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SARS and Vulnerabilities of Post-Westphalian Public Health

The other side of the Rubicon

Reflecting on the experience of handling the SARS epidemic, WHO's Mike Ryan observed that '[a] Rubicon has been crossed. There's no going back now' (Piller, 2003). As previous chapters illuminated, the SARS outbreak confirms that public health has moved into post-Westphalian governance territory with respect to infectious diseases. The successful management of the global SARS threat provides ample evidence that the governance possibilities in post-Westphalian public health possess exciting potential. Much future work, including the completion of the revision of the International Health Regulations and the establishment of the public–private partnership to fund improvements in national SARS-related surveillance and response capabilities, will focus on exploiting the possibilities revealed dramatically in the SARS crisis.

At the same time, the other side of the Rubicon public health crossed during the SARS outbreak deserves more critical attention. In addition to highlighting the shift from Westphalian to post-Westphalian public health, the SARS epidemic contains features that suggest that post-Westphalian public health faces vulnerabilities that may erode some of the promise now seen in the strategies used to respond and contain SARS in 2003. This chapter examines some of the governance problems that post-Westphalian public health confronts in the post-SARS environment.

The analysis in this chapter does not, however, constitute predictions about how public health will fare on the other side of the Rubicon. Historic public health accomplishments have, in the past, been followed by the emergence of unexpected public health nightmares. A good example is the emergence of HIV/AIDS immediately after the global triumph of the eradication of smallpox. Similarly, the global crisis of

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emerging and re-emerging infectious diseases identified in the 1990s dashed notions that modern science had equipped societies to conquer pathogenic microbes. The transition to post-Westphalian governance is not reassuring in every instance involving public health threats because this transition represents the continuation of the struggle to find ways to fend off the relentless pressure created by the interactions of the microbial and human worlds. Public health governance will continue to confront the volatile mixture of germs and politics in the 'new world order' for public health ushered in by the SARS outbreak.

Crossing prior Rubicons: The fate of previous governance innovations in international infectious disease control

What happened in the global campaign to contain SARS was revolutionary from a governance perspective. The SARS outbreak will go down in public health history as a landmark innovation in the handling of international infectious disease problems. Although understanding this innovation on its own terms is important, a broader historical perspective is needed in order to put the governance developments of the SARS crisis into context. Public health governance on infectious disease control has experienced significant innovations in the past, all of which became ineffective over time. Reviewing the fate of these previous governance innovations in the area of infectious diseases should moderate enthusiasm for the potential of the governance revolution witnessed during the SARS epidemic.

The first significant innovation in governance of infectious diseases internationally occurred when public health emerged as a diplomatic issue in the mid-nineteenth century. The diplomatic emergence of infectious diseases as a foreign policy issue marked a significant change in the nature of the Westphalian system of public health governance. As discussed in Chapter 3, prior to the convening of the first International Sanitary Conference in 1851, governance of infectious diseases was national in orientation. The elevation of infectious disease control to the subject of diplomatic activity in the mid-nineteenth century created new governance activities at the intergovernmental level. The governance innovations spawned by this new approach to infectious disease problems included the periodic international sanitary conferences and international sanitary conventions through which states sought to achieve international governance on infectious disease threats.

Not long after the elevation of infectious disease control to a foreign policy concern, experts and officials working the new machinery of

international health governance realized that the innovations of ad hoc diplomatic conferences and the negotiation of different international sanitary conventions were inadequate governance responses to the infectious disease problem. The nature of the threat posed by pathogenic microbes in an increasingly interdependent world forced the developing framework of Westphalian public health to undergo revision. States reformed the Westphalian approach through another governance innovation – the creation of permanent international health organizations charged with overseeing the international sanitary conventions and/or coordinating intergovernmental cooperation on infectious diseases. Through these reforms Westphalian public health governance became more centralized at the intergovernmental level.

In time, these reforms to the Westphalian model also proved inadequate in addressing the threat posed by pathogenic microbes. The next governance reforms appeared in four areas: (1) the consolidation of the various international health organizations into one universal organization, WHO; (2) the creation of a different process for crafting international legal rules on infectious diseases in the form of the adoption of international regulations under Articles 21 and 22 of the WHO Constitution; (3) the unification of international legal rules on infectious disease control to provide one set of rules for the international community, the International Health Regulations; and (4) articulating infectious disease control as part of the individual human right to the highest attainable standard of health.

The first two decades of the twentieth century witnessed the creation of three different international health organizations – the Pan American Sanitary Bureau (1902), the *Office International de l'Hygiène Publique* (1907), and the Health Organization of the League of Nations (1923). Despite efforts to coordinate the activities of these various bodies, the existence of multiple entities created inefficiencies and frictions that could only be overcome by consolidating intergovernmental cooperation on public health in one universal organization. The creation of WHO in 1948 as a specialized agency of the United Nations fulfilled this governance need. The first function listed in Article 2 of the WHO Constitution is for the Organization 'to act as the directing and co-ordinating authority on international health work' (WHO, 1948, Article 2(a)), thus giving WHO primacy in terms of intergovernmental cooperation on public health – an organizational primacy that did not exist in prior efforts at international health governance.

The WHO Constitution also addressed another perceived defect in international health governance on infectious diseases – the existence

of multiple international sanitary conventions. Experts argued that the many international treaties that existed on infectious disease control created an inefficient, patchwork regime that provided an inadequate framework for addressing the infectious disease threat in international relations. The plethora of treaties produced between 1851 and 1945 made international law on infectious diseases confusing and unsatisfactory by the end of World War II for three reasons.

First, the different treaties created holes in the international regime for infectious disease control. As argued in 1947 by the US Department of State (1947, p. 957), '[t]here are states, including some which occupy key positions in the stream of international maritime and aerial commerce, bound by only the obsolete conventions of 1912, 1926, and 1933, or by no sanitary conventions at all.' Second, the agreements often overlapped in substantive content, were not kept current as scientific knowledge advanced, and were not designed to cope with the increasing speed, volume, and scope of international travel and trade (Fluss, 1997, p. 379). Third, international infectious disease control relied exclusively on the treaty. In connection with infectious disease control, the treaty process proved cumbersome, slow, and resistant to revisions demanded by changing scientific knowledge and patterns of international trade (US Department of State, 1947, p. 957).

The governance innovation created to deal with these problems appears in Articles 21 and 22 of the WHO Constitution (WHO, 1948). Article 21 empowers the World Health Assembly to 'adopt regulations concerning:... sanitary and quarantine requirements and other procedures designed to prevent the international spread of disease.' Article 22 provides that '[r]egulations adopted pursuant to Article 21 shall come into force for all Members after due notice has been given of their adoption by the Health Assembly except for such Members as may notify the Director-General of rejection or reservations within the period stated in the notice.'

As mentioned in Chapter 3, the Article 21–22 combination creates a process different from the normal treaty-making approach. With treaties, states have to 'opt in' – affirmatively declare their willingness to be bound by the rules in the agreements. Article 22 establishes an 'opt out' approach – WHO member states are bound by regulations adopted by the World Health Assembly under Article 21, unless they expressly opt out of the regulations in question.

