

**THE CHANGING NATURE OF SECURITY IN THE POST-COLD WAR ERA**

With the collapse of the Soviet bloc in Eastern Europe in the late 1980s and early 1990s, it appeared that the world system could be on the threshold of an era of unprecedented peace and stability. Politicians, diplomats, and academics alike began to forecast the imminent establishment of a new world order, increasingly managed by an integrated international system based on the principles of liberal democracy and the free market.<sup>1</sup> As this new world order emerged, so it was assumed that serious threats to international stability and security would decline commensurately.

However, the initial euphoria that was evoked by the end of the Cold War has now been replaced by a growing sense of unease that non-traditional challenges—so-called “gray area phenomena”<sup>2</sup>—may soon come to assume greater prominence. Such concern has been stimulated by the remarkable fluidity that now characterizes international politics, an environment in which it is no longer apparent

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<sup>1</sup>For a detailed survey of these proposed changes, see the International Monetary Fund, *The World Economic Outlook*, Washington D.C., 1991, especially pp. 26–27.

<sup>2</sup>For a detailed account of the notion of gray area phenomena, see Peter Chalk, *Non-Military Security and Global Order: The Impact of Violence, Chaos and Disorder on International Security*, London: Macmillan, 2000, Chapter One. See also Jim Holden-Rhodes and Peter Lupsha, “Gray Area Phenomena: New Threats and Policy Dilemmas,” *Criminal Justice International*, Vol. 9, No. 1, 1993, pp. 11–17, and their “Horsemen of the Apocalypse: Gray Area Phenomena and the New World Disorder,” *Low Intensity Conflict and Law Enforcement*, Vol. 2, No. 2, 1993, pp. 212–226.

exactly what can be done to whom and with what means. Moreover, it appears that in this new world order turmoil and chaos are increasingly emanating from undefined sources, while violence itself is largely being used by the “weak,” not so much as a means of expressing identity but as a way of creating it.<sup>3</sup> Such dynamics are likely to reduce interstate conflict, but only at the expense of an increase in transnational threats that fall below the level of conventional warfare.<sup>4</sup>

Stated more directly, the geopolitical landscape that now faces the global polity lacks the relative stability of the linear Cold War division between East and West. There is no large and obvious equivalent to the Soviet Union against which to balance the United States, the world’s sole remaining superpower. Instead, the definitions of security, conflict, and general threat are more diffuse and opaque, existing in the absence of the simple dichotomies that underscored the Cold War era.<sup>5</sup> In commenting on this new environment, former Central Intelligence Agency (CIA) Director James Woolsey remarked: “We have slain a large dragon, but are now finding ourselves living in a jungle with a bewildering number of poisonous snakes. And in many ways, the dragon was easier to keep track of.”<sup>6</sup>

A common thread running through many of the threats currently facing the global community—including the spread of disease, the drug trade, environmental degradation, and terrorism—is their transnational character: They cross international borders but generally cannot be linked directly to the foreign policies or behavior of states.<sup>7</sup> Few of today’s dangers have the character of direct military

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<sup>3</sup>See, for instance, “Terrorism and the Warfare of the Weak,” *The Guardian* (UK), October 27, 1993.

<sup>4</sup>Richard Latter, “Terrorism in the 1990s,” *Wilton Park Papers*, Vol. 44, 1991, p. 2.

<sup>5</sup>See David Abshire, “US Foreign Policy in the Post Cold War Era: The Need for an Agile Strategy,” *Washington Quarterly*, Vol. 19, No. 2, 1996, pp. 42–44, and Simon Dalby, “Security, Intelligence, the National Interest and the Global Environment,” *Intelligence and National Security*, Vol. 10, No. 4, 1995, p. 186.

<sup>6</sup>James Woolsey, as quoted in John Ciccarelli, “Preface: Instruments of Darkness—Crime and Australian National Security,” in John Ciccarelli, ed., *Transnational Crime: A New Security Threat?* Canberra: Australian Defence Studies Centre, 1996, p. xi.

