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# Terrorists and biological weapons

## *Forging the linkage in the Clinton Administration*

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**ABSTRACT.** By the end of the Clinton administration, the claim that terrorists armed with biological weapons represented a huge threat to the security of the United States had achieved the status of received knowledge. How this linkage was forged, despite informed dissent not only outside the Clinton administration but also within it, and how it was used to justify a radical reframing of biological knowledge, especially in genetic engineering and genomics, in terms of military goals is the subject of this essay. My method is historical. I assume that no category is fixed but, rather, that key terms, such as "weapons of mass destruction," "biological weapon," and "terrorism" itself, are contingent, shaped under specific historical and political circumstances, and are therefore more fluid than often thought. This account draws on a wide variety of sources including government documents, policy papers and books, conference records, media materials, memoirs, and detailed interviews with nine subjects selected from among participants in the events examined. It shows that the nature of a linkage between terrorism and biological weaponry was debated at many levels in Washington, and it offers reasons why, ultimately, a counterbioterrorism "bandwagon" was constructed and began rolling at the end of the second Clinton administration.

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“My conclusion today is not if terrorists will use biological warfare, but when and where.”

William Patrick, former Chief of Product Development Division, U.S. Biological Warfare Program, Fort Detrick, Proceedings of Seminar on Responding to Consequences of Chemical and Biological Terrorism, 11 July 1995.

“The threat of a terrorist group using a nuclear, biological or chemical weapon of mass destruction in the United States is real. It is not a matter of ‘if’ but rather ‘when’ such an event will occur.”

Staff Statement, Senate Permanent Subcommittee on Investigations, 27 March 1996.

“It is not a matter of if this will occur [but] when it occurs, and how much panic and how much death . . . we [are] willing to accept at the time that it occurs.”

Michael T. Osterholm, M.D., M.P.H., Minnesota Department of Public Health, ABC PRIME TIME LIVE,  
*Germ Warfare: Weapons of Terror*, 25 February 1998.

“Threat assessment based on infinite vulnerabilities, conjured foes, worst-case scenarios, and the wrath of our children can degenerate into a fact-free scaffold of anxieties and arguments — dramatic, emotionally powerful, compelling, but analytically feeble.”

Brian Jenkins, terrorism specialist and former Director, Political Science Department, RAND Corporation,  
and director of its research on political violence, April 1999.

## I. Introduction

In an address to the National Defense University on 11 February 2004, President George W. Bush stated what had become after the 9/11 attacks one of the fundamental tenets of his administration:

What has changed in the 21<sup>st</sup> century is that, in the hands of terrorists, weapons of mass destruction would be a first resort — the preferred means to further their ideology of suicide and random murder. These terrible weapons are becoming easier to acquire, build, hide, and transport. Armed with a single vial of a biological agent or a single nuclear weapon, small groups of fanatics, or failing states, could gain the power to threaten great nations, threaten the world peace. America, and the entire civilized world, will face this threat for decades to come . . . America will not permit terrorists and dangerous regimes to threaten us with the world’s most deadly weapons. (Applause).<sup>1</sup>

Bush expressed the view that had gained the status of received knowledge in the United States, not only after the 9/11 attacks but *before* these events, that terrorists armed with “weapons of mass destruction” presented a preeminent threat to the security of the country. A subset of these threats, terrorists armed with biological weapons, was taken particularly seriously — so seriously that, when Bush called for billions of dollars to be committed to Project Bioshield — a vast, multi-billion dollar effort to develop new drugs to defend against biological attack — in his State of the Union address in January 2003, Congress responded positively with virtually complete bipartisan unanimity.

And yet, even with the passage of only a few years,

that “received knowledge” is under scrutiny, for several reasons. No biological attack has materialized since anthrax-laced letters were mailed in the fall of 2001 — and the significance of those letters appears to be shrouded in as much mystery now as it was at the time. Claims of Saddam Hussein’s “weapons of mass destruction” turned out to be groundless, raising questions about the reliability of government use of intelligence concerning possession of biological weapons, whether possession by states deemed hostile to the United States or possession by transnational terrorist organizations. This in turn has raised major questions about bias in media coverage of issues concerning such weapons and about the dangers of relying primarily on unnamed government sources.<sup>2, 3</sup> In fact, recent studies indicate that the extent of *al Qaeda*’s involvement with biological weapons reaches not much further than an expression of interest — and, at that, an interest drawing on publications that predate the advent of biotechnology.<sup>4</sup> The linkage between terrorism and biological weapons has begun to appear less obvious and less inevitable.

This linkage was formed *not* during the administration of George W. Bush but during that of his predecessor, Bill Clinton. The primary purpose of this essay is to examine how it was formed and also how it legitimated a set of practices that are one of the major legacies left by the Clinton administration for its successor.

The dominant view today is that this is a non-problem: “‘Terrorists’ will stop at nothing,” so this argument goes. “They will use biological weapons, if not immediately, then in the future.” In other words, the linkage is not new and has long been obvious. When a precedent, a prior “threshold event,” needs citing,

holders of the dominant view often point to the chemical nerve-agent attack on the Tokyo subway by an apocalyptic cult, Aum Shinrikyo, which had earlier attempted to use anthrax and had even tried to obtain Ebola direct from Africa. Yet, at the end of the Cold War, no such linkage was *generally* perceived in Washington — inside or outside the government — although it *was* assumed by a small number of people, some of whom would later help shift shared perceptions. Moreover, during the 1990s, there were serious differences in appraisals of bioterrorism not only outside the Clinton administration among members of leading security think tanks but also within the administration itself. These differences were never resolved. I explore them here, documenting the reasoning upon which they were premised and describing how a single view came to dominate Washington politics and to justify opening the federal coffers to major new civilian biodefense programs. In particular, I examine the roles played in this process by the executive and legislative branches, prominent members of the scientific, biotechnology, and security-policy communities, and the media. Further, I examine how the dominant view justified what I shall call the “militarization” of the biological sciences: the reframing of biological knowledge, particularly knowledge related to the new technoscientific fields of genetic engineering and genomics, in terms of military goals. To take the new biological knowledge being generated in the civilian sector and to redirect it towards military applications was a radical move, one fraught with implications for the nature of biological knowledge in general.

This essay is a historical account that focuses on the development of a strong perception of a bioterrorist threat by both the U.S. government and the American public; it does not parse the implications of bioterrorism policy. My intention is to examine how the ideas and assumptions forming the basis of Clinton’s “counterbioterrorism” policy evolved, rather than to undertake a full appraisal of its implications. In any case, such a policy appraisal needs to address the further development of counterbioterrorism policy by the George W. Bush administration. Inevitably, however, a history of this kind raises important questions concerning the general implications of the Clinton policy for the future framing of the biological sciences, especially the fields of cellular and molecular biology,

microbiology, and biotechnology, and these questions are addressed in the concluding section.

### *Methods and sources*

This essay draws throughout on original research into a wide range of source materials including, first, publicly available documents from U.S. federal executive and legislative branches, reports of the National Academy of Sciences, papers and books written by members of policy think tanks and non-governmental organizations, documents from and bearing upon the biotechnology industry, articles in the print media, and television shows; second, memoirs of members of the Clinton administration; third, secondary sources analyzing the various political, military, and scientific contexts in which the Clinton administration’s policies developed; and, fourth, my detailed interviews with nine participants in the formation of counterbioterrorism policy in Washington from the late 1980s to 2000.

Those interviewed in the course of research fully controlled use of quotations from the information they provided. Interviews used open-ended questions focusing on the development of counterbioterrorism policy and ranged from one to two hours; where necessary, interviewees were later contacted for clarification. With one small exception, who provided only reinforcement for existing knowledge, those interviewed permitted full use of all quotations. With respect to media coverage, the Lexis-Nexis news data base was used to examine articles published during the Clinton years and, when needed, to survey trends in the editorial opinions of major newspapers.

“Secondary” sources may of course be treated as “primary” when they are used as evidence for a particular claim. *Germs*, the book published by three *New York Times* reporters, Judith Miller, Stephen Engelberg, and William Broad, in 2001, is a case in point. Factually, this book is a rich source of information about the Clinton administration and those who influenced it. At the same time, the account has an almost exclusive focus on one side of the story: a fascination with the “bioterrorist threat,” with this concept assumed as fixed from the outset. (In the case of Judith Miller, a penchant towards assuming the possession of “weapons of mass destruction,” or the intention to acquire them, on the part of states and substate organizations seen as hostile was eventually recognized as problematic after failure to find any such weapons in Iraq.) *Germs*, like most other media

accounts of the period, ignored the existence of debate in Washington circles about the strength of the linkage between terrorism and biological weapons; it is, then, both a source of evidence and evidence itself.

## II. Categories and boundaries

“*Terrorism.*” In considering the history of events and policies concerned with “terrorism,” we must recall that the word itself has long been contested. While there is some agreement on core elements of the concept that encompass the use, or threat of use, of violence either against a state or against a civilian population for a political purpose, there is much less agreement on how the word should be applied in practice. Indeed, use of the word has been so contested that the United Nations has yet to formulate a definition that can be accepted by all of its member states.<sup>5</sup> This is hardly surprising. States that have used violence or the threat of violence against weaker states or against civilian populations would not wish to have the term used against themselves. In fact, Western mainstream usage of the word excludes the state as a terrorist entity, applying the word only to sub-national groups.<sup>6</sup> Descriptions of subnational groups involved in armed conflict raise further issues. Are such groups victims of or resistors to state terrorism or perpetrators of sub-state terrorism? The morphing of the moral status of the African National Congress in the United States from “terrorist” movement (during the Reagan presidency) to “national liberation” movement (during the Clinton presidency) is a salient case. Similar issues arise today with respect to the “insurgency” in Iraq following the second U.S. war on that country. Is it “terrorist” in nature or is it a movement that is resisting occupation by a foreign power? As Bruce Hoffman has observed, “few words have so insidiously worked their way into our everyday vocabulary.”<sup>7</sup>

Usage of the word is “insidious,” because it conveys an implicit orientation towards the events being described and contested. One feature, however, would be agreed by all: use of the term is pejorative.<sup>8</sup> It is very rarely applied to the self. It is applied, usually by states, to substate groups or movements that are seen and defined as threats. Moreover, its application has the effect of legitimating state use of force while undermining claims of substate groups to be liberating themselves from oppression. As Richard Falk has observed, state bias (in the West and elsewhere) is

expressed in the “unchallenged use of political language to frame issues of choice in such a way as to associate an identification of ‘terrorist’ practice exclusively with *the foreign other*, and correspondingly to endow the self (and allies) with the identity of a victim of terrorism.”<sup>9</sup>

Recent usage is particularly relevant to discussions of “bioterrorism.” Over the past twenty years, there has been a tendency in the United States to load the word “terrorism” used in connection with Arab sub-state movements with assumptions that marginalize the political claims of these movements. Influential accounts have portrayed these movements as fundamentally irrational, gaining their irrationality from a religion that, it is claimed, encourages extremism. Terms like “Islamic extremism” or “Islamism” convey a sense of a movement fueled by an essentially violent religion. The many forms of Islam are collapsed into one form that is claimed to support extreme aggression against the West. Key features of Islam that advocate respect for other religions and peaceful coexistence are ignored, thus suppressing consideration of legitimate grievances brought about by occupation and by violent countermeasures undertaken by states against popular resistance.<sup>10</sup> As Edward Said wrote in a response to such a depiction of Arab movements in the 1980s: “The main thing is to isolate your enemy from time, from causality, from prior action, and thereby to portray him or her as ontologically and gratuitously interested in wreaking havoc for its own sake.”<sup>11</sup> As we shall see, in the 1990s, such views easily lent themselves to the assumption that terrorists would not be inhibited from using “weapons of mass destruction.”

The term “bioterrorism” amplifies the sense of the morally offensive nature of “terrorism” by association with weapons that are internationally banned by the 1972 Biological Weapons Convention. Media portrayals often assume that acts of bioterrorism are capable of killing vast numbers of civilians — a feature that certainly characterized most media portrayals during the Clinton administration, as this essay will show. Biological weapons were depicted as “the poor man’s deterrent” as early as 1967 and more recently as “the poor man’s bomb,” again indicating the potential for mass casualties.<sup>12, 13</sup>

Use of the word “bioterrorism” has sometimes encompassed both criminal uses for personal reasons and hoaxes, thereby greatly expanding claims for past bioterrorist acts. But careful studies that distinguish



between acts of bioterrorism and “biocrimes” yield a very different picture. An extensive study of some 269 claims of use of biological agents worldwide in the twentieth century has shown that 82 (of which 56 were confirmed) were criminal cases, in which use of biological agents was pursued for personal reasons. A further 113 cases (of which 97 were confirmed) were deemed difficult to characterize, but most were hoaxes. Of the 269 cases, only 27 were judged to be “substantiated” cases in which a “terrorist” organization “possessed, attempted to acquire, threatened to use, or expressed interest in biological agents.” Of these 27 cases, the study found only 5 cases of use or attempted use, and of these only one (the case of the Rajneeshee cult, which used *Salmonella typhimurium* to poison salad bars in Oregon) was known to harm people, although no people died.<sup>14</sup> In summary, from 1900 to February 2001, there were no deaths in the United States from acts of bioterrorism, although some deaths from “biocrimes” did occur.<sup>15</sup> Since February 2001, one case might be added; anthrax-laced letters mailed in September and October 2001 in the United States killed 5 people. However, adding even this case, which was immediately assumed to be the work of one or more terrorists, would be provisional, since the perpetrator or perpetrators are, as of this writing, still unknown, and analysis of motivation remains speculative. In summary, acts of bioterrorism have been rare and very few indeed have resulted in harm. The actual historical record produces a picture at odds with the image conjured by the “poor man’s nuclear bomb.”

*Biological weapons.* Discussions of biological weapons, their relative ease or difficulty of acquisition or use, their effects, and even their history, are fraught with uncertainty. This is partly an effect of the secrecy that has enshrouded state development of biological weapons and partly an expression of varying technomilitary appraisals. In the 1960s, there was some agreement in western policy circles that use of naturally occurring pathogens as weapons was ineffective because of the delayed impact of pathogens, the sensitivity of living things to climatic conditions, and the possibility that dissemination of pathogens might rebound on the user. This was the view attributed to the Chief Scientific Advisor to the U.K. Government, Sir Solly Zuckerman in the late 1960s, who was reported to have said that “it was more or less accepted . . . that the bacteriological side of Porton [the British chemical and biological warfare

research establishment at Porton Down] was a pain in the neck and of no military value.”<sup>16</sup> High-level policy makers in the Nixon administration apparently shared this view. President Nixon’s Secretary of Defense, Melvin Laird, concluded that the military deficiencies of biological weapons undermined conceivable “benefits” and that “politically, [BW] had become a tar baby.”<sup>17</sup> It was not clear, however, that the Department of Defense (DoD) entirely agreed with this assessment. In 1969, a former DoD official argued that biological weapons could inflict immense damage on civilian populations, and similar claims have been aired more recently.<sup>18, 19</sup>

In the 1960s and early 1970s, advances in the new science of molecular biology were widely expected to increase the potency and reliability of biological weapons.<sup>20</sup> One scientist in 1969 feared that biological weapons would not remain forever “in the category of useless weapons.”<sup>21</sup> In his 1974 testimony supporting ratification of the Convention, Fred Iklé, director of the Arms Control and Disarmament Agency in the Nixon administration, cited this prospect: “Without a prohibition, new developments in the biological sciences might give rise to concern because they could be abused for weapons purposes.”<sup>22</sup>

Today, the technoscientific developments anticipated in the late 1960s along with others that could not then have been foreseen — genetic engineering, polymerase chain reaction (PCR), genome sequencing — are available in laboratories in industrialized countries worldwide; at the same time, the theoretical basis of molecular biology has itself evolved in what many would argue are multiple radical directions. So many empirical surprises have accumulated that DNA is no longer seen as “the master molecule,” directing the function and regulation of the living cell, but as part of a quasi-ecological system in which “the gene itself is part and parcel of processes defined and brought into existence by the action of a complex self-regulating system . . .”<sup>23</sup> Molecular biology is now widely seen as a field in search of a new paradigm, replete with anomalies and not, in general, a predictive science.<sup>24</sup> Such a view, stressing the *lack* of predictability of biological systems, would — for the moment, at least — seem to undermine claims that the “new biology” will lend itself to more effective and more controlled bioweaponry. The old questions of what germs might do, how they might mutate when released, remain.

For these reasons, the “effectiveness” of bioweapons is still broadly debated. On the one hand, there is what might be called a “triumphal literature of control” that argues that the human power over microbes will produce a new generation of terrifying bioweapons<sup>25</sup> and that the technology developed by the United States, Russia, and other states has the potential for delivering huge aerosols that will infect millions of people.<sup>26</sup> On the other hand, skeptics argue that, as living things, bioweapons, genetically modified or not, possess properties that are unpredictable in the ecosystems to which they are delivered, that the technologies of aerosolization are difficult, and that they therefore remain “unattractive” to military establishments and substate organizations alike.<sup>27</sup>

*Biological Weapons Convention.* The precise nature of constraints on the development of biological weapons has also given rise to varying interpretations. The international treaty banning biological weapons, the 1972 Biological Weapons Convention, holds the distinction of being the first international treaty of the twentieth century to prohibit a category of weaponry from development, production, and stockpiling. Indeed, this is seen as one its main strengths. The United States, in its national implementing legislation for this treaty in 1989, defined “biological weapons” precisely and broadly as any “micro-organism, virus, or infectious substance, capable of causing . . . death, disease, or other biological malfunction in [any living thing,] . . . deterioration of food, water, equipment, supplies or material of any kind . . . or deleterious alteration of the environment.”<sup>28</sup>

But several factors have tended to destabilize strict interpretation of this treaty. In the first place, the well known lack of clarity concerning the boundary between permitted and prohibited activities may allow governments (and might allow subnational groups) to engage in activities that could undermine the treaty’s basic prohibition.<sup>29</sup> Research is not addressed, which means that all types, even those that might have offensive application, are allowed; fuzzy boundaries between research and development and between offense and defense for development and production mean that compliance depends crucially on intention. The importance of these features for this essay is that governmental positions on restrictions on biological warfare activities may vary, thus defining norms that are more, or less, strict. For example, the U.S. government’s position on permitted biological defense activities has

varied from a restrictive position in the early 1990s that limited defensive work to “validated” biological weapons agents to a far more permissive position in the early years of the twenty-first century that has allowed work on organisms not known to be developed as weapons by other states.<sup>30, 31, 32</sup>

*Weapons of mass destruction (WMDs).* The term “weapons of mass destruction” was originally used in the 1940s by member states of the United Nations to denote a category of weapons that should be outlawed. For a while, after World War II, the goal was “general and complete disarmament,” with treaties banning “weapons of mass destruction” as a major goal. Nuclear, chemical, biological, and radiological weapons were all placed in this category.<sup>33</sup> By the 1990s, the term was applied, especially in Washington circles, with a different goal. As certain third world states became perceived as threats to U.S. security, so use of the term “WMD” came to be closely associated with “proliferation” of nuclear, chemical, and biological weapons to such states, and especially, from the late 1980s onwards, with the acquisition of these weapons by Saddam Hussein.<sup>34</sup> Because chemical and biological weapons were outlawed by international conventions, and possession of nuclear weapons was formally restricted by the Nuclear Non-Proliferation Treaty to the five “permanent” nuclear powers, the term “WMD” reinforced the connotations associated with what came to be known in the United States as “rogue states” — states that were assumed by the United States to be willing to violate international norms. Policies aimed at restraining the “proliferation of weapons of mass destruction” to third-world states were to be a hallmark of the Clinton national security policy (below, Part IV).

As terrorism rose to prominence as a security issue, the term “weapons of mass destruction” was applied, unaltered. It was widely taken for granted that the meaning of the terminology remained unchanged. Yet the context was vastly different. Transnational groups typically had neither the technological nor the financial capacity to develop or deliver such weapons on a massive scale. As will be discussed below, the fundamental differences characterizing terrorist and state use of biological weapons provided one of the reasons for the debate about the seriousness of the “bioterrorist threat” that took place in Washington policy circles beginning in the 1990s and has extended to the present day.

In summary, key terms that figure prominently in

this essay — “terrorism,” “bioterrorism,” “biological weapon,” and “weapons of mass destruction” in particular — are subjects of continuing debate over their significance and application. At the beginning of the Clinton administration, “bioterrorism” was hardly perceived as a significant security issue; few, if any, lives had ever been lost to bioterror *per se*. How and why bioterrorism soon came to be perceived as a *huge* threat to national security are questions to which we now turn.

### III. “Outlaw states” and “terrorists” as projected threats at the end of the Cold War

In the 1980s, the U.S. government saw threats concerning biological weapons primarily through the lens of the Cold War. The Department of Defense held that the Soviet Union illegally possessed biological weapons and repeatedly accused the Soviet Union of major violations of the Biological Weapons Convention. This threat provided the rationale for the expansion of the U.S. Biological Defense Program in the 1980s. As Secretary of Defense Caspar Weinberger wrote to a member of Congress who had questioned the need for expansion in 1984: “Our [biological defense] development efforts . . . are driven by the Soviet threat. To ensure that our protective systems work, we must challenge them with known or suspected Soviet [BW] agents.”<sup>35</sup> However, in the last years of the Cold War, national security commissions and security analysts, particularly on the right of the political spectrum, began to project a new set of threats posed by rising third-world states and terrorists supported by these states. Among such threats were terrorists armed with biological weapons and other “weapons of mass destruction.”

Such claims emerged during the Reagan administration as a second strand of its defense and foreign policy. President Ronald Reagan publicized his administration’s position in 1985 in a speech to the American Bar Association, branding Cuba, Iran, Libya, Nicaragua, and North Korea as members of a “confederation of terrorist states” and as “outlaw governments who are sponsoring international terrorism against our nation.”<sup>36</sup> At the time these charges were made, the Reagan administration itself was launching what came to be known as the “Reagan doctrine,” a policy of backing anti-Communist armed

movements from the *mujahedin* in Afghanistan (among them the son of a wealthy Saudi family of Yemeni origin, Osama bin Laden) to the *contras* in Nicaragua. These goals were expressed not only with financial support and arms supplies but also militarily, with “special operations” forces for what became known as “low intensity conflict.”<sup>37, 38</sup> Iraq was not included in Reagan’s list of “terrorist states.” Despite its production and use of chemical weapons against Iran from 1982 onwards and later against its northern Kurdish minority, Baathist Iraq was quietly supported by the United States; diplomatic ties with Baghdad were renewed on behalf of the United States by Donald Rumsfeld, then Reagan’s Middle East envoy, in 1983.<sup>39, 40</sup>

This second strand of the Reagan administration’s definition of threats to the United States was associated with a further claim that rising third-world states deemed hostile to the West might arm themselves with biological and chemical weapons, if not nuclear weapons, and that these states posed threats that were independent of the Cold War and the Soviet Union. Evidently this idea circulated in military circles. In 1985, a secret report of the Defense Science Board, a civilian committee that advised the DoD on technical matters, concluded that “the chemical and biological threats are increasing, Third World proliferation is getting worse, and the possible consequences are extremely serious.”<sup>41</sup> Later that year, an *ad hoc* group at the National Academy of Sciences chaired by Nobel laureate Joshua Lederberg, meeting to discuss possible forms of cooperation on biological disarmament with the Soviet Union, defined “terrorist use of biological weapons,” possibly sponsored by a “declining state or regime,” as a significant threat. In Lederberg’s words, the main concerns were “the danger of a clandestine attack and civilian vulnerability . . . using even a low level of technology in the BW field.”<sup>42, 43</sup> With the advantage of hindsight, this group’s emphasis on the dangers posed by third-world countries and “terrorists” now seems ironic, given the huge Soviet expansion of its biological weapons program in the 1980s.

