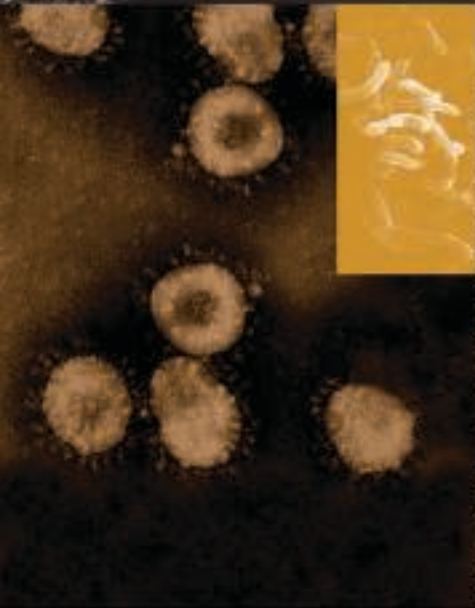


ANDREW T. PRICE-SMITH

Contagion and Chaos

DISEASE, ECOLOGY, AND
NATIONAL SECURITY IN THE
ERA OF GLOBALIZATION



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Disease, Ecology, and National Security in the Era
of Globalization

Andrew T. Price-Smith

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to my grandfather Judge Douglas Cameron (D.C.) Thomas and my
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Contagion and Chaos

Introduction

Great catastrophes may not necessarily give birth to genuine revolutions, but they infallibly herald them and make it necessary to think, or rather to think afresh, about the universe.

—Fernand Braudel (1980)

Health is the fulcrum of material power, and therefore it is central to the interests of the modern sovereign state. In the present day, novel trans-national threats to the security of states have arisen in the form of multinational terrorism, the proliferation of weapons of mass destruction, and global environmental change. From the mid 1990s on, scholars of international politics have speculated that emerging and re-emerging infectious diseases may also constitute a threat to international security, through their negative effects on sovereign states. Population health contributes directly to the endogenous prosperity and stability of a particular polity, to the consolidation and projection of sovereign power, and ultimately to the security of the state. The health of the body politic thus contributes directly to the functionality of the apparatus of governance.

Liberating the people from the shackles of disease and hunger contributes directly to the development and consolidation of endogenous human capital, which consequently augments economic productivity and the production of both social and technical ingenuity. The resulting prosperity permits the extraction of fiscal resources from the people via mechanisms of taxation to fill the coffers of the state. In view of the fungibility of economic power, such revenues may be transformed into public goods delivered to the people, or channeled into the apparatus of coercion (the military and police) so as to maintain order and project power abroad.

The antithesis of health, epidemic disease, then, presents a direct threat to the power of the state, as it erodes prosperity, destabilizing the relations between state and society, renders institutions sclerotic, foments intra-state violence, and ultimately diminishes the power and cohesion of the state. As such, epidemic infectious disease is profoundly disruptive to an affected polity, undermining its security. Yet contagion also contains the seeds of catalytic socio-economic and political transformation.

The principle of creative destruction lies at the core of all natural processes of change.¹ Geologists speak of catastrophic disruptions produced by phenomena such as volcanism, earthquakes, and impact events, yet out of such chaotic periods a new order emerges. Fire sweeps through an ecosystem, devastating the local flora and fauna, and in the aftermath a new ecological equilibrium coalesces. In these natural processes one sees a pattern: an original period of stasis and equilibrium, then a period of chaotic destabilization (turbulence), and then the establishment of a second equilibrium that may differ radically from the one that preceded the destruction. Thus, natural systems exhibit periods of stasis followed by abrupt change—a model of punctuated equilibrium, if you will.² The human species (and the institutions it has fashioned) emerged in the context of such catalytic (and non-linear) processes, and despite our anthropocentric hubris we remain deeply embedded within the global ecology, subject to droughts, hurricanes, earthquakes, and epidemic diseases.

Historians have argued that contagion wrought profound changes in the socio-economic, legal, and political orders of afflicted societies.³ Yet the complex interplay between non-linear natural systems and human societies is often ignored within the social sciences, particularly in the domain of political science.⁴ The political scientist Daniel Deudney has deplored the lack of inclusion of material-contextual factors in present-day political science, which acts as if societies evolved and matured *ex nihilo*: “[A] major distorting filter in contemporary thinking, particularly about international relations . . . is a gross underappreciation or misappreciation of the importance of material-contextual factors, of nature, geography, ecology, and technology. We think and act as if technologies are just our handy tools and as if nature has somehow just been left behind.”⁵

Historians have continued to investigate how such material-contextual variables (including contagion) affect state-society relations. Fernand

Braudel, one of the foremost historians of the twentieth century, noted that manifestations of epidemic disease induced profound disruptions of existing institutions such as markets, economies, and socio-political systems, and that such disruptions could be protracted.⁶ In a Schumpeterian sense, epidemics have the capacity to induce profound turmoil but often function as catalysts of change, generating transformation in the belief structures of survivors, in the micro- and macro-level social and economic structures of affected polities, in the relations between the state and society, and ultimately between countries. The profoundly destabilizing effects of contagion result from various manifestations of illness, including high levels of mortality and/or morbidity, the destruction of human capital, economic disruption, negative psychological effects, the consequent acrimony between affected social factions, and the deteriorating relations between the people and an often draconian state.

