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International Law and Global Infectious
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INTERNATIONAL LAW AND GLOBAL INFECTIOUS DISEASE CONTROL

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1. INTRODUCTION

At the beginning of the 21st century, the global public good of infectious disease control is increasingly under-produced. The World Health Organization (WHO) warned of a global infectious disease crisis in 1996,¹ and the crisis has deepened in succeeding years.² The HIV/AIDS pandemic continues to devastate the developing world;³ and old scourges such as tuberculosis, malaria, cholera, and pneumonia continue to cause morbidity and mortality around the world.² The anthrax attacks on the United States in 2001 raise the terrifying reality of bioterrorism and its threat to national and global public health. Attention to improving production of the global public good of infectious disease control has become imperative.

This chapter explores the role international law plays in producing global infectious disease control. International law has been part of international efforts to control infectious diseases since the mid-19th century. The historical record of international law's role in global infectious disease control reveals the evolution of a complicated relationship between international law and infectious diseases. The complexity of this relationship is explored in more detail in other works.⁴ This chapter

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examines how states, international organizations, and non-state actors have used international law to support the global public good of infectious disease control and what the prospects are for international law in this realm of public health.

The analysis begins by exploring why infectious disease control is a “global public good for health,” as Working Group 2 of the Commission on Macroeconomics and Health defines this concept. Infectious diseases within countries can generate negative externalities for other states. Addressing these externalities requires international cooperation, and historically international law has been part of international cooperative efforts against infectious diseases.

The traditional way international health organizations (IHOs) and states used international law to support infectious disease control has, however, failed. The classical international legal regime on infectious diseases—now embodied in the International Health Regulations—is effectively dead. New areas of international law have emerged in global infectious disease control, as have new international institutions to challenge the traditional pre-eminence of IHOs. These changes raise controversial and unanswered questions concerning the role of international law in global infectious disease control.

The chapter concludes by arguing that the role of international law in contributing to infectious disease control has never been more prominent and uncertain than it is today. Production of the global public good of infectious disease control has entered a new era in which the globalizing world has shattered or by-passed old approaches and strategies and confronts new legal approaches with severe challenges. The conclusion ponders whether any discernable trends for international law can be detected in this fluid transition.

2. INTERNATIONAL PREVENTION AND CONTROL OF INFECTIOUS DISEASES AS A GLOBAL PUBLIC GOOD

2.1 Infectious Disease Externalities

Endemic and epidemic infectious diseases within a nation pose two kinds of potential negative externalities for other countries—direct and indirect. The cross-border transmission of an infectious disease from one country to another constitutes a direct negative externality for the country into which the disease enters because the importing country bears the costs the imported disease creates (Figure 1). Tuberculosis provides an example of the direct negative externalities infectious diseases can generate. In the Global AIDS and Tuberculosis Relief Act of 2000, the United States Congress found that “[b]ecause of the ease of transmission of tuberculosis, its international persistence and growth pose a direct public health threat to those nations that had previously largely controlled the disease.”⁵ Countries into which tuberculosis enters bear the costs of detecting, treating, preventing, and controlling the morbidity and mortality associated with the disease. For the United States, this dynamic means that “tuberculosis will never be controlled in the United States until it is controlled abroad.”⁵

[INSERT FIGURE 1 HERE[†]]

An indirect negative externality arises when infectious diseases help destabilize or weaken a country’s socio-political situation, creating economic or political problems for other states (Figure 1). The economic and social devastation HIV/AIDS causes in sub-Saharan Africa provides an example of an epidemic infectious disease creating indirect negative externalities. Other states, such as the United States, assert that HIV/AIDS in Africa constitutes a national security threat not because of cross-border HIV transmission

but because HIV/AIDS has the potential to destabilize the region and harm the economic, political, humanitarian, and strategic interests of other countries. The Global AIDS and Tuberculosis Relief Act contained language that identifies the kind of indirect negative externality infectious diseases can pose:

At current infection and growth rates for HIV/AIDS, the National Intelligence Council estimates that the number of AIDS orphans worldwide will increase dramatically, potentially increasing threefold or more in the next 10 years, contributing to economic decay, social fragmentation, and political destabilization in already volatile and strained societies.⁵

Infectious diseases can create both direct and indirect externalities, and HIV/AIDS may be the paradigmatic example of a disease that poses cross-border threats[‡] and devastates countries in ways that impose costs on other states.

2.2 Infectious Disease Prevention and Control as a Global Public Good

Public health experts believe that the prevention and control of infectious diseases within and among nations is a global public good for health. Prevention and control strategies take one of two forms—vertical and horizontal (Figure 2). Vertical strategies seek to reduce the prevalence of infectious diseases within a country. The vertical approach attacks the infectious disease problem at its national sources and is, thus, inward-looking and does not directly focus on cross-border transmission. The objective is to reduce the overall incidence of infectious diseases within the country in order to

[†] All figures can be found at the end of the manuscript.

[‡] “AIDS, like all diseases, knows no national boundaries, and there is no certitude that the scale of the problem in one continent can be contained in that region.” Global AIDS and Tuberculosis Relief Act of 2000, §103(19).

decrease the national burden of infectious diseases and minimize the potential for disease exportation.

[INSERT FIGURE 2 HERE]

The horizontal strategy, by contrast, focuses on controlling cross-border transmission and is, thus, outward-oriented (Figure 2). The horizontal strategy is not directly concerned with reducing the overall infectious disease prevalence within nations but with coordinating state actions at points of disease exit and entry to minimize disease exportation and importation. Such coordination involves (1) decreasing the possibility of disease export through public health measures implemented at points of disease exit; and (2) strengthening public health preparedness and response capabilities at points of disease importation.

Both vertical and horizontal public health strategies against infectious diseases require cooperation among states. The horizontal strategy is based on states coordinating their public health actions at points of disease exit and entry. While states can reduce national disease morbidity and mortality without international cooperation, the reality is that many states, particularly developing countries, need technical and financial assistance from other states to improve national public health. Reducing the negative externalities that infectious diseases create cannot be realistically accomplished without international cooperation.

Successful international cooperation on infectious disease control produces benefits that are non-rivalrous and from which no state or people can be excluded. Public health improvements necessary to reduce either national infectious disease prevalence or cross-border transmission can be consumed without rivalry because they derive from

services available to all. To exclude people and goods from the benefits of such public health improvements would be cost-prohibitive and counter-productive from a public health perspective. International cooperation on infectious disease control can, thus, generate benefits that globally affect countries, peoples, and generations. In addition, successful international cooperation on infectious diseases promotes health equity among countries because such cooperation produces improved infectious disease control within as well as among countries, reducing the economic and social burden infectious diseases impose on low-income countries.

The history of infectious disease control from the middle of the 19th century demonstrates the need for international cooperation to address the negative externalities created by infectious diseases. International efforts to coordinate state actions on cross-border transmission in fact predate serious national public health reforms exemplified by sanitary movements. In addition to the traditional horizontal approach, international cooperation on infectious diseases added vertical strategies in the form of IHO-provided technical and financial assistance to countries. The production of the global public good of controlling infectious diseases nationally and internationally requires, among other things, the use of international law, which the next section explores.

2.3 The Role of International Law in Producing the Global Public Good of Infectious Disease Control

The importance of international law to the production of global public goods for health has theoretical and practical manifestations. Theoretically, the role of international law in producing global public goods arises from the structure of international politics. Anarchy—the absence of a central, supreme governing power—characterizes the

international system of sovereign states. In the historical development of this fragmented system, international law emerged as a key instrument states used to interact in an orderly way and to pursue mutual objectives cooperatively. International efforts to deal with cross-border transmission of infectious diseases in the mid-19th century represented the first time states attempted to use international law for a public health purpose. The use of international law in this context should come, however, as no surprise given how the anarchical structure of international politics drives states to use international law in their relations with each other. Arguments that international law and international legal regimes are “intermediate global public goods”^{6,7} underscore the importance of international law in the production of global public goods in the anarchical international system.

