditions, such as besieging armies or besieged towns, prisons, etc.

5. 1831-32: cholera.

6. 1890s: plague, from China to Europe. Possibly the same disease as 1348-49, but more probably not.

7. 1918: “Spanish flu.” Killed 20 million people in seventeen weeks.

8. 1980s to the present: AIDS.

But while the list of pandemics is quite short, the list of epidemics (if we could make it with any degree of accuracy) would be very, very long. In early modern Europe, epidemics—meaning here sudden outbreaks of diseases with a 10% or higher mortality—were very frequent. It has been calculated that in the 150 years from 1500 to 1650 there were seventeen occasions on which a particular epidemic spread widely across the whole continent, an average of once every nine years. In the commercial centers epidemics were particularly frequent: Amsterdam, for instance, experienced some twenty-four outbreaks during that period. Dense populations favor the spread of epidemics, and trading centers naturally encourage travel both in and out. Towns were death traps in the early modern period, and the richer and more active the town, the more subject it was to frequent epidemics. The countryside, by contrast, was in general a safer place to live, at least as far as disease was concerned. So not only

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were epidemics experienced frequently, but their effects were very visible, especially to town dwellers.

In the context of the kind of medicine taught in universities and practiced by physicians on the well-to-do, epidemics were anomalous. Galenic medicine was developed for the treatment of individuals, not crowds of sick people. The quality of the air that a person breathed and the management of the “non-naturals” as they were called (food and drink, sleep and wake, evacuations) were critical to the maintenance and restoration of health. The precise constitution of the individual patient—age, way of life, diet, and so on—were what made him or her vulnerable to illness. And illness or disease was not an attack on the individual by some disease-causing entity from outside, but rather resulted from an imbalance of the patient’s humors. Customarily, therefore, the physician devised a regimen or a program of treatment that would maintain or restore the particular balance of the humors in a particular individual. There was no room in this theory for understanding or treating many people simultaneously suffering from the same illness. Indeed, even where the physician noticed during epidemics that many people were suffering and dying from the same disease, he believed that its particular incidence in each particular patient would be unique. Therefore each individual needed to be treated in a unique way.

The Galenic physician interpreted epidemics as the product of a *specific poison*: specific in that it caused this particular set of symptoms and effects, and a poison in that like other poisons it acted directly on the heart as a result of having been breathed in from the air. The only medical cure for a specific poison was, of course, a specific antidote, and charlatans and quacks of all types, from bath attendants to butchers, were quick to offer for sale different drugs or treatments. In conventional medicine the best advice, which could only realistically be taken up by the rich, was to go away quickly, stay away as long as possible, and return slowly. While this advice might sound cynical, it actually was built on the view that the air was the source of poisonous ferments: moving to new air would avoid the disease.

As far as the causes of epidemics were concerned, the conventional view—held by learned physicians as well as by the religious—was that God was the First Cause of diseases, as of everything else. Most people (though not all) believed that God acted through *secondary causes*, that is to say He used natural means. Thus conventional wisdom had it that God in His wisdom decided to send an epidemic to a specific population. He carried this out by causing particular conjunctions of the planets, or bad aspects of the stars (literally “dis-asters”). These in turn would cause a change, a corruption, in the air, leading to the creation of a specific invisible poison. This poison then entered the body either through the lungs or via the pores of the body, making the victim now a source of infection to oth-

ers. The only cure was either an antidote or some attempt to appease or placate the First Cause.

Given this understanding of the origin of epidemic constitutions of the air, attempting to placate God was a natural—rather than a supernatural—thing to do, just as it was to practice astrology. By contrast, to place the first cause of epidemics in the stars themselves was considered superstitious: good Christians did not do this, recognizing that the stars were neither secondary nor primary causes. Because epidemics were interpreted in this way as natural phenomena, it was always easy to be wise after the event, and retrospectively spot the clear signs in nature that it was coming. Among

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the portents of epidemics were eclipses and fiery stars in the heavens, mists and lights in the sky as a consequence of the air becoming corrupted, and animals coming out of their lairs and dying in great numbers.

For Christians the visitation of disease has always been an ambiguous matter, since their God is a benign god, and nothing happens without His will and knowledge. Obviously God sends disease, and obviously it must be as punishment for sin. But it was not always clear, even to men of religion, quite which sins were being punished by a particular visitation of a pestilence, nor why the good died under God’s justice as well as the wicked. Though unable to answer these questions in a final way, the church, whether Catholic or Protestant, still remained the center for seeking divine intervention against this divine punishment. For the expiation of sins, and to plead for the mercy of God, Christian churches often called for communal fasts and instituted prayer marathons, together with the carrying of relics in procession through the streets, often accompanied by lay or religious flagellants.

First-hand accounts of epidemics are rare for obvious reasons, and first-hand accounts from survivors of epidemics are even rarer. So we are particularly fortunate in having a detailed account from a sufferer of the pox, when that disease was new, and before people understood that it was spread through sexual intercourse. The first large outbreak of it occurred in 1494, in the army of King Charles VIII of France that had recently been besieging Naples. Given this first appearance, it is no surprise that the French called it the Neapolitan disease, while those to whom it was spread equally naturally called it the French disease. Others were to call it the Polish disease, the German disease, or the Spanish disease. The variety of early names that this disease was given indicates how its arrival was perceived: that it originated from outside, and that

it was spread especially by soldiers. It had reached right across Europe within five years, and affected people from the poorest ranks of society to kings and cardinals.

When the disease first broke out it was fearsome and extraordinarily painful, causing its sufferers to scream with pain all day and, even more so, all night. The writer of our first-hand account was Ulrich von Hutten, a humanist in the service of the Archbishop of Mainz, who had contracted the disease while a soldier in Italy in 1509 or 1510 and who suffered grievously from the disease for many years. His book was called *Of the Wood Called Guaiacum, that Healeth the French Pox*, and it was first published in Latin in 1519. According to von Hutten, the physicians would at first have nothing to do with the disease because it was so horrible:

For when it first began it was of such filthiness, that a man would scarcely think this sickness, that now [i.e., in 1519] reigneth, to be of that kind. There were boils, sharp, and standing out, having

the similitude and quantity [i.e., size] of acorns, from which came so foul humours and so great stench, that whosoever once smelled it, thought himself to be infect. The colour of these pustules was dark green, and the sight thereof was more grievous unto the patient than the pain itself: and yet their pains were as though they had lain in the fire.