The governance innovation represented by the Article 21–22 combination was recognized when the WHO was created. Walter Sharp (1947, p. 525) described Article 22 of the WHO Constitution as adopting the 'comparatively novel principle known as 'contracting

out'.' Sharp (1947, p. 526) noted that delegations negotiating the WHO Constitution pushed for the innovation in Article 22 to allow WHO to apply new scientific techniques and knowledge efficiently and universally to the international legal rules on infectious diseases. Sharp (1947, p. 525) also observed that Article 22 'was the subject of warm debate' because states worried about the effect of this governance innovation on their sovereignty.

Articles 21 and 22 became the legal basis for the 1951 adoption of the International Sanitary Regulations (1951), the precursor to the International Health Regulations (IHR). With the International Sanitary Regulations, WHO unified the disparate international legal rules scattered across the many international sanitary conventions in existence into a single set of rules for use by WHO member states. WHO, thus, simplified and harmonized the legal framework for international governance for infectious diseases, which represents the third major governance innovation to occur in the immediate post-World War II period.

The IHR also limited the discretion of sovereign states by requiring that all reservations be approved by the World Health Assembly (IHR, 1969, Article 88.1). This provision was designed to deter WHO member states from making reservations to the IHR that would threaten their public health and scientific integrity. The process of having to seek World Health Assembly approval for reservations to the IHR reduced the normal flexibility states had under international law to make reservations to treaties they wished to join. In the IHR, the quasi-legislative powers of Article 21, the 'opt out' technique of Article 22, and subjecting all reservations to acceptance by the World Health Assembly work together, in theory, to provide robust governance for infectious disease control that is not weakened by WHO member states refusing to join or by significant reservations to key provisions.

The fourth major governance innovation to appear in the post-World War II period was the articulation of infectious disease control as part of the individual human right to the highest attainable standard of health. The WHO Constitution contains the first pronouncement that the enjoyment of the highest attainable standard of health was a fundamental human right (WHO, 1948, Preamble). Later international legal instruments, such as the International Covenant on Economic, Cultural, and Social Rights (ICESCR), also proclaimed the enjoyment of the highest attainable standard of health a human right (ICECSR, 1966, Article 12). Part of the responsibility of states under the right to health included the prevention, treatment, and control of epidemic and endemic diseases, including infectious diseases (ICESCR, 1966, Article 12.2(c)). Framing infectious

disease control in the context of the fulfillment of a fundamental human right represented a governance innovation because it identified individuals, not just states, as subjects of international law on infectious diseases.

The crisis in emerging and re-emerging infectious diseases identified in the 1990s and early 2000s revealed the extent to which public health experts were dissatisfied with each of these four governance innovations. By the mid-1990s, WHO's ability to act as the directing and coordinating authority on international health work was questioned and under attack (Godlee, 1994a; Godlee, 1994b; Godlee, 1997). Other international organizations not expressly dedicated to public health, such as the World Bank, International Monetary Fund, and the World Trade Organization, were increasingly seen by experts as more powerful and important players in public health than WHO. As one WHO official put it, '[t]he World Bank is the new 800-pound gorilla in world health care' (Abbassi, 1999, p. 865).

The IHR's collapse as an international legal regime on infectious disease control (analyzed in Chapter 3) suggested that the governance reforms of unifying international law on infectious diseases and the 'opt out' process had little, if any, impact. The human right to health similarly appeared to carry little influence with WHO member states in terms of infectious disease control, a reality confirmed by the growing toll infectious diseases, especially HIV/AIDS, were causing around the world as the twentieth century drew to a close. Katarina Tomasevski (1995, p. 873) captured the stagnation into which the human right to health had fallen by the mid-1990s when she argued that 'the right to health has not conceptually progressed from the time it was first proclaimed, not even to define the core terms *health* and *right* in the proclaimed right to health.'

A comprehensive analysis of why these previous governance innovations led to dissatisfaction in the world of public health is beyond the scope of this chapter, but some general observations are in order. First, three of the four governance reforms described above represent reforms from within the Westphalian governance framework. The creation of a single international health organization with primacy on international health work, the quasi-legislative authority of the World Health Assembly to adopt international regulations through the 'opt out' procedure, and the unification of international law on infectious diseases in the IHR remained firmly within the template of Westphalian governance. Only the linkage between infectious disease control and the human right to health moved beyond the Westphalian model by incorporating

individuals as formal subjects of international law. As governance responses to emerging and re-emerging infectious diseases in the 1990s and early 2000s (analyzed in Chapter 4) suggested, the main problem was the Westphalian template. Tinkering with the template did not significantly improve infectious disease control.

Second, the promise initially sensed with each of the four governance reforms described above never panned out for two basic reasons: (1) the commitment of governments to public health nationally and internationally waxed and waned, but mainly waned; and (2) political, economic, social, and technological changes created conditions encouraging the emergence and re-emergence of infectious diseases. In short, national and international governance on infectious diseases stagnated while the opportunities for pathogenic microbes to emerge and spread proliferated. The lack of political commitment from governments and globalization's stimulation of the resurgence of infectious diseases led to acknowledgment that the Westphalian approach, and all the reforms made to it, did not provide an adequate governance framework.

The move from a Westphalian to a post-Westphalian approach merely represents the latest attempt at governance innovation in the area of public health generally and infectious disease control specifically. Believing that public health has reached the 'end of history' with respect to governance of infectious diseases in the post-Westphalian period would be naïve in the extreme. The successful handling of the SARS outbreak does not ensure that the commitment of governments to better public health governance has reached a point at which backsliding is impossible. The containment of SARS does not mean that globalization's contributions to microbial incubation, emergence, and spread have waned to the point at which they are easily managed. Previous governance innovations in the area of infectious disease control proved unsustainable, and the sustainability of post-Westphalian public health governance will also be a serious issue that bears close observation.

Rubicons not crossed: The limited applicability of WHO's new global alert power

One danger in focusing too intensely on the SARS outbreak and the governance innovations that sprang from its handling is losing sight of many other global infectious disease problems that exist. The epidemiological profile of SARS – a novel virus communicable through respiratory means for which no diagnostic, therapeutic, or vaccine technologies

exist – is not the profile of many of the most serious infectious disease problems facing the world today and in the near future. The relevance of some of the strategies employed in SARS to the governance of other killer diseases is, thus, in doubt.

Much of the governance architecture used in the SARS outbreak does apply to other infectious disease threats, especially the incorporation of non-governmental sources of information into global surveillance, the enhanced response opportunities provided by improved surveillance, and the central role of WHO in global infectious disease surveillance and response. The use by WHO of global alerts and travel advisories is, however, not a governance feature that transfers readily to most of the major infectious disease problems countries face today. Thus, the most jaw-dropping and controversial governance aspect of the containment of SARS will not play a significant role in bringing other epidemic and endemic diseases under control.

The global health governance strategy of incorporating non-governmental sources of information into global surveillance effectively used in the SARS outbreak has general applicability to infectious disease problems. Surveillance is critical to the management of any infectious disease threat. Improvements in the quantity and quality of surveillance information achieved through the collection, analysis, and dissemination of data from both governmental and non-governmental sources are possible across a wide spectrum of infectious diseases. WHO's *Disease Outbreak News* has, from 1996 until the present, posted information on 51 different diseases and syndromes (WHO, 2003d-3), which reflects the broad range of infectious diseases handled by WHO's system of global surveillance, including its Global Outbreak and Alert Response Network (Global Network).

