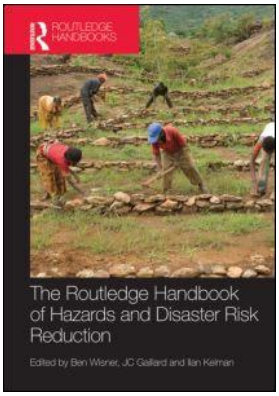

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Introduction

Epidemics and disasters have many connections. First, an epidemic may be considered a disaster in its own right, creating mortality, economic loss and social disruption on a scale comparable to other grave emergencies triggered by natural hazards. Second, epidemics may contribute to secondary events such as food shortage when disease-affected people are unable to farm or work. Third, some disasters such as floods may be followed by epidemics of water-borne diseases, and displaced people sheltering in unsanitary conditions have been known to suffer epidemics of cholera.

As with other forms of disasters, there is considerable inequality in the impact of epidemics and striking differences in the responses available for and played out upon different groups. The vividness of particular unfamiliar or devastating epidemic diseases – the Black Death, Ebola or 1918 flu – may hide this fact, leading to epidemic diseases being seen as equally destructive across populations; no respecters of class, culture or wealth. This chapter will examine epidemics and societies' responses to them. It will take a critical perspective, discussing not only the accepted science and dominant modes of response but also the extent to which an epidemic is a socially produced phenomenon.

The biology of an epidemic

An epidemic is usually defined as an unusually high incidence of disease within a population. It is unusual because it is relatively new to a particular place or has not occurred for some time. Infectious diseases are the most usual form of epidemic disease, although the term is not solely restricted to them. It is their ability to 'infect' and therefore to suddenly affect a population that means they produce unexpected illness and death. It is natural, therefore, to focus on the nature and spread of infectious diseases in order to understand epidemics.

Pathogens or infectious agents have a fairly simple life cycle of release from one host, transport in the environment and then entry into another host; however, the nature of that transport varies greatly. In general, two main forms of transmission can be identified. First, spread can occur through propagation or movement along a chain of infected hosts. Propagation between

humans can occur either directly through acts such as kissing, touching or sexual intercourse, or through the air in microbiological aerosols such as dust or droplets. Second, it can spread through a common vehicle of infection. Water, for example, can carry cholera-causing bacterium *Vibrio cholerae*. Common vehicle transmission is normally either through a common material or a vector such as insects.

There are a variety of types of pathogens; the most significant for human populations are bacteria, viruses and parasites. Other important agents include rickettsias, fungi, chlamydias and prions. Bacteria, unicellular independent micro-organisms, spread through asexual division. This division is in many cases rapid and this can lead to bacteria adapting relatively quickly to changing environments through a process of mutation and selection. This can allow, for example, strains of antibiotic-resistant bacteria to evolve over time.

Viruses are much smaller than bacteria. They are really only a simple bundle of infectious genetic material. Unlike other pathogens, viruses are incapable of independent reproduction. Instead they rely on invading the cells of a host and using those cells to reproduce themselves. The need for the virus to invade a host cell means that to a certain extent viruses are species specific. They need to be able to bind with a host cell and are therefore unable to make this connection to other types of cells. However, as with bacteria, mutation makes it possible for certain viruses to species jump. It also appears possible for intense sustained contact to allow viruses to cross species barriers. This species jumping is highly significant for epidemic disease, as viruses for which humans may not initially have a great deal of immunity are able to enter into populations and therefore cause sudden rises in morbidity.

Parasites are more complex organisms than either viruses or bacteria. They have various stages to their lifecycles, importantly some within hosts, others outside. Malaria is a highly significant parasite for human populations. It is hard to treat parasitic infections in humans because the complexity of their cell walls makes it difficult to find drugs that are toxic to the parasite but will not cause significant harm to the infected person.