In 1986, the Defense Intelligence Agency expressed its “grave concern” that “this genre of [biological] weaponry will be developed by some nations including those of the third world.”<sup>44</sup> A similar view informed *Discriminate Deterrence*, the report of a prominent Reagan commission charged with developing long-term



security strategy for the United States; this report warned that third-world states might arm themselves with nuclear or chemical weapons and the missiles to deliver them.<sup>45</sup> Members of the commission included Henry Kissinger, Zbigniew Brezinski, and Lederberg. Lederberg had had considerable exposure to these ideas since he was also a member of the Defense Science Board.

Washington security analysts, especially those with ties to institutions on the right of the political spectrum and to the Pentagon, expanded on these views in the late 1980s. One example was *America the Vulnerable: The Threat of Chemical and Biological Warfare* (1987), by Joseph Douglass, Vice President of Jaycor, a defense contractor and supplier of “non-lethal” weapons for law enforcement, and Neil Livingstone, a strong advocate of Reagan’s counter-terrorism policies and informal adviser to Reagan’s counter-terrorism head, Oliver North, and now head of Global Options, a Washington counter-terrorism and investigative organization.<sup>46</sup> Lacing their arguments with scary scenarios of communists, terrorists, and third-world states wielding chemical and biological weapons against the United States and its ally, Israel, Douglass and Livingstone portrayed an immediate and potentially devastating threat.<sup>47</sup>

While the Douglass-Livingstone account was almost hysterical in tone, others used less emotive language but made similar claims. Jeffrey Simon, an independent contractor for the RAND Corporation, linked third-world states to terrorists armed with biological weapons: “Constraints against the use of biological weapons may be weakening . . . The reluctance of terrorists to experiment with unfamiliar weapons may also be weakening, as state-sponsored terrorism becomes a dominant form of international violence. A state sponsor would have little trouble training a terrorist group in the proper use of biological agents and would be able to supply a wide variety of such weapons.” Furthermore, Simon claimed, technological, logistical, and financial barriers to use of biological weapons were not “insurmountable.”<sup>48</sup> Raymond Zilinskas, a CBW specialist who was then at the University of Maryland, took a similar position. Zilinskas went so far as to suggest that third-world states, in contrast to Western ones, viewed chemical or biological weapons without a sense of moral abhorrence.<sup>49</sup> Thus, security-policy circles around Washing-

ton were developing a shared sense that third-world states and terrorists hostile to the United States or, in the Middle East, to Israel, would not hesitate to use biological or chemical weapons and that the resulting devastation could be immense, rivaling that of nuclear weapons.

As the Cold War faded, such scenarios began to replace the Soviet threat. What Senator Sam Nunn called a “threat blank,” in March 1990 was soon filled, during the administration of George H. W. Bush, by so-called “backlash,” “maverick,” or “rogue” states claimed to be developing what became known collectively as “weapons of mass destruction” or “WMDs.” When Iraq under Saddam Hussein invaded Kuwait in August 1990, the state which the U.S. had supplied with loans and dual-purpose equipment in the 1980s was transformed into the concrete embodiment of a “rogue.” Intelligence claims that Iraq had developed biological weapons reinforced the image. During the run-up to the war, the claim triggered a scramble to vaccinate troops against anthrax and botulinum toxin; the decision to vaccinate reinforced the sense of threat.<sup>50</sup> Indeed, the first Gulf War was portrayed as the first military operation to contain a WMD threat in the post-Cold War era. As then Secretary of Defense Dick Cheney told members of Congress in March 1991: “The Gulf War presaged very much the type of conflict we are most likely to confront again in this new era: major regional contingencies against foes well-armed with advanced conventional and unconventional weaponry.”<sup>51</sup> According to *New York Times* reporters and authors of *Germs*, a best-selling account of bioterrorism, Judith Miller, Stephen Engelberg, and William Broad, Defense Science Board member Joshua Lederberg took such concerns a step further. What, he asked National Security Adviser Brent Scowcroft and members of intelligence agencies in 1990, would happen if Iraq’s biological weapons were to be used against American civilians? There was, apparently, only a small response, which focused on stockpiling some antibiotics in Washington. It was handled by a member of Scowcroft’s staff, Condoleezza Rice.<sup>52</sup>

In 1990 and 1991, the Congressional Office of Technology joined the chorus of those projecting bioterrorism as an emerging threat with two reports in the early 1990s issued under the title *Technology against Terrorism*.<sup>53, 54</sup> Congress had requested these

reports in response to the terrorist bombings of the U.S. Embassy in Beirut in 1983 and of Pan Am Flight 103 over Lockerbie, Scotland, in 1989. An advisory panel for the reports included among its members L. Paul Bremer, then the Managing Director of Kissinger Associates, Robert Kupperman, senior advisor to the prominent conservative Washington think-tank the Center for Strategic and International Studies (CSIS) and advocate of “low intensity warfare,”<sup>55</sup> and molecular biologist Joshua Lederberg, who was at that time President of Rockefeller University.

The contractor for the study was Yonah Alexander, a terrorism specialist at the State University of New York. Alexander’s previous affiliations were with the U.S. Global Strategy Council, where he had co-directed a program on terrorism and low-intensity warfare with former deputy Central Intelligence Agency (CIA) director, Ray Cline; the National Forum Foundation, an organization supported by right-wing foundations such as the Olin foundation, where he had been director of terrorism research; and CSIS, where he had been a visiting fellow. According to one analyst, “his views — which never depart from the right-wing version of the Western model — show a close spiritual affinity with the official Israeli and Reagan-era U.S. doctrine [on terrorism], whatever the formal and financial connections.”<sup>56</sup>

The first volume of *Technology against Terrorism*, subtitled *The Federal Effort*, was circulated in a classified version to Congress in September 1990 and subsequently released in an unclassified form in February 1991. Categories such as “terrorist” and “states that sponsor terrorism” were taken for granted in the report. This volume dealt primarily with the threat of terrorist bombings of planes and airport security but it also foresaw a time when terrorists might arm themselves with “weapons of mass destruction.” Arguing that even terrorist use of nuclear weapons was feasible, the report claimed that terrorists would find chemical and biological weapons easier to produce. Citing Simon’s view that barriers to use of biological weapons were “not insurmountable,” the report concluded that “biological weapons are, in some aspects, well suited to terrorist activities.”<sup>57</sup>

The second volume, released in January 1992, subtitled *Structuring Security*, elaborated this view. Focusing on terrorism that it claimed was being sponsored by Arab states and Iran, the report devoted

an entire section to its view that biological terrorism was “technically possible” and that “many agents are relatively easy to acquire, cultivate, and disseminate.”<sup>58</sup> In important respects, this second volume anticipated positions that would characterize the second Clinton administration. It argued that in the future, advances in molecular biology would make possible even more frightening possibilities.<sup>59</sup> To defend against such conventional and novel biothreats, the report urged defense not only for military forces, which was at that time the *only* form of biological defense, but also for the civilian population, for which the United States had no specific defenses. This proposal meant a major policy shift, since the DoD had previously focused exclusively on protecting troops, not civilians, and measures protecting the latter were seen as simply too difficult to undertake. Towards that end, the report urged development of effective protective masks, portable detectors, plans for the collection of epidemiological data, devices for rapid laboratory diagnosis, agents and algorithms for antimicrobial therapy, and vaccines, and finally it called for “coordination among military and civilian agencies” to produce “a more effective program of research, particularly in areas related to vaccine development and early detection and diagnosis of agents.”<sup>60</sup>

Thus these OTA reports promoted a vision of a vastly augmented biodefense program that Alexander and, one must assume, the members of the advisory panel overseeing the report wanted for the administration awaiting the November 1992 election. Such a program would require not only an expansion of the Defense Department’s biodefense programs but also the initiation of an entirely new civilian program that would involve the Department of Health and Human Services and its huge research institution, the National Institutes of Health, in a major new defense role. One member of the OTA’s advisory panel, Joshua Lederberg, would play a highly influential role throughout the 1990s and in the early years of the twenty-first century in promoting precisely this agenda.

But this vision of a future biothreat and the measures required to defend against it hardly registered in the early 1990s. Neither President George H. W. Bush nor Congress chose to act on the issue. As Richard Clarke, then the Assistant Secretary of State for Politico-Military Affairs, recalls in his memoir, *Against All Enemies*, his account of his counterterrorism roles

under the George W. Bush administration and its three predecessors:

George H. W. Bush had issued no formal policy on counterterrorism and had chosen to deal with the single major anti-U.S. act of terrorism during his tenure (the bombing of Pan Am 103) through diplomacy, not the use of force. America seemed to be enjoying a period largely free of anti-American terrorism after the tumultuous years of the Reagan administration and its bombings of Lebanon and Libya.<sup>61</sup>

#### IV. National security concerns at the end of the Cold War: Proliferation and the rogue state

When the newly elected Clinton administration began to formulate its defense and foreign policies in 1993, what Michael Klare has called the “rogue doctrine” was absorbed seamlessly from the George W. H. Bush administration, with Iraq as its leading exemplar. Along with Iraq, Iran, Libya, and North Korea were also placed in this category. “Proliferation of weapons of mass destruction” to such states became the cornerstone of the Clinton national security policy.

The huge, illegal biological weapons program of the former Soviet Union, details of which began to emerge in the early 1990s, and the gradual confirmation of Iraq’s far smaller biological weapons program, which was finally acknowledged by Iraq in 1995, served to maintain a focus on *states* as the prime “proliferators” of “weapons of mass destruction.” “Non-proliferation” military, trade, and diplomatic policies aimed at stemming the spread of nuclear, chemical, and biological weapons became the base of Clinton’s national security policy. The spread of these weapons to states seen as hostile to the United States, not to terrorists, was defined as the major defense threat. Even in February 1995, the Annual Report of the Secretary of Defense described the “fundamental change” that had occurred since the end of the Cold War as the replacement of the Soviet threat by the “spread of nuclear and other weapons of mass destruction” to smaller states — a matter deemed to pose “a large and growing threat to U.S. interests and security around the world.”<sup>62</sup>

An important expression of this view was a further report of the Congressional Office of Technology

Assessment, *Proliferation of Weapons of Mass Destruction: Assessing the Risks*, which appeared in August 1993. Once again, Joshua Lederberg served as an advisor, but this time on a panel that was, in terms of the political interests of the advisors, somewhat more broadly constituted than that of the previous OTA report. The panel included several strong advocates of chemical and biological disarmament: James Leonard, the former chief U.S. negotiator for the Biological Weapons Convention, Matthew Meselson, a prominent Harvard professor of biochemistry and molecular biology, who had devoted decades to building international support for the biological convention and the Chemical Weapons Convention, completed in 1993; and molecular biologist Barbara Rosenberg, who was actively promoting the concept of a new inspection regime to strengthen the Biological Weapons Convention. All three participants saw transparency, limits on biological defense programs, and strong international disarmament regimes as essential for limiting proliferation. The report focused almost exclusively on the problems of state interest in weapons of mass destruction. Terrorists figured only peripherally in the report, receiving scant mention. But the report produced one argument that would prove highly influential in the future appraisals of “bioterrorism.” Assuming a “highly efficient, line-source delivery” of anthrax, the report predicted that an airplane spreading 100 kilograms of anthrax on a “clear, calm night” could produce between one and three million deaths.<sup>63</sup> The chilling conclusion was that, pound-for-pound, “biological weapons efficiently delivered under the right conditions against unprotected populations would . . . exceed the killing power of nuclear weapons” — a prediction that would reverberate in discussions of bioterrorism over the next decade.

At the time, however, terrorism was seen as a second- or third-tier security problem — a problem that happened elsewhere. As Richard Clarke recalled a decade later: “The notion that terrorism might occur in the United States was completely foreign to us.”<sup>64</sup> In the words of two former National Security Council senior staff members, Daniel Benjamin and Steven Simon, terrorism was perceived as “a nuisance to be attended to, not a strategic threat.” It was not “the kind of issue to provide an organizing principle for America’s dealings with the world.”<sup>65</sup> Thus, the terrorist event that greeted the new President shortly after he entered office

— the bombing of the World Trade Center on 26 February 1993 — was not immediately seen as a harbinger of terrorists wielding “WMDs” but rather as the work of a “fanatic” using home-made bombs.<sup>66</sup> As Clarke acknowledges, in the early years of the Clinton administration, there was little understanding of any pattern to terrorist attacks or attempted attacks. The connection of the WTC bombing to an international network was not immediately perceived as such. According to Benjamin and Simon, bin Laden was a “phantom presence” whose interest in attacking U.S. assets was not perceived until several years later.<sup>67</sup>

And certainly, terrorist actions of the period showed no interest in “weapons of mass destruction.”<sup>68</sup> Terrorists were generally seen as people who used bombs and guns. The conventional wisdom of these early years of the Clinton administration was summed up in a pithy expression of RAND Corporation expert Brian Jenkins: “Terrorists want a lot of people watching, not a lot of people dead.”<sup>69</sup>

Despite this dominant view among terrorism specialists, a small number of people in the Clinton administration and among its defense advisors promoted the idea that “terrorists” armed with biological weapons would cause mass destruction. The nature of “bioterrorism,” as it came to be known in the 1990s — the identity of such terrorists, how they would acquire biological weapons, and their ability to cause mass casualties with them — do not seem to have been well defined. But in that gap between theory and evidence, the idea of bioterrorism as an emerging threat gained some influential proponents. Prominent among these was Joshua Lederberg, who, beyond his research interests, had had a long involvement with the biological sciences in both their industrial and their military applications. In the late 1960s, he had warned about the dangers of biological warfare, and he ultimately supported President Nixon’s unilateral renunciation of offensive efforts in November 1969. But he did not align with colleagues who pressed in the 1960s for closing Fort Detrick, the center of U.S. biological weapons research and development, and who called for ending U.S. use of anti-personnel and anti-crop weapons in Vietnam. He thought more in terms of *controlling* biological warfare research and also in terms of *nonproliferation instruments* analogous to those applying to nuclear weapons. His main concern about biological warfare was “its proliferation . . . as

a technique of aggression by smaller nations and insurgent groups” as opposed to its development by the “great powers.”<sup>70, 71</sup> He had attended the historic 1974 Asilomar Conference on the hazards of genetic engineering, but he had opposed those who pressed for controls. In the early 1970s, he became a scientific adviser to one of the early genetic-engineering firms, Cetus,<sup>72</sup> and a member of the Defense Science Board, a group of top scientific and industrial advisers to the Pentagon. He had served on a blue-ribbon committee on security matters during the Reagan years and continued this role in the Clinton years. As noted above, he was a member of the National Academy of Sciences Committee on International Security and Arms Control and was on the advisory board of the Office of Technology Assessment. Finally, in the early 1990s, a time when details of the huge Soviet biological weapons program were just emerging, he chaired a National Academy of Sciences committee of prominent scientists that met regularly with its Russian counterparts and advised the Pentagon on the details of the Soviet program.<sup>73, 74</sup> Lederberg was able to overcome initial Pentagon resistance to funding joint U.S.-Russian research projects designed to reorient Russian bioweapons work for civilian purposes. *New York Times* journalists Judith Miller, Stephen Engelberg, and William Broad described him as “[apparently] the only biologist with any standing among Pentagon officials.”<sup>75</sup> Indeed, generally, Lederberg was seen not only as one of the most prominent scientific authorities on biological warfare but also as “objective,” unaffected by political trends. Neither his earlier opposition to controls on genetic engineering nor his links to the biotechnology industry nor his early acceptance of the concept of “proliferation” of biological weapons to “small nations and insurgent groups” was seen as affecting the neutrality of his advice; such questions were never raised by those who commented on Lederberg’s role as a science advisor.<sup>76</sup>

Two distinct themes characterized Lederberg’s wide-ranging interests in the policy issues posed by microorganisms. On the one hand, Lederberg’s orientation to the problem of biological warfare was expressed as a member of the OTA advisory committee that approved the report by Yonah Alexander in 1991–92, with its vision of a huge expansion of biological defense to protect civilians against acts of bioterrorism. This novel idea, at odds with traditional war-fighting concepts and



dauntingly difficult to operationalize,<sup>77</sup> would lie dormant for several years more, but Lederberg was one of its earliest, most fervent, and ultimately most persuasive advocates.

On the other hand, Lederberg was also involved in national discussions of what became seen as a crisis in public health in the 1980s and 1990s.<sup>78</sup> The Reagan administration's assault on regulation and social programs had produced drastic cutbacks in support for public health and welfare programs and the long decrease in infant mortality — a key indicator of public health — was slowing.<sup>79</sup> An Institute of Medicine report published in 1988 concluded that the public health system had “fall[en] into disarray.”<sup>80</sup> At the same time, the HIV/AIDS epidemic was escalating, exotic diseases such as Ebola were emerging in Africa, and older diseases long assumed to be under control, such as tuberculosis, plague, and cholera, were reappearing.<sup>81, 82</sup> In 1991–1992, Lederberg co-chaired an Institute of Medicine committee that examined emerging microbial threats to health and recommended measures to address new or emerging diseases. The panel's orientation to this issue was technical rather than social. In January 1992, the committee produced a report, *Emerging Infections: Microbial Threats to Health in the United States*, with strong recommendations that emphasized increased surveillance, including strengthening the U.S. role in global surveillance of disease, expanding research on infectious diseases, and development and stockpiling of vaccines and drugs. This report proved to be highly influential in government circles. The issues raised by *Emerging Infections* were taken up by the Centers for Disease Control and Prevention (CDC), which issued a report delineating a prevention strategy for addressing emerging diseases in 1994, and by an interagency working group of the President's Committee on International Science, Engineering, and Technology (CISET) formed in December 1994 to address outbreaks of new and re-emerging infections.<sup>83, 84</sup>

Both *Emerging Infections* and *Addressing Emerging Infectious Disease Threats* framed the public-health issues they addressed in terms of naturally occurring diseases, not biological warfare. In general, the question of bioterrorism was one that had not yet arrived. Although, in the late 1980s and early 1990s, there was discussion in U.S. and Western circles of the possibility of using global disease surveillance as a tool for

investigations of compliance with the Biological Weapons Convention and its soon-to-be completed legal counterpart for banning chemical weapons, these discussions focused exclusively on arms control and disarmament. A major focus of this discussion was the need to strengthen the Biological Weapons Convention, and, in particular, to clarify compliance with its ban on possession of biological weapons. The question of “bioterrorism” remained on the periphery of security issues and was not raised in this discussion.<sup>85</sup>

However, Lederberg, from his early involvement in the question of biological warfare in the 1960s onwards, tended to link the natural and military dimensions of disease. In an article in the *Washington Post* in 1970, he wrote: “Throughout evolutionary history, infectious disease has been the overriding threat to the species. In contemporary life, only warfare makes a competing claim.”<sup>86</sup> These two dimensions would both converge and reinforce each other as he developed a vision of a technical response to bioterrorism that linked threats of the spread of natural and unnatural infections to a common solution rooted in disease surveillance and biomedical research.<sup>87</sup> As a member of the Defense Science Board and as a member of a National Academy of Sciences committee that met with its Soviet counterparts to address biological security issues posed by the former Soviet BW program, Lederberg had privileged access both to military and intelligence reports on the biological weapons programs in Iraq and the former Soviet Union — background knowledge that could be wielded with great authority and influence. From the first Iraq war onwards, Lederberg attempted to persuade the Pentagon both to broaden its conception of biodefense to include civilians — the move proposed in the OTA reports of 1991 and 1992 and by Lederberg himself, to National Security Adviser Brent Scowcroft in 1990 — and to enlist civilian institutions in that effort. In the Defense Science Board summer study of 1993, Lederberg once again urged this course of action, portraying biological weapons as “weapons of mass destruction”:

BW is a weapon of mass destruction. But no agency has done any serious planning about how to defend against a BW attack on our own cities, or those of our allies ... We urge DoD to take the initiative, together with the Center for Disease Control and Prevention, in formulating a comprehensive plan for civil defense



against BW attack. If such an attack should occur, the military establishment will be blamed for the failure in national defense, regardless of the purported mandate — and above all, we will blame ourselves.<sup>88</sup>

Lederberg's vision of the future of biodefense was not immediately acted on by the Pentagon at this time, but at least three members of the Clinton administration shared his views. One was microbiologist Frank Young, Director of the Office of Emergency Preparedness in the Public Health Service from 1993 to 1996. Prior to this appointment, Young had been the Reagan administration's Commissioner of the Food and Drug Administration (FDA) and the first Bush administration's Deputy Assistant Secretary for Health/Science and Environment. He had come to the Reagan administration from an academic career at the University of Rochester. In the late 1970s and early 1980s, he had also been a member of the NIH advisory committee on genetic engineering and had played a low-key but influential role in the biomedical research lobby's strenuous efforts to derail legislation to regulate genetic engineering.<sup>89</sup> Young had known Lederberg from his days as a graduate student.<sup>90</sup> Like Lederberg, he also had long-standing ties to the pharmaceutical and biotechnology industries.<sup>91</sup>

In November 1993, Young, together with a colleague, William Clark, organized the first bioterrorism training exercise for the civilian sector that the Clinton administration (and quite possibly the U.S. government) had held. CIVIX 93, as it was called, simulated an anthrax attack on a metropolitan subway system. According to Young's later congressional testimony, the exercise "revealed widespread weaknesses in the response system at all levels." Young concluded that the nation's civilian defenses were "woefully inadequate." But there was no immediate response from the Clinton administration.<sup>92, 93</sup>

A second member of the Clinton administration who was convinced that biological warfare and bioterrorism posed serious threats to the United States was the Undersecretary of the Navy, Richard Danzig. Danzig, a graduate of Yale Law School and a Rhodes Scholar, had taught at the Harvard and Stanford law schools, had served in the Department of Defense during the Carter administration, had been a partner in the Washington law firm Latham and Watkins in the 1980s, and had returned to the Department of Defense for

the Clinton administration. He was acquainted with Lederberg from his time at Stanford. Shortly after his appointment, Danzig undertook to address the dangers of biological warfare, turning for assistance to I. Lewis "Scooter" Libby, who had been Deputy Undersecretary of Defense in the first Bush administration, and to Lederberg. Libby had been involved in assessing the Iraq BW threat. Libby, interviewed by the three *New York Times* journalists, suggested that Saddam Hussein might contemplate using biological weapons against American civilians. Danzig, similarly interviewed, took this a step further, suggesting that while he might need to distance himself from use of biological weapons, Saddam might use terrorists to do the job for him. With encouragement from Lederberg, Danzig "worked the [military] bureaucracy from the inside" by organizing a series of presentations on the threats posed by "germ terrorists" in 1994–1995. However, as the authors of *Germs* recount, high-level Pentagon officials remained skeptical. They saw the bioterrorist threat as merely hypothetical and gave higher priority to other security issues.<sup>94</sup>

Finally, there was the controversial Richard Clarke, a former Assistant Secretary of State for Politico-Military Affairs in the George H. W. Bush administration who, when fired by Secretary of State James Baker for his role in an illicit transfer of arms from Israel to China, transferred to the White House as a member of the National Security Council staff. The Clinton administration's National Security advisor, Tony Lake, asked Clarke to stay on in that position in the Clinton administration, with a portfolio for "global issues."<sup>95, 96</sup> Clarke was portrayed, even by his friends, as a bully who could be "blatantly insulting," even "abusive." But as a bureaucrat, he also had some indispensable qualities. As two of his former colleagues have written, "he understood as well as anyone in Washington all the levers and pulleys of foreign policy . . . No one had a better mastery of the repertoire." He also pursued his goals relentlessly and he had "a gift for spotting emerging issues."<sup>97, 98</sup> His vaguely defined portfolio gave Clarke precisely the latitude he needed to shape policy. As his memoir shows, Clarke was deeply committed to discovering who was behind the World Trade Center bombing and other terrorist attacks on American assets abroad. He also had access to the intelligence that was emerging in the 1990s concerning the Soviet and Iraqi biological weapons programs.<sup>99</sup> In the White House, Clarke chaired an inter-agency working

group, known as the Counterterrorism and Security Group (CSG), which, under Clarke's guidance, would address terrorism and counterterrorism policy. Its members included Frank Young, whom Clarke saw as "an impressive member of the group."<sup>100</sup>

In the early years of the Clinton administration, Lederberg, Young, and Danzig all attempted to promote understanding of bioterrorism as an emerging problem. Danzig gave fulsome praise to Frank Young and Joshua Lederberg for "toiling" to educate him and other government officials about the "biological threat" not only to states but also to civilians. He described Lederberg as "one of the great figures in this field . . . who has done a lot to educate a lot of people with respect to the risks."<sup>101</sup> Despite their efforts, no major changes in policy or in funding happened until 1995. Bioterrorism remained just one of many possible future defense problems for the U.S. government. It was not widely perceived as ominously pressing or requiring new funding for civil defense either within the administration or by members of Congress.