Better surveillance of infectious disease problems creates enhanced opportunities for effective response activities, as illustrated in the handling of the SARS outbreak. Access to improved surveillance data allows national public health authorities to plan and implement control and containment interventions and catalyzes international assistance for countries that need it. Prior to SARS, WHO (2002a, p. 60) noted the link between its surveillance activities and the Global Network when it reported that '[d]uring the past two years, the network has launched broad and effective international containment activities in Afghanistan, Bangladesh, Burkina Faso, Côte d'Ivoire, Egypt, Ethiopia, Gabon, Kosovo, Sierra Leone, Sudan, Uganda, and Yemen. These activities are in addition to many smaller responses requiring technical support or assistance through the provision of vaccines and other supplies.'

The effectiveness of post-Westphalian infectious disease surveillance and response can be seen in examples recorded by WHO with respect to plague in India, Crimean-Congo haemorrhagic fever on the Pakistan–Afghanistan border, relapsing fever in Sudan, and Ebola in Uganda. In each case, early identification of the outbreak through improved surveillance facilitated effective cooperative responses involving national and international public health assets (WHO, 2002a, pp. 65–7). In the examples from India, Sudan, and Uganda, WHO measured the contributions made by the Global Network by comparing the surveillance and response efforts of identical outbreaks in those countries and regions prior to the establishment of the Global Network. In WHO's opinion, the Global Network has made an 'immediate – and measurable – difference' to surveillance and response for infectious diseases (WHO, 2002a, p. 65). WHO calculates the difference the Global Network has made in terms of its ability to address an outbreak without disrupting trade and tourism, by correcting potentially damaging speculation in the news media, by effectively containing the spread of the disease, and by reducing overall morbidity and mortality from the disease (WHO, 2002a, pp. 65–7).

The demands of enhanced surveillance and response activities in a globalized world place a premium on WHO's abilities to manage global flows of epidemiological information and coordinate international assistance for disease control and containment (Grein *et al.*, 2000, p. 97). The need for a strong role for WHO reaches across the spectrum of infectious diseases, from those, such as SARS, that pose global threats to those, such as human African trypanosomiasis, that constitute regional public health problems. Without an effective WHO, the operation of global health governance and the production of global/regional public goods for health would not be possible. This reasoning explains why WHO (2003c-3) is seeking $100 million from 'bilateral donors to support expanded surveillance and response across the globe.' (This $100 million initiative is *in addition* to the $100 million public–private partnership established to fund improvements in SARS-related surveillance and response capabilities in China and the Asian region.)

Although many of the governance features used effectively in the SARS outbreak contribute on a daily basis to WHO's global efforts to identify and contain infectious diseases, the power WHO exercised during the SARS outbreak to issue global alerts and travel advisories is of more limited value in the general fight against pathogenic microbes. As WHO (2003b, p. 3) noted during the SARS crisis, most of the previous outbreaks of new infectious diseases in the decade preceding SARS remained geographically confined because of, among other things, a lack

of efficient human-to-human transmission. Not all new diseases that emerge after SARS will share its respiratory transmission capabilities.

Further, governance of three of the major infectious disease killers – HIV/AIDS, tuberculosis, and malaria – is not enhanced, at present, by WHO's ability to issue global alerts and travel warnings. Reflecting on the use of this power in the SARS outbreak, WHO itself 'warned that scourges such as AIDS or malaria will require other approaches and massive new funding' (Piller, 2003). The nature of the Global Fund to Fight AIDS, Tuberculosis, and Malaria demonstrates that governance of these three killer diseases will demand strategies that do not involve WHO issuing global alerts.

The possibility also exists that WHO member states may revisit the issue of whether WHO should issue the kind of global alerts and travel advisories the Organization did during the SARS outbreak. The anger of WHO member states subject to the geographically-specific travel advisories (such as China and Canada) cannot be entirely discounted, even in light of the World Health Assembly's authorization for WHO to issue global alerts when necessary. For example, Health Canada's National Advisory Committee on SARS and Public Health pointedly raised WHO's travel advisory power as a 'discussion point' for further consideration in the aftermath of SARS (National Advisory Committee, 2003, p. 37). The Committee also observed that '[s]ome have suggested that WHO should confine itself to informing countries of the epidemiologic situation in member countries and not issue travel advisories' (National Advisory Committee, 2003, p. 202). Experts within countries affected by the geographically-specific travel advisories have also raised the question of whether the travel advisories made any measurable contribution to the containment of SARS. Paul Gully of Health Canada argued, for example, that it is 'appropriate to look at those travel warnings and ask, "Did it make any difference?"' (Piller, 2003). Another Canadian health official, Allison McGeer, warned that the kind of travel advisories WHO issued during the SARS outbreak are blunt, haphazard tools of unproved effectiveness that need to be assessed to ensure 'they are having positive impact' (Piller, 2003). Canada's National Advisory Committee argued that the criteria WHO used 'seem arbitrary and were developed during the outbreak without a formal consultation process or serious scientific debate,' and the Committee could 'find little rationale for the criteria or the timing of the WHO travel advisory' against Toronto (National Advisory Committee, 2003, p. 203).

The wording of the IHR resolution provides WHO member states concerned about WHO's future use of global alerts and travel advisories

some room to place limits on this WHO power. The resolution authorizes the WHO Director-General to issue alerts to the international community 'on the basis of criteria and procedures jointly developed with Member States' (World Health Assembly, 2003b). This language provides concerned WHO member states with the opportunity to circumscribe WHO's alert power by restricting the criteria and procedures under which WHO may exercise the power.

Health Canada's National Advisory Committee on SARS and Public Health recommended, in fact, that Canada should seek to launch a multilateral process that would establish agreed standards of evidence for the issuance of travel advisories and alerts by member states and that would determine 'the role of WHO in issuing travel advice, and to establish a procedure for providing advance notice for possible alerts and advice' (National Advisory Committee, 2003, p. 207). The Committee also recommended that 'the notice process should provide a mechanism for consultation with and a response by the target country' (National Advisory Committee, 2003, p. 207). These recommendations do not seek to strip WHO of the power to issue travel advisories recognized in the World Health Assembly, but they propose a process through which disciplines and limitations on WHO's power would be negotiated and agreed by WHO member states.

I make these observations not to diminish the importance and revolutionary nature of WHO's global alert and travel advisory powers in post-Westphalian public health governance. The use of these powers during SARS, and their subsequent confirmation by the World Health Assembly, constitute very important features of public health's crossing of the post-Westphalian Rubicon during the SARS outbreak. The lack of utility of these powers in the global struggle against major infectious disease threats, such as HIV/AIDS, tuberculosis, malaria, and many neglected infectious diseases that plague only developing countries, highlights the daunting challenges that remain for post-Westphalian public health. Other post-Westphalian Rubicons remain to be crossed, including those represented by the development of safe, effective, and affordable antimicrobial technologies for prevention (e.g., new vaccines) and treatment (e.g., new antimicrobials to address the advance of antimicrobial resistance).

Stagnation after crossing: The sustainability of post-Westphalian governance

Experts reflecting on the national and international efforts made during the SARS outbreak have argued that this outbreak significantly stressed

public health capabilities at all levels. There was acknowledgement that no public health system could have sustained effectively its heightened SARS response over a longer period of time simply because of the scale and nature of the threat and the inadequacy of public health resources and assets. These observations were made in connection with SARS-affected countries that were, relatively speaking, equipped with modern public health infrastructures. Sustainability of SARS efforts in countries lacking sophisticated public health capabilities would be even more difficult, if not impossible.