Practically, the historical record of public health activities in infectious disease control reveals international law’s importance. The evidence from the first 100 years of international cooperation on infectious diseases, for example, bears out the necessity for international law created by the structure of the international system. Between 1851 and 1951, states negotiated many treaties on infectious disease control; and most of these treaties sought to control the cross-border transmission of infectious diseases. Table 1 lists the main infectious disease treaties negotiated in the 1851-1951 period, and these and other treaties negotiated in this period show the importance of international law as a production tool for the global public good of infectious disease control. States also utilized international law to establish multiple IHOs in the first half of the 20th century (Pan American Sanitary Bureau (1902); Office International de l’Hygiène Publique

(1907); Health Organization of the League of Nations (1924); World Health Organization (1946)), each of which had infectious disease control as part of its mandate.

Table 1: Main Infectious Disease Treaties Negotiated and/or Adopted, 1851-1951

Year	Treaty	Subject Matter
1851	International Sanitary Convention and Regulations (never entered into force)	Cross-border transmission of cholera, plague, and yellow fever
1859	International Sanitary Convention (never entered into force)	Cross-border transmission of cholera, plague, and yellow fever
1874	International Sanitary Convention (never entered into force)	Cross-border transmission of cholera and the creation of a permanent International Commission on Epidemics
1881	International Sanitary Convention (never entered into force)	Cross-border transmission of cholera and yellow fever and the creation of a permanent International Sanitary Agency of Notification
1892	International Sanitary Convention adopted	Sanitary measures against cholera for shipping through the Suez Canal and to and from the Mecca pilgrimage
1893	International Sanitary Convention adopted	Cross-border transmission of cholera
1894	International Sanitary Convention adopted	Cholera-control measures in shipping in the Red Sea and Persian Gulf, with emphasis on the Mecca pilgrimages
1897	International Sanitary Convention adopted	Cross-border transmission of plague
1903	International Sanitary Convention adopted	Consolidated and replaced the International Sanitary Conventions of 1891, 1893, 1894, and 1897
1912	International Sanitary Convention adopted	Designed to replace the International Sanitary Convention of 1903 and addressing cross-boundary transmission of cholera, plague, and yellow fever
1926	International Sanitary Convention adopted	Designed to replace the International Sanitary Convention of 1912 and addressing cross-boundary transmission of cholera, plague, yellow fever, smallpox, and typhus
1933	International Sanitary Convention for Aerial Navigation adopted	Cross-border transmission of infectious diseases by aerial transport, with special attention on cholera, plague, yellow fever, smallpox, and typhus
1951	International Sanitary Regulations adopted	Cross-border transmission of cholera, plague, yellow fever, smallpox, typhus, and relapsing fever, replacing the International Sanitary Conventions of 1903, 1912, 1926, and 1933.

Contemporary evidence also highlights the role of international law as a production tool for the global infectious disease control. Sections 3-6 of this chapter take a closer look at how international law relates today to infectious disease control, but at this point a brief overview indicates the scope of international law's relevance to infectious disease control. Table 2 summarizes important areas of international law and how they connect to infectious disease control.

Table 2: International Law and Infectious Disease Control

International Health Regulations
Objective of the regime is to ensure maximum protection against the international spread of specific infectious diseases (cholera, plague, and yellow fever) with minimum interference with world traffic
International Trade Law
Contains rules that (1) regulate the use of trade-restricting health measures; (2) harmonize intellectual property rights for pharmaceutical products; and (3) promote liberalization of international trade in health services
International Human Rights Law
Contains rules that (1) discipline infringements of civil and political rights for public health purposes; (2) protect civil and political rights against discriminatory and irrational public health measures; and (3) promote the human right to health.
International Environmental Law
Contain rules that seek to mitigate environmental pollution and degradation that contribute to infectious disease problems, such as desertification, deforestation, transboundary air and water pollution, marine pollution, depletion of the ozone layer, and global warming
International Humanitarian Law
Contains rules that seek to minimize infectious disease morbidity and mortality during international and civil armed conflict
International Law on Arms Control
Prohibits the development, stockpiling, and use of biological weapons
International Law on Terrorism
Makes the use of biological pathogens and toxins in acts of terrorism an international crime

Other indicators of international law's importance include WHO's on-going revision of the International Health Regulations and arguments for the creation of new treaties on global infectious disease problems, including financing global vaccine

supplies,⁸ securing pandemic influenza vaccine supply,⁹ and improving access to essential drugs and vaccines.¹⁰ The increasing interest in the role of international law in infectious disease control echoes the growing interest in international law's contribution to public health generally.^{11, 12, 13}

While historical and contemporary evidence demonstrate the importance of international law, the actual contribution of international law to the global infectious disease control remains controversial. The global infectious disease situation today is frightening. HIV/AIDS threatens to “become the worst epidemic of infectious disease in recorded history, eclipsing both the bubonic plague of the 1300’s and the influenza pandemic of 1918-1919 which killed more than 20,000,000 people worldwide.”⁵ Other infectious diseases, such as malaria, tuberculosis, and cholera, continue to cause death and illness on a global scale. WHO believes that world faces a global crisis in emerging and re-emerging infectious diseases.¹ Antimicrobial resistance haunts efforts to control a growing list of infectious diseases, including HIV/AIDS, malaria, tuberculosis, pneumonia, meningitis, dysentery, nosocomial infections, and sexually transmitted diseases (e.g., gonorrhoea).² Developing countries lack affordable access to drugs and vaccines, contributing to the infectious disease burden these countries bear. Poor public health capabilities also mar efforts of developing countries to deliver drugs and vaccines that are available and affordable. Public health experts have raised fears that new international legal regimes within the World Trade Organization (WTO), such as the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS),¹⁴ adversely affect global efforts at infectious disease control. Finally, the anthrax crisis in

the United States demonstrates that the public health nightmare of bioterrorism has become reality.

The global crisis in infectious diseases is also a crisis for international law's role in infectious disease control. The following sections of this chapter explore this international legal crisis by examining how international law supports both horizontal and vertical public health strategies against infectious diseases. The analysis reveals that the traditional international legal approaches to infectious disease control may be moribund and that a new era of uncertain portents has emerged.

3. INTERNATIONAL LAW'S TRADITIONAL ROLE: SUPPORTING HORIZONTAL PUBLIC HEALTH STRATEGIES AGAINST CROSS-BORDER TRANSMISSION OF INFECTIOUS DISEASES

As Section 2 indicated, public health strategies against the negative externalities created by infectious diseases can be categorized as horizontal—focused on cross-border transmission—or vertical—concentrating on reducing national infectious disease burdens. States and IHOs traditionally have used international law to support the horizontal public strategy of reducing cross-border transmission. Cross-border transmission has been the dominant subject of international legal regimes on infectious diseases from the beginning of international health diplomacy in 1851 until the global HIV/AIDS pandemic. This section provides an overview of how international law supports the horizontal public health strategy of reducing cross-border transmission of infectious disease by exploring the classical, organizational, and trade regimes (Figure 3).