<sup>7</sup>Richard Matthew and George Shambaugh, “Sex, Drugs and Heavy Metal,” *Security Dialogue*, Vol. 29, No. 2, 1998, p. 163.

aggression emanating from a clearly defined sovereign source. Rather, these dangers tend to evolve as “threats without enemies,” with sources internal rather than external to the political order that the concept of “national interest” has traditionally represented.<sup>8</sup> Unlike the challenge posed by traditional concerns, such as overt aggression, the threats emanating from contemporary gray area influences are far more ambiguous in their patterns, processes, and effects. In many cases, this obfuscates the perceived need for rapid policy responses. Action is typically initiated only after a major crisis destabilizing stage has been reached within the state(s) concerned.<sup>9</sup>

Making sense of these changes will require a holistic, nonlinear approach to security that goes beyond the relatively parsimonious assumptions of *realpolitik* that have informed international politics for so many years. Traditional spatial notions of security, of national stability defined purely in terms of territorial sovereignty and integrity—which is reflected on a larger scale by the containment policies of the Cold War—simply do not work in today’s more complex geostrategic environment. Such statecentric paradigms are clearly unable to deal with issues that originate within national borders but whose effects transcend international boundaries and affect the security of people worldwide.<sup>10</sup> The concept of human security recognizes that individual security is not solely a reflection of an individual as part of a secure state, but also encompasses consideration of quality of life. As Matthew and Shambaugh observe, “[T]oday we must . . . broaden our perspective to encompass neglected areas in which new threats are intensifying, vulnerabilities are real, and forward looking policies are required.”<sup>11</sup>

<sup>8</sup>Abshire, “US Foreign Policy in the Post Cold War Era,” pp. 42–44; Dalby, “Security, Intelligence, the National Interest and the Global Environment,” p. 186.

<sup>9</sup>Chalk, *Non-Military Security and Global Order*, p. 3; Holden-Rhodes and Lupsha, “Gray Area Phenomena,” p. 12; and William Tow “Linkages Between Traditional Security and Human Security,” in William Tow, Ramesh Thakur, and In-Taek Hyun, eds., *Asia’s Emerging Regional Order: Reconciling Traditional and Human Security*, Tokyo: United Nations University Press, 2000, pp. 13–21.

<sup>10</sup>Chalk, *Non-Military Security and Global Order*, p. 2. See also Dalby, “Security, Intelligence, the National Interest and the Global Environment,” p. 186, and Alan Dupont, “Regional Security Concerns into the 21st Century,” in Ciccarelli ed., *Transnational Crime: A New Security Threat?*, pp. 72–73.

<sup>11</sup>Matthew and Shambaugh, “Sex, Drugs and Heavy Metal,” p. 163. See also Seyom Brown, “World Interests and the Changing Dimensions of World Security,” in Michael

## THE CONCEPT OF HUMAN SECURITY

Human security has its intellectual roots in the psychological theories of W. E. Blatz. His observations of individual learning processes and how humans interrelate with society and authority led him to conclude that security is necessarily “all inclusive and pervasive” and is something that does not necessarily require “the protective armor of an agent.”<sup>12</sup> The concept also draws heavily on the notions of common and comprehensive security, both of which encapsulate the global dimensions of emerging threats and problems and stress the need to achieve security with, rather than against, others.<sup>13</sup>

The core theoretical foundation of human security, however, is derived from the “globalist” school of thought. This particular paradigm asserts that an “international society” has emerged that integrates communications, cultures, and economics in new ways and in a manner that transcends statecentric relations. While globalists point to the many benefits that can flow from the intermingling of cultures and the creation of international societal “norms,” they also acknowledge the complexity of such processes and the wide range of new problems related to security and the welfare of humanity that can result. In many cases, these challenges are portrayed as issues that are beyond the capabilities of individual states to control or, indeed, manage.<sup>14</sup>

The key idea behind human security, and its main contribution to the globalist argument, is the focus on the *individual* as the primary

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Klare and Daniel Thomas, eds., *World Security: Challenges for a New Century*, New York: St Martin's Press, 1994, pp. 10–26; James Rosenau, *Turbulence in World Politics: A Theory of Change and Continuity*, Princeton, N.J.: Princeton University Press, 1990; and Donald Snow, *National Security: Enduring Problems in a Changing Defense Environment*, New York: St. Martin's Press, 1991.

<sup>12</sup>W. E. Blatz, *Human Security: Some Reflections*, Toronto: University of Toronto Press, 1966, p. 63. See also Tow, “Linkages Between Traditional Security and Human Security,” pp. 13–21.

<sup>13</sup>Ramesh Thakur, “From National to Human Security,” in Stuart Harris and Andrew Mack, eds., *Asia-Pacific Security: The Economics-Politics Nexus*, Sydney: Allen and Unwin, 1997, pp. 67–68.