An understanding of the development of an infection within the human, from invasion, to infectivity, through morbidity to recovery or possibly death, is key to disrupting diseases that spread through propagation. What is particularly important is the period of infectivity and the extent of inter-personal mixing during this period. If infection can occur during the period of incubation (i.e. the time between invasion and onset of illness), then it is often harder for the individual or other authorities to halt spread because they will be unaware of the threat unless a process of screening or testing has been implemented. Influenza and HIV are examples of two viruses that can be transmitted before the infected individual is exhibiting signs of illness. On the other hand, tuberculosis cannot be spread during the incubation period. Diseases that become infectious only when a person becomes ill are to a certain extent self-limiting. For example, the severe acute respiratory syndrome (SARS) outbreak in 2002 was constrained because the virus appeared only to be able to spread once people had become ill, at which stage they naturally reduced their contact with others, and similarly public health authorities were able to identify cases. In contrast, the 1961 'El Tor' cholera outbreak spread very widely across the world because of the high number of carriers who were infective but also asymptomatic. The overall spread of a contagious disease within a population is then determined by the number of infective contacts that can take place based on the 'density' of populations (i.e. the spatial and temporal concentration of possible contacts) and the extent of immunity or barriers to infection existing.

Epidemics resulting from diseases that require a common vehicle for transmission are usually a result of an environmental change in that vehicle, the contamination of water with the bacterium *Vibrio cholerae* or a change in climate allowing the malaria-carrying mosquito to survive in a different climate. In the case of *Yersinia pestis* bacterium or plague, it is the movement of the rat

carriers. The spread is as a result slow, some 15 km–20 km a year (Cohn 2008). Changes in the environment can result in previously unknown diseases affecting areas of the globe. After exceptionally mild winters in 1998 and 1999 the West Nile Virus appeared to have infected birds in New York and then the population of the city, causing cases of encephalitis and meningitis. Since then the virus has spread to the rest of North America. Major anthropogenic changes to the environment, such as dam building, can also provide new habitats for disease 'vehicles'.

Important dimensions of epidemics

Poverty and power

The unequal distribution of power across societies produces vulnerabilities that infectious diseases can exploit. The bodies of the poor and powerless, some weakened by malnutrition, other diseases or unable to resist the necessity for risky behaviours, allow infectious diseases to thrive, providing spaces where they can spread.

Even with a highly virulent and pathogenic virus such as the 1918 flu, which killed perhaps 50 million people, there is strong evidence for its socially patterned impact. There was a very large thirty-fold difference in excess mortality attributable to the flu experienced in countries around the world (Murray *et al.* 2007). At least one-half of this variation could be explained by differences in per capita income: if you were relatively poor, your chances of survival were very much worse than if you were relatively wealthy. In India it was likely that malnutrition and pre-existing illnesses were implicated in the very high mortality rates suffered amongst the poor (Schoenbaum 2001).

Frequently dominant discourses, whether they are in the media, amongst policy-makers or even in the research community, exaggerate the extent of the personal agency of the poor and powerless. Their 'risky' behaviour is often attributed to either a lack of knowledge or recklessness. During the famines of the nineteenth century in India, which decimated the population as a result of starvation and the infectious diseases attacking weakened bodies, the colonial authorities blamed the fecklessness of the afflicted for their own plight rather than colonial mismanagement and worse. Blaming the individual for their own action allows societies to avoid taking the more fundamental and therefore painful steps of carrying out significant reform.

The recasting of the poor as part of the problem is a natural part of the reinforcing of disease discourses. The use of new protease inhibitor drugs for HIV/AIDS with the poor in New York in the 1990s was discounted in dominant discourses because it was argued that non-compliance, due to chaotic lifestyles, would be high and there would, therefore, be a growing resistance to these new drugs (Farmer 2001). In other words, the act of giving these therapies to the poor was recast as a threat-increasing action.

The intersection of poverty, gender and ethnicity is an important juncture for understanding epidemic disease (see Chapters 35 and 38). The majority of women around the world infected with HIV/AIDS are poor. Poor women are particularly vulnerable to infectious disease, due to a combination of gender politics in their societies that deny them access to what capital exists in their situation of poverty. They may also be vulnerable to sexual violence and therefore sexually transmitted diseases. In one study in South Africa, thirty per cent of women said that their first intercourse was forced, seventy-one per cent had experienced sex against their will and eleven per cent had been raped (Whelan 1999).