The sustainability concern helps explain why public health experts are very keen to advance the development of effective diagnostics, vaccines, and therapies for SARS. Such technological breakthroughs would provide public health officials with additional weapons and decrease their reliance on isolation and quarantine. Technological breakthroughs would also allow SARS control to proceed in a manner that infringes less on civil rights and liberties.

Likewise, the sustainability of post-Westphalian public health governance dramatically ushered in by the SARS outbreak is not a foregone conclusion. As indicated in an earlier section of this chapter, previous governance innovations lost momentum, influence, and even relevance, becoming stagnant reminders of the failure of political commitment and the relentless pressure microbes create on human societies in globalized times. The epidemiological and political soundness of post-Westphalian forms of public health governance does not make such governance immune from stagnation.

Historically, public health has faced a 'sustainability conundrum.' When infectious diseases pose significant economic and health threats, government commitment to protecting population health typically increases. Subsequent improvements in public health capabilities often lead to decreases in morbidity and mortality associated with infectious diseases. Political interest in public health wanes, leading to complacency and a deterioration of public health capabilities. All this transpires as trade and travel increase rapidly in speed and geographical scope. Stagnation in public health governance leads to new crises with infectious diseases, producing heightened political commitment. The cycle begins again. The conundrum for public health is finding a way to stop success from leading to failure.

Warnings from WHO and other public health organizations and experts about the dangers of complacency with respect to SARS seek to prevent another cycle of the sustainability conundrum with respect to this new disease. More generally, the same warnings need to be issued in connection with the overall post-Westphalian governance architecture. This

architecture will not be resilient against the alliance formed between pathogenic microbes and the forces of globalization unless the structure is constantly strengthened, repaired, and enlarged. As Margaret Hamburg (2003, p. 6) argued in testimony to the US House of Representatives, the SARS outbreak teaches that:

> The magnitude and urgency of the problem [of infectious diseases] demand renewed concern and commitment. We have not done enough – in our own defense or in the defense of others. As we take stock of our prospects with respect to microbial threats in the years ahead, we must recognize the need for a new level of attention, dedication, and sustained resources to ensure the health and safety of this nation – and the world.

The historical record does not provide much evidence that post-Westphalian public health will escape the sustainability conundrum. The recognition of the need for a single international organization to direct and coordinate international health work seen in WHO's creation did not prevent states from allowing WHO to lose prestige and effectiveness over the course of its first 50 years. SARS helped underscore WHO's critical role in post-Westphalian public health governance; but this recognition does not automatically equate to sustained interest in, and political and financial support for, the Organization.

The stories of the re-emergence of many infectious diseases, including cholera, yellow fever, malaria, and tuberculosis, are tales of the political and economic neglect of public health nationally, regionally, and internationally. Even post-Westphalian governance initiatives established before SARS face sustainability problems. For example, the sustainability of the Global Fund to Fight AIDS, Tuberculosis, and Malaria has not been assured because, as mentioned in Chapter 4, funding for this new global health governance mechanism remains a serious, ongoing problem. Problems also plague funding of the Roll Back Malaria initiative, a public–private partnership launched in 1998 by WHO to reduce malaria in the developing world, including inadequate pledged donations and failure to disburse pledged donations in full (Narasimhan and Attaran, 2003).

Increasing political and financial support for SARS-control efforts does not necessarily mean that commitment for public health generally has increased. Responses to new problems, such as SARS, may have a parasitic effect on other public health programs because governments merely shift existing funds from one problem to another without actually

increasing the size of the overall financial commitment. This shifting effect could have adverse implications for post-Westphalian public health governance. As WHO (2003q-2) indicated in connection with China, '[m]easures may need to be found for sustaining China's present monumental effort to contain SARS, particularly as programmes for responding to other priority diseases, such as HIV/AIDS and TB, may suffer in the long run.' In relation to HIV/AIDS, the US National Intelligence Council (2003, p. 31) argued that 'SARS has focused greater international attention on the importance of health, but the new disease probably will not lead to a significant boost in the fight against HIV/AIDS in the coming years. Indeed, many countries are likely to view spending on diseases like SARS and HIV/AIDS as a zero-sum game in the short-term.'

A potential counterweight to any shifting effect seen through governmental responses to SARS is spill-over benefits that increased SARS vigilance might produce for infectious disease surveillance and response. Efforts to make surveillance systems more prepared for the emergence of SARS may create positive externalities by generating public health capabilities useful for surveillance and response activities with respect to other infectious diseases. Experts have identified similar synergies between preparedness for bioterrorism and for naturally occurring infectious diseases. WHO's David Heymann (2003a, p. 54) argued, for example, that 'strengthening public health for naturally occurring infectious diseases will ensure detection and response to those that may be deliberately caused.' How much SARS-specific activities produce synergistic spill-over for infectious disease control generally remains to be seen.

Some skeptics have expressed concern about the potential for governments to focus too much on SARS. *Médecins Sans Frontières* (2003b) criticized, for example, the G-8 Action Plan on Health issued in June 2003 because '[t]he only section of the Action Plan that shows determination is for SARS. Diseases that primarily affect poor people and occur in places of little consequence to the global economy are not treated with the same urgency.' If responses to SARS create public health systems only tuned to severe epidemic diseases with high cross-border mobility, then post-Westphalian governance might risk becoming as irrelevant in the future as the IHR became for today's infectious disease problems.

Ironically, the best way for public health to break the sustainability conundrum is to hope for repeated crises that keep the need for robust public health constantly at the top of the political agenda nationally and internationally. In the last decade, crises have kept coming in the form of emerging and re-emerging infectious diseases, the appalling growth of the HIV/AIDS pandemic, the global problem of antimicrobial

resistance, the threat of bioterrorism, and the emergence of SARS. Even with this parade of pathogenic horribles, the sustainability of post-Westphalian governance remains in doubt. Because of the sustainability conundrum, a seasonal struggle with SARS might paradoxically be the best thing for the sustainability of post-Westphalian public health governance.

Crossing with baggage: Public health's Westphalian core

A central theme of post-Westphalian public health is the disciplining of sovereignty in ways that contribute to global health governance and the production of global public goods for health. The disciplining of sovereignty witnessed in the governance strategies utilized in the SARS outbreak might, if not tempered, obscure recognition that public health as an activity retains a Westphalian core. Public health's Westphalian core restrains the potential of post-Westphalian governance. Public health crossed its post-Westphalian Rubicon with baggage from the Westphalian era.

Theoretically and practically, state-centrism marks public health as a discipline and activity. To the extent it exists, public health theory has focused almost exclusively on the role of governments in protecting population health. Traditionally, experts conceived of public health as a 'public good,' a service or resource that only governments can adequately produce (Institute of Medicine, 1988, p. 7; Gostin, 2000, p. 4). Non-state actors, whether individuals or private enterprises, have neither the incentives nor the resources to supply protection of population health. Public health histories reflect this state-centrism because they reflect the primacy of governmental policy (Rosen, 1958; Porter, 1999). Legal analysis of public health likewise teaches how central the government is to the pursuit of public health (Gostin, 2000, pp. 5–11). The state-centric nature of public health theory and practice does not mean that the government supplies all elements of a public health system, but it underscores that the government's responsibilities for population health are critical, comprehensive, and continuous.