## V. The Aum Shinrikyo attack and evolving perceptions of terrorism in the early years of the Clinton administration, 1993–1995

Compared to the clarity with which the concept of bioterrorism seized the imaginations of individuals such as Lederberg and Young, views on the nature of terrorism in general in the early years of the Clinton administration were vague, as Clarke has recalled in his memoir.<sup>102</sup> In fact, fundamental conceptual and structural problems in defining the terrorism problem persisted for at least Clinton's first term, if not longer. In the first place, as journalist Steve Coll has shown in his major work, *Ghost Wars*, on the Clinton administration's response to terrorist phenomena in the 1990s, the CIA was slow to understand the significance of the rise of Islamic jihad and the role of Osama bin Laden in the movement. This may have been partly because the agency was still operating from an old paradigm, perceiving terrorists in the Middle East as secular radicals whose operations were linked to and sponsored by state agendas, rather than recognizing an emerging paradigm: a stateless, transnational network. In addition, however, it was also because the emerging questions about transnational terrorism were so complex,

developing out of diverse movements across the Middle East and South Asia.<sup>103</sup> According to Coll, "It took the CIA three or four years even to articulate a view of [transnational terrorism], never mind come to grips with it."<sup>104</sup> It was not until January 1996 that the CIA opened a bin Laden unit. Even then, bin Laden was seen primarily as a wealthy terrorist financier (albeit an active one), not as a terrorist operator.<sup>105</sup> The slow recognition of a new terrorism paradigm is understandable: the extremist groups were complex, dispersed, and secretive. In any case, the CIA had few Arabic-speaking "assets" on the ground. It was never able to penetrate *al Qaeda*.

The Clinton administration's conceptual difficulties in defining the emerging forms of terrorism were compounded by serious tensions between the two agencies primarily responsible for intelligence on terrorism, the CIA and the FBI, which competed for both turf and budgetary resources. Structurally, the missions and legal foundations of the two agencies added further barriers to communication both between themselves and also between the FBI and the White House. The FBI addressed terrorism as it affected U.S. territory and U.S. citizens as a law enforcement problem and worked within the U.S. legal system. In contrast, the CIA operated abroad and often outside the system, using whatever means were deemed necessary — assassins, warlords, and so forth — to collect information. Both agencies were secretive. According to journalist Lawrence Wright, the FBI had developed certain practices known as "the Wall" which restricted the exchange of information between intelligence agents and criminal investigators. Furthermore, the FBI was notoriously secretive even with members of the White House National Security Council. Even after White House officials attempted to institute a channel of information between the FBI and the National Security Council, the FBI head, Louis Freeh, largely ignored the White House directive.<sup>106, 107, 108</sup> The CIA, for its part, often refused to share information with the FBI because, it claimed, sharing would compromise its sources and methods. Both Coll and Lawrence Wright provide convincing evidence that these barriers substantially inhibited understanding of transnational jihadist terrorism even up to the 9/11 attacks.<sup>109, 110</sup>

Thus, as Clinton's third year began, there was little understanding of the importance of the growing terrorist network being formed by bin Laden. Neither

bin Laden nor *al Qaeda* figured on the list of twelve terrorist groups on which Clinton imposed sanctions in January 1995.<sup>111</sup> The hunt for those responsible for the World Trade Center attack of March 1993 continued, and pointed to foreign agents. In January 1995, the plans of Ramzi Yousef, one of the WTC bombers who was still at large, to blow up U.S. airliners in the Pacific were uncovered in Manila and Yousef himself was tracked down by the FBI in Islamabad. The plots were foiled but the scale of Yousef's plan was disturbing. Even so, there was no sense of its connection to a growing transnational movement. Yousef, after capture, promoted the idea that he was just a freelancer with a grandiose terrorist scheme.<sup>112, 113</sup>

Despite the conceptual difficulties, the WTC bombing and Yousef's foiled plot meant that the administration's concerns about terrorism were intensifying. On 10 February 1995, Clinton proposed to Congress major anti-terrorism legislation, the Omnibus Counterterrorism Act of 1995, which he had earlier announced in his State of the Union address.<sup>114, 115</sup> This legislation provided the criminal justice system with new legal mechanisms for curbing the activities of organizations deemed to have "terrorist" intentions; it impeded fund-raising, enabled pre-trial detention, facilitated electronic surveillance, allowed deportation of aliens, and so forth, all strongly criticized by civil libertarians.<sup>116</sup> The legislation also expanded existing bans on use of nuclear materials and strengthened existing prohibitions against the use or threat of use of "weapons of mass destruction."<sup>117</sup> At this point, there was no special emphasis on terrorist attacks with biological weapons. How this legislation would evolve during the 104<sup>th</sup> Congress — before Clinton signed it on 24 April 1996 as the "Anti-Terrorism and Effective Death Penalty Act" — would reveal a great deal about the intensification of perceptions of bioterrorism as a major security threat on the part of both the administration and Congress in this period.

In the spring of 1995, several further events continued to raise the level of concern about terrorism, although the diversity of these events did not clarify what, eventually, would be understood as the predominant security problem. On 19 March, a Japanese religious cult, the Aum Shinrikyo, attacked the Tokyo subway with the nerve agent sarin, killing 12 people and sickening about a thousand, with several thousand more — the "worried well" — flooding hospitals out of

anxiety. A month later came the bombing of the Alfred P. Murrah Federal Building in Oklahoma City by antigovernment militia members Timothy McVeigh and Terry Nichols, killing 168 people. Finally, in May, Larry Wayne Harris, an army veteran and member of a neo-Nazi organization, acquired plague bacteria from a private germ bank, the American Type Culture Collection, under false pretenses. Harris's success in acquiring the bacteria underscored the ease with which harmful microbes could be acquired by malefactors; Harris had had not much more than official note paper and a phony laboratory rationale.

These events were completely unrelated to one another. Nevertheless, the view that began to assume a new prominence in the White House at this time was that terrorists of all stripes were developing interests in chemical, biological, and nuclear weapons. As Clarke notes in his memoir, at this time Clinton "talked incessantly about what it would be like if terrorists used a weapon of mass destruction to attack a U.S. city."<sup>118</sup> The event that gave this idea momentum in the administration was the Aum attack and the news from the investigation that followed that the Aum had attempted several previous attacks with anthrax. As Paul Pillar, chief of analysis and later Deputy Director of the CIA's Counterterrorism Center from 1993 to 1999, recalled in 2006, "what got people [in the administration] excited about [bioterrorism] and why it became such a focus was the Aum Shinrikyo story . . . and the subsequent investigations which showed what they had done in the biological area. The whole interest in chemical, biological, radiological, and nuclear terrorism in general and chemical/biological terrorism in particular just ballooned after the attack."<sup>119</sup>

Those like Lederberg, Clarke, Danzig, and Young, who were already convinced that bioterrorism could pose a serious threat to civilians, saw the Tokyo chemical attack as confirmation of their worst fears. Founded in the late 1980s by a half-blind guru, Shoko Asahara, who claimed supernatural powers, the Aum had attracted some 50,000 followers across the world and had assets valued at \$1 billion. It also had on its staff some 20 scientists with graduate degrees and laboratories for producing chemical and biological agents. Evidence that emerged after the attack revealed that the Aum began in the early 1990s to launch experimental attacks on Japanese suburbs, including several attempts with anthrax, and that it had also

attacked the city of Matsumoto with the nerve agent sarin in 1994, killing seven people and injuring others.<sup>120</sup> As news of the March 1995 attack circulated around the world, Clarke called an emergency meeting of the Counterterrorism Security Group (CSG) in the Situation Room of the White House, with Frank Young in attendance. As Clarke recalled, it was “the first time Health and Human Services had ever attended a meeting [of the CSG].”<sup>121</sup>

In June 1995, the Clinton administration responded to the Tokyo and Oklahoma City attacks by issuing a secret order, Presidential Decision Directive 39 (PDD-39), “U.S. Policy on Counterterrorism,” which had been drafted by Richard Clarke and his staff.<sup>122</sup> Daniel Benjamin and Steven Simon, former senior staff members of the Clinton National Security Council, describe the directive as “among the most important of the Clinton presidency.” It was, they argue, probably the first major policy document to address the supposed threat of “asymmetric warfare,” in which an adversary, recognizing that it is too weak to take on a powerful military force directly, attacks, or threatens to attack, civilian society.<sup>123</sup> The directive delineated the responsibilities of the various departments and agencies — FBI, Defense, State, CIA, and others — which would play lead roles in handling a terrorist incident. And, significantly for this analysis, it designated the Public Health Service of the Department of Health and Human Services as the agency responsible for planning and preparing a medical response to a major terrorist attack.

In addition, Clarke exerted his influence by proposing a further clause stating that “the United States shall give highest priority to developing effective capabilities to detect, prevent, defeat and manage the consequences of a nuclear, biological, or chemical materials or weapons use by terrorists . . . There is no higher priority to developing the acquisition of this capability or removing this capability from terrorist groups potentially opposed to the U.S.” According to Clarke, no one objected, but terrorists had used bombs and guns primarily, and some considered the language “odd.” PDD-39 was a crucial step in forging a perceived linkage between terrorism and “weapons of mass destruction.”<sup>124, 125, 126, 127, 128</sup>

The directive also had major administrative implications. As Benjamin and Simon observe: “[The directive] brought all the relevant agencies together for a budget

review to see who was doing what. Terrorism had been such a low priority for so long that no one could say what gaps there were in federal capabilities or, for that matter, what overlap. PDD-39 changed that. It was the first major step toward centralizing control over federal counterterrorism policy in the White House.” And that concentration of authority was “recognized by everyone . . . to be the handiwork of Richard Clarke.”<sup>129</sup>

A few days later, the President spoke at the fiftieth anniversary of the United Nations Charter in San Francisco, addressing terrorism among other security problems: “The bombing in Oklahoma City, the deadly gas attack in Tokyo, the struggles to establish peace in the Middle East and in Northern Ireland, all of these remind us that we must stand against terror . . .” Then, almost out of the blue, came a reference to terrorists armed with biological weapons: “Recent discoveries of laboratories working to produce biological weapons for terrorists [a reference to the Aum’s efforts] demonstrate the dangerous link between terrorism and weapons of mass destruction.”<sup>130</sup>

Clinton’s remark raised many questions concerning terrorist interests in and capabilities for using biological weapons, questions that would be debated both inside and outside the administration in the following years. But two weeks later, at a three-day meeting organized by Frank Young and his colleague William Clark and attended by some 400 government officials from the United States, Canada, Britain, and Japan, Young, along with Clarke, Richard Danzig, Joshua Lederberg, and others attempted to ensure that this meeting left no doubt in the minds of participants concerning such a linkage between terrorism and weapons of mass destruction — and biological weapons in particular. U.S. officials were drawn from all of the major departments and agencies deemed to play potential roles in forestalling a chemical or biological attack: State, Defense, Justice (FBI), Health and Human Services, Agriculture, CIA, CDC, FDA, the Environmental Protection Agency (EPA), and the Federal Emergency Management Agency (FEMA).<sup>131</sup>

Clarke, speaking by video, established the importance of this linkage for the White House by quoting extensively from the President’s United Nations speech. “We are working hard to ensure that [a terrorist attack as in Oklahoma City or Tokyo] never occurs again; never occurs in the United States. We cannot ensure with 100% confidence. We need to be ready in case it



does happen, while at the same time making every effort to prevent it from happening.”<sup>132</sup> Clarke emphasized the importance of PDD-39, citing the last paragraph, which he had drafted, on the connection between terrorism and weapons of mass destruction. He urged the participants at the conference to proceed to implement this directive.

Danzig, who credited Frank Young and Joshua Lederberg as major sources of his own knowledge of biological warfare, emphasized the potency of biological weapons together with their accessibility, low cost, and ease of dissemination, painting an impressive picture of the likelihood of a bioterrorist attack: “I am struck . . . with how much more ferocious and more dramatic [the Aum attack] would be if we were dealing with biological weaponry . . . A gram of anthrax has the capacity to kill at lethality rates measured in millions . . . I think there is a substantial risk that terrorists or states may in the future target our civilian populations and try to hold them hostage . . . This [bioterrorism] is an area in which the offense is too cheap, too prevalent, too potent for us to ever be entirely comfortable.”<sup>133</sup>

Danzig’s remarks were brought home by Bill Patrick, introduced by Young as “one of the true experts in the field of biological warfare.” In the 1960s, Patrick had been the Chief of the Product Development Division at Fort Detrick, a leader of the U.S. program to develop and produce biological weapons before President Nixon’s renunciation of the program in 1969. After Nixon’s renunciation, Patrick switched hats, joining the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) to work on biological defense, retiring in 1986 to become a private BW consultant, advising the FBI, the Pentagon, the CIA, and the United Nations team that inspected Iraq in the 1990s. One of his major jobs was the debriefing of former Soviet bioweaponer Ken Alibek, who defected in 1992. Alibek’s presence in the United States and Patrick’s role in debriefing him for the CIA were still secret in 1995. A further responsibility was advising U.S. intelligence authorities on the Aum’s failed anthrax attacks.

As one of the few remaining former American practitioners of the dark art of making biological weapons, Patrick’s presentation gave a scary edge to the proceedings. Lacing his presentation with the hair-raising scenario of a bioterrorist attack using an aerosol of botulinum toxin on the ventilation system of the World Trade Center and with the warning that “the

Iraqis” could very easily do the same thing, Patrick concluded ominously that the question before the audience was not “if terrorists will use biological warfare, but when and where” — a claim that would be echoed by him and others throughout the years to come.<sup>134</sup>

Joshua Lederberg’s presentation ended with a similar message but took an approach that linked the two sources of his thinking about emerging microbial infections. He focused first on the problems posed by *naturally* emerging infectious diseases, portraying humans as under attack from a malevolent nature and at a point of crisis in their relations with “microbial predators” but capable of defending themselves by virtue of their intelligence.<sup>135</sup> Science and biotechnology were the answer, according to Lederberg: “We have such vast new marvelous opportunities in biotechnology that are emerging from molecular genetic interventions . . . We are losing ground in some areas . . . [but] we will catch up.”<sup>136</sup>

This view provided Lederberg with a model for bioterrorism, with the malevolence of the terrorist replacing “malevolent nature.” Lederberg observed that “perhaps Aum Shinrikyo has done us a favor by breaching that barrier and making it obvious that there is a very serious threat; that terrorists would use any means imaginable at their disposal.”<sup>137</sup> Both threats, natural and unnatural, Lederberg claimed, posed “essentially identical problems” and challenges for research: early detection and verification of the agent and, to deal with the spread of disease, “management techniques” and “new therapeutic tools.” “There is entirely common ground [with respect to the research agenda],” he claimed.<sup>138</sup> In effect, Lederberg laid out a grand research agenda for combining defenses both against bioterrorism and against emerging and reemerging infectious diseases. The claim that public health and counterbioterrorism research shared common goals would become a potent argument for directing the resources of the National Institutes of Health into counterbioterrorism activities. Few, if any, questioned its validity at this point.

The strong message from Clarke, Young, Danzig, and Lederberg was that the Aum attack was, as it were, the “index case” for acts of bioterrorism. In Lederberg’s words, it marked a “threshold,” the weakening of a taboo on using chemical or biological weapons.<sup>139</sup> Here in 1995, were the seeds of a vision of a vastly expanded counterbioterrorism effort, spearheaded by a huge new research program under the auspices of the



nation's leading health research institutions. At the same time, this agenda was projected as a crucial base not only for defensive but also for peaceful applications. As Young, commenting on Lederberg's presentation, put it, there would be "enormous opportunity for new [anti-viral] technology."<sup>140</sup>

The possibility of combining a counterbioterrorism research effort with a program to address emerging and reemerging diseases also received endorsement from an additional part of the Clinton administration. The inter-agency working group on emerging and re-emerging infectious diseases, which issued its report in September 1995, had had time to consider the significance of the Aum attack. Most of the report addressed the need for increasing national and global surveillance of disease. However, the report also added a paragraph that echoed Lederberg's emphasis on a dual function for disease surveillance, emphasizing its application both for health and for biological defense:

[A] global disease surveillance and response network will enable the United States to respond quickly and effectively in the event of an attack involving biological or chemical warfare, as the experience gained in controlling naturally occurring microbes will enhance our ability to cope with a BW agent, should the need arise.<sup>141</sup>

But while the White House had become convinced that the Aum attack heralded a new and more menacing era of terrorism, terrorism and security specialists outside the government remained uncertain about its significance. Was it, as Lederberg had claimed, a "threshold" event? Or was it simply an aberration resulting from the unlikely convergence of two circumstances: first, a religious cult with a charismatic leader, obsessed with poison, who persuaded his followers to part with substantial funds to support development of chemical and biological weapons; and, second, a government — Japan's — that was reluctant to interfere with religious activity? A pair of articles in the *Harvard International Review* published in the summer of 1995 underscored this uncertainty. Brian Jenkins responded to positions like Lederberg's as follows:

Some foresee the emergence of "super-terrorists." These high-tech villains will use weaponry far more sophisticated than that in today's arsenal; hold cities

hostage with a stolen or clandestinely-fabricated chemical, biological, or nuclear weapon; or cause widespread disruption by attacking vital systems ... Some foresee the emergence of "white collar terrorists" who will focus their attacks on information and communication systems, the nervous system of modern society. On the other side of the debate are those who argue that tomorrow's terrorist is likely to be a somewhat more violent clone of today's terrorist — high on dedication, but often barely competent, exhibiting little in innovation in tactics, weapons, or targets, except for a drift toward indiscriminate violence. The debate, of course, is entirely theoretical. There is much to suggest, however, that terrorists will stick to well-worn paths.<sup>142</sup>

Robert Kupperman, the former Chief Scientist of the Arms Control and Disarmament Agency and senior advisor to the Center for Strategic and International Studies who had previously sat on the advisory panel for the two reports, *Technology against Terrorism*, published by the Office of Technology Assessment in 1990 and 1991, responded:

While I agree with Jenkins that terrorist tactics in the future will most likely be the tactics of today, I believe that we will see an acceleration of innovative changes employing more advanced technology. I suspect a number of analysts, including myself, have overstated the probability of terrorists using weapons of mass destruction. What is of immediate concern, however, is that mass destruction could be caused by the use of relatively low-tech weapons against civilians and other soft targets. Had the attack on the World Trade Center been more innovative, more casualties and even greater destruction could have resulted.<sup>143</sup>

But if such questions were on the minds of terrorism specialists, they did not appear to register strongly with the general public at this point. While the press covered the Tokyo attack, there was no indication that it was seen as a "threshold event" signifying a trend towards terrorist use of "WMDs." The *New York Times*, for example, while acknowledging that "citizens everywhere share the same vulnerability ... [and grief]" as the people of Tokyo, expressed far more concern about the erosion of civil liberties by the measures proposed by Clinton for his Omnibus Terrorism Act than about protecting Americans from acts of terrorism. For the media and the general public, the linkage between

terrorism and “weapons of mass destruction” remained to be formed.<sup>144, 145, 146</sup>

## VI. Congress responds, 1995–1996

The 1994 mid-term elections brought about a dramatic change in the political complexion of the U.S. Congress. Running on a platform — “The Contract with America” — that attacked “big government,” called for protection of “family values,” and claimed that individuals and families were being weakened by over-taxation and over-regulation, the Republican party gained control of both the House and the Senate, for the first time in forty years. The Clinton administration was on the defensive. The Omnibus Counterterrorism Act, introduced in February 1995, remained untouched until the Aum attack and the Oklahoma City bombing were used to justify action. Following the attacks, Clinton called for additional measures, including broadening federal wiretapping authority, enhancing the FBI’s access to consumer records such as credit and financial reports, and extending exceptions to the *Posse Comitatus* rule so that the military — since the end of Reconstruction prohibited from enforcing domestic law — might handle nuclear, chemical, and biological attacks within the “homeland.” With partisan warfare flourishing around virtually all White House initiatives, the legislation began its journey through the House and Senate, with gun lobbies on the one hand and civil liberties organizations on the other attempting to strip the legislation of what they saw as objectionable limitations on possession and transfer of fire arms and on privacy, respectively.<sup>147, 148, 149, 150</sup> But despite these fractious issues, some geopolitical themes served to unify the response from Congress and, in this process, fears of “weapons of mass destruction” in the hands of “terrorists” would play an influential role.