[INSERT FIGURE 3 HERE]

3.1 The International Sanitary Conventions and the International Health Regulations— The Classical Regime

The classical use of international law to support international infectious disease control can be found in the international sanitary conventions (ISCs) adopted in the late 19th century and first half of the 20th century and the International Health Regulations (IHR), originally adopted by WHO in 1951 to replace the ISCs. Today, the IHR constitute the “only international health agreement on communicable diseases that is binding on [WHO] Member States.”¹⁵ The basic features of the IHR and ISCs form a common international legal regime—the classical regime—for addressing cross-border infectious disease transmission. The IHR’s purpose—“to ensure the maximum protection against the international spread of disease with minimum interference with world traffic”¹⁶—captures the function of the classical regime.

The ISCs sought and IHR seek to protect against cross-border disease transmission in two ways. First, the classical regime required states to notify other countries directly or through IHOs about cases and outbreaks in their territories of specified diseases. These notification duties provided the central nervous system for international surveillance networks and global flows of epidemiological information. Armed with such information, states could be better prepared both to prevent disease exportation and to handle disease importation.

Second, the classical regime required states to maintain proper public health facilities and equipment at ports, airports, and frontier crossings. Having appropriate public health resources and measures in place at points of exit and entry would allow states to deal more effectively with disease exportation and importation as well as prevent

such points from being disease vectors themselves (e.g., harboring rats, mosquitoes, or unsanitary food and water).

The ISCs sought and IHR seek to provide minimum interference with world traffic by requiring disease-prevention measures that restrict international trade and travel be based on scientific evidence and public health principles. The strategy behind these requirements is to prevent states from implementing irrational measures against international trade and travel that would restrict world traffic without protecting public health. This is also why the classical regime provides that the trade- and travel-restricting measures allowed by the regime are the maximum measures permitted to be applied to international traffic.

The classical regime is designed to deal only with cross-border disease transmission. Nothing in the regime requires states to take actions that would reduce the overall level of infectious diseases in their territories. International legal duties to improve public health capabilities connect to points of exit and entry and do not penetrate into the rest of a country's territory. Capabilities built to facilitate compliance with international disease notification duties could also be used for domestic epidemiological surveillance, but the classical regime does not address the importance of surveillance to national infectious disease control.

As literature published in the late 1990s demonstrated, the classical regime as embodied in the IHR failed to achieve maximum protection against the international spread of infectious disease with minimum interference with world traffic.^{17, 18, 19, 20}

WHO officials and public health experts recognized the IHR's breakdown long before the crisis of emerging and re-emerging infectious diseases arose in the 1990s, as analyses of

the IHR's problems in the late 1960s and 1970s illustrate.^{21, 22, 23, 24} The IHR's ineffectiveness arises from four major factors. First, after smallpox's eradication in 1978, the IHR applied to only three diseases—cholera, plague, and yellow fever.¹⁶ Critics noted that the focus on these three diseases was anachronistic and did not reflect the infectious disease threats countries faced in the late 20th century. In connection with their scope, the IHR are linked, as if the rules were frozen in time, with the first International Sanitary Conference in 1851, which focused on cholera, plague, and yellow fever.

Second, the surveillance system for the diseases subject to the IHR broke down. WHO Member States routinely failed to notify WHO as required by the Regulations. Third, in violation of the rules on maximum measures, WHO Member States frequently applied excessive, irrational measures to goods and travelers from countries experiencing disease outbreaks. In 1969, the WHO Deputy Director-General observed that the IHR's objective of avoiding "excessive and unnecessary measures" had failed.²¹ Fourth, WHO Member States showed no interest in applying the IHR's enforcement machinery against violators. In 1976, one commentator on the IHR asked whether "there was much sense in the maintenance of rules if they are not observed—if they are disregarded or more or less systematically broken—without any consequences for those who deviate?"²⁴

In 1995, WHO began to revise the IHR to strengthen the classical regime's ability to contribute to infectious disease control in the era of globalization. Section 5.1 below examines this revision process in detail, but the decision to revise the IHR reflects a realization that the classical regime failed during WHO's first fifty years. The shambles that the IHR had become by the 1990s raised the question whether the classical regime could be sufficiently reformed to prolong its existence into a third century.

3.2 International Health Organizations—The Organizational Regime

The treaties through which IHOs are founded represent horizontal international legal regimes because they establish an institutional process for state interaction on public health. The obligations accepted under these organizational regimes have, however, been historically few and limited in scope, which makes these horizontal regimes legally weak in connection with infectious disease control.

A comparison of the regimes establishing the Office International de l'Hygiène Publique (OIHP, 1907) and the WHO Constitution (1946) illustrates the nature of the organizational regime. OIHP's principal function was "to collect and bring to the knowledge of participating States the facts and documents of a general character which relate to public health, and especially as regards infectious diseases, notably cholera, plague, and yellow fever, as well as measures taken to combat these diseases."²⁵ States joining the OIHP agreed to only two substantive duties: (1) to inform OIHP of the steps taken by them concerning the implementation of international sanitary conventions; and (2) to contribute funds to pay OIHP's expenses.²⁵

While WHO's objective under its Constitution is more ambitious—the attainment by all peoples of the highest possible level of health²⁶—the substantive duties accepted by contracting parties are almost exactly the same as the duties found in the OIHP treaty. The WHO Constitution imposes limited duties on Member States, which are only obliged to (1) pay their share of WHO's budget; and (2) submit periodic reports on various public health matters.²⁶ The Preamble of the Constitution proclaims that "[t]he enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being,"²⁶ suggesting that states—whether or not they join WHO—have an international

legal obligation to protect and promote human health, which would include control of infectious diseases. The WHO Constitution does not, however, contain duties that require WHO Member States to take any specific action to protect or promote human health. WHO can create treaties and adopt binding regulations on public health issues,²⁶ but WHO Member States retain the discretion whether to accept these international legal obligations. Nor did WHO use these powers to create international law on public health beyond the IHR in its first fifty years.

What this comparison of OIHP and WHO reveals is that the organizational regime leaves the public health sovereignty of states unfettered. This regime does not create any specific rules for addressing the negative externalities generated by infectious diseases and thus is shallow from a horizontal legal perspective. Vertical public health strategies against infectious diseases benefited, however, from the organizational regime, as Section 4.1 below explores.

3.3 GATT and the SPS Agreement—The Trade Regime

The third international legal regime to relate to the horizontal public health strategy against the cross-border transmission of infectious diseases is the regime that emerges from international trade law—the trade regime. The General Agreement on Tariffs and Trade (GATT) recognizes that WTO Member States can impose trade-restricting measures that are necessary to protect human health.²⁷ In addition, WTO Member States can consider the health-threatening properties of products in determining whether the most-favored-nation and national treatment principles in GATT apply.²⁸ For trade-restricting health measures that involve protecting human health from risks arising from the entry, establishment, or spread of diseases, disease-carrying organisms, or

disease-causing organisms, WTO Member States must comply with the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement).²⁹

The SPS Agreement is the most important WTO agreement in connection with cross-border transmission of infectious diseases, and the biggest area of concern is the international spread of food-borne pathogens. With globalization affecting international trade in food and foodstuffs, public health experts worry that liberalized trade increases the transnational spread of food-borne infectious diseases. WTO Member States must comply with the SPS Agreement in applying trade-restricting measures to protect themselves from the importation of food-borne diseases.