Public health's traditional state-centrism reflects the fact that humanity is divided politically into sovereign states. As a matter of political structure, public health has always been constructed with the boundaries of sovereignty in mind. Westphalian public health developed as public health problems, particularly infectious diseases, generated cross-border frictions among governments. The Westphalian approach was also consistent with public health theory's emphasis on the role of the

government in providing for the public's health because this approach was intergovernmental in nature.

Post-Westphalian public health breaks with the state-centrism of public health's past in its emphasis on global health governance and the production of global public goods for health. The state no longer retains a monopoly on the protection of the public's health within its territory. The SARS outbreak illustrated the importance of global surveillance, coordinated by WHO, to state responses to the threat. No state could respond effectively to SARS without accessing the mechanisms of global health governance and contributing to the production of global public goods for health. China tried and failed miserably in acting as if the Chinese government retained a monopoly on public health governance within China.

The involvement of non-state actors in epidemiological surveillance and the empowerment of WHO to use that involvement in global infectious disease responses change the context in which states exercise their public health sovereignty. At the same time, public health retains a Westphalian core because the state's responsibilities for the public's health remain critical, comprehensive, and continuous in this new governance environment.

Post-Westphalian public health governance will not work unless states create and maintain strong national public health systems. Global health governance changes the context in which states exercise their sovereignty, but effective public health responses still require sovereignty to be exercised effectively. Global health governance, and the production of global public goods for health, remain dependent on the quality of national public health governance. Non-state actors may have provided epidemiological information on SARS to WHO, but only state actors could take the actions necessary to contain the outbreak. The Westphalian core of public health appears each time WHO or public health experts stress the importance of national public health capabilities to successful global management of infectious diseases.

In the Westphalian template, state-centrism was largely a matter of jurisdiction because the principles of sovereignty, non-intervention, and consent-based international law created boundaries demarcating the limits of political and legal power. Under this construct, a state's decision whether to report disease events in its territory rested entirely with the state. The state could agree to report certain disease events through international law, but intergovernmental organizations were severely limited in their ability to use non-governmental information about disease events in that jurisdiction.

In the post-Westphalian context, state-centrism in public health is not largely a matter of jurisdiction because the development of global health governance has eroded the significance of formal jurisdictional boundaries. For example, the global flow of non-governmental epidemiological information drastically alters a state's decision whether to report disease outbreaks in its jurisdiction. The state has lost effective 'jurisdiction' over both epidemiological information related to its territory and the decision whether to report disease events. State-centrism in post-Westphalian public health is more a matter of capabilities than jurisdiction. In other words, does the state possess the requisite capabilities to deal with infectious disease threats in a world characterized by globalized anarchy?

A state-centrism of capabilities represents an enormous challenge for post-Westphalian public health governance for two basic reasons. First, post-Westphalian governance possesses no 'power of the purse' because decisions on whether and how to use public resources for population health remain the exclusive domain of sovereign states. Second, a state-centrism of capabilities focuses attention on the massive gaps that exist in public health capacity between the developed and developing worlds. These gaps create the need for resource redistribution from rich to poor if public health capabilities globally are to be improved.

This conclusion resonates with arguments made by, for example, WHO's Commission on Macroeconomics and Health (2001) for significant increases in spending by industrialized countries to help developing countries address infectious disease and other public health problems. This analysis also echoes the resource redistribution scheme at the heart of the Global Fund to Fight AIDS, Tuberculosis, and Malaria. Other global public–private partnerships for health involve resource expenditures to facilitate improvements in health in the developing world, such as occurs with the ventures to develop new drugs for malaria and tuberculosis.

The need for large-scale resource redistribution to advance post-Westphalian public health creates a political dynamic reminiscent of the Westphalian world – the strong have disproportionate influence over governance dynamics. Appeals to the great powers to fund global public health improvements are everywhere in the relevant literature. For example, Heymann (2003a, p. 54) argues that '[i]t is in the interest of industrialized countries to provide the resources and partnership necessary for strengthening public health systems in developing countries if international public health security from naturally occurring and deliberately caused infectious diseases is to be achieved.' The next section of this chapter explores the role of the great powers in

post-Westphalian public health in more detail, but it is important to note now that the disproportionate influence of powerful countries in the dynamic created by a state-centrism of capabilities forms part of the Westphalian core of public health that continues to affect public health governance efforts.

In addition to the problem of resources, a state-centrism of capabilities is difficult to manage because its management requires 'beyond the border' reforms that penetrate deeply into a state's sovereignty. Chapter 3 described the shift in international public health policy on infectious disease control from horizontal to vertical approaches in order to communicate the need for international health governance to get inside states to reduce infectious disease prevalence at the source. A state-centrism of capabilities likewise creates the need for global health governance to seek reforms in national public health policies that go well beyond traditional at-the-border strategies embedded, for example, in the IHR.

'Beyond the border' public health reforms are difficult to craft and implement successfully for two reasons. First, experts recognize that the processes of globalization erode a state's capabilities to control activities and events in its territory. Scholte (2000, p. 46) refers to this phenomenon as 'deterritorialization,' a term that also captures the end of a state-centrism based on jurisdiction. This phenomenon of deterritorialization stands behind the frequent arguments in public health literature that infectious disease problems will only be effectively addressed through increased international cooperation because no state can control pathogenic microbes on its own.

The erosion effect of globalization on sovereignty is worse for developing countries because (1) they are less well-equipped economically and politically to manage the rigors of globalized markets, trade, and commerce; and (2) they bear a higher burden of morbidity and mortality from infectious diseases, which acts as a drag on the economic development of these societies. In short, much of the world's population lives in countries ill-equipped to manage pathogenic threats of any kind, globalized or localized. Help from outside is required.

Global health governance faces the challenge of enhancing the public health capabilities of the weaker members of the international society. This challenge is difficult because sovereignty continues to rear its head and complicate the global management of a state-centrism of capabilities. The HIV/AIDS pandemic illustrates the continuing problems sovereignty poses in post-Westphalian public health. Andrew Price-Smith (2002, p. 136) observed the following:

> . . . [S]overeignty has in fact had important negative ramifications for the continuing proliferation of the global infectious disease threat, particularly since concerned state and non-state actors may not intervene in seriously affected countries without that country's explicit permission to do so. In the case of states such as South Africa and Zimbabwe, where there remains an enduring culture of denial regarding HIV/AIDS, this means that the international community has little choice but to stand by and watch the ruling elites of these countries preside over the destruction of their populaces.

Public health's lingering Westphalian core produces, thus, the need for not only massive resource redistribution from rich to poor but also management of sovereignty on the part of both giving and receiving states. The state-centrism of capabilities creates dissonance between sovereign states, recalling how donor–recipient relations in the post-World War II period were a political and ideological battleground in international health (Loughlin and Berridge, 2002, p. 16). Wealthy states will not exercise their sovereignty over their financial resources in a manner equivalent to writing blank checks for low-income countries to spend as they see fit. Recipient countries, on the other hand, will bristle if donor governments place too many demands on how the recipient countries use international assistance. The likely outcome of this dynamic is limited, highly-conditioned assistance that does not adequately support global management of infectious disease threats. On the other side of the Rubicon, post-Westphalian public health confronts a potential quagmire linked to the continuing impact of sovereignty.