In speeches, Clinton and members of his administration regularly linked “terrorism” to “weapons of mass destruction” and “rogue states” to “terrorism.” As Clinton put it in a speech at the U.S. Air Force Academy on 5 June 1995: “As horrible as the tragedies in Oklahoma City and the World Trade Center were, imagine the destruction that could have resulted had there been a small-scale nuclear device exploded there.”<sup>151</sup> In linking “rogue states” to “terrorism,” Iraq was used as a prime example. In her testimony to the

Senate Foreign Relations Committee in August 1995, Madeleine Albright, then U.S. Ambassador to the United Nations, claimed that Iraq was “in contact with terrorist groups such as the Abu Nidal organization and the Palestine Liberation Front [*sic*].”<sup>152</sup> Clinton in his address to the United Nations in October broadened the claim, describing Iran, Iraq, Libya, and Sudan as “states that sponsor terrorism and defy the rule of Law.”<sup>153</sup> The Clinton administration also linked “rogue states” and “weapons of mass destruction,” but here their claims were noticeably more tenuous. They could not have been otherwise, since, with the exception of Iraq, evidence for “rogue” possession of “WMDs” was hardly definitive, nor was it widely accepted by the international community.

The prime example of these connections for the Clinton administration was Iraq, where post-Gulf War UN inspections had so far followed a rocky course. High levels of mutual distrust marked these inspections. Iraq distrusted UNSCOM because of its close ties to the CIA and to Israeli intelligence, and almost certainly for more general historical reasons. The UNSCOM chairman and deputy chairman distrusted Iraq’s claims of compliance because of its resistance to the inspections and its inconsistent disclosures concerning its former weapons programs.<sup>154</sup> In her Senate testimony, Madeleine Albright restricted herself to complaining about Iraq’s “grudging, slow, sporadic, and insufficient” compliance and expressing skepticism regarding its claims to have destroyed its biological weapons.

Shortly after Albright’s testimony, however, Iraq’s claims to have destroyed its WMDs following the end of the Gulf War in 1991 received dramatic support from Saddam’s son-in-law, General Hussein Kamel, who had been responsible for Iraq’s weapons programs. On 7 August, Kamel fled Baghdad for Jordan, where the CIA, Britain’s M.I.6, and three UN inspectors led by UNSCOM’s chairman, Rolf Ekeus, debriefed him in separate sessions. The debriefings revealed a wealth of detail concerning the biological weapons program, including an acknowledgment of weaponization of several BW agents. Most significantly, Kamel supported Iraq’s claim that all of its weapons and weapons infrastructures — nuclear and chemical as well as biological — were destroyed after the Gulf War.<sup>155</sup> The debriefing document was surely known at the highest levels of the Clinton administration, but it was not revealed to the public until 24 February 2003, when it was reported by

*Newsweek* and, a few days later, when the complete transcript was circulated on the Internet.<sup>156, 157, 158</sup> (At that point, shortly before the George W. Bush administration initiated war against Iraq, the document was largely ignored by the press; reports were carried by just a few major newspapers on their inside pages — or, if covered, largely dismissed as a fabrication.)

Hussein Kamel's disclosure prompted a new and detailed report from Baghdad, containing major revelations concerning the extent of its former biological weapons program and a repetition of Kamel's claim that the weapons were destroyed in 1991.<sup>159, 160</sup> Many components of Iraq's former biological weapons program were destroyed in the first five years of the UNSCOM inspections, including an entire biological weapons production plant. But the deep distrust on both sides continued. Rather than expressing satisfaction with the substantial progress made towards fulfilling the requirements of the Gulf War ceasefire agreement, the Clinton administration continued to express skepticism concerning Iraq's claims. Almost a decade later, the absolute failure of the George W. Bush administration to find nuclear, chemical, or biological weapons in Iraq following the second Gulf War suggests that, despite Saddam's lies and evasions, Iraq's claims in 1995 that the full extent of its biological weapons program had been disclosed and that the weapons had been destroyed were largely accurate.

Perhaps because of the uncertainties concerning links between "rogues" and "WMDs," the Clinton administration's claims about such links were vague. Clinton himself spoke of "rogues," "terrorists," and preventing both from acquiring "weapons of mass destruction."<sup>161</sup> The constant repetition of such claims helped to generate a climate of opinion in which "terrorists" and "WMDs" became firmly linked in the security imagery of White House security staff and beyond and the Aum attack became viewed as a "threshold event" that confirmed the linkage.

In Congress, reinforcement for such claims came from two senators, Democrat Sam Nunn and Republican Richard Lugar. They had long seen the spread of nuclear, chemical, and biological materials and weapons as the leading threat to U.S. security in the post-Cold War era. In 1991, they had been responsible for developing legislation designed to prevent a flow of nuclear, chemical, and biological weapons, materials,

and expertise from Russia into the hands of other governments, criminals, and substate organizations; the program to achieve this goal through collaboration with the Russian government became known as the "Nunn-Lugar program."<sup>162</sup> The Nunn-Lugar program initially focused on "loose nukes" but was soon expanded to address "loose" chemical and biological materials and weapons as well. The Pentagon, which funded the program, accepted a proposal from the National Academy of Sciences to organize a cooperative program for Russian biologists and, more specifically, to help convert the former bioweapons facilities of the former Soviet Union and their staffs to civilian projects. Joshua Lederberg chaired the NAS committee appointed to advise the Pentagon.<sup>163</sup>

In the summer of 1995, John Sopko, Nunn's senior aide for the Senate Permanent Subcommittee on Investigations, learned at an intelligence briefing that the Japanese religious sect responsible for the Tokyo subway attack, the Aum Shinrikyo, had visited a nuclear weapons laboratory in the former Soviet Union. This event, providing evidence that a transnational group had attempted to acquire nuclear materials, led Sopko to propose to Nunn and Lugar that the Subcommittee hold hearings on the implications of the Aum attack for the proliferation of "weapons of mass destruction." The two senators readily agreed and the hearings were held in 1995–96.<sup>164, 165, 166</sup> Sopko turned to Joshua Lederberg and Bill Patrick for advice. Patrick impressed Sopko with his technical experience of the dark subject of biological weapons — just how many grams would be needed to carry off a "successful" bioweapons attack in a given milieu, just what type of organism to use under specific climatic conditions, and so forth. But in the end, it was decided not to invite Patrick to testify: he was "too scary for the American people." And Lederberg could not be convinced because "he did not want to scare the American people."<sup>167</sup>

Opening the hearings, the two senators took virtually identical positions on the proliferation question, assuming that terrorist organizations would inevitably gain access to nuclear, chemical, or biological weapons unless strenuous measures for controlling their spread were developed. Both assumed the increasing accessibility of what they described as a "vast supermarket" of nuclear, chemical, and biological weapons and "weapons-usable material." Both took the Aum's use of sarin as an exemplary expression of the emerging

threat. In Nunn's words, the problem was "one which, if we do not take appropriate measures, will increasingly threaten us in the future."<sup>168</sup> At this point, however, neither man made a direct connection between terrorists and "rogue states" willing to supply them with "weapons of mass destruction." The focus was on the Aum as an indicator of a future threat.

The picture painted by the minority staff report on the Aum, which was presented at the opening of the hearings, was worrying: some 50,000 members, more than \$1 billion in assets, a team of university-trained scientists which had managed to produce several lethal chemicals and several biological agents, attempts to use anthrax in Tokyo, and attempts to acquire nuclear materials from Russia. The question the report raised for the hearings was whether the Aum attack in Tokyo signified a new type of threat to the United States and what it said about the ease or difficulty of using biological or chemical weapons.<sup>169</sup>

Some who testified emphasized the urgency of the threat. Vil Mirayanov, a former researcher for the main Soviet chemical weapons research institute, GosNIIOKhT, warned that "corruption flourishes in contemporary Russia," that the possibility of theft of chemical weapons or materials was high, and that there were few barriers to illegal exports. Even more urgently, Director of Emergency Preparedness for the Public Health Service Frank Young strongly reinforced Nunn's position. Drawing on the evidence of the Aum's attempts to use anthrax and its chemical attack on the Tokyo subway as well as on "information . . . about the potential use of these agents in the Middle East" (apparently a reference to evidence of Iraq's biological weapons program), he emphasized that the "threat of terrorism with weapons of mass destruction is real."<sup>170</sup>

Further high-level support for this view came from CIA director John Deutch in March 1996. Deutch argued, citing the experience of Israel as an example, that "terrorist" organizations were increasingly "willing to take on acts against civilian populations and against countries throughout the world that make this issue of vulnerability . . . much more serious." Furthermore, using organizations operating in the Israel-Palestine conflict such as Hamas, Hezbollah, and the Palestinian Islamic Jihad as examples, he argued that they needed support from states in order to have sanctuaries for training, acquiring resources, and planning their operations. The implication was that all of these

organizations had the same goals and that all might be willing to use weapons of mass destruction. Under questioning from Senator Sam Nunn, however, Deutch steered clear of a claim that any states, including Iraq, were known to be providing terrorists with access to materials for making nuclear, chemical, or biological weapons. "This is not the kind of subject where I would want to give you or any other person categorical assurance that we know everything that's going on," said Deutch.<sup>171</sup> The following week, the director of the CIA's Nonproliferation Center, Gordon Oehler, reinforced this uncertainty in testimony to the Senate Armed Services Committee. The CIA, Oehler said, had "no evidence" of terrorists acquiring nuclear materials and "no indications" of state-sponsored attempts to arm terrorist organizations with such materials. Nevertheless, like his superior John Deutch, Oehler, pointing to the Aum as a precedent, claimed that the country faced a major new terrorist threat.<sup>172</sup>

In contrast, skepticism about whether the Aum attack augured a significant change in terrorist tactics from bombs to WMDs was aired by Milton Leitenberg, a biological weapons and arms control specialist at the University of Maryland. Leitenberg pointed out that, despite many past warnings of the possible terrorist use of biological weapons, "no such use has ever taken place." "The most serious attempt to produce a [biological] agent, which nevertheless failed, was made by the . . . Aum Shinrikyo group in the early 1990s." But "it failed . . . [despite] virtually unlimited [financial resources]." For Leitenberg, this failure signified the difficulty that small groups of terrorists would face in attempting to produce and disseminate biological weapons. This meant that the more important threat was posed not by terrorists but by states: "the greater [the] number of states that develop BW, the greater will be the eventual likelihood that it will be taken up by terrorist groups."<sup>173</sup> This difference in perception of the threat of bioterrorism by biological-weapons analysts — the one immediate and scary, the other qualified and skeptical — would continue throughout the 1990s and on into the twenty-first century (below, parts VII and VIII).

Also emerging from the hearings were questions about the framing of the U.S. government's response to this potential threat. Mirzayanov and Leitenberg emphasized focusing on states as the entities most likely, by virtue of their resources, to be the innovators and



purveyors of nuclear, chemical, and biological weapons. Mirzayanov emphasized the importance of international inspections of chemical facilities under the newly completed Chemical Weapons Convention and urged the Senate to ratify the convention. Leitenberg took a parallel position on controlling biological weapons, arguing for an emphasis on pressuring states to remove secrecy concerning their BW establishments, applying sanctions where necessary, and for the importance of U.S. support for the development of an international verification regime for the Biological Weapons Convention, parallel to that of the Chemical Weapons convention. This, Leitenberg averred, would be a fundamental way to “[stem] BW proliferation.”

On the other hand, Frank Young and other U.S. officials focused on U.S. *vulnerability* to a bioterrorist attack and the need for response measures. PDD-39 had assigned to the Public Health Service the responsibility for disaster medical assistance in the event of an attack with biological or chemical weapons. As Director of Emergency Preparedness for the Public Health Service, Young was responsible for coordinating this medical assistance. He emphasized several crucial gaps in the nation’s ability to respond to a chemical or biological attack: the lack of a “coordinated public health infrastructure to deal with medical consequences;” an “inadequate number of trained and experienced responders at all levels;” “significant gaps in early warning and detections systems, [agent] identification . . . , surveillance [of disease], decontamination procedures, and worker safety.” If Congress did not approve increased funding, Young warned, Federal, State, and local responses would be “compromised.”<sup>174</sup>

Interestingly, Senator Sam Nunn asked his staff to report not on the *likelihood* of a “WMD” attack on the United States but rather on the *capacity* of the government to manage the crisis of a terrorist attack with “weapons of mass destruction” and to respond to its consequences. Indeed, the basic assumption of the report on the hearings, issued on 27 March 1996, was that, as Young had said, the threat of such an event was real. Echoing Bill Patrick’s statement at the July meeting of government officials, the staff wrote: “It is not a matter of ‘if’ but rather ‘when’ such an event will occur.” Brushing aside Leitenberg’s doubts about the immediacy of such a threat, the staff report insisted that “the scenario of a terrorist group either obtaining or manufacturing and using a weapon of mass destruction is no

longer the stuff of science fiction or adventure movies. It is a reality *which has already come to pass*, and one which, if we do not take appropriate measures, will increasingly threaten us in the future [emphasis added].”<sup>175</sup> Thus, what emerged from the Nunn-Lugar hearings was a disturbing picture of a nation vulnerable to a terrorist attack with “WMDs.” The level of the threat itself was simply assumed. On 29 September 1996, in a speech on the Senate floor entitled “Terrorism Meets Proliferation,” Nunn argued that “the new twist [exemplified by the Aum] is that” terrorists may join the ranks of the proliferators. Some proliferators such as Iraq, Iran, Libya and Syria are also sponsors of terrorism. Would a government supply WMD capabilities to terrorists, or help terrorists acquire weapons of mass destruction from the former Soviet Union? Answering his own question, Nunn urged: “We need to think about the unthinkable possibility of a terrorist WMD attack against our country . . . This is a clear and present danger that requires a timely response.”<sup>176</sup>

While Nunn and Lugar investigated the implications of the Aum attack, Clinton’s proposed Omnibus Counterterrorism legislation made its way through the House and Senate and the Senate Judiciary Committee held hearings on the need for tightening controls on access to pathogenic microbes and toxins. The ability of Larry Wayne Harris to acquire a culture of plague bacteria under false pretenses had underscored the loopholes in the existing controls. In response, an inter-agency task force had proposed more rigorous controls over access to dangerous pathogens and tightening the existing implementing legislation for the Biological Weapons Convention — the Biological Weapons Anti-Terrorism Act of 1989 — by making it a criminal offense not only to use a biological weapon but also to threaten such use and to broaden the definition of biological agents to cover genetically altered organisms. A hearing in March 1996 indicated ready congressional support for such measures. The rationale was expressed by Representative Joseph Kennedy, speaking on behalf of parallel legislation which he, John Kasich, and Edward Markey had introduced in the House: “Terrorism in the form of biological and chemical weapons is the greatest law enforcement challenge of the next decade.”<sup>177</sup> Congress approved the amended anti-terrorism legislation, the “Effective Death Penalty and Anti-Terrorism Act,” in the spring of 1996, and Clinton signed it on 24 April.<sup>178</sup> The scenario of terrorists



armed with biological or chemical weapons was gaining ground in Congress.

In the summer of 1996, a suicide-terrorist attack killed 19 U.S. servicemen at an Air Force housing complex, the Khobar Towers, in Dhahran, Saudi Arabia, and a small pipe bomb killed one and injured others at the 1996 Summer Olympic Games in Atlanta. Clinton responded by proposing to Congress an omnibus spending bill (HR3610-PL104-208) that included \$1.1 billion for anti-terrorism measures and a further package of anti-terrorism initiatives (H.R. 3953) for protecting federal facilities, increasing numbers of FBI agents, and beefing up airport security. Republicans attempted to portray the President as a free spender, oblivious of budgetary constraints. As the Republican chairman of the House Appropriations Committee stated: "He promises everything to everyone with complete disregard for the American taxpayer . . . I am growing weary of searching for ways to pay for Mr. Clinton's spending sprees." With the November elections imminent, however, Republican resistance was weak and Congress approved the spending package.<sup>179</sup>

Beyond the omnibus spending measures, Nunn and Lugar and their staff worked hard to persuade a reluctant Congress to approve relatively low additional funding for "domestic preparedness," domestic responses to terrorist attacks with "weapons of mass destruction." John Sopko recalls: "There was quite widespread debate in Washington [about terrorist use of nuclear, chemical, or biological weapons] . . . and we could hardly get a dime for domestic preparedness . . . and people questioned the capability [of terrorists to acquire and use these weapons]."<sup>180</sup> Ultimately, however, Congress approved a modest spending bill. The legislation, which became known as the Nunn-Lugar-Domenici Amendment, was added to the Defense Authorization Act for Fiscal Year (FY) 1997. Some \$42.6 million was authorized for "domestic preparedness" to prevent and respond to "terrorist incidents involving weapons of mass destruction." \$16.4 million was assigned for a training program for state and local first responders; \$6.6 million was assigned to the Public Health Service for developing local medical response teams; \$9.8 million was assigned to the DoD to establish a national rapid-response team; and \$9.8 million was assigned to a new program to test federal, state, and local response capabilities.<sup>181</sup> Although small, such commitments inscribed into U.S. practices

the assumption that terrorists armed with weapons of mass destruction really did constitute a serious new threat. Finally, the amendment required the appointment of a "National Coordinator for Nonproliferation Matters." This was taken as an indication that Congress saw the existing White House arrangements as inadequate. The White House, for its part, took its time to respond.

The total amount approved by Congress for anti-terrorism measures was some \$6.7 billion for FY 1997. Most of this funding was assigned to the Department of Defense (some \$3.7 billion) and the Department of Energy (some \$1.4 billion), with the remainder shared among the departments of Justice (mostly for the FBI), Transportation, State, Treasury, and Health and Human Services.<sup>182</sup> Small wonder, perhaps, that such huge spending increases produced a daunting proliferation of anti-terrorism measures. A year later, the General Accounting Office would report that more than forty federal agencies were involved in these efforts and began to air what would become a sustained critique about their lack of accountability: "Because government-wide priorities for combating terrorism have not been established and funding requirements have not necessarily been validated based on an analytically sound assessment of the threat and risk of terrorist attack, there is no basis to have reasonable assurance that agencies' requests are funded through a coordinated and focused approach to implement national policy and strategy [and that] terrorism-related activities and capabilities are not unnecessarily duplicative or redundant."<sup>183</sup>

The Nunn-Lugar-Domenici funding was a small part of the entire support for counter-terrorism for fiscal 1997. As John Sopko later recalled, "[The amount] was not overwhelming. It was just to start the ball rolling, to get people trained, provide specific assistance . . . to start thinking about . . . [terrorism with] WMDs in a credible way."<sup>184</sup> The intention was not "to create . . . a massive entitlement program for counterterrorism [— a] welfare program for every fire and police department."<sup>185, 186</sup>

The sense aired in some quarters that the President and Congress had overreacted and overfunded counterterrorism measures applied with more force to departments other than Health and Human Services, where the Office of Emergency Preparedness headed by Frank Young assumed the lead federal role (under PDD-39) for public health and medical care resulting from

a chemical or biological attack.<sup>187</sup> According to a report of the General Accounting Office (GAO), DHHS funding for counterterrorism remained relatively low, rising from an estimated \$7 million in FY 1996 to an estimated \$14 million for FY 1997, for supporting the Office of Emergency Preparedness, and the medical preparedness and response activities for which it had assumed responsibility; the GAO emphasized that the amounts cited were uncertain because of a lack of uniform standards and imprecise reporting in government agencies.<sup>188</sup>

One of those who believed that funding for counterbioterrorism in particular was not nearly high enough was Joshua Lederberg, for whom the funding for FY 1997 was just a beginning. In August 1996, Lederberg wrote two editorials in the *Journal of the American Medical Association (JAMA)* depicting the twin microbial threats that consumed his attention. In the first editorial, he emphasized the threat of emerging disease, applauding the Clinton policy proposed in the CISET report: “We face an ever-evolving adversary: microbes a billionfold more numerous than ourselves, vested with high intrinsic mutability and replication times measured in minutes, not years . . . Pitted against microbial genes, we have mainly our wits.” Lederberg lent his authority to the conclusions of the CISET report, that the United States should use those wits to institute global surveillance of disease abroad and strengthening of public health to watch for “exotic syndromes” at home.<sup>189</sup> In the second editorial, written with the associate senior editor of *JAMA*, Annette Flanagin, he emphasized the threat of what he described as “terrorist activity . . . [sponsored by] smaller states on the fringes of commitment to international law.”<sup>190</sup> Lederberg and Flanagin thus assumed the connection that CIA director Deutch had carefully left unmade.

Lederberg and Flanagin went on to claim that “for unprotected civilian targets, biological attacks could engender casualties on the same scale as nuclear weapons, albeit less reliably and with minimal structural damage. These conclusions have not been refuted by any serious study. Unlike nuclear trauma, the outcome of exposure to biological agents can be profoundly altered by medical interventions, so preparedness is of the essence.” Here, in two sentences, were the basic elements of the position that Lederberg and other prominent scientists would develop over the course of the following two years, culminating in

Clinton’s announcement of a significant expansion of US counterbioterrorism policy at the National Academy of Sciences in January 1999 — with Joshua Lederberg by his side. In this 1996 editorial, Lederberg’s argument was that bioterrorism posed a far more catastrophic type of threat than the U.S. government had acknowledged at this time, comparable to that of nuclear weapons. Furthermore, in contrast to the impact of nuclear weapons, the effects of biological weapons could be countered. He envisaged, as he had stated at the July 1995 government conference on the Aum, a grand civilian defense research agenda that would respond at one and the same time both to the threat of emerging and reemerging diseases and to the threat he saw from “bioterrorism.” Thus he implied a far broader agenda than that proposed by Senators Nunn, Lugar, and Domenici — one that would enlist the resources of the civilian agencies of the government, including the Department of Health and Human Services, including the National Institutes of Health. In 1996, neither the Clinton administration nor Congress had endorsed such a grand expansion. Pursuing their goal, Lederberg and Flanagin called for a special BW-themed issue of *JAMA*; it would be published in August 1997.<sup>191</sup>

## VII. The debate on bioterrorism inside and outside the Clinton administration, 1996–1998

By 1996, the Clinton administration’s sensitivity to the transnational jihadist movement and to bin Laden’s role in it was increasing. Early in 1996, the CIA established a small “virtual station” to track bin Laden’s operations. Late in 1996, after bin Laden had left Sudan for Afghanistan, Jamal al-Fadl, a former bin Laden courier and aide in Sudan, defected to the United States and provided apparently reliable information about bin Laden’s interests — and in particular about his efforts to obtain nuclear materials, which failed. There were also slight but hardly definitive indications of interest in chemical weapons. There was no indication of interest in biological weapons until much later, after the 9/11 attacks — and, even then, the available evidence hardly indicated strong interest.