There was considerable variation in the manifestation of symptoms, but the pustules usually started, in males, on the penis. The astrologers predicted that the disease would only last seven years and then disappear, but instead after seven years the disease turned into a somewhat milder form, without the acorn-like pustules or so much stench. But the pain continued to be excruciating. “If any thing may cause a man to long for death, truly it is the torment of this sickness,” von Hutten wrote. “For this pestilence besides all his vexations and torments (which pass far all other) only with his foulness and loathliness is able to make one weary of his life.” Hutten felt driven to the sin of suicide under the pain, and only hesitated when he remembered his Christian duty of manfully suffering great torments and pains for Christ’s sake.

The pain was in the joints, but it also came from the running sores all over the body, and from the holes that appeared in the flesh as it putrified, so that one could see the bone and watch it being eaten away. According to von Hutten, there were agonizing sores in the bladder, the liver, and the stomach. Ulrich von Hutten’s case of the disease began in his left foot. As it rose up his leg the skin over the shin began to rot in many holes, very painfully, and over these holes “was a knob so hard that a man would have thought it a bone.” He could hardly stand up because of the pain; the calf and knee were very cold, the thigh consumed and worn

away; one buttock virtually withered away. The pain in his left shoulder was so great that he could not raise his arm, and both shoulders were withered. There was a constant voiding sore below his ribs on the right side, and a constant stream from the top of his head, running down his back. If you touched the place where this filthy stream began, it felt as though the skull was fractured. Von Hutten recovered because (he believed) he used the new cure of guaiacum wood.

Von Hutten started his treatise with the words, "It hath pleased almighty God," *Visum Deo est*, "that in our time sicknesses should arise which were unknown to our forefathers." This view was shared by medical men. The court physician in Ferrara, Corradino Gilino, wrote in 1499, "We also see that the Supreme Creator, now full of wrath with us for our terrible sins, punishes us with this cruellest of ills which has now spread not only through Italy but across almost the whole of Christendom. Everywhere is the sound of trumpets; everywhere the noise of arms is heard . . . Let us say, with the Prophet in the sixth psalm, 'Lord, do not censure me in your anger nor in your wrath afflict us.' This I believe is the cause of this savage plague." Some theologians claimed the sin in question being duly punished by God was *luxuria*: "seeing that the guilty organ [i.e., the penis] is the organ which suffers, the theologians admire that just and equitable maxim, for a like sin a like penance."

The decade of the 1490s was most unfortunate in that it witnessed the appearance of not one but two pandemics: pox and typhus. The latter arose primarily from the new modes of warfare, particularly the widespread use of siege tactics, which pinned down both the besieger and the besieged in frightful conditions. Moreover, "plague" (or diseases that contemporaries called plague) continued to appear every few years, regularly killing its thousands. All these epidemics and pandemics had significant economic—and sometimes political—effects, and these disruptions of society encouraged the view that people were living in the Last Days.

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Some 350 years later a cholera pandemic struck Europe. This 19th-century pandemic had a significant influence on the thinking of Justus Hecker (1795-1850), a third generation professor of medicine—and soon of the history of medicine—at Friedrich-Wilhelms University in Berlin. When cholera arrived in Europe in 1831, Hecker focused his attention on major epidemics in history. He read medieval and early modern chronicles, rediscovered the great plague of 1348-49 (which had been forgotten), and named it the "Black Death." He further learned of a dancing mania of the Middle Ages, and the strange disease of the "English sweat" that had broken out in the 16th century and only seems to have affected Englishmen whether at home or abroad. Subsequently, Hecker worked on the Antonine plague of the 2nd century A.D. On each of these past epidemics Hecker wrote a short book in the early 1830s, which was quickly translated into other languages. Almost single-handedly Hecker had recovered these momentous events of disease history, and he has thus appropriately been styled the originator of historical pathology. But Hecker also saw these epidemics as momentous in the development of human history. For Hecker's interpretation of these epidemics was peculiar. He regarded them as cosmic in origin, and caused by Providence (though not sent as divine punishments). He saw them as occurring in vast cycles, and their effect was to "renovate" nature. He believed that the story of epidemics, if it could be told, would be allied to the history of the mental development of the human race! In other words, the reaction of human society to disasters such as epidemics could over time improve the moral condition of mankind. So, although Hecker was certainly dealing in terms of historical pathology, it was not in a form that would today be recognized as scientific.

The development of laboratory medicine later

in the 19th century led to the perception that epidemics are purely natural phenomena, subjects of science rather than eschatology. In the 1870s and 1880s, as a result of the complementary but rival work of Louis Pasteur in France and of Robert Koch in Prussia/Germany in their laboratories, the identity of each epidemic disease was located in the distinct micro-organism (pathogen) that caused it. Between them, Pasteur and Koch and their immediate pupils discovered and isolated, over a mere three decades, the causal micro-organisms of many of the important infectious epidemic diseases: anthrax, typhoid, gonorrhoea, tuberculosis, cholera, diphtheria, tetanus, diarrhoea, pneumonia, plague, botulism, dysentery, syphilis, and others.

Laboratory medicine presented a quite new view: science can discover measures to prevent the spread of a particular micro-organism, and even cure epidemics by developing vaccines. God and the apocalypse are no longer part of the discussion.

And yet some of that apocalyptic hysteria still crops up when we are confronted by a new epidemic or pandemic whose pattern or origin we do not understand. It was the case in 1918 with the Spanish flu, and again the case with AIDS at the end of the last century: scapegoats are sought among minorities in the population. And, in the case of AIDS, it was even seriously proposed that nature (rather than God) was punishing us for the "unnatural" sexual excesses of the previous three decades.

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EPIDEMIC SMALLPOX IN INDIA

David Arnold

It is now nearly thirty years since the World Health Organization declared that smallpox had been eradicated. South Asia was one of the disease's most enduring strongholds: as recently as 1958 smallpox claimed more than 150,000 lives in India.¹ Long on the wane even before the mid-20th century, as a result of Edward Jenner's popularization of smallpox immunization through vaccination, it is perhaps now difficult to recall the depth of horror this virulent disease once inspired. Fatal in be-

tween a quarter and a third of all cases, smallpox left many of those who survived blind or with severely disfigured faces. Solely reliant on person-to-person communication, the smallpox virus struck with terrifying speed and violence. The victim suffered intense pain: a burning fever was followed by the eruption of large pustules that transformed the human body into a suppurating mass that reeked of death and decay. Adding to its tragic consequences, most of those who fell prey to this foul disease, in

places where it was endemic, were infants and children, and the recurrence of smallpox in epidemic form, every four to seven years, marked the mass infection of a new pool of unprotected individuals. The only virtue in smallpox, if anything so horrific can be said to have one, was that those who had once been attacked by the *variola* virus acquired lifelong immunity to the disease. It was recognition of this peculiar characteristic that had inspired human attempts to forestall the disease, whether by inocu-

lating vulnerable individuals with live smallpox matter (variola) or, following Jenner, by vaccinating them (with a vaccine derived from cowpox) so as to artificially induce immunity.