<sup>14</sup>Tow, “Linkages Between Traditional Security and Human Security,” p. 19, Anthony Giddens, *The Consequences of Modernity: Self and Society in the Late Modern Age*, Stanford, Calif.: Stanford University Press, 1990; Martin Shaw, *Global Society and International Relations*, Cambridge, Mass.: Polity Press, 1994.

object of security.<sup>15</sup> Canadian Foreign Minister Lloyd Axworthy, perhaps the most conspicuous exponent of the concept, has listed “safety for people from both violent and nonviolent threats” as core preconditions. He has further emphasized that, “[f]rom a foreign policy perspective, human security is best understood as a shift in perspective or orientation. It is an alternative way of seeing the world, taking people as its point of reference, rather than focusing exclusively on the security of territory or governments.”<sup>16</sup>

More specifically, human security recognizes that an individual’s personal preservation and protection emanate not just from safeguarding the state as a single political unit, but also from ensuring adequate access to welfare and quality of life.<sup>17</sup> As Thakur observes, this has a dual aspect:

Negatively, it refers to freedom from: want, hunger, attack, torture, imprisonment without a free and fair trial, discrimination on spurious grounds, and so on. Positively, it means freedom to: the capacity and opportunity that allows each human being to enjoy life to the fullest without putting constraints upon others engaged in the same pursuit. Putting the two together, human security refers to the quality of life of the people of a society or polity. Anything which degrades their quality of life—demographic pressures, diminished access to or stock of resources, and so on—is a security threat. Conversely, anything which can upgrade their quality of life—economic growth, improved access to resources, social and political empowerment, and so on, is an enhancement of human security.<sup>18</sup>

<sup>15</sup>Tow, “Linkages Between Traditional Security and Human Security,” p. 19.

<sup>16</sup>Lloyd Axworthy, “Human Security: Safety for People in a Changing World,” Department of Foreign Affairs and International Trade, Ottawa, April 1999. See also Astri Suhrke, “Human Security and the Interest of States,” *Security Dialogue*, Vol. 30, No. 3, 1999, p. 269.

<sup>17</sup>George McLean, “The United Nations and the New Security Agenda,” available at <http://www.unac.org/canada/security/mclean.html>. See also Keith Krause and Michael Williams, “From Strategy to Security: Foundations of Critical Security Studies,” in Keith Krause and Michael Williams, eds., *Critical Security Studies*, Minneapolis: University of Minnesota Press, 1997, p. 43.

<sup>18</sup>Thakur, “From National to Human Security,” pp. 53–54.

Human security differs from traditional concepts of security in three important ways. First and most important, the main agent of analysis is the individual rather than the state, and the principal goal is ensuring societal or communitarian stability as opposed to safeguarding territorial sovereignty per se (although, of course, the two objectives are not necessarily mutually exclusive). Second, traditional security stresses structured, militarized interstate violence arising from the existence of an anarchic world as the main threat to international order. By contrast, human security places its emphasis on unstructured chaos and turmoil—which can occur as a result of any number of socioeconomic, political, and environmental factors—as the chief challenge to global stability. Finally, whereas traditional security regards states as competitors whose interactions will always be of a zero-sum nature (i.e., one “wins” only at the expense of another), human security stresses the potential for individual/communitarian cooperation that is undertaken to achieve (absolute) gains that will be to the benefit of all.

Although not intended to be comprehensive, Table 1.1 presents a comparative exploration of these various dimensions for traditional and human security.

While important differences exist, there is one crucial similarity between traditional and human security: both stress the need to reduce the vulnerability of the security subject. Although the two theoretical perspectives differ in their precise account of the source and nature of insecurity, each nevertheless emphasizes the need to employ instruments that can be used to foreclose threatening behav-

**Table 1.1**

**Traditional and Human Security: Comparative Aspects**

Traditional Security	Human Security
State	Individual/community
National security	Societal security
Structured violence	Unstructured chaos
Competition	Cooperation
Interactions always lead to relative gains	Interactions can lead to absolute gains

ior and influences.<sup>19</sup> As George McLean notes, both traditional and human security thus “seek to guarantee or guard against some deprivation felt by either the [territorial state], the individual or the community.”<sup>20</sup>

### THE TRANSNATIONAL SPREAD OF INFECTIOUS DISEASE AS A THREAT TO HUMAN SECURITY

The argument that the transnational spread of disease poses a threat to human security rests on the simple proposition that it seriously threatens both the individual and the quality of life that a person is able to attain within a given society, polity or state. Specifically, this occurs in at least six ways. First and most fundamental, disease kills—far surpassing war as a threat to human life. AIDS alone is expected to have killed over 80 million people by the year 2011, while tuberculosis (TB), one of the virus’s main opportunistic diseases, accounts for three million deaths every year, including 100,000 children.<sup>21</sup> In general, a staggering 1,500 people die *each hour* from infectious ailments, the vast bulk of which are caused by just six groups of disease: HIV/AIDS, malaria, measles, pneumonia, TB, and dysentery and other gastrointestinal disorders.<sup>22</sup>