At this stage, the CIA saw bin Laden and his operations as one security issue among many — and even until the end of 1997, not as the highest priority for

the agency. He was seen as a “blowhard, a dangerous and wealthy egomaniac, and financier of other radicals. But he was also seen as “isolated in Afghanistan.” CIA director George Tenet, who succeeded John Deutch in 1997, continued to see “proliferation” — the spread of nuclear, chemical, and biological weapons to states that had the capacity to wreak huge damage with them — as a central security concern, as he testified in Senate hearings in January 1998. Moreover, American geopolitics in South Asia were complicated by at least two factors: first, Pakistan’s support for the Taliban, bin Laden’s hosts; and, second, the U.S. government’s own geo-economic reasons for not offending the Taliban, who were seen as bringing, in Coll’s words, a “a kind of brutal order” to Afghanistan. Furthermore, the United States was interested in “order” in that part of the world because of the small matter of the oil company UNOCAL’s interests in piping gas across Afghanistan. “Order” that could guarantee stability in a notoriously unstable part of the world would be needed for such a project. For the time being, bin Laden’s hosts were seen as untouchable.<sup>192</sup>

In this period, a subtle debate about the extent of the threat of bioterrorism took place not only in Washington circles outside the Clinton administration but also inside the administration itself. This debate went almost unrecorded by the media and consequently was unnoticed by the general public. This debate was not about bioterrorism as a *possible* problem, but rather focused on the importance and urgency being attached to it by Lederberg, Young, and a growing number of scientists on the one hand and, on the other, by members of the Clinton administration, including President Bill Clinton.

An early example of this debate occurred at a conference held in Washington in April 1996 by the Chemical and Biological Arms Control Institute, a Washington think-tank specializing in security issues, to assess the significance of the Aum Shinrikyo attack.<sup>193</sup> Participants divided on the question of whether the Aum attack represented in any way a “threshold,” as Joshua Lederberg and Frank Young had claimed in 1995. Indeed, Young reasserted this view at the meeting. In fact, his presentation began with the premise that “the threat of terrorism with weapons of mass destruction is real.” In Young’s view, the challenge was to provide sufficient funding for the “important and large” response that was needed.<sup>194</sup>

But others at this conference urged caution in rushing to conclusions. Brian Jenkins, expanding on his earlier position in the *Harvard International Review*, noted that among terrorism analysts a “largely theological debate” on the question of terrorist use of chemical or biological weapons had taken place over the previous decade. On one side were supporters of an “apocalyptic view” who subscribed to a Murphy’s law of terrorism: if something bad could happen, it probably would; on the other were skeptics who asserted that because it hadn’t happened, it wouldn’t. The Aum attack had “discredited disbelievers.” But it was “by no means clear that it vindicate[d] those who believe CB terrorism is inevitable.” Jenkins turned to history for his analysis of the issue.

Looking at the evidence on terrorist use of chemical or biological substances, Jenkins argued that he found a motley assortment of events involving use by “deranged individuals, criminal extortionists, and in fewer cases, political extremists [who] plotted or threatened . . . [use].” In a much smaller number of incidents, plots and threats had “turned to actual use, involving a few fatalities.”<sup>195</sup> In only a small number of cases — the murder-suicide at Jones Town in 1978, the restaurant food contamination by the Rajneeshee cult in Oregon in 1985, use of cyanide in the World Trade Center bomb in 1993, and the Aum attack itself — was the large-scale, indiscriminate use of chemical or biological agents involved. There was, in fact, little evidence indicating that “terrorists . . . had taken anything other than a modest interest in CB agents.”<sup>196</sup> In fact, terrorist interest in CB agents was more modest than Jenkins assumed: the suspected use of cyanide in the WTC bombing cited by Jenkins was not found by the prosecution in the World Trade Center Bombing case, although one of the WTC bombers, Ramzi Yousef, threatened use of chemical weapons.<sup>197</sup>

Some of Jenkins’ explanations for such “modest interest” — that terrorists did not, typically, aim for mass casualties and they were constrained by potential alienation of their constituencies by high levels of violence — would be undermined by the events of 9/11/01. But one of the main factors that he cited against the concept of apocalyptic terrorism with biological or chemical weapons, that “technical factors” were an important constraint, would persist: “It may be easy to acquire or fabricate chemical weapons or obtain dangerous biological weapons in small quantities, but

manufacturing, storing, and disseminating such agents in large quantities is difficult and dangerous. The lurid image created by media reports of the lunatic genius in his garage creating weapons that kill millions is simply wrong.”<sup>198</sup> And the Aum’s failure to cause mass casualties was a case in point. “CB terrorism,” Jenkins concluded, “is not about to become the car bomb of the 1990s.”<sup>199</sup>

Others also questioned premature apocalypticism. They argued that these were early days in the assessment of terrorism with nuclear, biological, or chemical weapons. Whether the Aum attack should be viewed as a precursor of larger biological or chemical attacks to come or not required careful analysis. After all, the Japanese themselves had treated the incident as a crime and had responded by upgrading video surveillance and police and fire department measures. They did not even outlaw the Aum. As Joseph Pilat, a policy analyst at the Los Alamos National Laboratory expressed this position, while the current predominant view of the Aum attack, that it effectively ended the taboo on terrorist or criminal use of chemical or biological weapons, “should not be dismissed out of hand . . . it is probably overblown, and certainly premature. It ignores and underemphasizes key aspects of the attack.” Those aspects included the fact that the attack, tragic as it was, claimed only 12 lives and “therefore raised questions about whether the threshold was actually crossed by the action.”<sup>200</sup> Nor had the attack brought about fundamental changes in Japan’s approach to terrorism.

Skepticism regarding the “reality” of biological and chemical terrorism came from the General Accounting Office (GAO), the nonpartisan agency created by the U.S. Congress to investigate and oversee federal programs and operations. The GAO issued two detailed reports on federal anti-terrorism programs in September and December 1997; these reports questioned the Clinton administration’s growing emphasis on terrorist interest in WMDs.<sup>201, 202</sup> The September report noted that U.S. intelligence agencies continued to believe that terrorists preferred bombs to germs or poisons: “Although the probability of their use may increase over time, chemical and biological materials are less likely terrorist weapons because they are more difficult to weaponize and the results are unpredictable.”<sup>203</sup> Furthermore, the reports noted that while government anti-terrorism programs were proliferating and expanding (more than forty government departments and

agencies were playing some role in addressing terrorism), priorities for funding had not been established and “funding requirements have not necessarily been validated based on an analytically sound assessment of the threat and risk of terrorist attack.” Finally, the GAO observed that in any case, it was impossible to track how the billions of dollars being committed to counterterrorism were being spent. Those funds were “unknown and difficult to determine.” The December 1997 report concluded that “there is no basis to have reasonable assurance . . . that the highest priority requirements are being met.”<sup>204</sup>

Despite these searching questions about the validity of the linkage between terrorism and WMDs and about the advisability of committing vast new funding for counterterrorism efforts, in the fall of 1997 and the first few months of 1998, the policy debate in Washington was overshadowed by a veritable blitz of academic articles, news reports, television programs, editorials, and scary novels which served to put bioterrorism in the headlines as a major menace. The stark clarity with which these claims were promoted contrasted with the uncertainty inside the CIA concerning the nature of the transnational threat posed by Osama bin Laden and *al Qaeda*.

First, Joshua Lederberg’s special Biological Weapons issue of *JAMA* appeared in August 1997. Bringing together a diverse group of military and civilian physicians, biologists, and policy analysts, the *JAMA* issue as a whole produced a sense of an emerging new threat of bioterrorism from “rogue states” and their proxies or from individual terrorist groups and an uncomfortable sense that far more needed to be done than Congress had achieved to that point. In a series of commentaries, Jeffrey Simon, Richard Danzig, and his former senior aide, Pamela Berkovsky, who had joined the staff of the new Secretary of Defense, William Cohen, and Joshua Lederberg — all long dedicated to the concept of bioterrorism as an emerging threat — now issued ominous warnings. Simon, who had supported the concept of state-sponsored bioterrorism in 1989, now warned that the nation needed to prepare itself for a “new age of terrorism” in which cheap, difficult-to-detect bioweapons could be used to cause “hundreds of thousands or even millions of casualties.” Simon cited the 1993 Office of Technology Report as support for his claim — a use that should have raised critical questions since the OTA report addressed biological warfare conducted by



states, not terrorists.<sup>205</sup> Danzig and Berkovsky warned that while states might be deterred from launching a biological attack, “nonstate actors, small groups, or even individuals” might not be. In contrast to Jenkins’ assessment of the past, they claimed “abundant” precursors for bioterrorist attacks — although in fact, they cited just one, the Aum. It was time to stop seeing biodefense as “unnecessary, someone else’s responsibility, or as simply too difficult.”<sup>206</sup> Lederberg warned that “terrorists would soon be attempting to deploy BW on an increasing scale” and, furthermore, that “advances in biotechnology will allow for even more troublesome microbiological agents of destruction.” Ignoring the counterarguments of terrorism specialists like Jenkins and Leitenberg, all of these commentaries called for expansion of military and public-health programs to defend against what they projected as a dire new threat. There was, Lederberg opined, a “long way still to go in the coordination of resources among a host of US governmental agencies — federal, state, and local.”<sup>207</sup>

A media event of a different kind was the appearance of Defense Secretary William Cohen on the ABC news program, *This Week*, on 16 November 1997.<sup>208</sup> Cohen, whom Clinton appointed to replace William Perry in December 1996, had previously served as vice chairman of the Senate Intelligence Committee and had participated in the hearings on the Aum Shinrikyo attack. He was described by Miller, Engelberg, and Broad as “already persuaded that more should be done about the threat of biological weapons.”<sup>209</sup> This view was certainly confirmed by Cohen’s performance on *This Week*. By the fall of 1997, UN inspections of Iraqi chemical and biological weapons were undergoing periodic crises as Saddam Hussein, claiming that all of these weapons had been destroyed, blocked access to his presidential palaces. The Clinton administration meanwhile contemplated attacking Baghdad. Cohen’s goal for his TV appearance was to prepare the public for an announcement that American troops would be vaccinated against anthrax in the event that Saddam attacked them with biological weapons.

Cohen’s efforts to convey the message that Iraqi anthrax posed a serious threat to American troops had the further result of transmitting the message that these same weapons posed a huge threat to American civilians. Cohen’s aide, Pamela Berkovsky, had previously served as a senior aide to Richard Danzig; like Danzig, she was convinced of both threats. Primed by Berkov-

sky and other Pentagon aides, Cohen dramatically hoisted aloft a five-pound bag of sugar on *This Week*, claiming that, were it to be spread over the city of Washington, this volume of anthrax would kill half the population. One breath of an anthrax aerosol, Cohen asserted, would produce “death within five days.” All qualifiers concerning the uncertainties of dissemination of biological weapons were dropped. The American public was not informed about the sensitivity of biological weapons to climatic conditions, the need to prepare anthrax in weaponized form, the difficulties of acquisition, production, and dissemination, or the fact that Cohen wildly over-estimated the effects, even assuming conditions most favorable to an attacker’s mission. But the message had been delivered, and the media were ready to transmit. As a rather ironic headline announced in Australia: “Defense Chief Conjures Biological Apocalypse.”<sup>210</sup>

Cohen followed up his television display with an op-ed piece in the *Washington Post* claiming — with no evidence cited — that the “most ominous” form of the threat of chemical and biological weapons was “the movement of the front line of the chemical and biological battlefield from foreign soil to the American homeland.” He warned that “[i]n a shrinking world of advancing technology and increasingly porous borders, the ability to unleash mass destruction and death is spreading . . . We cannot allow vulnerability to chemical and biological weapons attacks to become our Achilles heal.”<sup>211</sup>

In the same month, a spine-chilling thriller reinforced Cohen’s apocalypticism. *New Yorker* writer Richard Preston, who had already made a name as the author of a non-fiction thriller about emerging diseases, published a novel, *The Cobra Event*, featuring a mad scientist who infects New York City with a hybrid of smallpox and an insect virus that destroys nerves. In this endeavor, Preston had been encouraged by Richard Danzig, who “open[ed] doors inside the government and offer[ed] literary suggestions.”<sup>212</sup> He had also been “quietly advised” by former U.S. bioweaponer Bill Patrick<sup>213</sup> and by Frank Young, among others.<sup>214</sup> The book’s visions of a doomsday bug ravaging a helpless population no doubt kept frightened readers up late at night. Indeed, they would keep the President himself up.

Two months after these events, in February 1998, came a dual media event — in print and on television — that further boosted public concern with “bioterror-

ism.” This was the public emergence of Kanatjan Alibekov, the former Soviet bioweaponer and deputy director of *Biopreparat*, the network of supposedly civil molecular biology and biotechnology facilities that had hidden a major part of the huge biological weapons program of the former Soviet Union.<sup>215</sup> Alibekov had defected to the United States in 1992, just as the Soviet Union was dissolving, and had been kept under wraps for some six years while being debriefed by a CIA team led by Bill Patrick. On 25 February, Kanatjan Alibekov resurfaced in his new American persona, Ken Alibek, in a front-page story in the *New York Times*<sup>216</sup> and in an interview on an hour-long ABC *Primetime Live* program, *Germ Warfare: Weapons of Terror*, with anchor Diane Sawyer. The previous weekend, Sawyer had actually flown to Sverdlovsk, the scene of a deadly release of anthrax from a biological warfare facility in 1979, and to Novosibirsk in the heart of Siberia, the site of a huge facility known as Vector, which had specialized in developing lethal viruses as biological weapons.

Out of the ABC program came not only a frightening picture of biological weapons and their potential uses but also a connection between biological weapons and terrorism. Interviewees uniformly conveyed a sense of the *ease* of production of biological weapons in terrorist facilities — an interesting contrast with the huge Soviet facilities — and the huge numbers of deaths that could result from their use. Echoing Bill Patrick’s prediction at the 1995 government meeting on the implications of the Aum attack, Michael Osterholm of the Minnesota Department of Public Health intoned: “It is not a matter of if this will occur [but] when it occurs, and how much panic and how much death . . . we [are] willing to accept at the time that it occurs.” Reinforcement came from Colonel David Franz, a senior scientist in the U.S. biological defense program at Fort Detrick and a friend of Bill Patrick.<sup>217</sup> “The likelihood of there being an attack someplace in the United States is — is fairly high, probably in the next five years.” Finally, Richard Preston laced the coverage with gruesome accounts of the effects of biological weapons on humans.<sup>218</sup>

The footage from Sawyer’s long weekend in Russia and her interview with Alibek, with its confirmation of the Former Soviet Union’s huge armamentarium of lethal pathogens — like smallpox, Ebola virus, anthrax, and plague — reinforced such ominous predictions. “And how many people could these weapons have

killed?” Sawyer asked Alibek. “The entire population of the Earth several times . . . easily” came the stunning response.<sup>219</sup>

And there was more. Alibek asserted that the former Soviet program had developed genetically engineered bioweapons — hybrids of smallpox and other lethal viruses. Buttressing the impression that Russia’s genetic engineering expertise had been channeled into lethal BW applications was a paper published in December 1997 in a British journal, *Vaccine*, by scientists working at a former *Biopreparat* facility and claiming to have constructed a genetically modified form of anthrax which would overcome the immunity afforded by anthrax vaccination.<sup>220</sup> Such activities suggested that biological-weapons research, if left uncontrolled, could enter a new phase in which novel “superbugs” that resisted existing forms of protection and therapy could be created.

The ABC show also suggested that there were already extremists in the United States intent on acquiring and using biological weapons. The dubious testimony of Larry Wayne Harris, who just the previous week had been arrested again, this time in Nevada for possession of what turned out to be an anthrax vaccine, was used to endorse the predictions of Alibek, Preston, Osterholm, and Franz. “I know almost beyond a shadow of doubt . . . that there [are] groups in the United States armed with biologicals,” Harris told Sawyer. “You mean anti-government groups?” Sawyer asked. “Oh yes. Oh yes,” came the response. Osterholm and Preston followed up with scary scenarios of the lethal impact of smallpox released in an airplane or a shopping mall. The ABC TV show had fused the views of a known crackpot obsessed with biological weapons with those of supposedly more reliable sources.

The frightening thought that Sawyer left with her audience was that “the threat of the 21<sup>st</sup> century” would be “biological.” Terrorists would surely target civilians and the implication was that America needed “a new defense system for a new kind of threat” quite different from biological defense for troops on battlefields. The vision of biological-weapons attacks on civilians, widely dismissed in the 1980s as too extreme to take seriously, had begun to seize the imagination of the American public. Skepticism was being marginalized.<sup>221</sup>

It was not only the American public that became increasingly enthralled by the specter of bioterrorism;

so too did the Clinton administration. As we have seen, certain members of the administration, notably Frank Young, Richard Clarke, Richard Danzig, and the new Secretary of Defense, William Cohen, accepted the bioterrorism scenario early on and promoted it. By 1998, President Bill Clinton himself had also become a convert. According to his autobiography, *My Life*, Clinton heard about Richard Preston's thriller, *The Cobra Event*, from Craig Venter, a controversial entrepreneur-scientist and president of The Institute for Genomic Research who would make history by vying with an international consortium headed by the National Institutes of Health in sequencing the human genome. Clinton met the flamboyant Venter at a private, futuristic gathering of top Democrats and high-flying citizens at Hilton Head in late December 1997:

I asked Craig about the possibility that genetic mapping would permit terrorists to develop synthetic genes, reengineer existing viruses, or combine smallpox with another deadly virus to make it even more harmful. Craig said those things were possible and urged me to read Richard Preston's new novel, *The Cobra Event* . . .<sup>222, 223</sup>

Clinton read the book, was duly scared, and began to ask top officials and members of Congress to read it and tell him what they thought of it. The answer from a senior Pentagon official, John Hamre, was that the novel's chilling scenario was "theoretically plausible."<sup>224</sup>

Further reinforcement for Clinton's concerns came from a stream of official reports that argued that existing programs were not nearly sufficient to cope with an emerging biological threat. Two of these reports originated in the Pentagon. In October 1997, a panel of the Defense Science Board reported the results of a study on "transnational threats" carried out in the summer of 1997.<sup>225</sup> Panel members included former CIA director John Deutch, who left the agency in July 1997; Joshua Lederberg; Richard Falkenrath, the coauthor of *America's Achilles' Heel: Nuclear, Biological, and Chemical Terrorism and Covert Attack*, which would be published in 1998; Joseph Nye, a former Assistant Secretary of Defense for International Security Affairs in the Clinton Administration; and Ashton Carter, a former Assistant Secretary of Defense for International Security Policy in the Clinton Administration; Falkenrath, Nye, and Carter were at the Kennedy School of Government

at Harvard University. The panel claimed that such "transnational threats" might be posed by adversaries with "no claimed homeland," for whom the power and relative ease of access and use of chemical and biological agents would have a particular attraction.<sup>226</sup> The panel recommended adding \$1 billion to the Pentagon's chemical and biological defense program for, most prominently, "consequence management and intelligence."<sup>227</sup> Among other things, this meant expanding capacity for intelligence on the germ-warfare threat, expansion of medical and military response teams, and expansion of the Nunn-Lugar program to redirect Russia's former bioweaponers into civilian applications of the biosciences.<sup>228</sup> These directions were already being pursued. But, in addition, the report added a radical new proposal: "leveraging the extensive national expertise in biotechnology that is resident in the universities and industry, as well as the research supported by federal agencies." This new proposal, the report noted, "can greatly enhance DoD's capabilities in this area."<sup>229</sup> Thus the emphasis on bioterrorism as an emerging threat was also accompanied by Lederberg's vision of harnessing the power of the new biotechnology for military defense purposes.

In December 1997, the Defense Science Board's proposals were supported by a National Defense Panel composed of former members of the military, representatives of the defense industry, and defense policy specialists, which concluded that the new threat facing America came from "rogue states, as well as non-state actors, [that] have acquired the means of delivering weapons of mass destruction." The "American homeland," in the view of this panel, "cannot be viewed as a sanctuary from their use." Thus, new forms of civil defense against WMDs were called for.<sup>230</sup>

Following right behind the two Pentagon reports on 1 January 1998 was an interim report of the Institute of Medicine, *Improving Civilian Response to Chemical or Biological Terrorist Incidents*, the outcome of a request to the Institute from Frank Young and the DHHS Office of Emergency Preparedness.<sup>231</sup> The committee that wrote it included academic leaders in medicine, public health, and the biological sciences. Among the members at this time were Joshua Lederberg, Matthew Meselson, several directors of emergency medical programs, and a former commander of the Army's Medical Research and Development Command.

The report favored the Lederberg-Young view, that

the Aum attack on the Tokyo subway heralded “a new dimension to plans for coping with terrorism.” It played down the skepticism being aired by the General Accounting Office and by some terrorism specialists: “It would be a grave mistake to assume that terrorists will not be able and willing to take advantage of biotechnology to develop new chemical or biological threats.” But the report also acknowledged that, “for nearly any specific locale, a terrorist attack of any sort is a very low-probability event, and for that reason expensive or time-consuming actions in preparation for such events are extremely difficult for local governments to justify.” While this appeared to be a nod in the direction of the skeptics, at the same time two arguments that distracted attention from the skeptics’ position were emphasized: first, the *vulnerability* of American civilians to biological attack; and second, the “*dual-purpose*” argument that a vast civilian bioprotection program could also be used for public health, the argument that Lederberg advocated: “The committee has given special attention to actions that will be valuable even if no attack ever occurs.” In other words, the justification for an ambitious research-and-development (R&D) program to prepare for events that most probably would never happen was simple enough: public health would surely benefit. Beyond such “dual-purpose” promises, the committee indicated that it would propose “specific actions” to respond to terrorist events and, in its final report, a program of “generic, long-term research and development.”<sup>232</sup>

Nevertheless, the report’s interim recommendations for future biological R&D had a definite defense emphasis. Recommendations included preparing hospitals to treat mass casualties from terrorist attacks; testing personal protective equipment; initiating discussions with the FDA for testing new drugs and vaccines where “clinical trials are not ethical,” that is, for pharmaceuticals that would be used *only* to treat or protect people in the setting of a chemical or biological attack; establishing hospital stockpiles of antidotes for chemical nerve agents and toxins; and organizing and equipping “medical strike teams.” Few of these proposals were high priorities for public health. Nor were the longer-term R&D needs the committee foresaw. These included developing sampling and detection technologies; understanding adverse health effects; decontaminating people and places; developing drugs and vaccines; and envisioning psychological treatments

for victims. Most of this research focused on the specific agents that had been developed as chemical and biological weapons, not the ordinary causes of major public-health problems. But clearly, such a list could extend a long way. Eventually, it would.