The reader will, doubtless, note the double-entendre in the title of this book. The historical record suggests that contagion may induce degrees of chaos within affected societies, the level being dependent on many subtle contextual variables regarding the pathogen, the affected society, and the resilience (or capacity) of the state. In addition, the emergence of novel pathogenic microbial agents results from the complex interplay of chaotic systems in the natural realm, and from their intersection with the human ecology. Natural systems exhibit non-linearities (such as epidemic growth curves) and emergent properties, govern the emergence of novel zoonoses, and determine the course of their manifestation as epidemic and/or pandemic disease. Such non-linear dynamics are often observed during periods of war. To the extent that war destroys the infrastructure of medicine, public health, and sanitation, impedes the production and distribution of food and medical supplies, prevents surveillance and treatment, and generates poverty, it is a driver of pathogenic emergence and virulence. To that end, the social and structural chaos induced by war may act as a powerful amplifier of disease.⁷

Hypotheses

The first hypothesis advanced in this volume is that epidemic disease may function as a stressor variable to compromise the prosperity, the legitimacy, the structural cohesion, and in certain cases the security of sovereign states. Further, disease may exacerbate pre-existing domestic conflicts

between ethnicities, and/or classes and may generate intra-societal and intra-state violence, and the resulting societal discord may generate punitive and draconian responses by the state against the people as it seeks to maintain order. Thus, disease often functions to destabilize the coherence, the power, and (perhaps) the security of the state.

The second hypothesis is that epidemic and pandemic manifestations of novel pathogens may promote economic and political discord between countries, although contagion is not likely to generate significant armed conflict between sovereign states.

The third hypothesis is that only some of the documented infectious pathogens threaten national security, and that criteria based on lethality, transmissibility, fear, and economic damage will illuminate which pathogens are security threats and which are not.

The fourth hypothesis is that the practices of warfare (both intra-state and inter-state) will generate “war pestilences,” contributing to the proliferation of infectious disease within the ranks of the combatants and subsequently to proximate civilian populations. Thus, conflict amplifies the burden of disease.

The fifth hypothesis is that the paradigm of “health security” is philosophically grounded in the political tradition of republican theory, a theoretical antecedent to both Realism and Liberalism; that the association between the health of the population and perceptions of national security is ancient but largely forgotten; and that a republican revision of systems-level international relations theory (with elements of political psychology) provides an optimal theoretical framework for pursuing such inquiries.

The biologist E. O. Wilson bemoaned the “fragmentation of knowledge” and argued that the solutions to the complex collective action problems of the modern age lay in interdisciplinary knowledge and its practical application. This volume is explicitly a consilient,⁸ or interdisciplinary, exploration of the relationship among infectious disease, governance, and prosperity within affected polities, and between countries. The material presented herein is admittedly an eclectic synthesis of political science, history, biology, demography, economics, psychology, sociology, ecology, physics, and public health. The hope is that such a work may appeal to a broad audience and encourage new avenues of thought and investigation across the disciplines, bridging the epistemic schisms that have deepened over the decades as a result of disciplinary specialization.

On Globalization and Disease

A considerable amount of scholarly discourse has emerged concerning the effect of globalization on economies and societies, but such literature typically ignores the nexus of globalization, ecology, and public health. Processes of “globalization”⁹ are often linked to the diffusion of pathogens in the modern era, as trade is directly associated with the inter-continental diffusion of pathogens and with their vectors of transmission.¹⁰ Global microbial proliferation and emergence is also facilitated by tourism and migration, by increasing population densities, by environmental degradation,¹¹ by international (and intra-state) conflict,¹² and (to a degree) by inequities in the international distribution of resources between developed and developing countries.¹³ Thus, the proliferation of pathogenic organisms is a negative manifestation of globalization, but such processes are by no means novel, although the scale and rapidity of emergence has increased.