In many countries particular ethnic groups experience a vulnerability to infectious diseases due to the racism to which they are subjected, and also because of the consequent poverty they

experience. The institutional racism they experience can be exemplified in the reporting of their deaths, so for example Briggs (2004) assessed that there had been some 500 deaths from cholera between 1992 and 1993 in the Orinoco Delta in Venezuela. However, only thirteen deaths were reported to World Health Organization (WHO) officials – the other deaths were effectively 'erased'. This institutional response was simply part of a process of blame for the cholera deaths that was placed particularly on *indígenas* (indigenous women) for failing to save their family members.

Globalisation, modernity and epidemics

One of the key features of the modern world is the extent to which space, as a barrier to and consumer of time within systems of human communication and exchange, has been increasingly weakened by technological advancement. The resulting increase in interconnectedness of people across the world is often referred to as globalisation. The motivation for this 'compression' of time and space is the benefit it brings to capitalist systems of production and in particular the extent to which it allows an increasing circulation of capital. This benefit has certainly been very important in the economic growth seen particularly within industrialised countries in the last 200 years. However, because space and distance is an important protective factor at a number of different levels to infectious diseases, space–time compression has also as a by-product created new spaces of vulnerability to epidemic diseases. It in effect brings reservoirs of disease (place specific – i.e. particular livestock settings) close to everyone (see Chapter 31). It makes possible the sudden occurrence of previously unknown and, as they have become known, 'emerging diseases'.

Although the increased interconnectedness of people across the globe has accelerated in the last 100 years, this increase has been a fairly constant feature of human history. The Plague of Justinian (541 CE–542 CE), for example, occurred within a collapsing Roman Empire (Marks and Beatty 1976). Similarly, it is likely that the speed with which the 'Black Death' was able to devastate European populations in 1348–1400 was a result of the increasing trading contacts, particularly within the Mediterranean basin but also to isolated places such as Iceland and Greenland.

Epidemics as agents of change

Epidemic disease has led to dramatic transformations throughout history. Crosby has argued that the domination of European powers over the Americas after the arrival of Columbus and the Spanish in 1492 was not the result of superiority (cultural, intellectual or racial), or simply to do with technological or economic factors, but was vitally linked to ecological factors. 'Where imperialists have been successful not simply in conquest but also in settlement, they have done so with the indispensable assistance of the life forms they brought with them' (Crosby 2004: 368). Crosby argued that empire led to the creation of 'neo-Europes' – temperate colonial regions dominated by those of European descent and European diseases. It is estimated that of a pre-contact native population of about 54 million, by 1600, after only 100 years of contact with the Spanish, this population had dwindled to 5 million–6 million (Denevan and Lovell 1992).

Europeans, unlike the native populations of the Americas, had become used to living in unsanitary towns and cities in close proximity to livestock and other reservoirs of disease (Crosby 2004). When the populations of South America were exposed to these European diseases, they in contrast had little or no immunity. This happened in other but not all places touched by European imperial expansion. So although part of the 'conquest' of the plains of North America owed something to military might, a very significant role was played by flu,

Box 30.1 Neoliberalism, Washington Consensus and vulnerability to epidemic diseases

It could be argued that the economic policies followed by the leading financial institutions of the world, the World Bank, International Monetary Fund (IMF) and World Trade Organization (WTO), and supported by the leading industrial nations over the last thirty years, known as the Washington Consensus, have done more to (re)produce spaces of vulnerability to infectious diseases than remove them. Structural Adjustment Programmes (SAP) initiated in response to the debt crisis affecting countries economically battered by the various financial crises, oil shocks and recessions of the 1970s and early 1980s have been seen as particularly problematic. In the 1950s and 1960s many countries of the global south had been experiencing economic growth and were developing health, social and educational sectors along the lines of Western welfare states. This was affordable because of the healthy trade balance that existed at this time, with a strong exporting sector. However, this trade balance was upset in the 1970s as recession in the industrialised world led to a fall in demand for goods. Many countries of the global South had instead to turn to lenders to finance, initially in the short term, their existing welfare provisions. As the economic turmoil of the 1970s continued, these countries found it increasingly difficult to obtain further loans from private sources, often necessary simply to finance existing debt, as the risk associated with such lending was seen as too high. Instead they had to increasingly turn to the IMF and World Bank, which insisted on economic and social reform or 'stabilisation programmes', later termed SAP, as part of their agreements to lend.