Realpolitik over the Rubicon: Post-Westphalian public health and the great powers

As Chapter 3 analyzed, Westphalian public health bore the imprint of the great powers of the international system. The humbling of a rising great power, China, by global health governance mechanisms in the SARS outbreak provides evidence that the great powers' influence in post-Westphalian public health is diminished. The great powers did not control or manipulate key aspects of the global campaign against SARS, including the use of non-governmental surveillance information against China and WHO's use of global alerts and travel warnings. Even the world's hegemon, the United States, supported (after some grumbling) the resolutions in the World Health Assembly that solidified the

strategies utilized in the SARS outbreak. The SARS outbreak witnessed the great powers as humble members of the global village rather than its haughty overlords.

While the shift from Westphalian to post-Westphalian public health signals a change in the role of the great powers in public health governance, some caution is in order with respect to this role. Post-Westphalian public health is not devoid of politics or immune to the effects of power. In some respects, the context of post-Westphalian public health heightens the importance of the great powers in new ways. To begin, the resources needed to address the capabilities gap discussed in the previous section have to come from the more affluent nations of the world, which are, by and large, the political and economic great powers of the international system – the United States, European Union, and Japan.

Great-power influence in the Westphalian era was not manifested in schemes of resource redistribution for public health; rather, this influence manifested itself in the nature of the governance regime built to mitigate the burden infectious diseases posed to the commerce and populations of powerful nations. As the handling of the SARS outbreak demonstrates, the Westphalian regime built by the great powers has collapsed. Yet, the international community faces no other option but to turn again to the great powers to take the lead in shaping post-Westphalian public health because of the desperate need for material resources to improve global infectious disease control capabilities.

The inescapable need for great-power involvement and leadership explains the tone of much of the literature on emerging and re-emerging infectious diseases in the 1990s and early 2000s, which attempted to frame the growing microbial threat in terms of the self-interests of the great powers, particularly the United States. The titles and sub-titles of some leading reports send a clear message: *America's Vital Interest in Global Health* (Institute of Medicine, 1997); *The Global Infectious Disease Threat and Its Implications for the United States* (National Intelligence Council, 2000); *Why Health is Important to U.S. Foreign Policy* (Kassalow, 2001); *Health, Security, and U.S. Global Leadership* (Ban, 2001); *Reconciling U.S. National Security and Public Health Policy* (Brower and Chalk, 2003).

These, and other, attempts to re-engage the world's hegemon with global public health appeal to the self-interests of the United States. *America's Vital Interest in Global Health* lists three strategic rationales for US engagement: 'protecting our people,' 'enhancing our economy,' and 'advancing our international interests' (Institute of Medicine, 1997). *Why Health is Important to U.S. Foreign Policy* provides a classic example of this appeal when it argues that the United States should make health

a foreign policy concern out of 'narrow self-interest' and 'enlightened self-interest' (Kassalow, 2001). William Foege (2003) links US interests to global health by focusing on the US military and protecting US citizens, and stressing that 'healthy societies provide better markets for US goods and healthy societies are able to provide less expensive goods for sale to the United States.' More conceptually, economic approaches to global public health problems, advanced by the World Bank (1993) and the Commission on Macroeconomics and Health (2001) attempt to provide the great powers of the international system with direct, selfish motivations to engage more intensively in international health activities.

Arguments that tie progress in global public health to the self-interests of the United States are nothing new. In 1971, for example, Representative Hugh L. Carey, arguing in favor of the proposed International Health Agency Act of 1971, said the following:

> Again as a practical matter it is in our self-interest to find and fight disease in foreign lands as a safeguard for our own population. Pandemic diseases respect no borders . . . A second practical consideration is that improved health among the developing peoples abroad means more viable young nations and better hopes for a peaceful environment throughout the world. I submit that health care is our lowest cost form of international security and protection against war and violence . . . Third, improved health overseas in all age brackets means expanding consumer markets and increased trade for US products. (International Health Agency Act Hearings, 1971, p. 5)

The emphasis on the health vulnerability, economic costs and opportunities, security concerns, and foreign-policy objectives of the great powers present in much of the literature on emerging and re-emerging infectious diseases in the 1990s and early 2000s has a Westphalian ring to it. The pattern that emerges from these contemporary efforts to re-engage the great powers in global public health could be taken from the pages of nineteenth-century international health diplomacy. We see again emphasis on economic, military, and geopolitical aspects of infectious disease threats from the perspective of the great powers.

These observations are not meant to criticize those who have been appealing to the self-interests of the United States and other powerful countries to show leadership on global public health problems. These appeals reflect not only the consequences of the state-centrism of capabilities (discussed above) but also the continuation of a special role for the great powers in post-Westphalian public health. Ilona Kickbusch's

(2003, p. 199) question for global health governance – 'What role for the realist American hegemony?' – is significant in the post-Westphalian world because US 'hegemonic power defines the strategies proposed in the global forum' (Kickbusch, 2002, p. 139). This great power role is different from the functions the great powers served in the Westphalian period but nonetheless places these countries in a very influential position vis-à-vis the global management of infectious diseases.

Success in elevating global infectious disease threats on foreign policy agendas of the great powers in the post-Westphalian period may have the ironic effect of rejuvenating Westphalian patterns of behavior. If powerful countries increase and sustain their national interests in connection with infectious diseases, then they might take firmer control of infectious disease diplomacy. Evidence for this dynamic is already apparent in the context of HIV/AIDS.

The United States' Emergency Plan for AIDS Relief (Emergency Plan), announced by President Bush in January 2003, now overshadows one of the highest profile experiments in global health governance, the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund). The United States unilaterally controls how the vast majority of the Emergency Plan's $15 billion will be spent, with only a small amount being channeled – with conditions attached – into the Global Fund. Supporters of the Global Fund have criticized the Emergency Plan's unilateralism (Fidler, 2003c, p. 141). The Emergency Plan represents a significantly higher political and financial commitment by the United States to the global HIV/AIDS problem, but the US approach in the Emergency Plan perhaps shares more characteristics with Westphalian than post-Westphalian public health because the United States is using its material power to set and dominate the agenda.

The role of the great powers in post-Westphalian governance may also evolve in ways that create dissonance as opposed to harmony in the world politics of public health. Technological innovations and the harnessing of these by international organizations and non-state actors have broken the traditional 'great power concert' that dominated infectious disease diplomacy in the Westphalian period. This great power concert created a governance structure for infectious diseases that catered mainly to the public health and trade interests of the great powers. The concert created institutions primarily to facilitate protection of these interests and secondarily to provide technical and financial assistance to less powerful nations.

A new kind of 'great power concert' may come to dominate post-Westphalian public health governance. This concert may abandon its

traditional ambivalence and indifference toward public health in other parts of the world and act in more determined ways to address the globalized nature of pathogenic threats, which will include improving public health capabilities in the developing world. The great powers may take on something akin to a stewardship or trusteeship role concerning global public health, using their material resources to dictate the content and pace of reform within developing countries. Kurt Campbell and Philip Zelikow (2003, p. 6) have argued, for example, that it 'might be beneficial to consider new international institutions . . . to take on burdens of field intervention or even "trusteeship."' Vertical public health strategies will then have a political edge not present in the Westphalian context because they will challenge (if not brush aside) developing-country appeals to sovereignty and non-intervention. Done in a heavy-handed way, a stewardship or trustee role on the part of the great powers will take on an imperial quality that will undermine its long-term chances of success.