Second, if left unchecked, disease can undermine public confidence in the state’s general custodian function, in the process eroding a polity’s overall governing legitimacy as well as undermining the ability of the state itself to function. When large-scale outbreaks occur, such effects can become particularly acute as the ranks of first responders and medical personnel are decimated, making it doubly difficult for an already stressed government to respond adequately.

During the initial weeks of the anthrax attacks in fall 2001, the lack of coordination at the federal level, especially with regard to communi-

<sup>19</sup>Tow, “Linkages Between Traditional and Human Security,” p. 2.

<sup>20</sup>George McLean, “The United Nations and the New Security Agenda,” p. 2.

<sup>21</sup>Chalk, *Non-Military Security and Global Order*, pp. 96–97; Laurie Garrett, “Gates Urges More Funds for HIV Prevention,” *Washington Post*, April 8, 2001, p. A5.

<sup>22</sup>World Health Organization (WHO), “Report on Infectious Diseases: Removing Obstacles to Healthy Development,” available at <http://www.who.org/infectious-disease-report/pages/textonly.html>, pp. 1–2.

cation, led to a loss of confidence by some citizens, especially postal workers in Washington, D.C. Potentially exposed individuals were given conflicting advice on antibiotic treatment and the efficacy of the anthrax vaccine. The general public, largely because of inconsistent information enunciated by government officials, bought Cipro, the antibiotic approved for the treatment of anthrax, in large numbers.

Similarly, in 1996, Japan suffered a severe food poisoning epidemic caused by *Escherichia coli* O157. Over the course of two months, eight people died and thousands of others were sickened. The perceived inability of the Tokyo government to enact an appropriate response generated widespread public criticism, compounding popular dissatisfaction with an administration that was still reeling from the effects of the previous year's Kobe earthquake. As one commentator remarked at the height of the crisis, "The cries against government authorities are growing louder by the day. . . . The impression here [in Japan] is too much talk and not enough action has led to yet another situation that has spun out of control."<sup>23</sup>

Third, disease adversely affects the economic foundation upon which both human and state security depends. The fiscal burden imposed by the HIV/AIDS epidemic provides a case in point. Twenty-five million people are currently HIV-positive in sub-Saharan Africa, costing already impoverished governments billions of dollars in direct economic costs and loss of productivity. Treating HIV-related illnesses in South Africa, the worst-hit country on the continent, is expected to generate annual increases in healthcare costs in excess of US\$500 million by 2009 (see Chapter Three).<sup>24</sup> South and Southeast Asia are expected to surpass Africa in terms of infections by the year 2010. If this in fact occurs, demographic upheaval could tax and widely destabilize countries with fragile economies and public health infrastructures. Economies will be greatly affected by the loss of a stable and productive workforce as well as from a reduction of external capital investment, potentially

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<sup>23</sup>"Japan Declares E. coli Epidemic an Outbreak: Citizens Accuse Government of Slow Response," CNN Interactive World Wide News, August 1, 1996.

<sup>24</sup>"The Cruellest Curse," *The Economist*, February 24, 2001; Barton Gellman, "An Unequal Calculus of Life and Death," *Washington Post*, December 27, 2000, p. A1.

reducing general gross domestic product (GDP) by as much as 20 percent.<sup>25</sup>

Fourth, disease can have a profound, negative impact on a state's social order, functioning, and psyche. In Papua New Guinea, for instance, AIDS has severely distorted the *wantok* system—which formalizes reciprocal responsibilities, ensuring that those who hit hard times will be taken care of by extended family—because of the fear and stigma attached to the disease.<sup>26</sup> The Ebola outbreak that hit the crowded Ugandan district of Gulu in late 2000 caused people to completely withdraw from contact with the outside world, reducing common societal interactions and functions to a bare minimum.<sup>27</sup> Epidemics may also lead to forms of post-traumatic stress. A number of analyses have been undertaken to assess the long-term psychological effects on those who have been continually subjected to poor sanitary conditions and outbreaks of disease. The studies consistently document the extreme emotional stress suffered by these people and the difficulty of integrating them back into “normal society.”<sup>28</sup>