Originating in Old World Eurasia, smallpox appears to have become widely prevalent in China, India, Mediterranean Europe, and North Africa by the 7th century A.D. It thrived on human populations dense enough to sustain its cyclic recurrence in epidemic form, but it also spread out along trade, pilgrimage, and invasion routes into new regions and previously unprotected peoples. With the movement of Europeans from the 15th century onward across the Atlantic and around the Cape of Good Hope into the Indian Ocean and Pacific, smallpox moved rapidly into regions and among populations that had no previous experience of, and hence immunity to, the disease. By the 16th century smallpox had assumed an almost pandemic form, though it principally manifested itself in localized epidemics. Without the need for insect vectors or long periods of incubation, smallpox could even move in advance of European exploration and conquest, devastating indigenous peoples, weakening their capacity to resist invasion and all but eliminating them from lands thrown open to European annexation and settlement. Few diseases, so the argument goes, had so great an impact on indigenous populations or did so much to shift the balance of power towards invading whites. And for the indigenes themselves, it was difficult not to believe that so sudden, so horrifying, so fatal an affliction was a kind of curse, a form of divine retribution. But how was smallpox understood in those countries—like India—that were not new to smallpox, where, for all its episodic peaks of intense destruction, it had long ceased to be rare and exceptional, a phenomenon that had somehow to be accommodated within the patterns and beliefs of everyday lives?

India was, so far as we know, one of the regions where smallpox was most widely entrenched. Smallpox epidemics occurred there roughly every four to seven years, at times reaching out beyond India into neighboring Sri Lanka and Afghanistan or, carried by traders and by pilgrims on hajj to Mecca, traveling across the Arabian Sea to East Africa and the Red Sea coast. It is possible, too, that the smallpox that invaded southern Africa and penetrated elsewhere around the Indian Ocean during the first centuries of European commerce and contact may have issued from India rather than Europe. Within South Asia itself, smallpox, its impact accentuated by malnutrition and famine, may have had an even higher case fatality than in Europe—at times in excess of 30%. Smallpox was said to be “the scourge of India,” and “one of the most violent and severe diseases to which the human race is liable.”² In Calcutta, capital of British India, smallpox accounted for

21,000 fatalities between 1837 and 1869, representing 5-10% of all deaths. In 1849-50 alone, 6,100 smallpox deaths were recorded in the city. Even after Jennerian vaccination had been introduced to large parts of British India by the mid-19th century, mortality from the disease remained very high, with at least 4 million deaths between 1865 and 1899. In years when epidemic smallpox raged, it accounted for a third of all recorded deaths.³ Except in remote areas, the disease appears to have been almost universal. Unless protected by inoculation, everyone could expect to experience the disease at some stage of their lives, usually as young children. So common



SHRINE OF SITALA AND DISEASE GODLINGS.

From William Crooke, *The Popular Religion and Folk-lore of Northern India*, vol. 1 (London, 1896).

was the disease that it came to be thought of as an inescapable ordeal, a necessary rite of passage (for those who survived) into adult life. As late as 1879, Sir Sayyid Ahmad Khan observed that smallpox was

the inevitable bridge which every child has to cross before entering into life; and recovery from the disease is considered second birth . . . Other diseases are looked upon as accidental; but small-pox is regarded, as indeed it is, [as] almost universal. It touches the keenest of human susceptibilities; for there are thousands in this country who, though spared by it from death, still have traces of its violence in the deep marks on the face or the loss of an eye.⁴

A British medical officer, writing a few years earlier about northern India, similarly observed that it had become “quite a saying among the agricultural and even wealthier classes never to count children as permanent members of the family until they have been attacked with and recovered from smallpox.”⁵

The Indian response to the near inevitability and almost constant visibility of smallpox was complex, and it offers a rather different view of how religion was implicated in human responses to disease. Across a large swathe of northern, eastern, and central India smallpox was identified with a popular

Hindu deity, the goddess Sitala. Equivalent female deities, known under a variety of different names, were to be found in many parts of south India as well. Sitala was not part of the original Vedic pantheon and may have been a local deity who rose to prominence as smallpox grew more widespread and established from the 7th century onward. Ralph Nicholas has recorded the rise of a Bengali literature about the goddess starting in the 16th and 17th centuries, but also notes earlier representations of the goddess in Hindu shrines and temples from Gujarat in the west to Bengal in the east.⁶ Although there are some references to Sitala as “the goddess of spots,” the conventional image of the deity represents her not as being afflicted by the disease but as simultaneously its disseminator and the protector against its ravages. She appears as a calm but powerful female presence, with large, commanding eyes. She rides on an ass, carrying in her outstretched hands a pitcher of water and a broom and bearing on her head a basket of grain. The goddess’s image embodies both the nature of the disease and the manner of its containment. The basket of grain represents the grain- or lentil-like pustules that were the primary feature of the disease. By shaking her head Sitala spreads the disease, but, if she so chooses, she can sweep it away with her broom before it causes distress. The name “Sitala” means the “Cool One,” in recognition of the goddess’s intrinsic desire to be

cool despite the frequent human neglect or misconduct that incites her fiery rage.⁷ The pitcher of water and the ass refer to the widespread belief that since smallpox was a “heating” disease, evident through the raging fever it caused, it needed to be tackled by means of various “cooling” substances—such as cold water and asses’ milk—or by the sufferer being wafted with cool, wet leaves from the *neem* tree, sacred to Sitala and believed to have both cooling and medicinal properties. Smallpox was commonly thought of as a form of possession, with the goddess showing by her fiery fever that she had occupied the body of her host. Her presence needed, accordingly, to be treated with the reverence appropriate to a presiding deity: hymns were sung praising the goddess, cool drinks were offered and cooling medicaments applied for fear that the wrath of the goddess might be aroused and the sufferer’s condition made worse. If the patient died, his or her body was not cremated in the usual way but buried or released into a stream—the heat of the goddess might prevail even after death.