This new kind of 'great power concert' has better prospects of succeeding if it channels and disciplines its supremacy in power through principles designed to address globalized disease threats. The SARS outbreak illustrates the importance of some of these principles, including: (1) expanding epidemiological surveillance to include non-governmental sources of information; (2) supporting the free and open flow of epidemiological information nationally and globally; (3) strengthening and empowering WHO in terms of both its surveillance and response capabilities; and (4) creating sustainable frameworks through which national surveillance and response capabilities can be enhanced in the developing world. The strategic objective for the new 'great power concert' is to integrate horizontal and vertical governance strategies in a comprehensive, interdependent manner.

The handling of the SARS outbreak provides evidence of the potential for the new 'great power concert' to achieve the strategic objective of integrated global health governance. The expansion of epidemiological surveillance to include non-governmental information helped the global campaign against SARS, as illustrated by the World Health Assembly's confirmation of this approach at its May 2003 meeting. WHO's battle with China over the flow of epidemiological information underscores the critical importance of governments allowing the free and open flow of disease outbreak information. WHO member states recognized the importance of empowering and strengthening WHO in light of WHO's revolutionary actions during the SARS outbreak. Finally, the SARS outbreak revealed the gaping need for public health capabilities to be improved in every nation, especially developing countries.

Importantly, the great powers of the international system seem committed to the first three of the principles described above, including the exercise of autonomous power by WHO in circumstances such as those that arose in the SARS outbreak. An integrated strategy will not, however, coalesce without the great powers' commitment to leading the creation of sustainable frameworks for national public health reforms in the developing world. Whether that commitment takes shape in the wake of SARS still remains to be seen.

Reflecting on prospects for world order, Hedley Bull (1977, p. 315) argued that 'a consensus, founded upon the great powers alone, that does not take into account the demands of those Asian, African and Latin American countries that are weak and poor . . . who represent a majority of states and of the world's population, cannot be expected to endure.' This insight can be reformulated for thinking about the prospects of post-Westphalian public health.

A 'great power concert' for global public health requires a consensus among the great powers that takes seriously the threat of globalized pathogens – a consensus the SARS outbreak has done much to stimulate and solidify. But any governance strategies built on this consensus cannot be expected to endure if the public health travails of the majority of states and of the world's population are not taken into account and mitigated. As Kickbusch (2003, p. 200) warned, '[i]ncreasingly the developing world is watching with scepticism how "global priorities" become just another linguistic expression of the interest of rich and powerful countries, and the plight of the poor is not improved, despite increasing globalist rhetoric.'

Building a great power concert sensitive to the health needs of the developing world is difficult because, as Helen Epstein (2003, p. 15) writes, '[t]he reason the health crisis in developing countries is so serious is precisely because it is possible for rich nations to prosper even with billions of sick and hungry people in the world.' In the post-Westphalian world of public health, the great powers are confronted with a challenge and responsibility that, historically, has proved beyond their capabilities.

Germs don't recognize Rubicons: Confronting the axis of illness

Although post-Westphalian governance mechanisms helped stop SARS dead in its tracks in 2003, those involved in the global campaign against this new threat understand all too well that the potential for microbial trouble has not abated because of the SARS success. Post-Westphalian

public health is vulnerable to an 'axis of illness.' The axis of illness represents linkages between five interdependent elements that act together to stimulate microbial emergence and spread. The axis presents challenges to post-Westphalian public health governance that reveal weaknesses in such governance, weaknesses that may call for governance approaches even more radical than those solidified and ushered in by the SARS outbreak.

The axis of illness represents a way to capture why infectious diseases pose such a global public health threat today and to illustrate how difficult post-Westphalian governance for infectious diseases will be. This concept builds on analyses that focus on the various factors that are involved in the emergence and spread of infectious diseases. For example, the seminal 1992 report from the Institute of Medicine (1992, p. 47) listed six factors in disease emergence: human demographics and behavior; technology and industry; economic development and land use; international travel and commerce; microbial adaptation and change; and breakdown of public health measures. Identifying such factors helps communicate the message that infectious disease emergence and re-emergence is an interdependent relationship between the microbe, host, and the environment in which they interact (see Figure 8.1).

The most recent Institute of Medicine report on microbial threats (2003, p. 60) expands the factors in infectious disease emergence from six to 13, which emphasizes the enormous complexity of the phenomenon of disease emergence and spread (see Table 8.1).

The Institute of Medicine's 2003 report sees infectious disease emergence arising from the convergence of genetic and biological factors; physical environmental factors; ecological factors; and social, political, and economic factors. The convergence of these interlocking factors

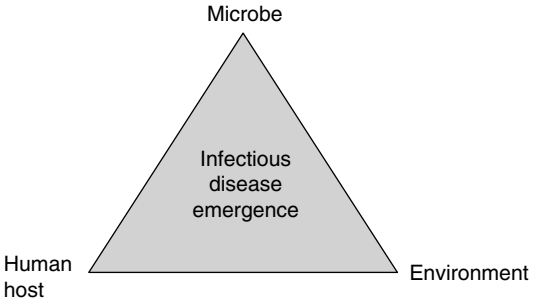

Figure 8.1 Host–microbe–environment interdependence

Table 8.1 Institute of Medicine (2003) factors in infectious disease emergence

- Microbial adaptation and change
- Human susceptibility to infection
- Climate and weather
- Changing ecosystems
- Human demographics and behavior
- Economic development and land use
- International trade and travel
- Technology and industry
- Breakdown of public health systems
- Poverty and social inequality
- War and famine
- Lack of political will
- Intent to harm

determines the nature of the interaction between the human and the microbe.

Similary, the 'axis of illness' idea provides a way to organize factors of infectious disease emergence to simplify this complex phenomenon by assigning the factors to five overarching categories (see Table 8.2).

The category of 'microbial resilience' captures the importance of microbial, genetic, and biological factors that power pathogenic evolution and its relationship to the human body. 'Human mobility' emphasizes the role played by international trade, travel, and migration in disease emergence, including the contributions technology has made in increasing the speed, scope, and impact of human mobility. The category of 'social determinants of health' focuses attention on the underlying societal problems that foster microbial penetration of populations. Social determinants of health are under constant pressure from the other

Table 8.2 Factors of emergence in five categories

Category	*Factors from Institute of Medicine (2003)*
Microbial resilience	Microbial adaptation and change; human susceptibility to infection
Human mobility	International trade and travel; human demographics and behavior; technology and industry
Social determinants of health	Poverty and social inequalities; war and famine; climate and weather; human demographics and behavior
Globalization	Economic development and land use; technology and industry; changing ecosystems; human demographics and behavior
Collective action problems	Lack of political will; intent to harm; breakdown of public health measures; poverty and social inequalities; war and famine

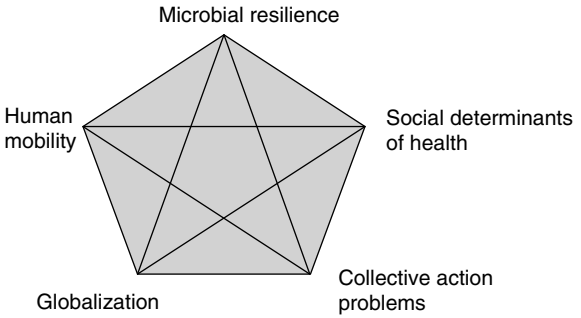

Figure 8.2 The axis of illness

categories in the axis of illness and are undermined by factors, such as the breakdown in public health measures, that weaken the effort. 'Globalization' refers to factors that accelerate economic development, technology, industry, and culture in ways that deterritorialize human behavior. The category of 'collective action problems' refers to the governance challenges created by infectious disease emergence at national, international, and global levels.