Fifth, the spread of infectious diseases can act as a catalyst for regional instability. Epidemics can severely undermine defense-force capabilities (just as they distort civilian worker productivity). By galvanizing mass cross-border population flows and fostering economic problems, they can also help create the type of widespread volatility that can quickly translate into heightened tension both within and between states. This combination of military, demographic, and fiscal effects has already been created by the AIDS crisis in Africa. Indeed, the U.S. State Department increasingly speculates that the disease will emerge as one of the most significant “conflict

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<sup>25</sup>See National Intelligence Council (NIC), “The Global Infectious Disease Threat and Its Implications for the United States,” NIE-99-17D, Washington, D.C., January 2000, p. 10.

<sup>26</sup>M. O’Callaghan, “PNG-Positive,” *Australian Magazine [Weekend Australian]*, November 13–14, 1999.

<sup>27</sup>“Deadly Ebola Bug Strikes Uganda,” *The New Straits Times*, [Malaysia]. October 18, 2000.

<sup>28</sup>Chalk, *Non-Military Security and Global Order*, pp. 113–114; D. W. FitzSimons and A. W. Whiteside, “Conflict, War and Public Health,” *Conflict Studies*, Vol. 276, 1994, p. 28.

starters” and possibly even “war outcome determinants” during the next decade.<sup>29</sup>

Finally, disease can assume a highly significant strategic dimension, through the threat of biowarfare (BW) and/or bioterrorism (BT). Considerations of virulence, morbidity, and rapidity of infectious spread would make the threat far greater than that posed by conventional or even chemical weapons.<sup>30</sup> International attention on BW and BT has increased over the last ten years, particularly in the United States, due to a number of factors:

- Anthrax attacks in fall 2001
- Discoveries of the scope of Iraq’s BW efforts after the Persian Gulf War
- Revelations by Boris Yeltsin and Ken Alibek<sup>31</sup> about the depth and breadth of the Soviet Union’s BW program
- Evidence that Aum Shinrikyo was actively trying to acquire and disseminate biological agents both prior to and after its 1995 sarin nerve gas attack in Tokyo
- Indications that terrorist organizations not sponsored by states, including Osama bin Laden’s al-Qaeda network, have an interest in developing a BT capability.<sup>32</sup>

The consequences of a large-scale, successful act of BW or BT would be catastrophic. Whereas the spread of most infectious diseases spread slowly through natural processes of contagion, deliberate, large-scale releases of virus or bacteria, especially in unvaccinated populations, would lead to the immediate exposure of a specific tar-

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<sup>29</sup>Center for Strategic and International Studies, *Contagion and Conflict: Health as a Global Security Challenge*, Washington, D.C.: 2000, p. 21; U.S. Department of State, “United States Strategy on HIV/AIDS,” publication no. 10296 (July 1995), available at <http://dosfan.lib.uic.edu/ERC/environment/releases/9507.html>, p. 30.

<sup>30</sup>Chalk, *Non-Military Security and Global Order*, p. 111.

<sup>31</sup>Ken Alibek, *Biohazard*, New York: Random House, 1999.

<sup>32</sup>See, for instance, Center for Strategic and International Studies, *Contagion and Conflict*, p. 12; Ron Purver, “Chemical, Biological, Radiological and Nuclear (CBRN) Terrorism,” Perspectives Report 2000/02, Ottawa: CSIS, December 18, 1999; and “Bin Laden Goes After Big Guns,” NBC Interactive News, June 15, 2000, available at <http://www.msnbc.com/news/421013>.

get to a large quantity of (possibly enhanced) infectious organisms. The result would be a massive, largely simultaneous outbreak of disease after an incubation period of only a few days. This would not only cause widespread casualties and panic, but also severely strain and possibly collapse entire public health and response capacities.<sup>33</sup>

Although the emergence and reemergence of disease is a widely discussed topic, only a few assessments have considered a discrete security focus that captures the multicausal and reciprocal mosaic outlined above.<sup>34</sup> Most studies focus specifically on the sources and epidemiological etiology of particular viral and bacterial strains,<sup>35</sup>

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<sup>33</sup>Richard Falkenrath, "Confronting Nuclear, Biological and Chemical Terrorism," *Survival*, Vol. 40, No. 3, 1998, pp. 45–46.