The President increasingly emphasized the importance of the bioterrorist threat in public. In his State of the Union address on 27 January 1998, he warned of “an unholy axis of new threats from terrorists, international criminals, and drug traffickers” and that “these 21<sup>st</sup> century predators . . . will be all the more lethal if weapons of mass destruction fall into their hands.” Moreover, he urged the nation “to confront the new hazards of chemical and biological weapons, and the outlaw states, terrorists, and organized criminals seeking to acquire them.” Saddam Hussein, Clinton said, “has spent the better part of this decade . . . on developing nuclear, chemical, and biological weapons.” There was no mention of evidence in American hands suggesting that Saddam had disposed of Iraq’s WMDs and weapons components after the first Gulf War, of the substantial disassembly of weapons facilities accomplished by the UN Special Commission, and of the CIA’s acknowledgment that Iraq probably had not attempted to arm terrorists with WMDs. Instead, the strong impression given by Clinton’s 1998 address was that the threats of the twenty-first century would come from connections between “rogue” states and terrorists and from the real risks that chemical and biological weapons would be transferred from the former to the latter.<sup>233</sup>

And yet, even within the White House Counterterrorism Security Group, the concept of terrorism with “weapons of mass destruction” was seriously debated. According to Steve Coll, disagreements within the group on the nature of contemporary terrorism, bin Laden’s network, the threats it posed, and counterterrorism policy were “substantive, intellectual, and visceral,” and they took place under the almost unbearable burden of possibly being wrong.<sup>234</sup> Clarke and his senior aides Steven Simon and Daniel Benjamin took the position that “WMD terrorism” was an emerging major threat. As Steven Simon later recalled, “This sense of the potential consequences [of a WMD attack] probably concentrated people’s minds a lot.”<sup>235</sup>

On the other hand, Paul Pillar, the deputy director of the CIA’s Counterterrorist Center and the person who represented the CIA “semi-regularly” at the CSG



meetings, disagreed with the effects of “concentrating minds” on the threat of terrorists armed with chemical, biological, radiological, or nuclear weapons — for which the CIA used the acronym CBRN. It was not that he dismissed that possibility entirely but, rather, that he believed a focus on such extremes diverted attention from other, more likely terrorist threats. Moreover, he questioned the distinction between terrorism with “weapons of mass destruction” and “conventional” terrorism. According to Pillar, that distinction confused the issue by conflating use of CBRN weapons with mass casualties and by ignoring the possibility of mass casualties produced by weapons like bombs or rockets. The distinction also ignored the fact that previous terrorist use of chemical or biological weapons had produced few if any casualties. The WMD terminology contained an inherent bias that hyped the idea of terrorism with “WMDs.”<sup>236</sup> While Pillar did not think that the WMD emphasis prevented the White House national security team from recognizing “a more general terrorist threat that could manifest itself in use of any number of tactics,” he held that the emphasis strongly shaped priorities. As he wrote after he left the CIA in 1999, it “skewed priorities and misdirected resources within counterterrorism. Appropriating more money for initiatives aimed narrowly at a chemical or biological threat, especially the worst case scenario of a mass casualty attack, may mean less money for efforts that combat terrorism in general (and that could save more lives).”<sup>237</sup> And this had a pronounced impact on the way counterterrorism policy was implemented: “[With respect to] emergency preparedness, exercises, that sort of thing — just about any scenario ... involving the military, the FBI, police departments — it was *always* a chemical or biological exercise, never a conventional kind of thing.”<sup>238</sup>

### VIII. Constructing the counterbioterrorism bandwagon, 1998

By 1998, the bioterrorism question had generated a serious debate, inside the White House as well as outside, about the credibility of the threat scenarios developed by technical experts Joshua Lederberg, Frank Young, Bill Patrick, and Craig Venter and promoted by members of the administration, notably William Cohen, Richard Danzig, and Richard Clarke, as well as novelists, journalists, and media figures. Those who

questioned the threat-scenario emphasis worked, in general, in a different paradigm. They asked not what might *theoretically* happen, in other words, what vulnerabilities were *conceivable*. Rather, they asked about *actual historical patterns* of terrorist attacks in the United States and on U.S. assets abroad. What they saw was a strong reliance on conventional weaponry.

Nothing of this debate was reflected in coverage by the major media, which continued to focus with few exceptions on terrorism with “weapons of mass destruction,” and especially biological weapons assumed capable of producing massive epidemics. The media coverage, conferences, and policy analyses that began explosively in the last few months of 1997 rolled on, but did not yet roll as a bandwagon. To attract funding and for followers to climb on board, more substantial support was needed. First, government departments, notably the Department of Health and Human Services, had to be persuaded to recognize bioterrorism as a major threat and then to raise its priority in comparison to other problems. Second, Congress had to be persuaded to increase funding sharply — particularly for DHHS, which to that point had received only a modest increase.

To persuade DHHS and Congress, skeptical questioners had to be answered. Many people understood at this point that producing bioweapons with capacity for mass destruction would not be readily accomplished by a few people operating alone in a basement laboratory. This required technical expertise and substantial support. Two possible sources were proposed by supporters of an expanding counterbioterrorism effort. In the first place, news of the former Soviet Union’s huge biological weapons program, dramatically revealed by Ken Alibek in February 1998, raised the possibility of “loose” bioweaponeers seeking clients for their skills and culture. Second, Iraq’s acknowledgment, in 1995, of its biological weapons program seemed to confirm claims that bioweapons were spreading to states seen as hostile to the United States, while Hussein Kamel’s claim of the destruction of Iraq’s weapons in 1990 (Part VI) was kept under wraps. The dominant impression of Iraq’s behavior towards the UN inspections in the United States at this time was one of deception and resistance; the possibility, later revealed by the *Boston Globe* and the *Washington Post* and ultimately not denied by the Clinton administration, that Iraq’s resistance was at least partly a response to the CIA’s use of the UNSCOM

monitoring equipment for espionage against Saddam's security arrangements, hardly registered even after definitive investigations by reputable reporters exposed the CIA's operation.<sup>239, 240, 241, 242, 243</sup>

Seemingly confirmed by the media blitz on bioterrorism that began in the last months of 1997, the conventional wisdom in Washington was now that "rogue states" such as Iraq or "loose bioweaponers" in Russia might supply biological or chemical weapons to terrorists. Thus, when the Senate Select Committee on Intelligence held hearings on the theme, "*Chemical and Biological Threats to the United States*" in March and April 1998, such possibilities seemed clear.<sup>244</sup>

Those invited to give testimony — among them Seth Carus; Colonel David Franz, the deputy commander of USAMRIID; Richard Preston, author of *The Cobra Effect*; and Donald Latham, Vice President of the Lockheed Corporation — accepted these assumptions. Although Carus acknowledged that "there is no public evidence to suggest that [transfer of biological weapons from a state to a terrorist organization] has ever taken place," he also argued that "hostile states, intent on countering the power of the United States, might be inclined to adopt asymmetric responses . . . We know that the Iraqis have [sic] a sophisticated biological warfare program. We know that Iraq has supported terrorist activities in the past, although not necessarily with great success." Thus, although Carus qualified his claims about the transfer of bioweapons from states to terrorists, he also managed to leave the Senators with the impression that a bioterrorist attack with the aid of a "rogue" state was certainly possible.

Suitably impressed by images of clouds of anthrax and other lethal pathogens released over unsuspecting civilian populations, the Senators were primed for the strong message that came from Carus and other witnesses: the United States, despite earlier funding, was *still* unprepared to meet the threat and required an expanded defense to respond to it. Beyond public-health measures, Carus indicated that what was needed was "a responsive research infrastructure with which to deal with the unknown when it does occur, an effective intelligence program . . . solid law enforcement, . . . and especially education of our health providers and our citizens." Of these proposals, it was the "responsive research infrastructure" that stood out as a new

concept, requiring potentially huge new appropriations from Congress.

Further events in March 1998 continued to intensify the sense in government circles that it was time to act. At an international conference on emerging infectious diseases sponsored by the CDC, the American Society for Microbiology (ASM), and other scientific organizations, qualifications about the low probability of bioterrorism were now dropped as leading scientists and government representatives assumed that bioterrorism was a real and threatening phenomenon. Secretary of Health and Human Services Donna Shalala announced: "The next pandemic could result not from a mutating bug or ineffective antibiotics but from an act of bioterrorism." Moreover, high-visibility reinforcement came from none other than the person who had led the campaign for the global eradication of smallpox, Donald Henderson. Categorically dismissing skepticism regarding bioterrorism and citing the *JAMA* issue of August 1997 as a definitive review of the problem, Henderson insisted that the threat was "more likely than ever before and far more threatening than either explosives or chemicals." To respond to an attack with smallpox would require adding 20 million doses of smallpox vaccine to the existing U.S. stockpile and development of a capacity to produce further doses at short notice should the need arise.<sup>245, 246</sup> A major scientific voice supporting expansion of bioterrorism preparations had been added to the roster of prominent scientists speaking out in support of the emerging biothreat.

Despite such developments in the early months of 1998, Richard Clarke was still not convinced that government departments other than the Department of Defense were taking the threat of biological terrorism seriously, but in the spring of 1998, he was determined to generate more funds for counterbioterrorism. His superior, National Security Advisor Sandy Berger, countered that if they were not genuinely interested, the departments would simply "shift the funds . . . to their own pet rocks." To avoid that outcome, Berger advised Clarke that "what you have to do is to scare the shit out of the Cabinet members the way you have scared me with this stuff. Make them want to do something about it."<sup>247</sup>

Thus encouraged, Clarke set out to scare Cabinet members into action. In this, Clarke and his staff turned to a prominent genetic engineer, William Haseltine,

who had made a fortune with his company, Human Genome Sciences, applying gene sequencing technologies to the development of new drugs. Haseltine obliged with a scenario of a hybrid virus that would produce symptoms like smallpox, causing the government to immunize the population, but actually kill its victims by producing a hemorrhagic fever, for which there would be no cure.<sup>248</sup> In March, Clarke organized a secret “tabletop exercise” for some forty senior officials, including Cabinet members. The Cabinet members were told that the President wanted them to attend, but they did not know what to expect. What confronted them after they assembled was a bioterrorist attack with Haseltine’s sci-fi virus spreading through California and the Southwest — and Richard Clarke demanding answers from individual heads of departments about their responsibilities for stemming the spread of the highly contagious and lethal virus. It soon became apparent that if such an attack ever occurred, the federal government would have little idea about how to proceed — how to identify the organism, how to respond to an epidemic, whether and how to quarantine, and so forth.<sup>249, 250, 251</sup>

Whether the scenario was realistic — whether such a virus could be made and whether terrorists would be able to acquire and use it if it could be made — was not addressed at the exercise. American vulnerability and the inability of the United States to cope with a bioterrorist attack should one occur were now defined as the central issues, not consideration of the likelihood that terrorists were actually interested in biological weapons or could develop such a capability. According to Clarke, Cabinet members returned to their departments suitably mortified as well as softened up for a further meeting a few weeks later, this time with the President and seven scientific and emergency-preparedness experts. Meanwhile, in a speech at the National Press Club on 17 March, Secretary William Cohen announced that the National Guard would create ten rapid-response teams to be available to react almost instantaneously to acts of bioterrorism. Twenty-five nations were developing chemical and biological weapons and the threat from terrorist groups worldwide was increasing, Cohen asserted. The nation had to be prepared to respond. The threat was reified by the very act of creating special response teams, announced the next day to the American public: “Hub Fighters

Prepared for Threats from Terrorists,” “U.S. Military Will Set Up 10 Anti-Terrorist Teams.”<sup>252, 253</sup>

The President’s meeting with his Cabinet members and selected experts, which took place a few weeks later on 10 April, has been described in some detail both by Richard Clarke, its key organizer, and the three *New York Times* authors of *Germs* — Miller, Broad, and Engelberg — who interviewed the expert participants. This event marked a significant turn in the Clinton administration’s counterbioterrorism policy, from support for the main counterbioterrorism programs initiated by Congress, which were focused on providing rapid response teams and regulating access to dangerous pathogens, to a far more ambitious, multifaceted program that extended to more than 40 government departments and, in particular, integrated into the counterbioterrorism effort not only the nation’s public-health programs but also the world leader of biomedical research and development, the National Institutes of Health. Clinton may in fact have anticipated such an outcome. According to Steven Simon, “I think the President had already made up his mind [about the bioterrorism threat] ... He reasoned that sooner or later there would be an epidemic. And we’d better be prepared.”<sup>254</sup>

To organize the meeting and to select the experts for it, Clarke and his aides turned to Joshua Lederberg, Frank Young, and Craig Venter, among others, all of whom also participated in it.<sup>255, 256</sup> Not surprisingly, given the sources of advice, the group of seven experts who met with Clinton agreed almost completely about the magnitude and immediacy of the bioterrorist threat. After all, all of them thought about security within the same “vulnerability” paradigm. A possible exception was Barbara Rosenberg, a former research biologist who had pursued a second career as a leading advocate for strengthening the Biological Weapons Convention through a new inspection regime. The three other experts were Lucille Shapiro, a microbiologist and professor of cancer medicine at Stanford University and a former colleague of Lederberg; Thomas Monath, former chief of virology for USAMRIID and, at the time of the meeting, a vice president of OraVax, a vaccine company which had serious financial problems and was attempting to secure a Pentagon subcontract to make smallpox vaccine; and Jerome Hauer, the head of New York City’s emergency management program.

The President chaired the meeting with the seven experts sitting around the Cabinet table and Cabinet members — including the Secretary of Defense, the Attorney General, the Secretary of Health and Human Services, the CIA Director, and the National Security Adviser — and top aides seated in the “back benches” of the room, observing the proceedings. Recalling the themes of Preston’s thriller, *The Cobra Event*, Clinton asked whether fears about bioterrorism as a major security threat were plausible — and, not surprisingly, in light of the fact that the experts had been largely hand-picked by Lederberg, Young, and Venter, he was assured by the experts that they were. Lederberg reinforced Clinton’s worries by arguing that germ weapons could surpass the nation’s defenses against them. Shapiro warned of futuristic dangers posed by exotic, bioengineered pathogens, and by reminding Clinton that the Soviet Union had already gone down this path. Hauer argued that New York City was unprepared to meet the challenge. Monath argued that the government did not possess the vaccines needed to protect against the threat. Venter, according to the authors of *Germs*, “pushed hard for federal support for genetic sequencing and gene identification,” the very technologies that his firm was pioneering at that time.<sup>257</sup> Of all of the experts, only Rosenberg drew attention to the importance of the United States’ international role in strengthening the Biological Weapons Convention as a barrier to the spread of biological weapons.

But Rosenberg’s message was not the one that resonated strongly with the President or his security advisors — as the history of the moves made by the United States in 1998–2000 to weaken rather than strengthen international proposals for an inspection regime for the Biological Weapons Convention shows.<sup>258</sup> The main message transmitted to Clinton was that the nation was dangerously underprepared to meet the bioterrorist threat and would urgently need to enlist its great resources in the biological sciences and in biotechnology. During the meeting, Lederberg handed the President a copy of the *JAMA* special issue focusing on bioterrorism. The authority of those invited to brief the President was thus augmented by an authoritative source conveying the message that military and public-health programs required substantial expansion to meet the new threat. The journal was passed on to members of the White House national security staff for their use.<sup>259</sup>

Following the meeting, Frank Young prepared a detailed report which summarized this case and called for increased spending on civilian biodefense. Young had initially proposed about \$100 million per year, but Lederberg strongly disagreed, arguing for far more — at least five times that amount for the next four or five years. Young and others demurred, but Lederberg insisted, and the others went along. The proposal to the White House endorsed by all seven experts called for a huge increase in spending on civilian biodefense: almost \$2 billion over the following five years, with \$420 million earmarked for a national stockpile of antibiotics and vaccines. The experts claimed that this stockpile would “reduce death and illness 10 to 100 fold.” As the authors of *Germs* note, the experts also addressed a particularly sensitive matter. They called for research on genetically modified pathogens not known to exist as weapons in order to develop defenses against them. They noted that the recombinant DNA controls of the National Institutes of Health did not allow such work and that it might “raise alarm on the part of other nations.” If publicized, others might use the work “for nefarious purposes.” Regardless, the group urged that it should be pursued anyway — implying that the existing regulations could be circumvented in ways that would allow work to be done in secret.<sup>260, 261</sup> This move represented a revolutionary change in several U.S. policies: simultaneously, it undermined the assumptions on which the NIH controls for the safety of genetic engineering were based, the assumption of the ongoing Biological Weapons Convention negotiations, and the previous limitations that Congress had placed on biological defense in the early 1990s. It was not revealed publicly until the release of *Germs* in September 2001. Apparently, none of these issues were discussed with the President at the meeting.

Following the meeting, the expert group was criticized on the grounds that several of its members — Venter and Monath in particular — used the meeting to promote their own business agendas.<sup>262</sup> What went unrecognized in 1998 were the broader commercial interests of members of the group. On May 9, Venter established a new, for-profit company, Celera Genomics, to sequence the human genome.<sup>263</sup> Young and Lederberg would become members of the scientific board of EluSys Therapeutics, a New Jersey biotechnology company established in May 1998, with venture



capital provided by, among others, Neil Bush, a younger brother of George W. and Jeb Bush and a member of the EluSys board of directors.<sup>264, 265</sup> From its formation, EluSys would focus on biological defense applications, receiving in 2000 a contract from USAMRIID to collaborate on developing a therapy to treat anthrax by removing anthrax bacteria from the bloodstream.<sup>266</sup> More generally, with the exception of Barbara Rosenberg, *all* of the participants would eventually benefit, as members of or advisers to biotechnology companies receiving biodefense contracts from the burgeoning biodefense industry that they had influenced the President to launch.

But either questions about possible conflicts of interest on the part of some of the expert advisers did not register with Clinton and his senior advisers or they took no notice of them. (There is no mention of such questions in Richard Clarke's account of security debates during the Clinton administration.) Nor, apparently, were they aware of the skepticism with which their view of bioterrorism was received in some Washington policy circles (below, Part IX). As Clinton records in his autobiography: "Everything I heard confirmed that we were not prepared for bio-attacks, and that the coming ability to sequence and reconfigure genes had profound implications for our national security."<sup>267</sup>

In an atmosphere of impending biological doom, the President and his advisers began to craft new policy initiatives to address terrorism. Clarke set about drafting three presidential directives to reform the overall management structure for counterterrorism, protect critical information networks, and ensure the continuity of government in the event of a terrorist attack.<sup>268</sup> Clinton used a speech to the U.S. Naval Academy graduates in Annapolis on 22 May to announce these new policies, which would be codified as Presidential Decision Directives 62, 63, and 67.<sup>269, 270, 271</sup> In particular, Clinton emphasized his determination to "prevent the spread and use of biological weapons" and to "protect our people in the event these terrible weapons are ever unleashed by a rogue state, a terrorist group or an international criminal organization." The influence of members of the expert group was noticeable. The speech noted specific goals, from boosting the public health system "to aid our preparedness against terrorism, and to help us cope with infectious diseases that arise in nature" (the idea launched by Lederberg in

the *JAMA* issue) to "creating stockpiles of medicines and vaccines to protect our civilian population" (one of the main proposals of the expert group). To such goals, Clinton now added a further proposal of the expert group: "We will pursue research and development to create the next generation of vaccines, medicines and diagnostic tools." In this endeavor, "the Human Genome Project will be very, very important" — an opinion that reflected Craig Venter's influence. "We must not cede the cutting edge of biotechnology to those who would do us harm," Clinton concluded. In other words, the biological sciences had to be transformed into a fundamental tool of biodefense. The concept originally proposed in the OTA report, *Technology Against Terrorism*, in 1992 and forcefully promoted since by Lederberg was being realized.

PDD-62 assigned joint responsibility for managing the consequences of a terrorist attack with WMDs to FEMA and DHHS. It also created a new position, the National Coordinator for Security, Infrastructure, and Counter-Terrorism to oversee ten programs for counterterrorism and security — a position that was assigned to Richard Clarke. Although it did not assign either a large staff or a budget for the position, the directive enhanced Clarke's authority for dealing with counterterrorism substantially. As two of his former staff members recalled, it "gave the national coordinator a seat at the table when the foreign policy cabinet discussed terrorism," thus creating "a voice at the top for counterterrorism concerns."<sup>272</sup> Clarke, as "counterterrorism czar," immediately set to work to increase funding for counterterrorism and security programs.<sup>273</sup> In June 1998, Clinton backed up his directives with a supplemental request to Congress to add some \$300 million to the fiscal 1999 budget for defense against biological and chemical terrorism. This request included \$51 million dollars for a stockpile of antibiotics and other pharmaceuticals to treat the effects of biological or chemical attacks; a further \$10 million for biomedical defense research, including gene sequencing; a further \$43 million for the CDC to improve disease detection and communication capabilities.<sup>274, 275</sup> These decisions marked an expansion and proliferation of counter-terrorism programs and a vision that went far beyond Nunn-Lugar-Domenici funding for rapid response teams. Integrating the resources of the nation's public-health and biomedical-research institutions into these programs was a huge turn in civilian biodefense.

A major step in constructing the bioterrorism bandwagon had been achieved: committed Presidential support for opening the federal coffers for counter-bioterrorism funding.

## IX. Jumping on the counterbioterrorism bandwagon, 1998–2000

Congress now had to be persuaded to approve the administration's funding request and to accept its basic assumption — that the security problem facing the country was not simply that of transnational terrorist attacks but attacks with “weapons of mass destruction.” In the summer of 1998, the Clinton administration was beset by crises from the personal to the geopolitical. Personally, Clinton was embroiled in the Monica Lewinsky scandal and special prosecutor Kenneth Starr's investigation into the affair. Politically, the previously shadowy persona of “terrorist financier” Osama bin Laden suddenly came into sharp focus as the mastermind behind *al Qaeda*. In June, he had been widely registered in the United States as the result of a dramatic ABC *Nightline* interview with him in a mountain camp in Afghanistan by reporter John Miller, in which bin Laden predicted further violence in the weeks ahead.<sup>276</sup> Then, on 7 August, two teams of suicide bombers in Nairobi and Dar-es-Salaam attacked the U.S. embassies there, killing 224 and wounding over 4,000. CIA and FBI investigations left little doubt that bin Laden was responsible.<sup>277</sup> Clinton now called bin Laden “perhaps the preeminent organizer and financier of international terrorism in the world today.” In the view of the *Washington Post* editors, “bin Laden had now gained the status of “global menace.”<sup>278, 279, 280</sup>

But it was not simply *al Qaeda* and transnational terrorism that the Clinton administration saw as a major threat to national security. Increasingly, it was the fear that terrorists armed with “weapons of mass destruction” would attack the United States. When the administration retaliated against *al Qaeda* on 20 August, not only did the U.S. send a shower of cruise missiles at a training camp in Afghanistan; it sent a second shower at a supposed chemical-weapons facility, the Al Shifa plant, in Khartoum, Sudan. According to one of his aides, Clinton talked about this “all the time, and it was very much on his mind.”<sup>281</sup>

The Al Shifa attack could not have been justified under international law as “preemptive” since there was

no clear evidence that the facility posed an imminent threat to the United States. The nature of the facility was seriously questioned soon after the attack; best current understanding is that it manufactured pharmaceuticals, though controversy persists and some members of the former Clinton administration still defend their original position.<sup>282, 283, 284, 285</sup> Its justification aside, this attack on an industrial facility in a sovereign state showed just how convinced the administration had become that terrorists were seriously pursuing “weapons of mass destruction.”