The axis of illness forms as these five categories interact to foster the emergence and spread of infectious diseases (see Figure 8.2). It is important to stress that each category connects with the others directly and indirectly in a dynamic process. For example, the processes of globalization directly affect human mobility by making faster transportation technologies available. Globalization affects collective action problems directly and indirectly through exacerbating problems with social determinants of health and accelerating human mobility. Of most relevance for my purposes is how the axis of illness highlights the daunting governance challenges the emergence and re-emergence of infectious diseases present. Successful management of the collective action problems is only the beginning, because those solutions have to bear, in some sustainable fashion, the force produced by the interdependence of microbial resilience, human mobility, social determinants of health, and globalization.

The SARS outbreak underscores each element of the axis of illness and the challenges it poses for states, international organizations, and non-state actors. The emergence of a virus never before seen in animals or humans demonstrates that microbial resilience played a role in this outbreak. SARS-CoV took advantage of opportunities human behavior

presented and forced the world of public health and science to ponder the mysteries of yet another new, dangerous virus. The speed with which SARS-CoV apparently jumped from animals to human and then triggered a local, regional, and global epidemic is evidence of the potent miasma the global village creates for the microbial world.

SARS reinforces the effectiveness of human mobility, in combination with the processes of globalization, as a means of spreading pathogenic microbes. WHO's resort to historically unprecedented travel advisories against specific geographic areas illustrates how dangerous global travel can be in the context of infectious diseases. The economic damage caused to SARS-affected countries from lost tourism and business-related travel is a further indication of how dependent the globalized world is on air travel. The emergence of post-Westphalian public health governance does nothing to lessen this dependence. This element of the axis of illness will only continue to grow in importance.

The SARS outbreak also illustrated the importance of social determinants of health in disease emergence. The role likely played by the sale of exotic animals for food or medicine in southern China represents a socially determined risk to health, perhaps exacerbated by China's mid-August 2003 decision to lift the ban on the sale and consumption of exotic animals it imposed during the SARS outbreak (National Intelligence Council, 2003, p. 9). Commentators noted the role poverty, unemployment, migrant labor practices, and lack of access to medical services played in China's SARS outbreak (Huang, 2003, pp. 70–1; National Intelligence Council, 2003, p. 9). Experts also observed that SARS' appearance in a number of relatively affluent nations with modern public health and health care systems significantly helped the global campaign bring SARS under control. Fears that SARS may gain a foothold in poor countries and regions with substantial sick and malnourished populations, such as sub-Saharan Africa (National Intelligence Council, 2003, p. 24), further highlight social determinants of health as factors in infectious disease emergence and spread.

The SARS outbreak also reflects the role collective action problems can play in disease emergence. At the national level, the epidemic revealed weaknesses and problems in the public health capabilities of many countries affected by the epidemic. As noted earlier, many of the seriously SARS-affected countries, such as Canada, Singapore, Hong Kong, and Taiwan, were nations with relatively sophisticated public health and health care systems, and SARS stretched these systems to breaking point. The SARS outbreak also exposed serious deficiencies in China's public health and health care capabilities. Experts even questioned the public

health preparedness of nations not seriously affected by the outbreak, such as the United States. Although the SARS epidemic did not heavily affect developing countries, particularly those in Africa, fear remained high during the outbreak that SARS would invade nations with the least capability to respond to such a disease threat. All these examples prove that national collective action problems concerning public health constitute a robust link in the axis of illness.

The move toward global health governance, especially the incorporation of non-governmental information in global surveillance, is an explicit indication that intergovernmentalism as a collective action response had proved inadequate for infectious disease control purposes. Similarly, WHO's radical actions during the SARS outbreak – in publicly confronting China's duplicity and lies and in issuing geographically-specific travel advisories – were actions not supported at the time taken by the existing intergovernmental and international legal regimes in place on infectious disease control.

SARS also illustrates the role globalization plays in disease emergence. International political economists have analyzed the growing loss of the state's control over its domestic economy caused by global economic interdependence and integration (Strange, 1995, pp. 160–1). The globalization of markets 'has intensified economic competition and increased pressure on governments to reduce expenditures, including the funding of public health programs, leaving states increasingly unprepared to deal with emerging disease problems' (Fidler, 1996, p. 78). Globalization feeds into the creation and perpetuation of public health vulnerabilities. Similarly, the loss of economic control complicates the state's ability to address socio-economic problems, such as poverty and urbanization, or to slow down environmental degradation resulting from economic activity. The globalization of markets for goods, capital, and services exacerbates social, economic, and environmental problems, particularly in the developing world, that provide opportunities for pathogenic microbes.

This element of the axis of illness can be seen clearly in the SARS problem in China. The move to a more market-based economy, increasingly integrated with the rest of the world, resulted in declining government funding and commitment to China's public health and health care systems. Globalization's weakening of China's ability to deal with infectious diseases is reflected not only in the SARS outbreak but also the growing HIV/AIDS problem in that country.

Post-Westphalian public health governance has given states, international organizations, and non-state actors new strategies and

mechanisms for reacting to disease emergence and re-emergence. These new governance strategies create potential for better global surveillance and response activities. Global health governance and the production of global public goods for health target one element of the axis of illness – the collective action problems. Less clear is whether post-Westphalian public health contains new strategies for preventing the emergence and spread of infectious diseases. Prevention strategies would include addressing the social determinants of health by mitigating the deeply-rooted social, economic, and environmental problems that nurture microbial emergence and spread.

Given the gaps in public health capabilities and economic resources, prevention strategies might involve more significant interventions into the domestic affairs of sovereign states that even post-Westphalian public health governance, at its present stage, does not contemplate. While proposals for improving response capabilities (e.g., surveillance and intervention) have been made, there has been little, or no, discussion of 'pre-emptive' public health governance in the aftermath of SARS. In addition to the long list of infectious diseases that have emerged or re-emerged in the last three decades, SARS may suggest that the forces of globalization mean that post-Westphalian public health governance can merely be reactive rather than preventive in resolving the collective action problems that exist.

In this respect, post-Westphalian governance would parallel Westphalian public health – an unwelcome parallel given how events eventually bypassed the Westphalian template in favor of reactive strategies better suited to the exigencies of a globalized world. The axis of illness demonstrates that the germs will continue advancing, placing sustained pressure on post-Westphalian governance. The public health victory achieved in SARS represents only one battle in the confrontation with the axis of illness. The SARS outbreak confirms that conditions on the other side of the post-Westphalian Rubicon still favor the axis.

Mike Ryan is correct – after SARS, there is no going back to the ways of Westphalian public health. Public health's 'new world order' remains, however, a work very much in progress. This chapter analyzed vulnerabilities that post-Westphalian public health governance might face in the coming years. That vulnerabilities exist is hardly a surprise or cause for panic. In addition, having witnessed the astonishing achievement of SARS containment, most people dedicated to public health would much rather confront these vulnerabilities and the challenges, known and unknown, that lie ahead with the arsenal of post-Westphalian governance than without it.