The emergence and diffusion of infectious disease on a global scale is a process that originated during the earliest years of inter-continental trade. The first recorded instance of such trade-induced pathogenic diffusion was the “plague” of Athens, which was borne to Greece by trade ships from Northern Africa.¹⁴ In the centuries that followed, plague bacilli (*Yersinia pestis*) came to Europe via trade caravans from Central Asia along the Silk Road,¹⁵ and Europeans transmitted the scourge of smallpox to Native American populations with the “discovery” of the Americas.¹⁶ In recent decades we have witnessed profound qualitative changes in the processes of globalization (e.g., the rapidly increased speed of trade and migration as facilitated by advances in transportation technologies, which augments the speed and scale of pathogenic proliferation). Furthermore, the diffusion of both knowledge and fear via telecommunications media permit the negative psychological externalities produced by disease to affect the global community, as was demonstrated by the SARS¹⁷ epidemic of 2003. Furthermore, globalization may accelerate the evolutionary properties of pathogens, augmenting their natural disposition to swap genetic information. William Rosen notes that globalization has increased the genetic “library of code”¹⁸ available to all microorganisms as pathogens from disparate and previously isolated regions have become able to exchange genetic properties with other ubiquitous organisms. Further, the burgeoning human population increases the sheer number of organisms in the human ecology, and the increasing speed of travel accelerates the global process of genetic mixing.

The Scope of the Problem

During the Cold War (1945–1991), issues of public health (with the exception of biological weaponry) were typically consigned to the realm of “low politics.” With the end of US-Soviet rivalry in the early 1990s, environmental change, terrorism, migration, and public health began to ascend on the international agenda. Public health victories against microbes reached a zenith in the mid 1970s with the development of powerful anti-microbial drugs. However, the pace and intensity of pathogen emergence has increased since that time with the proliferation of novel agents of contagion. In the late 1990s, the recognition that the HIV/AIDS pandemic represented a significant threat to the economy, the governance, and perhaps the security of developing countries spurred the academic and policy communities into action against this emerging foe. In recent years, the BSE epizootic, the SARS contagion of 2003, and our increasing understanding of the influenza pandemic of 1918–19 have generated great interest in the political and economic impact of contagion. Such outcomes include a capacity to generate socio-political acrimony, a capacity to disrupt global markets and trade, and a capacity to disrupt relations within and between sovereign states.

The Modern Literature on Public Health and Security

Over the centuries, various schools of thought have emerged to examine the linkages between public health and governance. Historians have long dominated the debate, beginning with Thucydides. In recent times, Alfred Crosby, William McNeill, and Peter Baldwin have argued that interactions between pathogens and the human ecology often generate profound effects on the evolutionary trajectories of human societies. In the domain of political science, the first inquiries into the relationship among public health, governance, and security were articulated by Dennis Pirages (1995), who argued for the emerging concept of “microsecurity” and pushed for a re-conceptualization of security to include non-military threats.¹⁹ Pirages was followed by other political scientists, including Price-Smith (1999, 2001), Elbe (2002), Ostergard (2002, 2007), Peterson (2002, 2006), Singer (2002), Huang (2003), Youde (2005), and McInnes (2006). In the realm of public health and international law, the legal scholars David Fidler (1999) and Obi Aginam (2005) have conducted inquiries into the nature and depth of cooperation between sovereign

entities and international organizations, often crossing over into political science. Collectively, the work of this group constitutes the discourse that forms the canon of the “health security” debate in the domain of political science.

Plan of the Book

In chapter 1, I offer a historical exploration of relations between state and society in the context of contagion, ranging from Thucydides’ observations to relatively recent times. The purpose here is to expose the reader to the utility of the historical record as a means to inform modern inquiries in the social sciences. Disease has historically generated negative effects on various societies, ranging from economic and social destabilization to rampant stigmatization and inter-ethnic violence, prompting draconian reactions by the state against its own people to enforce order. In that chapter I also illustrate the principle that infectious disease has long been perceived as a distinct threat to stability, to prosperity, to the material interests of elite factions, and therefore to the security of the state. This serves to place the current debate as to whether disease should be “securitized” in its proper historical perspective.

In chapter 2, I analyze the effects of the influenza pandemic of 1918–19 on various affected societies. In the domain of demography, the chapter illustrates the differential mortality generated by the waves of contagion that swept the planet. The chapter then examines the possibility that the pandemic affected the various combatants in World War I in different fashions, based on the statistical data presented herein. Previously unpublished data from German and Austrian archives reveal the malign effects of the virus on the military forces and the people of the Central Powers during this period. Analysis of the data suggests that the epidemic eroded the Central Powers’ capacity to continue the conflict, and that it may have accelerated their capitulation and/or disintegration. The data presented herein also raise the possibility that the first serious episode of influenza-induced mortality occurred in Austria in the spring of 1917, not in the United States in the spring of 1918. Finally, the chapter briefly addresses the Swine Flu affair and the shortcomings of the United States’ preparedness for another lethal pandemic.