The forced cuts in public spending combined with the disruption of rural livelihoods associated with SAP meant new spaces of vulnerability to epidemic diseases were created. Health care systems were badly affected by cuts. User fees were introduced in many countries leading to falls in utilisation, and two-tier health care systems developed, with the middle class fleeing the public-funded health care system into the private health care sector. The disruption of rural livelihoods, associated in part with trade liberalisation and competition from highly industrial farming systems led, ironically, to less food security and more poverty amongst rural dwellers who were then forced to migrate to urban areas in search of work. The urban spaces they moved into were often socially and economically marginal and unsanitary. Within this context vulnerability to epidemic disease increased.

measles, typhus and smallpox. However, in the Philippines this did not occur because of the long history of domestication of animals and trade with Eurasia. In Asia, colonisation was much less successful, with the native populations of these countries fairly rapidly becoming able to resist European domination.

Epidemic disease has had transformative impacts at other times. Cholera and other infectious diseases were a central part of why a European late nineteenth-century sanitation revolution took place, when the social conditions of citizens particularly in cities came to the fore. The 1918 flu, though devastating in its impact, may have helped end WWI, as Germany, experiencing the second more virulent wave of the pandemic, simply ran out of soldiers (Quinn 2008). It was also a significant motivator for the formation of the League of Nations Health Organization, the predecessor of the WHO.

War, disasters and epidemics

War and other disasters typically intensify already existing vulnerabilities to infectious diseases. Women, for example, are particularly vulnerable to sexual violence in refugee camps or at the hands of armed groups. In refugee camps, the normal forms of protection from diseases are frequently absent, such as mosquito nets, effective sanitation or clean water. After the 26 December 2006 tsunami diarrhoeal illnesses, typhoid fever and cholera occurred amongst many of the displaced peoples in the affected region. In 1994 the Rwandan refugee camps located around Goma and Bukavu in the Democratic Republic of the Congo experienced a severe outbreak of cholera, resulting in about 70,000 cases and 12,000 deaths (Siddique *et al.* 1995). The area has since become one of the world's most active foci for cholera in the world (Bompangue *et al.* 2009).

The collapse of infrastructure that occurs in the midst of war means that normal public health practices such as vaccination and other public health processes halt. Since the invasion of Iraq in 2003 there has been a rise in tuberculosis, diarrhoeal diseases, measles and mumps (Dyer 2004), and therefore also in deaths (Roberts *et al.* 2004). Although generally causing hardship, wars do occasionally lead to a lack of population mixing and therefore limit some infectious diseases. In Mozambique and Angola the spread of HIV may have been limited by the civil wars in these countries (Strand *et al.* 2007).

Responses, reactions and prevention

The 'modern' public health response to epidemics

The dominant response to potential or actual infectious disease outbreaks typically involves forms of surveillance identifying threat and then the implementation of control over the host, vector, infected, environment or infectious agent. These controls are applied at different scales: some will involve the individual, others institutions, communities or even regions. Immunisation has been one of the most effective forms of control over infection in hosts, and the eradication of smallpox was arguably the most effective application of an active immunisation programme.

Chemoprophylaxis, or the use of chemical substances to prevent, halt the progression of or treat the symptoms of infection, is the other main form of medical control intervention. Antibiotics are a key tool in the fight against bacterial disease. The discovery of the potential of an extract from the penicillium fungi to kill bacteria in the 1930s opened the era of antibiotics. Bacterial infections such as syphilis and staphylococcus, which were serious and for which there were no effective interventions before the development of the antibiotic penicillin, could now be treated. The use of chloroquine to prevent the development of malaria, specifically to prevent malarial parasitaemia, is another example.

Other responses attempt to control behaviour. This may include, for example, attempts to change the way individuals have sex, work, eat or use drugs recreationally, in order to prevent infection. A significant number of infectious diseases are spread through sexual contact, including syphilis, HIV and *Chlamydia trachomatis*. The aims of public health interventions may focus on trying to encourage abstinence, limiting the number of sexual partners an individual may have or the use of various forms of protection from infection such as condoms. Amongst intravenous drug users the goal may be to encourage users to stop sharing needles. An important assumption often made within these types of public health campaigns is that the target of the policy has individual agency, for example, that a sex worker has sufficient power, within their relationship with a client and in the context of their working environment, to insist that a

condom is used, even if they understand the reduction in risk of infection that it offers. This assumption is often questionable, particularly for the least powerful and most vulnerable in society.