The SPS Agreement imposes two kinds of legal disciplines. First, WTO Member States must satisfy the SPS Agreement's science-based disciplines. Trade-restricting health measures must be based on scientific principles and supported by sufficient scientific evidence and by a scientific and policy risk assessment.²⁹ Where scientific evidence is uncertain, WTO Member States may apply trade-restricting health measures until the scientific evidence clarifies.²⁹ The SPS Agreement's scientific disciplines resonate with the classical regime because, in both, trade-restricting health measures should be based on scientific principles in order that the measures actually protect human health. Second, the SPS Agreement applies trade-related disciplines to trade-restricting health measures. Such measures must be the least trade restrictive measures possible to achieve the WTO Member State's appropriate level of health protection.²⁹

The SPS Agreement also encourages WTO Member States to adopt international standards promulgated by relevant international organizations in establishing trade-restricting health measures.²⁹ The Codex Alimentarius Commission (Codex), a joint

effort of WHO and the Food and Agricultural Organization (FAO), adopts international standards on food safety. The SPS Agreement specifically mentions Codex as a relevant international organization in connection with food safety.²⁹ WHO standards, guidelines, and recommendations on public health issues would also be available for use in setting trade-restricting health measures.²⁹ If a WTO Member State decides to adopt a measure that is more protective than the relevant international standard, it may to the extent that it has a scientific justification for its actions.²⁹

This overview of the SPS Agreement indicates that it aims for the classical regime's objective of "minimum interference with world traffic," at least in connection with trade in goods. The SPS Agreement's scientific and trade disciplines are not, like the IHR, confined to three specific diseases but apply to all trade-restricting measures designed to deal with cross-boundary transmission of infectious diseases. More importantly, disputes under the SPS Agreement are settled through the WTO's Dispute Settlement Understanding,³⁰ which is more powerful than any dispute settlement provisions found in the classical regime. Its broader scope and strong dispute settlement mechanism make the SPS Agreement more important than the IHR in connection with trade-restricting measures related to infectious diseases. WHO has recognized the SPS Agreement's importance in revising the IHR.³¹

While the WTO Dispute Settlement Body (DSB) has adjudicated disputes concerning the cross-border transmission of animal³² and plant diseases,³³ to date the DSB has not decided a WTO case involving infectious diseases of humans.

4. INTERNATIONAL LAW AND VERTICAL PUBLIC HEALTH STRATEGIES AGAINST INFECTIOUS DISEASES

The vertical public health strategy against negative externalities generated by infectious diseases does not focus on cross-border transmission but aims to decrease the prevalence of infectious diseases within the state. Vertical strategies seek to (1) reduce environmental causes of infectious disease outbreaks, such as contaminated water and inadequate sanitation; (2) improve public health infrastructure and services; and (3) utilize drugs and vaccines better. Vertical approaches represent the public health ideal because they attack the infectious disease problem at the source rather than reacting to cross-border transmission.

Many countries, such as the United States and European nations, reduced national infectious disease burdens by attacking unsanitary living conditions, building public health systems and capabilities, and using drugs and vaccines extensively. Whether the advances made by developed countries against infectious diseases in the 20th century owe anything to horizontal public health strategies and the classical, organizational, and trade regimes is doubtful. Tension between horizontal and vertical public health approaches was even apparent in the classical regime's formative period. In 1894, Robert Koch argued that the international sanitary conventions on cholera control were "superfluous" because the correct strategy was for every country individually "to seize cholera by the throat and stamp it out."³⁴

This section focuses on how states and international organizations have used international law to support vertical public health strategies against infectious diseases.

Four categories of international legal support are canvassed: the “soft law” regime, human rights regime, environmental regime, and access regime (Figure 4).

[INSERT FIGURE 4 HERE]

4.1 The “Soft Law” Regime

Historically, WHO has not been interested in creating new international law to advance global public health. WHO has preferred to use recommendations and persuasion to guide Member States to adopt appropriate public health policies. Member State compliance with WHO recommendations remains voluntary because the recommendations carry no legal force, which means that the public health sovereignty of states remains legally unfettered by WHO’s actions. WHO’s use of non-binding standards and guidelines resembles what international lawyers call “soft law”—principles that are not binding but which carry normative weight.³⁵ WHO’s penchant for non-binding recommendations and guidelines constitutes a vertical “soft law” regime because much of WHO’s technical and scientific advice seeks to improve in-country public health policies and is not tied to cross-border flows of people, goods, or pathogens.

The nature of the horizontal organizational regime found in the WHO Constitution drives the “soft law” regime. WHO’s vertical public health advice and activities would not be possible without its Constitution, but the limited obligations the Constitution imposes on WHO Member States force WHO to take a “soft law” approach. Ironically, the horizontal trade regime through the SPS Agreement gives WHO “soft law” legal bite that it does not have under the WHO Constitution. While not cases involving infectious diseases, WHO-generated scientific information and guidelines played important roles in two landmark WTO cases—the *Beef Hormones Case*³⁶ and *Asbestos*

*Case.*²⁸ While WHO “soft law” contributes to public health improvements in various countries, the WTO and SPS Agreement make WHO “soft law” on food-borne diseases important in international law, heightening the relevance of WHO within the horizontal trade regime. WHO “soft law” not connected to the trade regime does not, however, receive a legal boost from the WTO; so this WHO-WTO synergy is restricted to issues of cross-border disease transmission.

4.2 The Human Rights Regime

The idea expressed in the preamble of the WHO Constitution that the “enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition” provided perhaps the earliest linkage of public health and human rights in international law. The creation of international human rights law on both civil and political rights and economic, social, and cultural rights developed this linkage to the point where international human rights law has become one of the most important areas of international law for public health generally and infectious disease control specifically.

The importance of international human rights law to infectious disease control emerged most dramatically in the global efforts to control HIV/AIDS. Public health experts, led by the late Jonathan Mann, argued that respect for human rights was a powerful public health tool in bringing HIV/AIDS under control within countries. Discrimination against people living with HIV/AIDS drove the epidemic underground, where public health authorities could not provide counseling, treatment, or care. Government respect for human rights became a “health determinant” in connection with this global infectious disease crisis.

International human rights law supports vertical public health strategies against infectious diseases in three ways: it (1) disciplines governmental restrictions on civil and political rights undertaken to protect public health; (2) prohibits governments from discriminating against vulnerable populations in the enjoyment of civil and political rights; and (3) promotes the human right to health. In each of these areas, international human rights law imposes duties on governments relating to their treatment of citizens; and fulfillment of these duties supports public health policies and strategies against infectious diseases.

The vertical human rights regime is, however, weak and plagued by international legal difficulties. The extensive discrimination against persons living with HIV/AIDS and against populations suspected of harboring HIV or AIDS witnessed in the course of the pandemic indicates how little international law on civil and political rights has contributed to public health efforts. The synergy between respect for civil and political rights and public health championed by human rights and public health advocates has remained a rhetorical rather than a real synergy.

The human right to health also has not fulfilled its conceptual promise. The International Covenant on Economic, Cultural, and Social Rights (ICESCR, 1966) provides that the States Parties “recognize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health.”³⁷ Governments subject to this treaty are required to prevent, treat, and control epidemic and endemic diseases.³⁷ The human right to health provides, thus, the most direct international legal support to vertical public health strategies against infectious diseases.

Legal and political problems undermine, however, the utility of the human right to health. Legally, governments are only obliged to fulfill the right to health “to the maximum of its available resources, with a view to achieving progressively the full realization” of the right.³⁷ This “principle of progressive realization” means that governments can legitimately excuse public health problems because of a lack of financial and other resources. The human right to health leaves sovereignty unfettered because it does not impose obligations that are defined, stable, and enforceable. Politically, the human right to health has historically been a rhetorical device rather than a serious legal principle. Even WHO paid little attention to the human right to health throughout most of its history.³⁸ Thus, the rule of international law that most directly connects to vertical public health strategies turns out to be of frustrating utility.