Sitala could be counted among the many “godlings of disease” worshipped in villages across India.⁸ Some took the form of mother goddesses, protectors of the village community from calamity as well as reminders of the ever-present danger of disease. Other, lesser deities held responsibility for particular diseases. Thus when cholera erupted in

epidemic form across India in 1817 (and initiated the first of several pandemics), it gave rise to similar beliefs in a disease-causing deity, and women appeared who claimed to be possessed by the cholera goddess. But Sitala occupied a place of exceptional reverence among disease deities. Sitala became, especially in 17th- and 18th-century Bengal, a superior deity, a mother goddess to be worshipped not only in village ceremonies during the early spring season when smallpox first became prevalent, but also celebrated in religious hymns and verses. Sitala was also worshipped by the Muslims of eastern Bengal (today's Bangladesh), who shared much of their culture with Hindus until the Faraizi reform movement in the 19th century sought to win them away from such un-Islamic beliefs. Nicholas attributes this outpouring of religious fervor for Sitala to the exceptional prevalence of smallpox at that time. Sitala took on the mantle of a protectress.⁹ This role is echoed in the songs sang by women as they tried to cool the body of a smallpox victim, fanning it and evoking the goddess:

O Mother, giver of salvation to the world, thou art kind to the poor.

My kine have strayed into the forest of Sitala.

O Mother, giver of salvation to the world, thou art kind to the poor.

What can avail if God gives [a child] to any one? One gets it only when Sitala gives; the giver of salvation to the world.

When Sitala is wroth with one, one finds no pleasure in milk, in the milk-pot, in the son in the cradle, in the house or in the courtyard.

O Mother, giver of salvation to the world.

Thou art land and water, and thou art the most powerful of all.

Thou art queen of three regions. O Mother, giver of salvation to the world.¹⁰

In the eyes of some Western critics the veneration paid to Sitala amounted to devil worship. The British blamed Indian resistance to Jennerian vaccination largely on the worship of Sitala. In actuality, much of the dissent was attached to the coercive methods used by the British and not unreasonable doubts about the effectiveness of vaccination. India already had an established means of protecting against smallpox. This was the practice of variolation performed by itinerant specialists who visited villages in the early spring, offering to inoculate those unprotected against the disease. They used attenuated smallpox matter (crusts) harvested the previous year and scarified the patient's skin (usually on the upper arm) to insert a small amount of viral material. The operation required care as the patient was, in effect, being subjected to a mild case of the disease in order to "buy" lifelong immunity, and the implanting of the virus was followed by a series of strict dietary proscriptions, a "cooling" regimen (in-

cluding cold water baths), and the segregation of those inoculated.¹¹ Although variolation was criticized and eventually outlawed by the British as far more dangerous than vaccination and a potential cause of epidemics, it appears to have been effective in a great majority of cases and sufficiently widespread in regions like Bengal to reduce mortality from the disease.

Variolation countered the colonial argument that Indians were "apathetic" in the face of disease.¹² Here was evidence of a sustained and calculated response in anticipation of the near inevitability of a dreadful disease. It has, moreover, been argued that this was a striking case of the mobilization of local knowledge and of self-help by villagers (who chose

The Indian case shows that religious beliefs do not necessarily stand in the way of prophylaxis and treatment but might actually serve to support such measures.

to have their children inoculated and paid a small fee to the inoculators for doing so).¹³ But where did this prophylactic practice of smallpox inoculation leave the goddess Sitala? In some cases, variolation seems to have been carried out with minimal deference to the deity, but more commonly the practice seems to have been accompanied with the cautious invocation of the goddess: it was, in the words of one observer, "practically a religious ceremony." The day before the operation a solemn offering of cooling fruits and fluids was made to the goddess, followed on the day of the inoculation by incantations to the deity and by further hymns and offerings once the success of the operation was assured. In the meanwhile the inoculated child was treated kindly in the belief that "the deity presiding over small-pox is in the child's system, and any castigation or abuse might offend the goddess and draw down her wrath upon the child, in the form of confluent small-pox and death."¹⁴ In other words, Sitala retained her authority even over a prophylactic practice instituted by humans and intended to minimize the impact of the disease over which she presided. It is ironic that long after variolation had been suppressed and the authorities in independent India sought to make vaccination universal, they found it necessary to present smallpox as a demon that needed to be destroyed.¹⁵

What, then, does smallpox in India tell us about the relationship between religion and epidemic—or pandemic—disease? First, it suggests ways in which the dangerous and seemingly unpredictable relationship between a disease and its human hosts could be normalized. Sitala helped her devotees make sense of why epidemics occurred and gave them a means by which to address the near inevitability of the disease's visitation. Second, the Indian case also shows that religious beliefs do not necessarily stand in the way of prophylaxis and treatment but might actually

serve to support such measures. Although powerless to eradicate smallpox, the invocation of Sitala that accompanied variolation and the cool and calming atmosphere with which householders tried to cope with the disease and aid recovery gave religious sanction to local practices that helped reduce the impact of one of the most devastating disease known to humankind.

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¹ Donald R. Hopkins, *Princes and Peasants: Smallpox in History* (University of Chicago Press, 1983).

² *Annual Report upon Vaccination in the North-West Provinces for the Season 1866-67*, 4; T. Edmondston Charles, *Popular Information on Small-pox, Inoculation and Vaccination* (Calcutta, 1870), 1.

³ Jayant Banthia and Tim Dyson, "Smallpox in Nineteenth-Century India," *Population and Development Review* 25 (1999): 660, 664, 677.

⁴ Shan Mohammad, ed., *Writings and Speeches of Sir Syed Ahmad Khan* (Nachiketa Publications, 1972), 142.

⁵ R. Pringle, "On Smallpox and Vaccination in India," *Lancet* (January 1869), 44.

⁶ Ralph W. Nicholas, "The Goddess Sitala and Epidemic Smallpox in Bengal," *Journal of Asian Studies* 41 (1981): 29-33.

⁷ Susan Wadley, "Sitala: The Cool One," *Asian Folklore Studies* 39 (1980): 33-62.

⁸ W. Crooke, *The Popular Religion and Folk-Lore of Northern India*, vol. 1 [1896] (Munshiram Manoharlal, 1968), ch. 3.

⁹ Nicholas, "Goddess Sitala," 33-34.

¹⁰ W. Crooke, "Religious Songs from Northern India," *Indian Antiquary* 39 (1910): 285-86.