Control is also applied routinely to the infected with the aim of halting the spread of disease. This control may be reinforced by legal sanction, not simply requests to behave in certain ways. It can take various forms, from the restriction of activities so that individuals with diarrhoeal diseases should not be preparing food, to forms of isolation. Enforced isolation or quarantine into hospitals and other institutions can and has been used to ensure that the infected do not come into contact with the non-infected; however, other forms of isolation – for example, not entering public places – are more common.

Though, of course, often effective in limiting spread, quarantine does involve the suspension of human rights. This may be ethically acceptable if it applies equally to all members of society; however, it has often been the case that the most powerful can resist these types of sanctions more easily than the least powerful in society. Even if there appears to be a clear and legitimate public health argument for enforced quarantine, the implications can be troubling. The case of 'Typhoid Mary', a cook in New York during the early twentieth century, is a notorious example. She was an asymptomatic carrier of typhoid and her status and also her refusal to stop working as a cook led eventually to her enforced quarantine for some twenty years until her death. Her position as a poor Irish migrant at a time of intense discrimination and, therefore, her treatment by the public health authority (as well as the fact that the idea of a 'well' carrier of typhoid would have been extremely odd to the public at this time) suggest that even in this case the ethics and social justice of the public decision-making might be questioned (Wald 1997).

Control can also be applied to the environmental 'vehicles' for diseases, with control over water through effective sanitation and the provision of safe water probably being two of the most significant for human populations. Direct protection can be provided from insects by using bed nets, sometimes treated with an insecticide; however, while this offers protection against malaria-carrying mosquitoes, it offers no protection against insects that bite during the day. The tsetse fly, a vector for the sleeping sickness, is active during the day. Instead, direct controls against the insects have to be used, for example insecticides or biological controls such as the introduction of sterile insects.

In order for controls to be implemented there needs to be a system of surveillance and then a structure that can implement responses. Within countries this is typically carried out by local public and environmental health authorities under the direction of central disease control centres (e.g. the Centers for Disease Control and Prevention in the USA). These control centres communicate internationally and are also aided in this work by the Global Alert and Response system of the WHO under the International Health Regulations of 2005. Other bodies, such as the European Centralised Information System for Infectious Diseases, collect, analyse and present data on infectious diseases for their region.

The pharmaceutical industry and infectious diseases

Vaccines and drug therapies represent some of the most useful tools with which to fight epidemic diseases. They are particularly useful, it might be argued, because their use does not require the need to substantially transform society in order to remove the vulnerabilities that would otherwise lead to large inequalities in exposure and illness. However, despite this clear benefit, it is notable that there is as yet no vaccine for the prevention of HIV infection. It has been argued that this is not necessarily due to scientific difficulties, but rather to the state of the pharmaceutical industry. Scientific infighting, inadequate funding and a lack of co-ordination have all acted as a

deterrent to the effective process of vaccine development (Cohen 2001). More broadly there appears to be a greater impediment to development in the relationship between the market-driven impetuosity of medical research in the twentieth and twenty-first centuries and the economic inequalities that exist across the globe (Craddock 2007).

This is a situation that not only affects the search for a vaccine for HIV but also new medical products aimed at tackling epidemic diseases affecting economically poorer societies. The market-driven pharmaceutical industry has, not unexpectedly, turned away from research and development into potentially unprofitable medicine and vaccines and is instead concentrating on products that will guarantee a profitable return. Since the 1980s it is estimated that there have been some 180 new drugs developed for the treatment of cardiovascular disease but only three for tuberculosis (Kaufmann 2009). Research is focused on diseases of the Western world, where the health care systems can be expected to pay for the expense of developing new medicines. For drugs that may be used against infectious diseases, often there is a significant and unresolved dispute between pharmaceutical companies exercising their rights to exploit the intellectual capital they have in the patents for these drugs and attempts by countries where they may be most usefully used to reduce cost by using that scientific knowledge to produce cheaper generic versions of these products. It centres particularly on the contrasting entitlements of a country to protect its citizens' health against the intellectual property rights of companies, both of which are supported in the 1995 Trade Related Aspects of Intellectual Property Rights agreements of the WTO and discussed at its 2001 Doha meeting.