4.3 The Environmental Regime

Public health experts argue that environmental conditions and change are important factors in the emergence and re-emergence of infectious diseases.³⁹ Environmental degradation that connects to infectious diseases includes air and water pollution, marine pollution, deforestation, depletion of the ozone layer, and global climate change.⁴ States have created international legal regimes that deal with most of these environmental concerns, and these regimes relate to infectious disease prevention and control.⁴ The environmental regime supports vertical public health strategies because it imposes duties on governments to improve environmental conditions within their territories or in areas beyond national jurisdiction that will reduce national infectious disease burdens.

The environmental regime suffers, however, debilitating weaknesses. The environmental problems that cause the biggest infectious disease burdens—local air and water pollution in developing countries⁴⁰—are not the subject of any international environmental treaty.[§] Transboundary air and water pollution, ozone-layer depletion, marine pollution, and global warming are subjects of international environmental law; but local air and water pollution are the leading infectious disease killers among the types of environmental degradation currently addressed by international environmental law. Vertical public health strategies against local air and water pollution have to fall back on the human right to health and all its problems to find international law that supports attacking these environmental drivers of large-scale infectious disease morbidity and mortality. Further, existing international environmental law on transboundary air and water pollution, marine pollution, and global warming is of questionable effectiveness. The strongest relevant area of international environment law is the regime on the depletion of the ozone layer, but this regime has one of the more tenuous connections to infectious disease control of the international environmental treaties.^{**}

4.4 The Access Regime

Perhaps the most visible global public health effort currently underway is the push to increase access for developing countries to affordable and effective drugs and vaccines. International organizations and NGOs are involved in campaigns to improve developing country access to drugs and vaccines for a host of diseases, including

[§] The United Nations Economic Commission for Europe and WHO's Regional Office for Europe helped create the Protocol on Water and Health, adopted in June 1999, to promote, among other things, improvements in national water standards in the European region. Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 17 June 1999.

^{**} Depletion of the ozone layer increases human exposure to ultraviolet solar radiation, and such exposure may weaken human immune systems. Infectious diseases could capitalize on weakened immune systems.

HIV/AIDS, tuberculosis, and malaria. The access campaigns are vertical public health strategies because they seek to expand the use of effective antimicrobials within countries against infectious diseases. The international legal connection to these access efforts has proved controversial.

The “access regime” in international law is a fluid, volatile mixture of international law on human rights and on the protection of intellectual property rights of pharmaceutical companies. WHO and leading NGOs such as *Médecins Sans Frontières* argue that access to essential drugs and vaccines is a human right, deriving from the human right to health.^{41, 42} According to WHO, access to essential drugs and vaccines depends on four factors: (1) rational selection and use of medicines; (2) sustainable and adequate financing; (3) affordable prices; and (4) reliable health and supply systems.⁴¹ Many public health experts argue that TRIPS threatens the human right to essential drugs by making new drugs and vaccines under patent unaffordable for developing countries. In addition, skepticism about TRIPS includes the belief that the protections it offers pharmaceutical companies will not increase research and development on pharmaceuticals for diseases predominantly suffered in the developing world.⁴³

The international legal and public health controversies surrounding TRIPS are addressed elsewhere in this book,^{††} so I do not explore them. I do want to examine briefly, however, the volatile access regime to highlight issues not often raised in the debate about whether TRIPS is good or bad for global public health. First, the assertion that access to essential medicines is a human right all too often goes unanalyzed, as if this is a clear principle of international human rights law. As suggested in the analysis of the human right to health, the meaning and parameters of this right as a matter of

international law remain unclear. Using drugs and vaccines in the fight to control epidemic and endemic diseases is a step governments can take to achieve progressively the right to health; but neither the relevant treaty texts nor state practice under the treaties support the idea that access to certain pharmaceuticals is a fundamental human right. A government could shift its budget from antibiotic procurement to funding clean water and sanitation systems and not be in violation of the human right to health, even though this would deny people access to essential drugs.

Second, the TRIPS debate complicates the claim that access to essential medicines is a human right. WHO and NGO activists acknowledge that pharmaceutical companies need incentives provided by patents to produce new drugs and vaccines, but they stress that TRIPS allows governments to use compulsory licensing and parallel importing to increase access to pharmaceutical products. Under TRIPS, governments are not required to use these access-improvement measures; they have the right to do so under certain conditions laid out in the treaty. But, if access is a human right, then are not governments under an international legal *obligation* to use compulsory licensing, parallel importing, and other techniques to improve access in all situations not just those mentioned in TRIPS? Few people in the TRIPS debate have pushed the human right argument this far, which suggests that the human right of access to essential medicines is not absolute. Most human rights are not absolute; the key question is under what circumstances can the right legitimately not be fulfilled. With the human right to access, we return to the general human right to health, which leaves discretion to governments about how to fulfill the right and under which there is no minimum core not subject to the

†† See Chapters [TO COME].

principle of progressive realization. The human right to access is as indeterminate as the human right to health.

Third, the TRIPS controversy has not focused serious attention on the other critical aspects of access to drugs and vaccines listed by WHO—rational selection and use, sustainable and adequate financing, and reliable health and supply systems. Rarely does one find arguments that governments are violating the right to health by not following WHO recommendations and advice on rational drug selection and use. For example, WHO advises countries to use Directly Observed Therapy (Short Course) (DOTS) in treating tuberculosis.² But WHO itself acknowledges that its Member States' compliance with DOTS in tuberculosis control is poor.² Is the failure to implement DOTS a violation of the human right to drug access? More generally, is the lack of regulation of the dissemination of antibiotics prevalent in many countries, which contributes to the development of antimicrobial resistance, a violation of the right to health?

Nor does one often find public health experts asserting that governments are violating the human right to drug access by not allocating sufficient budgetary resources to procure essential drugs and to improve public health and drug supply systems. *Médecins Sans Frontières'* call for the negotiation of a new treaty on drugs and vaccines for neglected diseases reflects the emphasis on affordable availability while not addressing governmental duties on rational use, financing, and public health and drug supply systems:

This treaty should promote the search for medicines and vaccines that are effective and easy to use, and must ensure their affordability. It should address quality, efficacy, and safety standards. It should correct the current imbalance

between rights and obligations under the present international treaties and agreements, such as TRIPS. It should guarantee that drugs for neglected diseases will be considered global public goods and address the relevant intellectual property issues.¹⁰

The attention and criticism focused on TRIPS and the WTO obscure the fact that access in developing countries to generic drugs on WHO Essential Drug List is often very poor for reasons that have nothing to do with TRIPS. If the access regime debates remain fixated on whether TRIPS is good or evil, then its contribution to vertical public health strategies against infectious diseases will resemble the shallow support now rendered to such strategies by the human rights and environmental regimes.

5. THE FUTURE OF HORIZONTAL REGIMES

5.1 Death of the Classical Regime

The overview in Sections 3-4 above of the relationships between international law and infectious diseases reveals that international law intertwines with efforts to control infectious diseases domestically and their cross-border migrations. When WHO proposed in 1995 that the IHR be revised, the Organization reinforced the role that international law has played in connection with infectious diseases. The IHR's history and their revision suggest, however, that the international legal strategy embodied in the IHR may no longer represent a viable approach to international infectious disease control. In this section, I argue that the IHR revision reveals not the renaissance but the death of the classical regime.