¹¹ J. Z. Holwell, "An Account of the Manner of Inoculating for the Smallpox in the East Indies," in A. Dharampal, ed., *Indian Science and Technology in the Eighteenth Century: Some Contemporary European Accounts* (Impex India, 1971), 143-163.

¹² S. P. James, *Smallpox and Vaccination in British India* (Thacker, Spink, and Co., 1909), v.

¹³ Frédérique Apffel Marglin, "Smallpox in Two Systems of Knowledge," in Frédérique Apffel Marglin and Stephen A. Marglin, eds., *Dominating Knowledge: Development, Culture, and Resistance* (Oxford University Press, 1990), 102-143.

¹⁴ L. S. S. O'Malley, *Bengal District Gazetteers: Balasore* (Bengal Secretariat Book Depot, 1907), 72.

¹⁵ Harish Naraindas, "Crisis, Charisma and Triage: Extirpating the Pox," *Indian Economic and Social History Review* 40 (2003): 451-55.

WHY DID IT HAPPEN? RELIGIOUS EXPLANATIONS OF THE “SPANISH” FLU EPIDEMIC IN SOUTH AFRICA

Howard Phillips

“**H**ere Lie the Bodies of 75 Natives Who Died During the Epidemic—1918.”

This stark, collective epitaph on a plain memorial stone in a long-abandoned company cemetery 45 kilometers from Cape Town is one of the very few public reminders of South Africa’s greatest natural disaster, the so-called “Spanish” influenza epidemic of 1918. In the space of six weeks it carried off some 300,000 South Africans, or 6% of the population. No calamity before or since in South Africa—not even HIV/AIDS—has been as swift and lethal as this local outbreak of the global pandemic of that year.

Traumatized by what one contemporary called a veritable “tornado of plague,” grieving survivors struggled to recover socially, materially, emotionally, and psychologically. In a society in which religious beliefs were deeply embedded, most looked to religion for an explanation of the catastrophe that had ravaged their communities. As Max Weber pointed out, people are at their most religious when their lives and their livelihoods are under serious threat.

Of what significance is this to historians? The answer is that to meet the intense popular demand for explanations of this disaster, an unusually large number of them were printed in journals and newspapers at the time, and so remain available to historians ninety years later to give insight into otherwise transient contemporary ideas about the cause of this calamity. If probed, these ideas can, in turn, reveal deeper beliefs about causation, why bad things happen, and the very nature of God—big existential questions that historians are not accustomed to ask about past societies.

Moreover, in the case of South Africa the answers are possibly even more revealing, for the cultural heterogeneity of the diverse population meant that, even if one confines oneself to official religious explanations, a wide spectrum of these was recorded, stretching from four universalist religions, Christianity, Islam, Judaism, and Hinduism, to traditional African religion. This makes possible comparisons among the explanations of the same phenomenon by several faiths and even by different denominations within a single faith, all at a time when religions across the board were being confronted by the challenges of

modernity, modern science, and the faith-shaking experiences of the Great War. In short, such an investigation of the complex ways in which faiths responded to a dire, life-and-death crisis on the ground has the potential to shed light on much



Demonstration at the Red Cross Emergency Ambulance Station in Washington, D.C., during the influenza pandemic of 1918. Library of Congress, Prints and Photographs Division [reproduction number, LC-USZ62-126995].

more than just how they sought to make sense of this particular visitation; they can illuminate, too, their core beliefs about their God.

Within the South African Christian fold, for example, clergymen of the Calvinist Afrikaner Dutch Reformed Church saw God as all-powerful, the First Cause. The epidemic was obviously the result of “divine visitation,” a moderator of the church told his congregation. To seek its ultimate source in the chance action of germs was as misguided as the dog that bites the stone thrown at it without realizing who the thrower was. Did the plague of lice visited upon Pharaoh’s Egypt not demonstrate how God could transform the smallest things in nature into a potent instrument of divine will?

Even more revealing for the historian is that such explanations also sought to account for why God had sent the epidemic. Punishment for sin was the most common reason offered. What the sin was provided a sharp insight into what church leaders in 1918 felt was so reprehensible as to warrant divine punishment on such a scale. This in turn helps delineate their conception of the nature of God by setting out what human behavior they judged to be anathema to Him [sic].

As always, generic sins like immorality, drunkenness, and lax church attendance featured prominently in the list of those that were said to have called forth God’s wrath. One novel sin, though, was that of “worshipping science,” a real si[gn] of the times. “Nowadays people speak of germs and filthy streets and slums” as the cause, “and it is out of fashion and unscientific to refer to sin,” lamented the Dutch Reformed Church’s official mouthpiece. “But God wants us to have no other gods before Him.”²

Another burning contemporary issue that was held to have drawn direct divine intervention was World War I. Against the backdrop of horrendous, mechanized bloodshed, some Calvinist ministers saw the epidemic as a lesson to those who arrogantly thought that humankind, with all of its new weapons, had perfected the ability to kill. “Isn’t it as if the Almighty is toying with the murder resulting from sinful science?” asked a senior clergyman. “Humans may kill in thousands, but God can kill in tens of thousands!”³ Other Reformed thinkers drew a different conclusion. To them the combination of a terrible war and a devastating plague was not mere coincidence. They were eschatological signs of deeper things afoot, heralds of the Second Coming. “‘Maranatha! The Lord is coming’ could well be the theme of our thoughts in these times,” announced a distinguished theologian in the Dutch Reformed Church.⁴ At least one lay member of the church, Johanna Brandt, went even further, prophesying that the Day of Judgment was upon them. In a widely circulated pamphlet, *The Millennium—A Prophetic Forecast*, she warned that the flu epidemic was only the beginning of the affliction that was foretold in the Book of Revelations. Much worse was to follow before Christ returned. Tellingly, her millenarian prophecy came during a particularly harrowing period in the history of the Afrikaner community in South Africa, reminding us of Michael Barkun’s point that “[m]illenarian movements almost always occur in times of upheaval, in the wake of culture contact, economic dislocation, revolution, war, and natural catastrophe.”⁵ As revealing is the fact that at exactly the same moment millenarian prophecies were also being heard in several African Christian communities in South Africa, which were equally hard-pressed.⁶