The politics of response

Responses to epidemics are of course not apolitical. The HIV/AIDS crisis illustrates this well. The responses of political leadership to the crisis around the world have varied greatly. The political leadership in China, for example, grossly underestimated the extent of the crisis in their country for many years (Bor 2007). When in 2004 Premier Wen Jiabao finally made a more realistic assessment of the extent of the disease, the central government felt able to triple the funding available to tackle the problem. In South Africa, despite the scale of the crisis, the African National Congress (ANC) leadership felt able to resist pressure to extend the programme of antiretroviral drug (ARV) therapy, despite concerted campaigns by civil society organisations and other political parties (Bor 2007). More generally, harm-reduction approaches, the use of condoms or the provision of clean needles, have become highly contested within the international response to the HIV/AIDS crisis. Conservative institutions have lobbied against these types of programmes, significantly affecting their funding (Pisani 2008).

Epidemics, blame and the oppression of vulnerable groups

The 'top-down' approaches to epidemics of surveillance and control may seem rational. However, it is important to critically examine the presumptions on which they are based, as well as their intended or unintended consequences. This is important because within the fear engendered by epidemics the pernicious forces of discrimination and various types of oppression have frequently been able to play out. Indeed these forces can be seen to become easily embedded in public health policy. This is due to a tendency to link epidemic diseases to ideas of deviance and marginality associated with particular groups in society and therefore for the responses to epidemics to become tools of the dominant forces of social control and the goals of fixing social positions (Rosenberg 1992).

Box 30.2 Facing pandemic threat in France

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Experiences from how the French government faced the recent H5N1 and H1N1 pandemics allow two conclusions. First, preparedness activities have been important since the mid-1990s and a detailed plan, including the purchase of important stocks of vaccines, was drawn and revised several times. Such a plan resulted from the strong involvement of the government, eventually joined by other stakeholders in the health and public safety sectors. It primarily focused on the health and medical impact of a potential long-term crisis, but also considered the social and economic dimensions of pandemics. France was thus considered as one of the best-prepared countries in the world.

Second, although they were prepared, government authorities failed to avoid a nascent political crisis triggered by the outbreak of the H1N1 pandemic. Public detractors alleged that the government hastily purchased vaccines and that experts who recommended such a measure were closely connected to major pharmaceutical firms. France was following recommendations from the WHO, as did other countries, and, in fact, the WHO was also caught up in controversy over experts' alleged links with large pharmaceutical firms and the profits earned by these companies by producing the vaccine.

The H1N1 crisis is, however, rooted in a deeper tangle of structural causes that are evident in the inability of France, as with other countries and international organisations, to consider solutions outside existing frameworks. Tools and procedures for monitoring and mobilising stakeholders and appropriate resources are at stake. Each pandemic is different and it is crucial to develop frameworks that are flexible enough to consider multiple scenarios in terms of knowledge and multiple solutions in terms of action, not limited to medical and health-related measures. Surveillance systems should also be flexible enough to monitor both health phenomena and social, economical and organisational responses.

Epidemic disease is particularly useful in reinforcing public discourses of discrimination and oppression because it transforms the emotional language of fear, hatred or scorn into the legitimated language of medicine. So, for example, during the 1918 flu pandemic in many countries 'foreigners' were blamed for the spread of the disease. In parts of Eastern Europe, in particular Poland, the Jewish population was singled out for blame (Quinn 2008). In this case the anti-Semitism of these places was easily reinforced by the fear engendered by the disease, and this facilitated oppressive 'public health' interventions and worse. Similarly, in San Francisco in the nineteenth century smallpox allowed the widespread view that the Chinese community was undesirable to be legitimised within a public health context (Craddock 2000). Chinatown became a particular focus for this transformed view of difference, and the place and its inhabitants were subjected to oppressive public health sanctions including restrictions on external employment and building. This in effect imposed severe restrictions on where the Chinese could go, what they could do and how they might sustain their livelihoods. The oppression acted out through the public health responses was not new, but simply transformed what had existed. Smallpox had not changed the Chinese community into an undesirable one: this had