<sup>34</sup>Selected works (excluding surveys that are purely scientific/diagnostic in nature) include George Armelgaos, "The Viral Superhighway," *The Sciences*, Vol. 38, No. 1, 1998; Institute of Medicine, Committee for the Study for the Future of Public Health, Division of Health Care Services, *The Future of Public Health*, Washington, D.C.: National Academy Press, 1988; Ruth Dircks, ed., *Disease and Society: A Resource Book*, Canberra: Australian Academy of Science, 1989; P. Epstein, "Emerging Diseases and Ecosystem Instability: New Threats to Public Health," *American Journal of Public Health*, Vol. 85, 1995; S. Foster and S. Lucas, *Socioeconomic Aspects of HIV and AIDS in Developing Countries: A Review and Annotated Bibliography*, Public Health Policy Departmental Publication No. 3, London: London School of Hygiene and Tropical Medicine, 1991; L. Garrett, *Betrayal of Trust: The Collapse of Global Public Health*, New York: Hyperion Press, 2000; M. Gregg, ed., *The Public Health Consequences of Disasters*, Atlanta: CDC, 1989; John Last, *Public Health and Human Ecology*, Stamford, Conn.: Appleton and Lange, 1998; M. Lechat, "The Epidemiology of Health Effects of Disasters," *Epidemiological Review*, Vol. 12, 1990; James Logue, "Disasters, the Environment and Public Health: Improving Our Response," *The American Journal of Public Health*, Vol. 86, No. 9, 1996; Bernard Roizman, ed., *Infectious Diseases in an Age of Change*, Washington, D.C.: National Academy Press, 1995; Joseph Smith, "The Ellison-Cliffe Lecture: The Threat of New Infectious Diseases," *Journal of the Royal Society of Medicine*, Vol. 86, 1993; Derek Yach, "The Globalization of Public Health I: Threats and Opportunities," *American Journal of Public Health*, Vol. 88, No. 5, 1998; WHO, *Removing Obstacles to Healthy Development: WHO Report on Infectious Diseases*, 1999, available at <http://www.who.org/home/reports.html>, accessed January 15, 1999; and National Science and Technology Council, *Infectious Disease—A Global Health Threat*, report of the Committee on International Science, Engineering, and Technology, September 1995.

<sup>35</sup>Some rare exceptions include Dennis Pirages, "Microsecurity: Disease Organisms and Human Well-Being," *Washington Quarterly*, Vol. 18, No. 4, 1995; Jack Chow, "Health and International Security," *Washington Quarterly*, Vol. 19, No. 2, 1996; E. Chivian "Microorganisms, Disease and Security, Technology, Social Change, Demography," *Technology Review*, November/December 1994; Laurie Garrett, "The Return of Infectious Disease," *Foreign Affairs*, January/February 1996; FitzSimons and Whiteside, "Conflict, War and Public Health"; and Alan Whiteside and David FitzSimons,

while much of the security-oriented literature tends to emphasize only one facet of the overall microbial threat: the use of bioagents as offensive or terrorist weapons.<sup>36</sup> If the true dimensions of the challenge posed by infectious and pathogenic organisms are to be understood and factored into viable policy responses, it is vital that more comprehensive and inclusive analyses of *both* disease *and* security be adopted. Only then will policymakers appreciate the full extent of the disease threat with which they are currently faced and, just as important, the socioeconomic and political context within which it operates.

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"The AIDS Epidemic: Economic, Political and Security Implications," *Conflict Studies*, Vol. 251, 1992.

<sup>36</sup>See, for instance, Ken Alibek, *Biohazard*; Seth Carus, *Bioterrorism and Biocrimes: The Illicit Use of Biological Agents in the 20th Century*, Washington, D.C.: Center for Counterproliferation Research, National Defense University, 1999; Richard Falkenrath, Robert Newman, and Brad Thayer, *America's Achilles' Heel: Nuclear, Biological and Chemical Terrorism and Covert Attack*, Cambridge, Mass: MIT Press, 1998; D. Henderson et al., "Smallpox as a Biological Weapon: Medical and Public Health Management," *JAMA*, Vol. 281, No. 2, 1999; Ron Purver, "Chemical and Biological Terrorism: A New Threat to Public Safety?" *Conflict Studies*, Vol. 295, 1996; Joshua Lederberg, ed., *Biological Weapons: Limiting the Threat*, Cambridge, Mass.: MIT Press, 1999; Ronald Atlas, "Combating the Threat of Biowarfare and Bioterrorism: Defending Against Biological Weapons Is Critical to Global Security," *Bioscience*, Vol. 49, No. 5, 1999; and Al Venter, "Biological Warfare: The Poor Man's Atomic Bomb," *Jane's Intelligence Review*, March 1999.