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different view of God. Their God was more distant from everyday human conduct and less inclined to intervene directly to punish sin, a stance that had developed out of the encounter with science and modernity over the preceding century. “People speak of it [the flu epidemic] as an ‘Act of God,’ a legal phrase, I know,” lamented the Anglican Archbishop of Cape Town, “but it seems to me to put the matter into an altogether wrong light. The Enemy who sows tares certainly found a congenial soil in the slums here.” A fellow bishop spelled out these ideas more fully in an article in the official *Church Chronicle*. He did not believe “that God has sent the influenza because He is angry with us, and has determined to punish us.” Rather, the source of the epidemic’s devastation lay in the fact that

certain conditions...laid down by the Creator as necessary to our health, have been neglected, wilfully, it may be, or, what is more likely, in ignorance We know already that fresh air, cleanliness, nourishment, are our allies in contending with disease, and that on the other hand, foul air, dirt, poor and insufficient food, are enemies strongly entrenched in the households of thousands of people in this country [W]e who tolerate such conditions are guilty before God and humanity.⁸

It was within such a social gospel framework that ministers of other Christian denominations explained the epidemic, too, although they differed as to the degree of God’s involvement. Presbyterians hinted at a more direct role in punishing humanity’s neglect of social conditions, other Nonconformists at a lesser role. For instance, a Methodist synod resolved that “this calamity, permitted of God, was largely due to the social conditions amid which vast numbers of the people are compelled to live.”⁹ Some Christian publications minimized God’s role even more. “[I]gnorance and neglect, not God, are responsible for disease,” averred a Congregationalist magazine, while its Baptist equivalent made no mention of God at all in its account of the epidemic. The *Catholic Magazine*, after months of vacillation, eventually attributed the outbreak to an undefined “Nature.”

For all their variations, each of these interpretations sought to reconcile belief in an omnipotent God with the discoveries of science and medicine during the previous one hundred years. That they were not always successful in doing so is indicated by the fact that numerous Africans, dissatisfied with mainstream Christianity’s inability to protect them or to provide an adequate explanation of the disaster, abandoned their mission churches in the wake of the epidemic and established breakaway churches of their own.

Nor did such attempts to find a compromise between faith and science remain purely academic,

for, acting on medical advice, several local authorities decided to try and prevent infection spreading by banning all indoor gatherings, including church services. Clergymen’s responses varied, reflecting the uncertainty in the minds of many when the teachings of faith and science collided so directly over a matter widely supposed to concern life and death. Predictably, Calvinists had the fewest doubts. The ban, declared their journal, was plainly unchristian for “it prevents a communal approach to the Lord when people are suffering His trials and punishments.”¹⁰ Most Anglican ministers also expressed themselves in favor of continuing regular services, either because it was a time when people were looking to their religion

For adherents of traditional African religion, responsibility for the devastating flu epidemic was very specific and intensely personal.

in particular for help and comfort or because not to do so would imply that appealing to God communally was useless in such circumstances. Some clergymen tried to resolve their dilemma by shortening services or holding them out of doors, but many ignored the ban, pointing to the non-closure of gathering places like bars, shops, and markets. Only a handful of ministers actually suspended services on explicitly public health grounds, but one, the Congregationalist chaplain to the mayor of Cape Town, triggered an outcry when he criticized those churches that remained open when cinemas, theaters, and dance halls were being forced to close. With a flourish of theological modernism, he proclaimed,

On general grounds, if the churches are to open for public assembly, I fail to see why we should discriminate against theatres. Whatever ecclesiastics may think about our newly-made acquaintance, the bacillus catarrhalis, there is no essential difference between a congregation assembled for public worship and a crowd gathered to witness the screening of a film.¹¹

The dismay that this stance elicited from both lay and clerical quarters was widespread. A Calvinist journal felt that, in comparison, its belief in the primacy of the spiritual over the physical was “old-fashioned and unscientific,” but, on balance, “closed churches fill us with greater fear than the bacillus catarrhalis.”¹² In the event, most local authorities were sufficiently prudent not to enforce the ban on church services, at least if most of their congregants were white-skinned.

Evidence of how adherents of non-Christian universalist faiths interpreted the epidemic is less

abundant. Nevertheless, it is clear that Hindus, Jews, and Muslims all acknowledged God’s primary role in sending the disease, yet none was inclined to probe the reason why, at least in public. Muslims accepted it unquestioningly as the “Takdir [Will] of Allah”; Hindus felt it might be an expression of an unspecified divine wrath; while the country’s senior rabbi felt that it was useless to speculate about the epidemic’s causes and origins. “Let us frankly confess that such knowledge is too wonderful for us,” he told a memorial service for flu victims. “It is too high for us to attain unto it.”¹³

For adherents of traditional African religion, responsibility for the devastating flu epidemic was very specific and intensely personal. Operating within a religious framework in which their Supreme God was far removed from humankind’s daily round of activities, they saw misfortunes like the epidemic as stemming either from ancestors (rightly) punishing the misconduct of individuals who had offended them or from the nefarious actions of malevolent witches or wizards who were humans with an evil intent born of anger, envy, or selfishness.

The patchy sources that survive point to the latter as a not uncommon explanation among such believers, for in the wake of the unprecedented epidemic the colonial authorities noticed a surge in cases in which witches or wizards were “smelled out” by witch doctors or witch finders. For instance, the commissioner of police for one largely African region reported patronizingly that

The recent Influenza Epidemic ravaged the Natives and in their ignorance they ascribed the visitation to various causes and reasons, blaming friends and relatives for having caused the illness and death of those near and dear to them. There has been an increase of Smelling-Out cases and a resultant increase in the number of crimes of violence reported, also mainly due to the witch-doctor.¹⁴

He illustrated the grave consequences of such smelling out by referring to a case in which a man suspected by a witch finder of being the cause of two deaths earlier in 1918 had now been definitely labeled by the witch finder as a wizard who was responsible for all the flu deaths in the village. His fellow villagers had responded quickly, attacking his kraal and killing him, his wife, and infant child and wounding his two teenage sons. “Many cases of homicide and serious assault resulting from ‘smelling out’ have come to my notice recently especially after the outbreak of influenza,” noted the local solicitor-general the following year.¹⁵

Ninety years later, readers in parts of the world with little experience of life-threatening epidemics may find the preceding explanations quaint and naive. Yet I wonder whether they would still be as blasé were avian flu, for instance, to esca-

late into a lethal pandemic in 2008. Would they perhaps again be searching for an ultimate cause beyond nature? Certainly the initial responses to the AIDS pandemic in the 1980s suggest that they would.

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[All translations into English in the text are by the author]

¹ *De Kerkbode*, November 7, 1918, 138; *Het Kerkblad*, November 1, 1918, 1.

² *De Kerkbode*, October 17, 1918, 140.