Box 30.3 Resistance in the face of epidemics

The treatment of excluded groups during periods of epidemic disease has had important consequences for their political evolution. The response of society to the epidemic may objectify the oppression that the group experiences and therefore provide a focus for political activism. Something around which it was difficult to motivate action is transformed by the disease and a society's response to it into something more tangible. It has been argued, for example, that the HIV/AIDs crisis and in particular the failure of the state to provide an appropriate response to it, while it was seen largely as a 'homosexual disease', solidified the political community of homosexual identity (Altman 1988). AIDS deaths cut across divisions of social class or ethnicity and therefore provided a unifying cause which eventually allowed the group to act politically against this and other forms of discrimination.

This possibility for transforming the discrimination, embedded in public health responses, into libratory action may only be possible at certain times or within specific contexts. For example, although the Chinese in San Francisco fought successfully for the repeal of certain public health-related discriminatory policies, they were unable to throw off the mantle of 'pathological deviance' attached to them in common discourses (Craddock 2000). Nor were they able to turn the tide of tough immigration laws linked very closely to this discourse. It is also possible that difference can separate resistance movements that might be expected to act on new issues of discrimination. The differentness of women infected with HIV, their ethnicity, class and nationality, may have separated them from the Western feminist movement, leading to these 'other' women being isolated from media for protest and resistance available to Western feminists (Farmer 2001).

pre-existed the outbreaks. In a similar way the homosexual community was not transformed in the eyes of society by HIV/AIDS into a 'deviant' group (Craddock 2000); it had always been seen as sexually deviant. Rather it was now also or predominantly seen as a diseased and dangerous group.

Alternatives: bottom-up approaches to epidemics

Top-down responses to epidemics are typically unable to respond to the highly variable social and environmental situations that often exist in different places. This is important because it is in these different spaces and places that elements come together to produce situations of vulnerability to epidemic disease. Certain diseases such as HIV/AIDS, cholera, plague and malaria, because their mechanisms of spread are highly embedded in the unique contexts of specific places, are particularly unsuited to nationally planned public health responses.

The alternative, bottom-up approaches instead focus on locally initiated and run schemes. They allow health messages to be site specific and therefore to take into account the constrained condition of many people's lives. They may use local experts to encourage behavioural change, using sex worker peer HIV/AIDS educators, for example (Walden *et al.* 1999), or villagers to form water and sanitation committees to oversee sanitation improvements in their villages (Pradesh 2001). They may focus on early diagnosis of diseases such as malaria, not in village health posts and dispensaries but by members of households and in particular women (Tanner and Vlassoff 1998). Sustainable vaccination programmes, for example, aim to increase coverage through gaining an in-depth understanding of the local contexts (Streefland 1996).

However, although a focus on the local is important in generating effective public health policy, it is equally important not to lose sight of broad, fundamental structures that lead to the inequalities upon which vulnerability to infectious disease is sited. Otherwise there is a danger that blame is shifted onto the individual and the potential for social change is reduced.

Conclusions

Globalisation means that most people across the world are now 'closer' to potential infectious disease reservoirs than at any time before. At the same time there are also very effective tools with which societies can respond to the threat posed by epidemic disease. However, human history is replete with examples of the differential use of available resources and their unjust application. To be effective and just, responses to epidemics must be based both on an understanding of the epidemiological expression of disease biology and also on the social transformation of this process as it plays out across unequally positioned individuals.

Prevention is more cost effective and sometimes far more critical than treatment in the case of epidemic disease. However, preventative interventions need to be critically scrutinised to avoid the risk of simply reinforcing existing situations of inequality. The limited agency of the poor also needs to be taken into account. Although prevention is vital, treatment and particularly its availability to the poor must not be overlooked. Too many of the epidemic diseases of the poor are under-researched, underdeveloped, with few treatments available. Where they are available, for a variety of reasons often they are not available to the poor. Bottom-up approaches to epidemics do produce effective local preventative measures. However, unless they are also acting at other scales, as processes of resistance, they risk being simply a 'sticking plaster' for deeper structural vulnerabilities. As with most types of disasters, the reduction of structural inequalities, and specifically poverty across the globe, would do much to reduce the destructive impact of epidemic diseases.