5.1.1 Maximum Protection Against the International Spread of Disease. In deciding to revise the IHR, WHO concluded that the purpose of ensuring maximum

protection against the international spread of disease with minimum interference with world traffic should remain the fundamental goal of the revised IHR.⁴⁴ To strengthen efforts to ensure maximum protection against the international spread of disease, WHO proposed in the February 1998 draft of the revised IHR moving from disease-specific to syndromic reporting in order to deal with the problem that the IHR only dealt with three diseases.⁴⁵ WHO abandoned this approach because of its lack of feasibility within the IHR regulatory framework.⁴⁶ The focus then shifted to requiring notifications of only public health risks caused by an infectious agent that are of “urgent international importance.”⁴⁵ WHO is currently devising a “decision tree” that will supposedly help countries determine whether a public health risk is of urgent international importance and legally reportable to WHO under the revised IHR.⁴⁵

WHO’s work on crafting a new legally mandated notification system seems, however, to be overshadowed by its ability to harness new information technologies, such as the Internet, for infectious disease surveillance. Whether WHO Member States define a public health risk of urgent international importance in a way that does not leave them with a great deal of discretion seems unlikely. Whether the “urgent international importance” approach to notification duties will produce greater compliance by WHO Member States than disease-specific notification seems doubtful. If an infectious disease event reaches the level of urgent international importance, WHO is much more likely to hear about it from non-governmental sources *before* the government in question fulfills its legal duty to notify.

These arguments explain why WHO places great emphasis on gathering infectious disease surveillance and outbreak information from governmental and non-

governmental sources. WHO has enhanced its ability to collect infectious disease information from diverse electronic and other media through its global alert and response network. WHO can approach Member States on a confidential basis about information it collects through its network and work with the country concerned to encourage it to implement appropriate public health measures.

WHO wants the revised IHR to “include the use of WHO’s global alert and response network as an additional source of information on public health risks of urgent international importance together with reports from countries.”⁴⁵ The necessity of linking the revised IHR to the use of the global alert and response network is unclear. WHO already uses the network to collect infectious disease data, discuss such data confidentially with relevant WHO Member States, and offer advice and assistance to the country’s public health response. In February 2001, WHO reported that, through the global alert and response network since 1997, “745 reports have been investigated in direct collaboration with the countries concerned.”⁴⁵ Clearly, the revised IHR are not needed to make this process work because it already works on an impressive scale.

New information technologies give WHO capabilities that free it from reliance on international legal mandates requiring Member States report disease events. Such mandates have been one of the two main pillars of the classical regime since the 19th century. International legal requirements to report infectious disease events may still have benefits for global surveillance; but the revolution in information technologies renders such benefits marginal and, given the past failure of WHO Member States to comply with such requirements, uncertain in how global epidemiological information is collected and used today.

As for public health requirements at points of entry and exit that the IHR impose, WHO has stated that the revised IHR will cover “maintenance of a reliable system to prevent the extension of public health risks through the application of updated and broader routine public health measures for transport of persons and goods.”⁴⁵ In reporting on the IHR revision, WHO described its certification of the Shenzhen airport in China as a “sanitary airport” under the IHR⁴⁷ to indicate that this certification process would remain important in WHO’s efforts under the IHR. Neither the public health requirements imposed by the IHR for ports and airports nor the certification process appear to have been significant factors in controlling cross-border transmission of infectious diseases during the life of the IHR, which suggests that similar requirements in the IHR revision will make, at most, modest contributions to cross-border infectious disease control.

5.1.2 Minimum Interference with World Traffic. The second half of the classical regime involved rules to discipline how states responded to trade and travelers originating in countries experiencing infectious disease problems. As Section 3.1 above described, WHO Member States routinely violated these disciplines by implementing irrational and excessive public health measures at their borders. The IHR revision process had to confront this fundamental failure of the IHR.

Moving from disease-specific reporting to syndromes then to public health risks of urgent international importance complicates the use of a “maximum measures prescribed” rule as exists in the IHR. As WHO admitted, part of the reason syndrome reporting was deemed infeasible was because “syndromes could not be linked to preset rules for control of spread.”⁴⁵ The February 1998 draft of the revised IHR attempted to deal with this problem in connection to syndromes by providing that any measures taken

“should reflect expert consensus opinion.”⁴⁴ The term “expert consensus opinion” was not defined, and the operative verb—“should”—meant that the provision was not mandatory.

Using the concept of “public health risks of urgent international importance” creates the same problem because it will be difficult to include in the revised IHR clear “maximum measures” for all types of possible urgent infectious disease situations. In its latest update on the IHR revision, WHO states that, if a public health risk of urgent international importance is identified, then the revised IHR will ensure “that appropriate international public health measures are recommended by WHO.”⁴⁵ The focus is on what WHO will recommend (not require) rather than on what WHO Member States must follow in terms of public health measures implemented. Thus, the “maximum measures” rule that has for so long been part of the classical regime seems to have faded away.

Another problem with the “minimum interference with world traffic” objective under the IHR was the frequent violation of the “maximum measures” discipline by WHO Member States and the lack of enforcement of such discipline. The February 1998 draft of the revised IHR proposed a “Committee of Arbitration” that would settle disputes between WHO Member States.⁴⁴ The target of this proposal was the problem of excessive and irrational measures. As I wrote elsewhere, the inclusion of this reform “indicates how seriously WHO believes that excessive measures have undermined the IHR.”⁴

This radical proposal has vanished from the IHR revision process, presumably after opposition from WHO Member States. The surrogate for the Committee of Arbitration is, however, the WTO dispute settlement mechanism through the SPS Agreement. As indicated in Section 3.3 above, trade-restricting health measures that do

not have a scientific basis and justification violate the SPS Agreement, opening access to a powerful dispute settlement mechanism to deal with “excessive measures” in the context of infectious diseases. WHO updates on the IHR revision frequently mention WHO’s efforts to explore the links between the IHR and SPS Agreement. The problem of “excessive measures” has not only evaporated from the revised IHR but also migrated to the WTO. Again, this development represents the collapse of the second of the two main pillars of the classical regime—ensuring minimum interference with world traffic through prescribed maximum measures.

The foregoing analysis suggests that the traditional horizontal international legal strategy that dominated the approach to cross-border transmission of infectious diseases from the mid-19th century is no longer viable. The IHR revision process reveals the death of the classical regime not its rejuvenation. The IHR’s collapse as an effective regime identified as early as the 1960s may mean the regime was dead long ago, killed by the combination of new transportation technologies (e.g., jet air travel), the failure of public health improvements in developing countries, and the age-old jealous guarding of sovereignty by states.

The lack of interest shown by WHO and WHO Member States in the IHR revision process also suggests that the regime is dying. While WHO devotes extensive resources and attention to its effort to develop a framework convention on tobacco control, the IHR revision process appears neglected. The openness and transparency of effort on the framework convention on tobacco control, including the extensive involvement of NGOs, has no equivalent in the IHR revision process. Apathy has also been apparent on the part of WHO Member States about the IHR revision. WHO

received few comments from WHO Member States on the February 1998 draft revision. Also, WHO reported in July 2000 that the majority of WHO Member States had not made use of the electronic discussion group set up for the IHR revision.⁴⁶ Further, in the ferment about infectious diseases in the global community today, the IHR revision is virtually invisible. Much greater attention is focused on international trade (especially TRIPS) and human rights law. One would probably search in vain for a global NGO involved in infectious diseases that monitors (let alone promotes) the IHR revision.

What appears to be emerging from the IHR revision process is a document that will (1) contain legally binding requirements for port and airport public health capabilities; and (2) essentially *recommend* to WHO Member States that they (a) report public health risks of urgent international importance, and (b) take appropriate public health actions to control the risks. Whether WHO Member States heed the recommendation to report public health risks of urgent international importance matters less today because WHO will probably find out about the problem through its global network of epidemiological information. WHO has been powerless when WHO Member States enact irrational, excessive measures against other countries; so whether the Member States follow WHO's recommended public health policies will not change WHO's inability to confront such violations. The venue for confrontation, if any, will be the SPS Agreement and the WTO's DSB.