³ *Handelingen van de Zeste Vergadering van den Raad der Ned. Geref. Kerken in Zuid Afrika*, 1919, 37.

⁴ *Gereformeerde Kerkblad*, November 1918, 160.

⁵ Michael Barkun, *Disaster and the Millennium* (Yale University Press, 1974), 45.

⁶ Robert R. Edgar and Hilary Sapire, *African Apocalypse: The Story of Nontetha Nkwenke, a Twentieth-Century South African Prophet* (Ohio University Center for International Studies and Witwatersrand University Press, 2000), ch. 1; Bengt Sundkler, *Zulu Zion and Some Swazi Zionists* (Oxford University Press, 1976), ch. 4.

⁷ University of the Witwatersrand Library, Historical and Literary Papers Division, AB 186 (Archbishop W.M. Carter Letters), Carter to Lord Wenlock, All Saints Day, 1918.

⁸ *Church Chronicle*, November 28, 1918, 456-467.

⁹ *Daily Dispatch*, February 3, 1919.

¹⁰ *De Kerkbode*, October 31, 1918, 1034.

¹¹ *Cape Times*, October 26, 1918.

¹² *De Kerkbode*, October 31, 1918, 1035.

¹³ *In Memoriam. Memorial Service for Members of the Jewish Community Who Died during the Epidemic. Held in the Great Synagogue, Cape Town, 24 November 1918*, (Cape Town Hebrew Congregation, 1918), 6.

¹⁴ Cape Archives, Cape Town: CMT 3/872, file 638.1, Annual Report of Transkei Division of South African Police for 1918, 4.

¹⁵ Cape Archives, Cape Town: CMT 3/942, file 820, Solicitor-General, Grahamstown to Secretary for Native Affairs, July 18, 1919 enclosed in Secretary for Native Affairs to Chief Magistrate Transkei, July 28, 1919.

RELIGION AND EPIDEMIC DISEASE

Duane J. Osheim

John Snow's tracking of cholera in 19th-century London and Robert Koch's subsequent identification of *vibrio cholerae* as the disease's cause can stand as markers of the transformation in our understanding of epidemic disease, and by extension of the space left for religion in modern medicine. The widespread introduction of antibiotics after the Second World War seemed to validate the insights about illness and health implicit in epidemiology and bacteriology. In a previous work Andrew Cunningham observed that since the rise of the laboratory, the very definition of a disease has been based on a microbial analysis rather than a symptomatic one.¹ In this respect, Cunningham argues, we cannot compare ancient and modern diseases. And yet, David Arnold's analysis of smallpox in India and Howard Phillips's discussion of the religious response to the Spanish Flu in South Africa, both of which occurred during this period of revolution, should give pause to those who believe that the experience of epidemic disease in the past half millennium should be read as a narrative of modernization and secularization.

Secularization is implicit in Cunningham's account, but Samuel K. Cohn, Jr. perhaps has put the thesis most forcefully. For example, he has argued that in the 15th and 16th centuries, chron-



Broadside, Mexico City, 1910. Library of Congress, Prints and Photographs Division [reproduction number, LC-DIG-ppmsc-04798].

clers and doctors came to believe that they understood plague and had no need for religious explanations. "God slips into the background," Cohn writes.² He rejects the idea that the medieval plagues led to a retreat into religious dogma—at least after the initial experience of the Black Death. Chroniclers and doctors may not have actually understood what they were observing, but they believed they did. Cohn describes Europeans in the 15th century as generally "[m]oving away from utter despair, stargazing, and prayers to God."³ Cohn is surely correct when he suggests that attitudes toward epidemic disease changed, but

the transformation he describes seems too stark, especially in the case of religious ideas and behaviors. We merely need to recall that in late 15th- and 16th-century Italy the cult of the St. Roch exploded in popularity, the shrine of the Holy House of Loreto became popular throughout Europe, and the Venetian government fulfilled a vow by constructing the Palladian masterpiece, the Redentore. All of these phenomena were responses to pestilence.

All of our authors are describing a number of religious contexts within which contemporaries understood epidemic disease. The simplest way to think about these essays is to note that Cunningham is describing religion as a stage in a

process. Arnold's discussion of smallpox in India, on the other hand, shows the place of religion in a system of thought. Finally, Phillips's discussion of the responses to the Spanish Flu in South Africa allows us to see the ways in which religious ideas influence the very fabric of public life. In all cases, we should add, there is no single predictable religious response. The influence of religion, like disease itself, depends very much on the environment.⁴

In each of these essays a remote God can remain as a first cause, even as contemporaries discussed secondary causes. Cunningham notes that

this generally was the case in early modern Europe, just as Phillips finds a number of religious leaders in South Africa who easily accommodated modern medicine, simply assuming that it described conditions established by the Creator. Thus however remote a God or religious explanation might be, belief could accommodate a modern, microbial understanding of life. We merely need recall that even as literary critics proclaim that Darwin leaves no room for God, the director of the Human Genome Project continues to proclaim his belief.⁵

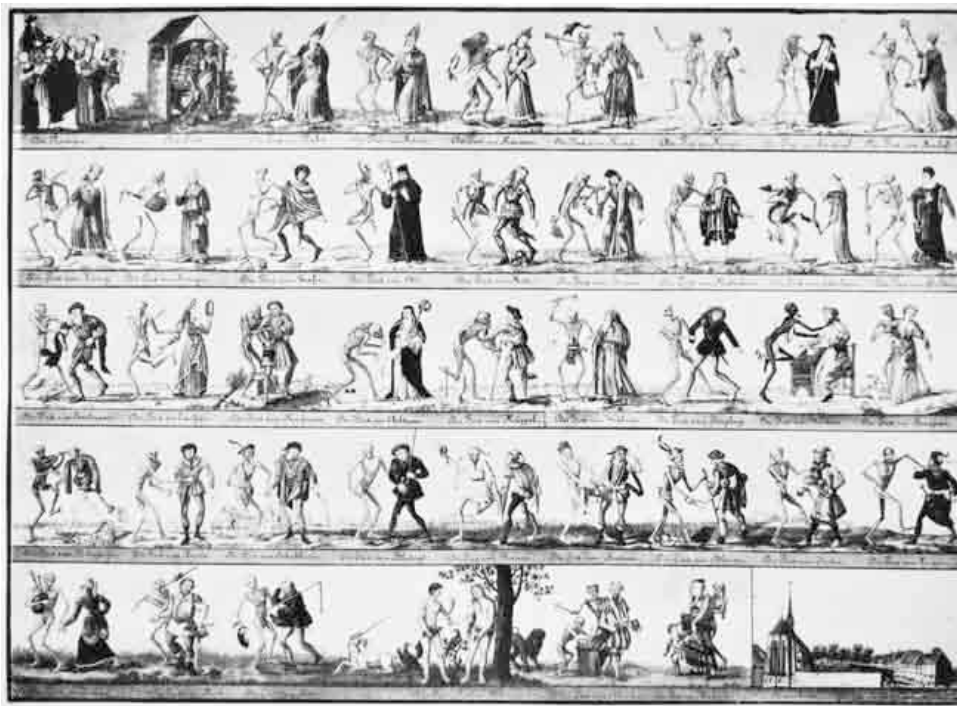
But in fact, as we look at these essays we will see that religious responses are not simple, nor are they uniform. They do, however, seem to fall along a continuum. The most dramatic responses are those Cunningham associates with the apocalyptic predictions of the Christian Gospels—Luke 21:11 predicts earthquakes, famines, pestilences, “and great signs from heaven.” The 14th-century plagues and the initial spread of the great pox fit this model well. Phillips reports that some in South Africa came to a similar conclusion. But it is important to realize that it was the combination of signs and not just plague itself that commentators noticed. The Black Death was preceded by devastating earthquakes; the Great Pox spread in the wake of the French Wars in Italy; and in South Africa it was World War I that led believers to proclaim, “the Lord is coming!” In fact, it may well be that war and earthquakes were more likely to excite apocalyptic speculation than disease. When epidemics arose independent of other signs, the religious response was more reflective.