The stand-off between the UN Special Commission charged with inspecting Iraq's chemical and biological disarmament and Saddam Hussein generated a further crisis for the administration. The inspections faced one impasse after another, with Iraq claiming that the United States was using the inspections as a pretext for spying on Iraq's security structures and for maintaining sanctions. Iraq insisted that there was nothing more to reveal, and the United States insisted that Iraq continued to hide WMDs. In August and again in October, Saddam refused to cooperate with the inspectors. Finally, the crisis came to a head in mid-December, when the inspectors were pulled out of Iraq and the United States and Britain bombed Iraq for several hours — a unilateral action not supported by the UN Security Council.

The administration's sense of a growing threat from “rogue states” and “terrorists” armed with “WMDs” was echoed in the major media. “Without inspections, can the United States know when Saddam Hussein is ‘reconstituting his weapons of mass destruction?’” asked the *Washington Post*. “If Iraq now gets away with vitiating the U.N. inspection system, its concealed weapons programs will give it a big head start on rebuilding its arsenal of terror,” warned the *New York Times*. Clinton, now facing political attack at home and the stand-off with Saddam Hussein and terrorist attacks abroad, stated in his address to the United Nations in September: “Terrorism has a new face in the 1990s . . . Today terrorists take advantage of greater openness and the explosion of information and weapons technology. The new technologies of terror, along with increasing mobility of terrorists, raise chilling prospects of vulnerability to chemical, biological, and other kinds of attacks . . .”<sup>286, 287, 288</sup>

The same fear of the vulnerability of the United States to terrorist attacks with WMDs was also echoed repeatedly by the prominent scientific and policy

organizations that produced voluminous reports in this period. On 1 December 1998, the Institute of Medicine and the National Research Council released its final report as a book, *Chemical and Biological Terrorism: Research and Development to Improve Civilian Medical Response*, which urged major new R&D programs largely in line with the goals expressed by Clinton's expert advisors. Detection devices, drugs, and vaccines were just some of the products deemed necessary to combat bioterrorism along with strong support for strengthening public-health surveillance by the CDC and local public health authorities, developing and stockpiling new vaccines for anthrax and smallpox, and funding new programs of research and development for protecting civilians.

Those participating in the report, as writers and reviewers, were drawn from fields such as emergency medicine, public health, biotechnology, infectious disease, and molecular biology. They included Matthew Meselson, Donald Henderson, Michael Osterholm, head of epidemiology for the Minnesota Department of Health, and, of course, Joshua Lederberg. Names like these carried great authority.

The NAS report considered, but did not fully address, the possibility raised with Clinton in May that use of *genetically engineered* pathogens would also pose threats "as potential terror agents in the future." As the report stated:

Some have pointed out, correctly, that genetic engineering may eventually make the list of potential terror incidents extremely long. In practice, the few chemical and biological terrorist incidents that have occurred to date have involved only a few different agents, and these agents are well known from military weapons programs. There is no guarantee that this will continue to be the case, indeed, it would be a grave mistake to assume that terrorists will not be able and willing to take advantage of biotechnology to produce new agents.<sup>289</sup>

The implication, which reinforced the expert advice given to the president by Lederberg and others in April, was that it would be a "grave mistake" *not* to prepare to defend against such possibilities.

The huge American Society for Microbiology, representing some 42,000 scientists in medical, environmental, and public-health microbiology, announced its strong support for a major counterbioterrorism effort. In Senate hearings on the FY 1999 appropri-

tions in June 1998, Michael Osterholm, representing the ASM as chair of its Committee on Public Health, focused particularly on the need to strengthen "the public health infrastructure to respond to bioterrorism." Emphasizing both the weakened state of the Centers for Disease Control and state health departments as well as the crucial role they would be expected to play in responding to acts of bioterrorism, Osterholm urged the Senators to increase federal support for monitoring and responding to infectious diseases. He also used the dual purpose argument to urge further support for expansion of biomedical research on such diseases: the additional funds would be used, even in the absence of a bioterrorist attack. According to Osterholm: "Basic research is the underpinning for the long term ability to address infectious disease threats. None of the additional capacity to counter the threat of bioterrorism will be inactive or wasted."<sup>290</sup>

This position was backed by Ronald Atlas, a member of the ASM's Task Force on Biological Weapons and a future president of the society. Atlas published an article, "The Medical Threat of Biological Weapons," in the journal *Critical Reviews in Microbiology*, which Atlas also edited. Atlas supported Osterholm's call for strengthening public health capacity to deal with infectious disease, but he also went further, echoing Clinton's expert advisors in calling for attention to the threat of genetically engineered pathogens: "The great fear of some security experts and members of the medical and scientific communities is that genetic engineering will be used to create new and more powerful biological weapons . . . The United States and the world, despite huge investments of time, money, and effort in recent years, is still unprepared to respond . . . Increased training, research, and response capacities of the biomedical community is critical for developing and deploying the protective network against biological weapons, as well as for dealing with natural outbreaks of disease." The last sentence expressed precisely the strategy that leaders of the biomedical research community would follow: argue for vastly increased appropriations for research, surveillance, and stockpiles for counterbioterrorism and reassure the Congress that even if a bioterrorist attack never happened, biomedical research would benefit.<sup>291</sup>

Individual scientists also jumped on the counterbioterrorism bandwagon, predicting a new, scarier generation of bioterrorists, armed with futuristic and

devastating bioweapons. One of these was Stanford biophysicist Steven Block, who presented a paper titled “Living Nightmares: Biological Threats Enabled by Molecular Biology” at a “National Security Forum” organized by Stanford’s Hoover Institution in November 1998. The paper, which drew on Block’s earlier presentation at a conference in 1997 organized by the JASON group, an organization of prominent scientists that advises the Pentagon, was subsequently published in the conference proceedings, titled *The New Terror: Facing the Threat of Biological and Chemical Weapons*. Block projected the forthcoming threat as “an entirely new class of weapon of mass destruction: genetically engineered pathogens” such as “stealth viruses” that would hide in their human hosts for a predetermined period and then be synchronously activated and “designer” genes that would overcome the difficulties natural pathogens faced in surviving and infecting human hosts and exhibit a new range of lethal properties. The “real Y2K problem,” Block declared, was the “millennium bug.”<sup>292</sup>

Policy specialists followed a similar course. An influential policy group at the Belfer Center for Science and International Affairs at Harvard University’s Kennedy School of Government called vulnerability to terrorists wielding weapons of mass destruction the “Achilles heel” of America’s defense. With respect to biological terrorism, the group’s recommendations further reinforced the proposals that were already circulating in Washington: increase state and local preparedness; enhance epidemiological surveillance; stockpile drugs and equipment.<sup>293</sup>

Soon after this first Harvard study came a second, a report entitled “Catastrophic Terrorism,” written by three prominent national security advisors, former assistant secretary of defense Ashton Carter, former CIA director John Deutch, and a former member of the National Security Council, Philip Zelikow. The authors were summarizing a report, “Catastrophic Terrorism: Elements of a National Policy,” circulated earlier the same year. If there were any doubt in the public mind about the seriousness of the threat of terrorists armed with WMDs, this new essay was designed to put those doubts to rest. “Catastrophic terrorism has moved from far-fetched horror to a contingency that could happen next month,” declared the authors. And, once again, the message to the public was that the United States was vulnerable: “The bombings in East Africa killed

hundreds. A successful attack with weapons of mass destruction could certainly take thousands, or tens of thousands, of lives,” and the country was “not yet prepared.” Although the authors differed with the Clinton administration on the organization of a response to “catastrophic terrorism,” they supported the administration’s goals. Like the Institute of Medicine report, “Catastrophic Terrorism” called for “technology” — vaccines, antibiotics, detectors, protective clothing. This meant not only more research but either “borrow[ing] medication or tools from, or enter[ing] into an effective partnership with, academia and industry.” Thus the scientific advice to Clinton now received strong backing from major figures in national security policy at the Kennedy School.<sup>294</sup>

Congress’s previous resistance to the idea of terrorism as a first tier threat now disappeared, to be replaced not simply by acceptance of the emerging threat of transnational organizations such as *al Qaeda* but by acceptance of the fusion of terrorism and “weapons of mass destruction.” The tense stand-off between the UN inspectors and the Iraqi government that ended with the U.S. bombing of Baghdad in December 1998 was widely assumed to mean that Saddam Hussein was hiding a great deal. Furthermore, if WMDs were in the hands of “rogue states” like Iraq, it was assumed that they would easily find their way into the hands of terrorists as well. United in fear of the emerging bioterrorist threat, Congress held hearings not on whether it supported Clinton’s call for new measures and organizations to combat terrorism in general and bioterrorism in particular, but on how to do so.

Virtually all of those who were invited to testify in several Congressional hearings in the summer and fall of 1998 spoke with a single voice. As James Hughes, Director of the CDC’s National Center for Infectious Diseases, put it, echoing the claim originally made by William Patrick in 1995: “Today’s terrorists can choose among many highly dangerous agents, including chemical and biological agents ... An attack with a biological or chemical weapon used to be considered very unlikely but now seems entirely possible. Many experts believe that it is no longer a matter of ‘if’ but ‘when’ such an attack will occur.”<sup>295</sup> In the fall of 1998 in hearings held by the House National Security, International Affairs, and Criminal Justice Subcommittee, Frank Cilluffo, co-director of a terrorism task force at the hawkish Center for Strategic and International



Studies expressed the consensus view when he portrayed the recent history of Washington's appraisals of the terrorism threat this way: "For decades, terrorism experts have argued the likelihood of a major terrorist incident occurring on U.S. soil. They also argued over the possibility of terrorists using weapons of mass destruction. The debating ended abruptly with February 26, 1993 World Trade Center bombing and the March 20, 1995 sarin gas attack of the Tokyo subway . . . Recognition that [terrorist] acts (possibly involving weapons of mass destruction) can indeed occur in America has been a cornerstone of both the Congress' and the Clinton Administration's national security agendas in recent years."<sup>296</sup> It was now taken for granted that the Aum attack was emblematic of the new terrorism threat.

Expressing what was now a solid consensus, Congress approved most of the \$300 million supplementary funding that Clinton had requested beyond his original request. Funding for counterbioterrorism for the Department of Health and Human Services jumped from \$15.9 million in FY 1998 to \$173.1 million in FY 1999. The new funding included \$62 million for upgrading the public health infrastructure at the CDC in Atlanta and locally, \$51 million for a stockpile of antibiotics and other medicines, \$35 million for research and development, and some \$2 million for studies of the state of preparations for civilian biodefense. The latter earmarked \$1 million for a center at Johns Hopkins, which would be directed by Donald Henderson, and support for similar centers at Carnegie Mellon University, St. Louis University, and the University of Texas-Galveston. More generally, total funding for defending the nation against all types of "weapons of mass destruction" (nuclear, chemical, and biological) rose to an unprecedented \$1.24 billion for FY 1999.<sup>297, 298, 299, 300</sup>

The DHHS funding for counterbioterrorism measures in FY 1999 represented a substantial increase. Only two years earlier, there were virtually *no* funds for counterbioterrorism measures in the DHHS budget and only a total of \$15.9 million for FY 1998. Nevertheless, the funding was still considerably less than that proposed by Lederberg and other members of the group of expert advisors to the President in May 1998. Shortly after Clinton's announcement in the summer of 1998, Donald Henderson and Michael Osterholm complained that far more was required to enable the crumbling

public-health infrastructure to cope with terrorism-induced epidemics.<sup>301</sup> In fact, the Clinton administration saw the FY 1999 funding as only a first step. Clarke, as the new "counterterrorism czar," was completely committed to expansion of counterterrorism programs, and, in particular, the counterbioterrorism effort. As Clarke later recalled his activities in the fall of 1998: "If PDD-62 had given me anything, it was a further invitation to get funding for counterterrorism and security programs. I set to work. By January [1999], the President was set to ask the Congress for \$10 billion for counterterrorism, security, weapons of mass destruction preparedness, and infrastructure protection."<sup>302</sup>

Indeed, in January 1999, the White House organized a media campaign to prepare Congress and the public for a vastly increased FY 2000 counterterrorism budget: a presidential interview with the *New York Times* (represented by reporters Judith Miller and William Broad) on 21 January; a presidential speech on the theme of using science and technology to increase security at the National Academy of Sciences the following day — an event that also featured National Security Advisor Sandy Berger and expert advisor Joshua Lederberg; and a press conference given by Clarke, Attorney General Janet Reno, and Secretary of Health and Human Services Donna Shalala.<sup>303, 304, 305</sup>

In his National Academy speech, with national security advisor Sandy Berger and Joshua Lederberg accompanying him, Clinton painted a frightening picture of terrorists and outlaw states "extending the world's fields of battle, from physical space to cyberspace, from our earth's vast bodies of water to the complex workings of our own human bodies." Berger and Lederberg echoed Clinton's views. As Lederberg put it, driving home once again the threat he had projected for a decade: "The very triumph of the democratic world's military technology with guided missiles and dominance of the battlefield drives the agents of disorder to ever more subversive means of attack and inspires new scales of terrorism, grand and small."

And the way to counter terrorists armed with WMDs, claimed Clinton, was to harness American science and technology to enable "defense to stay ahead of offense," or, at the least, to "close the gap between offense and defense to nothing, if possible." This meant taking "scientific strides in deciphering the genetic

material in microbes and humans, so that vaccines could be tailored for a quick response to an attack.” Lederberg translated Clinton’s view in institutional terms, asserting that countering bioterrorism meant that biodefense had to be “reconstructed as a branch of public health, and [drawing attention to the dual use benefits that would accrue from biodefense] it is equally necessary to deal with cyclic renewals of historic natural plagues, as much as those borne of malice.”

This was the buildup to a White House announcement, the next day, that Clinton would ask the Congress for \$10 billion to address terrorism — an increase of some fourteen percent over FY 1999.<sup>306</sup> In the press briefing following Clinton’s speech, Clarke and Shalala gave details of the White House request. The White House planned to request a doubling of funds for counterbioterrorism in the FY 2000 budget, Clarke said. Shalala said this meant major increases in the DHHS budget to fund expansion of disease surveillance, medical response capacity, pharmaceutical stockpiles, and, finally, counterbioterrorism research. The proposed DHHS counterbioterrorism budget was \$235 million.<sup>307</sup> For counterbioterrorism research to be conducted not by the Department of Defense but by DHHS was a radical development that took a noticeable share of the resources and the talent of the nation’s leading biomedical research institutions and directed them into military applications. As Shalala announced to reporters, in a phrase that marked this major turn in public-health and biomedical-research policy, this would be “the first time in American history in which the public health system has been integrated directly into the national security system.”<sup>308</sup> The following day, an approving *New York Times* editorial urged Congress to act: “President Clinton is right to plan a coordinated Federal response to what could become a major problem.”<sup>309</sup> A Congress now deeply worried by images of anthrax clouds over Washington and persuaded that it was “no longer a matter of if but when” increased the requested budget to \$278 million.<sup>310</sup>

The federal coffers for counterbioterrorism research had been opened and the effects soon began to resonate in academia and in policy think tanks. The steep increase in funding supported the emergence of a new generation of academic centers and researchers, which in turn produced a new wave of conferences, journals, bioterror simulations, studies, papers, and editorials.

These activities made news, and the news they made itself made news, more and more of it.<sup>311</sup> The new counterbioterror centers had the effect of both multiplying and magnifying perceptions of the bioterror threat. The Johns Hopkins Center for Civilian Biodefense Studies, with Donald Henderson as its first director, is a case in point. The Center was inaugurated with a large conference on civilian biodefense in Washington 16–17 February 1999. Close to a thousand public-health officials, physicians, and representatives of the branches of the U.S. government (military, intelligence, public health, emergency management, and so forth) attended. Frightening scenarios of bioterror attacks on American cities producing epidemics of anthrax and smallpox that spiraled out of control both intensified the sense of impending threat and reinforced the warnings of a long list of prominent speakers (such as Henderson, Clarke, Shalala, and Lederberg) that the threat was real and that the nation was woefully underprepared to respond to it.<sup>312</sup> As a reporter for *The Scientist*, an on-line journal whose board of editors was chaired by Joshua Lederberg, stated: “Be prepared. That was essentially the take-home message of the ... conference ... Could a bioterrorist attack occur in the United States? The answer: absolutely — in fact, the chances are pretty good, given the availability and ease of production of several biologic agents, including smallpox and anthrax.” “Bioterrorism is suddenly on the map, bringing a major funding boost for research and defensive measures,” announced a report in *Science*.<sup>313, 314</sup>

## X. An undercurrent of informed skepticism

The bioterrorism bandwagon was rolling. Yet, in this period, substantial criticism of the Clinton counterbioterrorism expansion, especially from communities specializing in terrorism and intelligence, continued. In 1998, Ehud Sprinzak, a leading terrorist specialist at Hebrew University, Jerusalem, and visiting fellow at the U.S. Institute of Peace, issued a strong challenge to what was fast becoming the conventional wisdom. Sprinzak argued that the claims of a new trend towards “unconventional” terrorism that were gripping the imaginations of the President and Congress were based on a dual fallacy: first, they were not based on the history of actual attacks; second, they “ignored preparations for a potential new wave of conven-

tional terrorism.” He urged policy makers to address the forms of attack that “terrorists do best: identify American soft targets, assemble conventional explosives and kill a large number of unprotected civilians.”<sup>315, 316</sup>

In April 1999, a second conference on terrorism organized by the Chemical and Biological Arms Control Institute generated further critiques of the emerging counterbioterrorism policy and its basic assumptions, especially from those specializing in the history of biological warfare and of terrorism. Milton Leitenberg, who had earlier given testimony in the Nunn-Lugar hearings in the fall of 1995, delivered a stinging review of the conclusions being drawn from the Aum attack on the Tokyo subway. Drawing on interviews with Japanese sources and Japanese press reports of prosecutorial evidence against the Aum, Leitenberg argued *not* that bioterrorism could be pursued easily and under-cover in garages and basements but precisely the opposite. Leitenberg explained that despite its financial resources and access to people with some biological training, the Aum had had difficulty producing botulinum toxin, anthrax, and other toxin and germ agents and great difficulty dispersing anthrax — and in fact, had not succeeded. Leitenberg also showed that claims in press reports that the Aum had used genetic engineering to introduce the gene for botulinum toxin into the common intestinal organism, *E. coli*, were without factual foundation. In summary, said Leitenberg, “misinformation, disinformation, and inaccuracy regarding the Aum’s BW efforts that was propagated unquestioned and unchallenged for three to four years” had given rise to unwarranted “alarm and hysteria” concerning bioterrorism.<sup>317</sup>

The foundations of the Clinton policy were attacked from a different direction from two other conference participants, prominent terrorism experts Brian Jenkins and Bruce Hoffman of the RAND Corporation. Jenkins once again questioned claims that bioterrorism was on the rise. While he acknowledged that there was ample ground for concern about terrorism, he pointed out that the Aum attack, to that point, had not initiated a trend and that, with the “possible exception” of bin Laden, there was no evidence that any terrorist group was gearing up to use weapons of mass destruction: “Increased reports that terrorists may be talking more about weapons of mass destruction could simply reflect the fact that *we* are talking more about weapons of

mass destruction,” Jenkins observed.<sup>318</sup> Jenkins’ insight would be confirmed when a *Wall Street Journal* reporter, Alan Cullison, stumbled upon two of *al Qaeda*’s computers in Kabul in November 2001, after its members had fled Afghanistan. One of the computers contained many letters written by Ayman al-Zawahiri, Osama bin Laden’s deputy. One of these, written in April 1999, stated: “The enemy starting thinking about [biological and chemical] weapons before WWI. Despite their extreme danger, we only became aware of them when the enemy drew our attention to them by repeatedly expressing concerns that they can be produced simply with easily available materials . . .”<sup>319</sup>

Jenkins argued further that the Clinton policy focused not on the *intentions* of terrorists but on the *vulnerabilities* of U.S. society. The problems with this approach were first, that “vulnerabilities [from fires at chemical plants to outbreaks of disease] are infinite;” second, that the “scenarios projected were inevitably worst cases,” and worst-case analyses obscured possibilities that were more likely; third, such hypothetical worst-case scenarios tended to become reified as “imminent threats.” Jenkins drew a highly skeptical conclusion from this analysis:

Threat assessment based on infinite vulnerabilities, conjured foes, worst-case scenarios, and the wrath of our children can degenerate into a fact-free scaffold of anxieties and arguments — dramatic, emotionally powerful, compelling, but analytically feeble.<sup>320</sup>

Bruce Hoffman reinforced Jenkins’ conclusion from a different direction. He acknowledged that there appeared to be signs of a “bloodier and more destructive era of terrorism in the future,” but he went on to point out that, even if this were true, “these trends do not necessarily imply that terrorists have either the requisite technical knowledge or the technical capabilities to implement their violent ambitions.” Even if terrorists could brew up anthrax or nerve agents, *dissemination* still posed a daunting technical problem.