Chapter 3 constitutes an analysis of the deleterious effects of HIV/AIDS on intra-societal relations, the capacity of state institutions, and the relations of the state to society in the context of the contagion. In

that chapter I examine the worst-case scenario of Zimbabwe and juxtapose it against the scenario of Botswana, where, despite similarly high levels of contagion, state-society relations remain benign and the state retains its cohesion. The chapter examines the demographic implications of HIV/AIDS, and in particular the issue of AIDS orphans and their potential for radicalization. Using a human-capital approach, I then analyze the effects of HIV/AIDS on economic productivity (at the micro, sectoral, and macro levels) and the virus' possible effects on foreign investment. Subsequently, I examine the effects of the pathogen on the domain of governance, articulating the direct negative effects of HIV/AIDS on the institutions of the state, such as the military, police forces, and the bureaucracy. Finally, I chronicle the Zimbabwe government's draconian response and abuses of power, which have coincided with the epidemic, and collectively undermined societal prosperity and cohesion.

Chapter 4 is an investigation into the effects of a prion-induced contagion, bovine spongiform encephalopathy (BSE), and its human variant, Creutzfeld-Jakob disease. In both Europe and North America, the BSE affair is associated with questions about the efficacy and legitimacy of the scientific community and about the government institutions that are entrusted with safeguarding the public interest. In this chapter I also analyze the economic impact of these cases and explore how the North American cases generated externalities that continue to undermine the United States' relations with Japan and South Korea. I highlight problems of miscalculation of risk, question assumptions of rationality by individuals and states, and note the significant role of emotion (fear and anxiety). Further, I examine the role of BSE in generating rapid institutional change at both the domestic and the international level, and I analyze BSE's effects on cooperation between sovereign states.

In chapter 5 I deal with the SARS contagion of 2002–03, which resulted from the emergence of a novel coronavirus in southern China late in the year 2002. I detail the peculiar etiology of the virus and its subsequent demographic impact. I also note the central role of fear and anxiety in undermining social cohesion, international markets, and the irrational behavior of many sovereign states in the face of a new pathogen. I then examine the effects of SARS on governance in China and Canada, and on regional governance in Pacific Rim countries. Finally, I examine the claim that we have entered a “post-Westphalian” era of global health governance.

In chapter 6, I analyze violent conflict and war as “disease amplifiers.” I examine the mechanisms by which inter-state and intra-state conflict contribute to the dissemination of existing pathogens and to the emergence of novel microbial agents. I then examine the interaction between conflict and individual pathogens as documented in the historical record. I utilize data regarding the incidence of multiple pathogens and their effects on mortality and morbidity culled from US, German, and Austrian government archives for the period of World War I (1914–1918), and the role of civil wars in the propagation of disease.

In chapter 7, I briefly examine the proposition that health contributes to economic productivity, which then bolsters the power of the state and facilitates the projection of power (martial and ideological). I chronicle the nascent debate on health security and critique the existing literature. I then argue that significant pathogenic threats to health constitute both a direct and an indirect threat to national security. Further, I argue that the existing “health and security” debate is excessively myopic, insofar as most of the current discourse focuses exclusively on HIV/AIDS, and that as a result the discourse is profoundly anti-historical. Moreover, this debate in political science reveals a truncated understanding of the history of public health, and of health’s effects on state-society relations. Finally, I suggest a mechanism by which security theorists may assess the threat that a specific pathogen presents to a specific state.

Theory and Exegesis: On Health and the Body Politic

Most of the change we think we see in life
Is due to truths being in and out of favor
—Robert Frost, “The Black Cottage”

My analysis does not seek to explain all possible outcomes related to the effects of disease on structures of governance, but rather to generate plausible analytical relationships between variables that will permit further empirical testing and refinement. As the philosopher of science Thomas Kuhn stated, “To be accepted as a paradigm, a theory must seem better than its competitors, but it need not, and in fact never does, explain all the facts with which it can be confronted.”¹

On *Physis* and Republican Theory

In *The Social Contract*, the Swiss republican political philosopher Jean-Jacques Rousseau explicitly linked population health, economic productivity, and effective governance:

What is the object of any political association? It is the protection and prosperity of its members. And what is the surest evidence that they are so protected and prosperous? The numbers of their population. Then do not look beyond this much debated evidence. All other things being equal, the government under which, without external aids . . . the citizens increase and multiply most is infallibly the best government. That under which the people diminishes and wastes away is the worst.²

Indeed, Rousseau recognized that implementation of the social contract effectively entailed an exchange between the sovereign and the governed wherein the latter pledged their fealty (and taxes) to the former in exchange for the protection of their lives and property: “Their very lives

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