5.2 Synergy Between the Trade and Organizational Regimes

The SPS Agreement's science-based disciplines and reference to the standards, guidelines, and principles of relevant international organizations create a synergy between the horizontal trade and organizational regimes that will dominate how these

regimes deal with cross-border transmission of food-borne pathogens. While the classical regime may be dying, the trade regime has breathed international legal life into WHO's work that is unprecedented in its history. Under the organizational regime, most of WHO's work has no international legal significance. The SPS Agreement has changed this situation for WHO not only on food-borne diseases but also non-communicable disease problems (e.g., *Beef Hormones* and *Asbestos Cases*). WHO-generated scientific and technical data and recommendations now influence the outcome of international legal adjudication in the most powerful dispute settlement mechanism in international law. From an international legal perspective, the WTO and the SPS Agreement are two of the best things to ever happen to the organizational regime.

Whether this synergy between the trade and organizational regimes manifests itself in WTO cases involving cross-border transmission of infectious diseases remains, however, uncertain. Irrational and excessive trade-restricting measures imposed to keep pathogens out of a country are often temporary rather than long-term, which means the measures will probably be lifted before a WTO case against them gets seriously underway. The WTO still awaits its first SPS Agreement case that involves cross-border transmission of infectious diseases that pose a human health risk.

6. THE FUTURE OF VERTICAL REGIMES

6.1 *The "Soft Law" Regime*

The SPS Agreement's ability to harden WHO "soft law" is, as Section 4.1 above argued, limited to the cross-border transmission of infectious and non-communicable diseases through products. Beyond this realm, WHO "soft law" remains as soft as ever. WHO has started to turn "soft law" on tobacco control into harder treaty law through the

negotiation of the framework convention on tobacco control;⁴⁸ but, in the infectious disease context, the hard-law IHR appear to be dissolving into soft law and no efforts to harden WHO soft law on vertical public health strategies have been formulated.

6.2 The Environmental and Human Rights Regimes

Neither states nor international organizations appear interested or willing to create international environmental law to address local air and water pollution in developing countries, so the environmental regime's contribution to vertical public health strategies against infectious diseases will remain marginal at best. The potential contribution of international human rights law on civil and political rights is unfulfilled as state compliance with this law continues to be poor, especially in connection with HIV/AIDS. Academic, intergovernmental, and non-governmental efforts have been and continue to be made to give the right to health more meaning and substance in international law,^{49, 50, 51} but it remains a right subject to resource availability and state discretion and weakened by the absence of any effective enforcement mechanism. In their traditional forms, neither the environmental nor the human rights regime provides strong international legal support to vertical public health strategies against infectious diseases.

6.3 The Access Regime

The future of the access regime depends on whether states and international organizations establish *rapprochement* between the human rights claim for greater access to drugs and vaccines and the need for patent protection for new pharmaceutical products. Obscured by the sound and fury over access to essential drugs is the fact that the WTO and TRIPS have catalyzed global public health activism on a scale and intensity WHO could never have produced. As with the SPS Agreement, the WTO has made WHO and

public health more relevant to international law than any international health organization ever achieved. While the SPS Agreement creates synergy between WTO and WHO, the TRIPS/public health dynamic for international law is less synergistic than dialectical.

Whether *rapprochement* in the access regime is on the horizon is uncertain. The jointly sponsored WTO/WHO experts' conference in Norway in April 2001 focused on differential pricing as the basis for consensus,⁵² but the outcome of this meeting has not been universally celebrated.⁵³ WTO negotiations on a statement on TRIPS and public health for the Doha summit in November 2001 have been difficult and acrimonious. The threats by the United States and Canada in October 2001 to break Bayer's patent on ciprofloxacin in order to make generic versions for dealing with the anthrax attacks added a new and unexpected dimension to the controversy over the access regime.

Further, the retreat of the United States and then the major pharmaceutical companies in their challenges to South Africa's compulsory licensing and parallel importing legislation are wrongly cheered as victories for global public health. The aftermath of these victories may be that developing-country governments that have often shown little understanding of the HIV/AIDS epidemic and have not adequately financed or maintained prevention strategies or public health and drug supply systems may increase the use of HIV/AIDS therapies. Such increased use is humanitarian because it will alleviate some of the current suffering. Whether it is prudent public health policy is less certain. Consensus on the wisdom of spending huge sums of money on HIV drugs for developing countries as opposed to prevention programs and basic public health reforms does not exist even within the global community fighting HIV/AIDS.⁵⁴ In addition, undisciplined access to new drugs for HIV/AIDS, tuberculosis, and malaria will

lead to antimicrobial resistance, a public health nightmare that is already haunting malaria and tuberculosis control and is emerging as a threat to HIV/AIDS treatment.

The access regime debate has not, to date, confronted the problem of antimicrobial resistance. What is troubling from an international legal perspective is that antimicrobial resistance prevention and control is a vertical public health challenge for which weak and underdeveloped international legal regimes provide ineffective support. The most likely venue for the development of international law on antimicrobial resistance will be the WTO's SPS Agreement and dispute settlement mechanism,⁵⁵ but this law will primarily affect horizontal rather than vertical public health strategies against antimicrobial resistance.

7. CONCLUSION

Historically, international law's role in the production of the global public good of infectious disease control concentrated on cross-border transmission and was managed by IHOs. Today, the classical regime on cross-border transmission is effectively dead; and the trade regime under the WTO dominates the horizontal area. Ironically, these developments are good for WHO from an international legal perspective. They give the Organization a new birth of influence in international law's support of horizontal public health strategies on infectious diseases after the withering away of the classical regime.

Within the last fifty years, international law's role in supporting the global public good of infectious disease control has also changed with the creation of international legal regimes that relate to vertical public health strategies against infectious diseases. The HIV/AIDS pandemic marked the first clear moment when a vertical regime—international human rights law—superceded the classical regime as the most prominent

international legal strategy against an infectious disease. TRIPS' arrival further accentuated the rise of vertical international legal regimes and WHO's place in their controversies and development.

The shift from horizontal to vertical regimes is not, however, without problems. The soft law, human rights, environmental, and access regimes provide weak international legal support for vertical public health strategies. In addition, the access regime's volatile mixture of human and intellectual property rights has exploded in ways that might be detrimental to global public health by subordinating prevention as a public health strategy or courting the menace of antimicrobial resistance.

What the death of the classical regime, rise of the WTO as driver of international law on public health, the shift from horizontal to vertical international legal regimes, and WHO's emerging role in this fluid international legal drama portend for the production of infectious disease control as a global public good is unclear. The impact of the anthrax attacks in the United States in 2001 and the new U.S. emphasis on bioterrorism on the role of international law and infectious disease control also is uncertain.⁵⁶

The profile of international law in infectious disease control has never been higher than it is today; but this visibility also comes at a time when infectious diseases pose a global crisis. Whether international law's higher profile contributes to greater production of the global public good of infectious disease control in the future remains to be seen. All the changes in international law's relationship with global infectious disease control have yet to reveal all their consequences, intended and unintended. For these reasons, international law's current prominence also means that its role in global infectious

disease control has never been more uncertain than it is at the beginning of the 21st century.