In Christian terms, by far the most typical response was to acknowledge “God’s just anger.” Cunningham notes how easily pox and sexual license fit together. But in the Christian West, avarice, gluttony, sodomy—all manner of social and personal sin—might have occasioned God’s wrath. In India, perhaps because of the ubiquity of smallpox, or perhaps because of the subcontinent’s religious pluralism, the disease does not seem to have ignited moral reflection. In the case of South Africa, some Christian moralists seem to have connected Spanish flu to a sinful neglect of sanitary conditions while others saw the moral lapse of secularism. But in general it may well be that sin can be an explanation only if disease is relatively unexpected.

There is nothing in the European or South African experiences quite like Sitala, the Hindu deity. Perhaps the German *Pestfrau* or the Swedish plague boy would have been similar. Sitala did have a long history before joining the Vedic pantheon.

And she, like the *Pestfrau*, seemed to offer an explanation of why some died and some did not. Certainly religions struggled with explaining why some sickened and others did not. The story of Job recounts just such a struggle.

What seems missing in the Indian response to smallpox is the search for individuals or groups responsible for the tragedy. Europeans sometimes attributed outbreaks of plague to marginal, seemingly sinister groups. In the 14th century lepers and Jews were blamed. Later the Romani peo-



“Dance of Death,” from Raymond Crawford, *Plague and Pestilence in Literature and Art* (Oxford, 1914).

ple were implicated. And finally, northern Italians believed that plagues were caused by the *untori*, evil people who spread disease by rubbing a mysterious ointment on the walls of public buildings and the covers of prayer books.⁶ South Africans blamed witches for the deadly flu. It often seems that a search for a scapegoat is a natural response to epidemic disease. Yet these responses, too, have a pattern, an epidemiology. Attacks on lepers and Jews in the 14th century were not universal, but followed a pattern similar to earlier rumors of well poisonings. And the anti-Semitic attacks spread along a path from the south of France into Switzerland and the Rhine Valley that was different from the movement of plague. In South Africa attacks on witches were fueled by well-established tensions in families and villages.

Finally, in all three areas (although it is not an issue Cunningham pursues) part of the religious response may well have been a reaction to state power and not simply to disease. Sitala offered a means to reject heavy-handed British imperial medicine. The Calvinists’ angry rejection of modern medicine and complaints about the unchristian actions of public officials were clearly related to broader issues between the Afrikaner and the British. Carlo Cipolla’s fascinating microhistory,

Cristofano and the Plague, makes a similar point about 17th-century Tuscany.⁷

What we learn from these three essays, of course, is that there is no single or predictable religious response to epidemic disease. Nor is it correct to assume religious responses are always apocalyptic. It might be better to recognize that religion, like gender, class, or race, is a category of analysis. The religious response to epidemic disease may best be seen as a frame, a constantly shifting frame, subtly influencing illness and human responses to it.⁸

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¹ Andrew Cunningham, “Transforming Plague: The Laboratory and the Identity of Infectious Disease,” in Andrew Cunningham and Perry Williams, eds., *The Laboratory Revolution in Medicine* (Cambridge University Press, 1992), 209-244.

² Samuel K. Cohn, Jr., *The Black Death Transformed: Disease and Culture in Early Renaissance Europe* (Oxford University Press, 2002); the quote is from Cohn, “Triumph over Plague: Culture and Memory after the Black Death,” in Truus van Bueren and Andrea van Keerdam, eds., *Care for the Here and the Hereafter: Memoria, Art and Ritual in the Middle Ages* (Brepols, 2005), 36.

³ Cohn, “Triumph over Plague,” 39.

⁴ Paul W. Ewald, “The Evolution of Virulence,” *Scientific American* (April 1993): 86-92. This is a point Cunningham also makes in the larger study from which his essay is drawn, Andrew Cunningham and Ole Peter Grell, “The Pale Horse: Disease, Disaster and Death,” in *The Four Horsemen of the Apocalypse: Religion, War, Famine and Death in Reformation Europe* (Cambridge University Press, 2000), 298-304.

⁵ See for example, Philip Kitcher, *Living with Darwin: Evolution, Design, and the Future of Faith* (Oxford University Press, 2007) and Francis S. Collins, *The Language of God: A Scientist Presents Evidence for Belief* (Free Press, 2006).

⁶ William G. Naphy, *Plagues, Poisons and Potions: Plague-Spreading Conspiracies in the Western Alps, c.1530-1640* (Manchester University Press, 2002).

⁷ Carlo M. Cipolla, *Cristofano and the Plague: A Study in the History of Public Health in the Age of Galileo* (University of California Press, 1973).

⁸ Maureen C. Miller, “Religion Makes a Difference: Clerical and Lay Cultures in the Courts of Northern Italy, 1000-1300,” *American Historical Review* 105 (2000): 1095-1130. For a discussion of the cultural context of illness and disease see Mark Harrison, *Disease and the Modern World: 1500 to the Present Day* (Polity Press, 2004).