Figure 1: Infectious Diseases and Negative Externalities

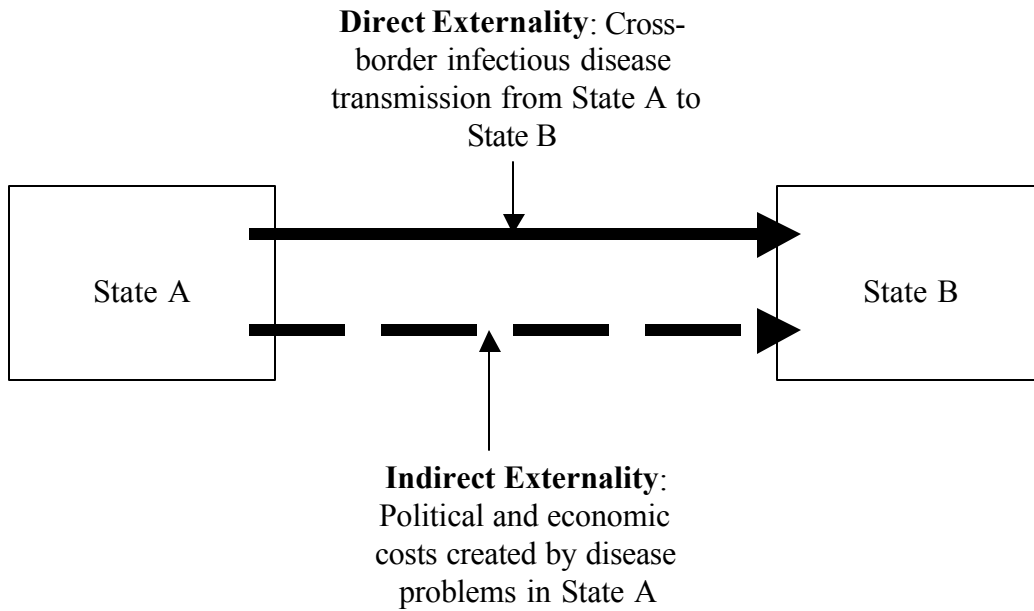


Figure 2: Public Health Strategies Against Infectious Diseases

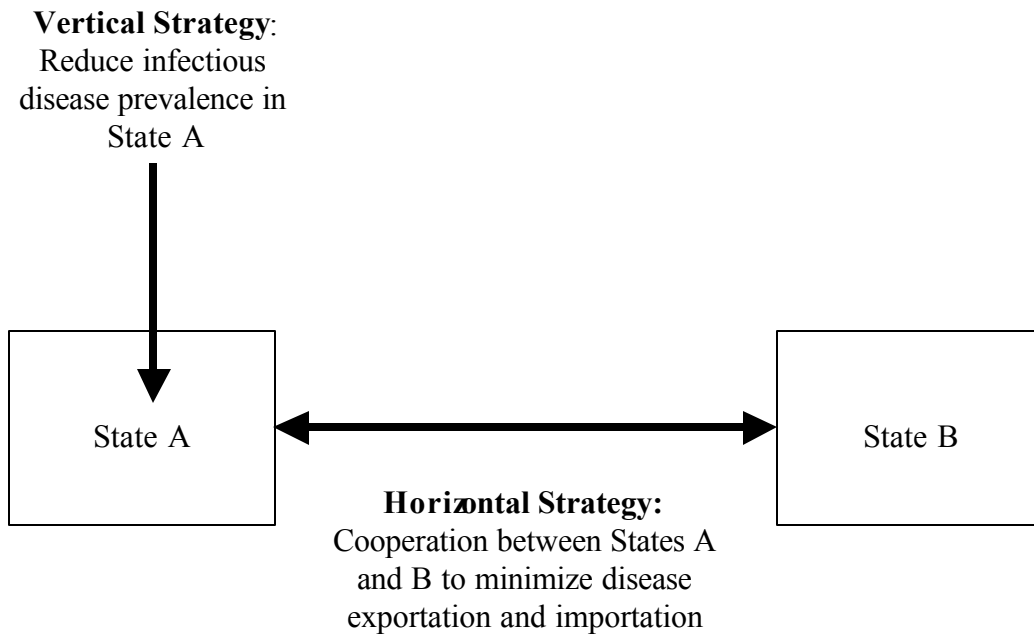
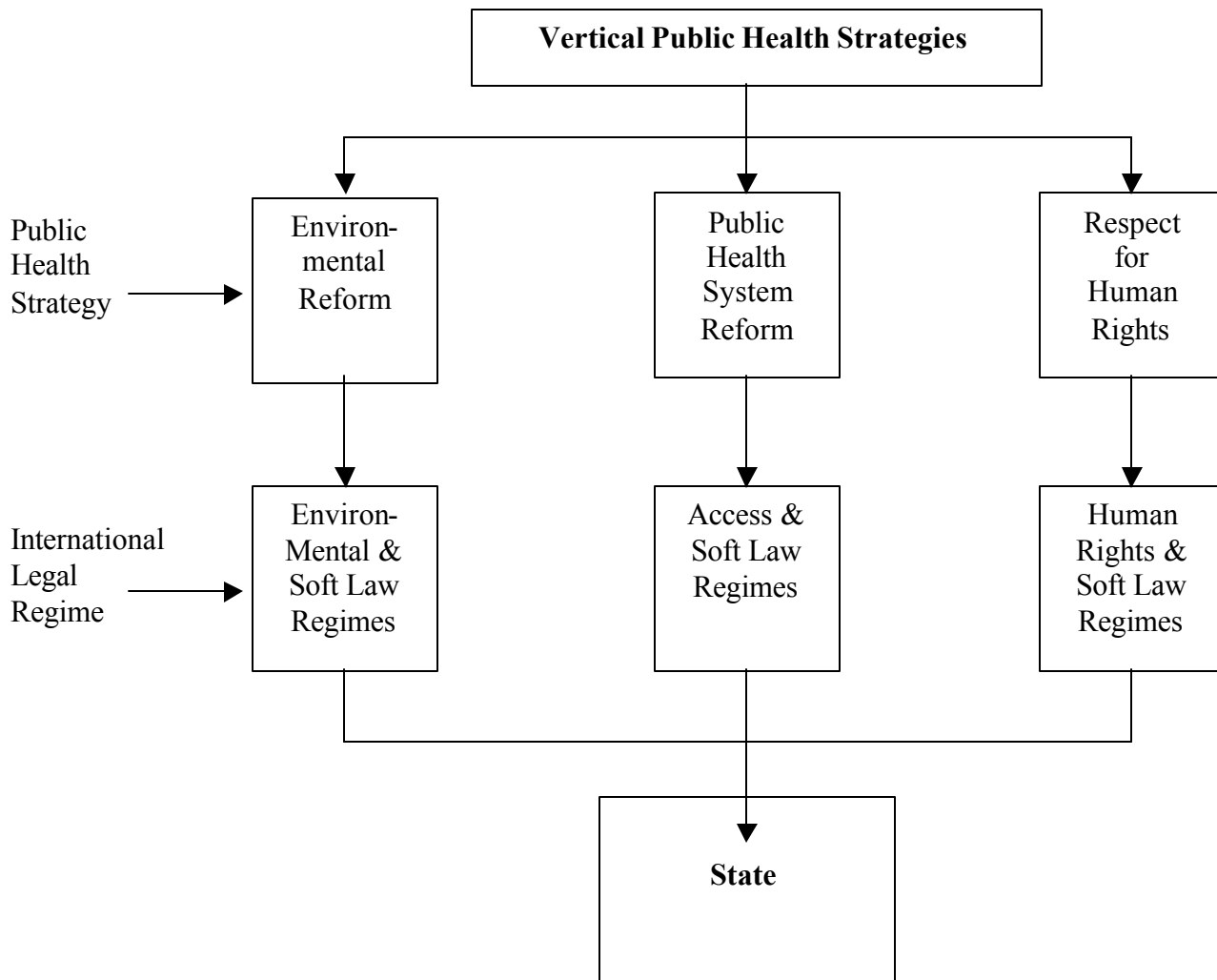


Figure 3: Horizontal International Legal Regimes



Figure 4: Vertical Public Health Strategies and International Law



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