With the hindsight of the impact of the anthrax-laden envelopes of the fall of 2001, his remarks appear prophetic:

The real issue and the most likely threat may not be the ruthless terrorist use of some weapon of mass destruction but . . . the far more deliberate and

delicately planned use of some CBRN weapon to achieve far-reaching psychological effects ... Even a limited terrorist attack [with such an agent] on a deliberately small scale could have disproportionately enormous consequences, generating unprecedented fear and alarm ... This possibility seems to have gone unnoticed or ignored as legislators and agency heads, governors and mayors, police commissioners and fire chiefs, military commanders and health officials compete with one another to ensure that they each get a thumb into the burgeoning domestic terrorism preparedness/homeland defense pie.<sup>321</sup>

Leitenberg, Jenkins, and Hoffman were not the only dissenting analysts. Other criticisms of Clinton's counterbioterrorism policy were aired in this period as well.<sup>322, 323, 324</sup> Moreover, skepticism concerning biological and other forms of terrorist apocalypticism arose in Congressional hearings in 1999. John Parachini, a senior researcher at the Monterey Institute of International Studies, testified on the Institute's study of incidents involving chemical or biological weapons.<sup>325</sup> Parachini concluded that the detailed record of terrorist attacks did not confirm a trend toward terrorist use of biological or chemical weapons: "Given how vulnerable we believe we are to terrorist CBW attacks, surprisingly few incidents have actually occurred and attacks with conventional explosives have proved to be far more deadly ... Based on our examination of the historical record, only a small number of groups or individuals were actually motivated to employ chemical or biological weapons, and most of them were unable to surmount the formidable technical hurdles to produce a mass casualty event." Clearly questioning the assumptions underlying the Clinton policy, Parachini warned: "By emphasizing national vulnerabilities and technology proliferation that could reach the hands of terrorists, we naturally drift towards technological remedies to the terrorist CBW threat. We must guard against looking for the technological silver bullet and ignoring other non-technological options to curb the problem."<sup>326</sup>

Once again, the General Accounting Office weighed in, questioning the basis for the increased funding that was now flowing into counterbioterrorism. At a Senate hearing in March 1999, Henry Hinton, the GAO's Assistant Comptroller General for National Security and International Affairs, warned that while it would be "unconscionable not to prepare to respond to [a

biological attack at some level]," it was important to question the basis for federal investment for what was growing into a major defensive medical program. Citing a CIA analysis, Hinton argued that while terrorists might be showing interest in biological and chemical weapons, there were significant technical barriers to their use, which terrorists would find problematic: "Overall, our work to date suggests that, for the most part, there are serious challenges at various stages of the process for a terrorist, group, or individual to successfully cause mass casualties with an improvised biological or chemical weapon or device." Moreover, Hinton issued a harsh critique of DHHS' assessment of its roles and needs: "The ad hoc interagency group making the [assessment] comprised representatives only from the health and medical community. As a result, we have not seen any evidence that the group's process has incorporated the many disciplines of knowledge and expertise or divergent thinking that is warranted to establish sound requirements for such a complex and challenging threat ... It is unclear whether DHHS has fully considered the long-term costs, benefits, and return on investment of establishing the production and inventory infrastructure for [its FY 1999 counterbioterrorism initiative], Hinton stated."<sup>327</sup>

This critique was expanded in a major GAO report issued in September 1999 on the government's proposals for countering chemical and biological terrorism; the report concluded that the government had not conducted the comprehensive threat and risk assessment that was needed to justify the steeply increasing expenditures for counterbioterrorism. Citing similar conclusions by the CIA, the report emphasized the technical barriers that terrorists would need to overcome in order to develop, weaponize, and deliver biological agents. "Causing mass casualties with biological agents ... presents extraordinary technical and operational challenges for terrorists without the assistance of a state-sponsored program," Henry Hinton stated at a Congressional hearing on 20 October. Although the GAO reports were low-key and carefully qualified at times, their message was clear: the vast increases in counterbioterrorism support proposed by the Clinton administration had no basis in a thorough assessment of the threats. These critiques were *not* intended to imply that the risk of bioterrorism should be entirely dismissed but, rather, that the focus on specific



high-tech attack scenarios could well obscure other more likely possibilities.<sup>328</sup>

But these warnings could scarcely be heard above the clamor for protection against the threat of horrific bioweapons wielded by rogue states and terrorists. Further official reports intensified that image. In September 1999, a Pentagon-chartered commission, chaired by former senators Gary Hart and Warren Rudman and whose members included former House speaker Newt Gingrich and former top military officials, issued a grim assessment, replete with grim scenarios for mega-threats to the United States, and, in particular, the threat of terrorists wielding genetically engineered microbes: “While conventional conflicts will still be possible, the most serious threat to our security may consist of unannounced attacks on American cities by subnational groups using genetically engineered pathogens.” Acquisition and dissemination were, apparently, assumed to be within the grasp of such groups.<sup>329</sup>

A more nuanced approach came several months later from a commission established by Congress, chaired by James Gilmore, the Republican governor of Virginia, and staffed by members of the RAND Corporation.<sup>330</sup> In contrast to most discussions of bioterrorism in this period, the Gilmore commission avoided use of the term “weapons of mass destruction,” preferring the more cumbersome but more precise terminology, “chemical, biological, radiological, and nuclear weapons” on the grounds that, with the exception of nuclear weapons, the ability of the other types to inflict mass destruction depended crucially on such factors as technical expertise, procurement and production capacities, and the ability to control and direct dissemination. It also questioned the prevailing assumptions that terrorists could easily either acquire biological weapons or produce them themselves: “Several reasons work against state sponsorship [of such use], including the prospect of significant reprisals by the United States against the state sponsor, the potential inability of the state sponsor to control its surrogate, and the prospect that the surrogate cannot be trusted, even to the point of using the weapon against its sponsor.”<sup>331</sup> In particular, the commission held that the efforts of the Aum Shinrikyo to produce and use biological weapons provided a different lesson from that assumed by the Clinton administration and its advisors:

While the technical challenges in producing an effective biological weapon are not insurmountable, they are neither as straightforward nor as simple as has often been claimed and presented publicly. The latter view, based on the limited information previously available, has heretofore primarily served as the basis for the public and for many decisionmakers to draw conclusions about the direction of public policy. The level of difficulty was in fact what Aum discovered for itself and why it elected to pursue, in tandem with its continuing biological R&D program, a concerted and even more expensive effort to produce chemical weapons.<sup>332</sup>

The report also rejected the idea that planning for “worst-case scenarios” or “catastrophic terrorism,” would also prepare the country for lesser disasters. The report warned: “The main weakness in such an approach is in ... [ignoring] the fact that higher-probability/lower-consequence attacks might present unique challenges of their own.”<sup>333</sup>

With such qualifications, the commission concluded that the nation had to be prepared for “the entire spectrum of potential terrorist threats — both the unprecedented higher-consequence attack, as well as the historically more frequent, lesser-consequence attack, which the Panel believes is more likely in the near term.”<sup>334</sup>

The media may have been too primed by bioalarmism to report much on the Gilmore commission’s warnings. The *Washington Post* reduced the nuances of the report to the message that “terrorists armed with weapons of mass destruction pose a ‘genuine threat’ to U.S. security.” A month later, a more substantial article in *Newsweek* did greater justice to the report, noting that “some of these fears are hyped ... While urging citizens not to panic, President Clinton has perhaps inadvertently heightened fears. Clinton scared himself several years ago by reading Richard Preston’s novel, *The Cobra Event*, about a terror attack in New York City ... [and] has repeatedly raised the specter of biological and chemical weapons.”<sup>335, 336</sup> By this point, however, the Washington consensus on bioterrorism had solidified and the bioterrorism bandwagon was rolling.

Spurred both by testimony and these official reports, Congress moved ahead with the counterbioterrorism budget. While the Republican-controlled Congress

threatened to cut \$5.6 billion from the total terrorism budget proposed by Clinton for FY 2000, no such language was applied either to the total counterbioterrorism budget or to the counterbioterrorism budget of the Department of Health and Human Services. The latter was left untouched, except for the addition of some \$10 million for counterbioterrorism research and development to bring the total to \$112 million. At the end of the day, the DHHS counterbioterrorism budget for FY 2000 rose to some \$278 million and the total counterterrorism budget to \$8.4 billion.<sup>337, 338</sup>

The survival of the counterbioterrorism budget elicited little comment in the press. But a few seasoned observers of the Washington process voiced skepticism. “No doubt there are nuts and demons out there planning evil things,” wrote Daniel Greenberg, who had long analyzed the funding of “big science” in Washington. “But it should be noted that there’s a whiff of hysteria-fanning and budget opportunism in the scary scenarios of the saviors who have stepped forward against the menace of bioterrorism. The rising din about bioterrorism is dominated by one faction — people who say the problem exists, and they should be trusted and financed to deal with it.” Veteran science journalist Lois Ember explained the Washington climate in 1999: “Perhaps the primal fear bioterrorism evokes has precluded rational analysis of the likelihood and the magnitude of the threat, and of how best to allocate resources to defend against it. Instead of wide-ranging debate, the President has convened closed-door meetings and task forces, issued presidential directives, and proposed billions of dollars to defend against what he perceives to be a growing danger to U.S. citizens.” A headline in the London-based newspaper, *The Independent*, put it more bluntly: “A Deadly Cloud of Paranoia Drifts Across the US.”<sup>339, 340, 341</sup>

Looking back at the period several years later, terrorism specialist Bruce Hoffman summarized his experience of the heady atmosphere in the capitol in 1999 this way: “[Bioterrorism] was where the funding was and people were sticking their hands in. It was the sexiest of all the terrorism threats and it was becoming a cash cow. So the threat of bioterrorism became a kind of self-fulfilling prophecy. It was archetypal Washington politics in the sense that you generate an issue and it takes on a life of its own. You had these bioterror

institutions being created and people emerging [from them] saying ‘this really is a threat.’ So there was tremendous momentum and people weren’t pausing [to examine the arguments.] I don’t know how many times I would go to talks and there would be a high-level government official who would say that the Aum attack demonstrated that ‘we’ve crossed the threshold,’ and also that the Aum attack demonstrated the ease of use. But when you parsed such claims, this showed how difficult it really was. We were drawing all the wrong conclusions.”<sup>342</sup>

## XI. Conclusion: The ascendancy of alarmism over skepticism

As the Clinton administration drew to a close, Congress was captured by the belief that the bioterrorist threat required a massive civilian defense program that would encompass not only greatly increased surveillance, diagnostic, and response capabilities on the part of the Centers for Disease Control and state public health systems but also — and more fundamentally — integration of the nation’s highly valued biomedical and biotechnology research resources into military frameworks. It is not too extreme to say that a revolution in the handling of the nation’s biomedical and biotechnology resources was underway.

This revolution was justified by a widely shared sense of the imminence and extent of the threat. The image of a cloud of anthrax killing millions, repeatedly promoted to the public by prominent scientists and senior members of the administration — notably Secretary of Defense William Cohen in November 1997 — gained the same kind of symbolic strength as the mushroom cloud of a nuclear explosion. Senator Edward Kennedy called biological weapons “the ultimate in stealth technology... Few experts doubt that the nation will eventually face outbreaks of deadly disease,” claimed Kennedy at the Second National Symposium on Medical and Public Health Responses to Bioterrorism organized by the Johns Hopkins Center for Civilian Biodefense Studies in November 2000.<sup>343</sup> As Richard Falkenrath of Harvard’s Kennedy School summarized the sense of this meeting: “I think it’s fair to say the issue of bioterrorism and the need for a national system of preparedness is now firmly lodged at least in Washington in the ... executive branch and I think also in Congress.”<sup>344</sup> The debate on the nature and urgency of

bioterrorism had been settled, but it was hardly resolved.

A major finding of this study is that there was a continuing debate over the urgency of the bioterrorist threat in Washington in the 1990s — both inside and outside the Clinton administration. This was not a matter of either accepting or rejecting the “catastrophic” view (which I call “alarmism”) that “bioterrorists” would use pathogens as weapons against civilian populations. As Brian Jenkins pointed out in 1996, criticism of the catastrophic view (which I call “skepticism”) did not completely reject the possibility of bioterrorism. Rather, skeptics questioned the importance, urgency, and scale anticipated by supporters of alarmism and argued that other forms of terrorism that used existing technology were more likely: “CB terrorism is not about to become the car bomb of the future.” Skeptics were also concerned that alarmism would, as Paul Pillar, the former deputy director of the CIA’s counterterrorism program put it, “skew priorities” and “misdirect resources” — meaning that if the administration overemphasized “catastrophic” threats like bioterrorism, it would be less prepared to respond to other “conventional” threats.<sup>345</sup>

In essence, this was a paradigm debate in which alarmists and skeptics emphasized quite different facets of bioterrorism. Leading proponents of alarmism included prominent scientific and technical advisers like Joshua Lederberg, Bill Patrick, Frank Young, William Haseltine, and Donald Henderson. These advisers greatly intensified both the administration’s and the public’s sense of a bioterrorist threat. They focused on the question of the *vulnerability of the civilian population*, to which they applied their impressive scientific and technical skills to the possibility of “apocalyptic” attacks with natural pathogens and genetically engineered hybrids. But they asked few questions about the identities of “bioterrorists” and their interests in pursuing such attacks or their capacities to do so. In a period when the categories of “rogue states” and “loose bioweaponers” were ascendant as the new post-Cold War threats, they seem to have assumed that aspiring bioterrorists could acquire whatever they needed.

In contrast, skeptics tended to have backgrounds and training in the history, politics, and culture of terrorism. For them, questions of the identity, interests, and details of past attacks were the primary questions to ask.

Looking at the history of use of chemical or biological agents, for example, Brian Jenkins saw users as a motley group of “deranged individuals, criminal extortionists, and in fewer cases, political extremists,” not organized terrorist movements of the kind that were tacitly assumed by alarmists. They saw little indication that the Aum Shinrikyo attack was typical of terrorism in general — and also much evidence showing that despite the Aum’s funding and sources of expertise and despite tolerance of its existence and growth in Japan, it failed in producing effective biological weapons. It also failed in efforts to extract anything of value from the Russian government and Russian scientists. Where alarmists saw a crucial precedent, skeptics saw failure.

Why was it then that the Clinton administration opted for alarmism over skepticism — even in the face of the rise of *al Qaeda* and its record of using bombs and other “conventional” weapons, rather than the “catastrophic” weaponry associated with germs, toxic chemicals, and nuclear materials?

In the first place, as this essay has shown, there were several highly influential people inside and outside the Clinton administration who promoted the bioterrorist threat and did not stop when they found resistance. Inside the government, the bureaucratically powerful Richard Clarke, who became the “terrorism czar,” Secretary of the Navy Richard Danzig, Secretary of Defense William Cohen, CIA Director John Deutch, and Director of the Public Health Service’s Office of Emergency Preparedness Frank Young all played important roles. All of these people were also influential in gaining support from members of their organizations and in circulating their views in media venues that attracted large audiences.

Outside the government, the most influential figure was surely Joshua Lederberg, in his role as scientific adviser at many levels of the executive and legislative branches. Although he shunned public hearings and the media for the most part, he exerted an enormous influence by advising the President and members of the White House National Security Council and Office of Science and Technology staffs, the Department of Defense, the CIA, Congressional committees, and the former Congressional Office of Technology Assessment and by his participation on numerous panels of the National Academy of Sciences on what he saw as the twin threats of biological warfare and emerging infectious disease. He spoke with unquestioned authority

on the scientific and technical details of biological weaponry. Gerald Epstein, who served with the White House Office of Science and Technology Policy from 1996 to 2001, recalls: “For a long time Lederberg was *pretty much the* technical reachback. Expertise was pretty thin in the biological warfare area, and Josh was it. For a while pretty much any technical question went back to him.”<sup>346</sup> Lederberg was able to enlist the authority of the National Academy of Sciences and the Institute of Medicine not only by participating on such panels but also by forming such panels and shaping their agendas. It no doubt appeared that the scientific community spoke with a single voice.

Yet in promoting his view that bioterrorism constituted a major threat, Lederberg also made assumptions that went beyond the realm of his scientific and technical expertise. This account shows that he accepted assumptions that began to circulate during the Reagan administration that certain third-world states would arm themselves with nuclear, chemical, or biological weapons and that they might pass these on to terrorists (Part III) and that he continued to make these assumptions. As he stated in 1996, “terrorist activity” would be sponsored by “smaller states on the fringes of international law” (Part VI).

A further influential technical authority was former bioweaponer Bill Patrick, who was responsible for debriefing Russian defector and bioweaponer Ken Alibek. His advice was uniformly frightening — too frightening, Congressional aides later decided, even to invite him to testify to members of Congress when the question of bioterrorism was first brought before the Senate Permanent Subcommittee on Investigations.<sup>347</sup> Nevertheless, Patrick, as one of the few remaining Americans with technical experience in developing and producing biological weapons, exerted strong influence as a consultant to government agencies, including the CIA, the FBI, and the Defense Intelligence Agency, and as a shaper of public perceptions, through interviews with journalists and television anchors.

Arguably, however, even such prominent proponents of the bioterrorist threat would not have found it easy to persuade the President and Congress in the absence of other beliefs that were widely accepted in Washington and that made this threat appear both realistic and imminent. After all, there were strong technical arguments *against* biological weapons as instruments of warfare. They were dangerous to produce, difficult to

disseminate on a major scale, and unpredictable in impact — and they might easily rebound on the user. What made the threat appear realistic was its connection to a concept that was deeply embedded in U.S. national security thinking by the mid-1990s and taken for granted after that: the “rogue state,” assumed not only to be intent on arming itself with “weapons of mass destruction” but also on supporting “terrorism”; this idea had circulated as early as the 1980s but had long been overshadowed by Cold War risks. In the early 1990s, Iraq had become seen as the archetypal “rogue,” and its previous use of chemical weapons against Iran and the Kurds of Northern Iraq and its pursuit of biological and nuclear weapons reinforced this view. It became unthinkable that Iraq’s resistance and deception during the UNSCOM inspections in the 1990s could signify anything other than its intent to hide WMDs. With the hindsight provided by the absolute failure to find WMDs in Iraq after the 2003 invasion, it is now possible to see Iraq’s resistance and deception as attempts to hide the fact that it was militarily vulnerable from hostile neighboring states, as well as, perhaps, an expression of resistance to a government that had used UN inspection procedures to spy on Iraq’s security apparatus. But for the Clinton administration, these alternative interpretations seem to have been almost unthinkable.

Furthermore, it was assumed that even if terrorists could not produce useable bioweapons themselves, they might still acquire them either from a “rogue” or from former employees of the Soviet biological weapons program. Neither assumption turned out to be warranted, yet evidence that both were widely shared is abundant. Steven Simon and Daniel Benjamin, former Senior Director and Director, respectively, for Transnational Threats on the Clinton National Security Council, fully accepted them. Warning that more lethal forms of terrorism were more likely in the future, Simon and Benjamin wrote in 2000 after leaving the White House that six “state sponsors of terrorism” — Iran, Iraq, Libya, North Korea, Syria, and Sudan — all had “WMD-production programmes.” They then continued: “Any one of these could, if it wished, transfer material to a terrorist group with which its interests converged. The desire to elude discovery and avoid retaliation would make this an attractive option for a state intent upon attacking the US or its allies.”<sup>348</sup> The following argument from the Center for Science and



International Security dismissing skepticism concerning bioterrorism captures the mindset of the 1990s:

Many recent studies have pointed out the difficulties that terrorists would incur if they wanted to use biological agents. Several factors, however, make the use of biological agents by terrorists a substantial danger in the future. First, in the near term, non-state actors may be helped by rogue states, removing technological obstacles to the efficient use of any kind of CBRN weapons. Second, proliferation in the developing world or the insecurity of the Russian or Iraqi CBRN arsenal may provide a ready source of agent to terrorists.<sup>349</sup>

In other words, links between “rogues” and “terrorists” were likely; thus, the technological challenges for the latter might be overcome by acquiring biological weapons from the former.

This assumption of a linkage between “rogues” or “loose bioweaponeers” on the one hand and “terrorists” on the other hand does not however explain why the Clinton administration accepted the advice that *novel* genetically engineered microbes *also* constituted a major threat. After all, such organisms existed mainly in the realm of science fiction. There was no evidence that “rogues” had developed such organisms, and it also seemed unlikely that former Russian scientists would part with whatever information they had without the long-term guarantees and substantial rewards that a government might be able to offer. The administration’s acceptance of a need to defend against bioterrorism involving *genetically engineered* organisms was a radical turn in the history of biological warfare, one which had been previously rejected. But with imaginations now in overdrive, the military viewed such a threat as possible even if unlikely for a while — and so Clinton was told after he requested an evaluation of the hybrid virus assumed in Preston’s novel, *The Cobra Event* (Part VII). This was close to advice that Joshua Lederberg gave the RAND corporation in February, 2000. While the first few attempts of terrorists to use biological weapons were, he said, “very likely to be fumbles,” genetic engineering and other forms of biotechnology did “open up a Pandora’s box of limitless dimensions . . . It is easy to imagine organisms that might be concocted either to promote unlimited spread, or even . . . of being able to target particular population sectors . . . It’s just built in that the knowledge that is being accumulated in

the basic biochemistry of infection is going to make it a lot easier to perfect biological weapons than to build defenses against them.” It is reasonable to assume that Clinton received similar advice.<sup>350</sup> Given the immense (some would say “insurmountable”) technical difficulties of defending against a myriad of novel pathogens, the decision taken by the Clinton administration was to initiate research and development against *conceivable* (as opposed to actual) threats immediately.

In addition, there was what Bruce Hoffman at the RAND Corporation has called the “Prudence Bushnell factor.” Prudence Bushnell was the U.S. ambassador to Kenya who had requested additional security protection for the Nairobi embassy six months before it was blown up by *al Qaeda* in 1998. After the attack, her superiors were held responsible for failing to respond to her request. Faced with warnings of anthrax clouds over Washington (and similar scenarios) from high-level science and policy advisors, the President and Congress were in a similar position. Moreover, warnings that even though bioterrorist scenarios had a low probability, they might — if played out for real — have devastating impact were influential; this “low probability/high impact” argument haunted politicians, who felt increasingly compelled to open the federal coffers for biodefense. It was difficult for them to resist warnings from high-powered scientists that “we should not have to wait for the biological equivalent of Hiroshima to rally our defenses.”<sup>351</sup> Funding biodefense was as much an insurance policy for political reputations as it was a protection for the nation. In the event of a bioterrorist attack, politicians could say that they had done their utmost to forestall the consequences.

Furthermore, Clinton administration officials may have believed that focusing on more theoretical, “high-impact,” “catastrophic” threats would also make it easier to deal with more conventional threats, on the assumption that the latter were a “lesser included contingency.” That way, in the words of a Washington terrorism specialist, “you covered the water-front.”<sup>352</sup> Possibly such a claim may have been an *ex post facto* rationalization of the Clinton policy, following the 9/11 attacks. Either way, the emphasis on high-impact threats with “WMDs,” particularly biological or chemical weapons, was expressed in the theoretical exercises and emergency response training that was supported by counterbioterrorism funding, which,

according to skeptics, diverted funding and training away from preparation for more likely threats.

A final reason regularly offered by scientific advisors for expanding counterbioterrorism measures was the claim that the counterbioterrorism funding would not be wasted, whether or not an attack occurred. This was the “dual purpose” argument, energetically promoted by Lederberg, Frank Young, Donald Henderson, Ronald Atlas, and other leaders of biomedical research, according to which federal dollars committed to biodefense would *also* yield great benefits for public health. In other words, disease was disease, and the source — whether natural or intentional — was irrelevant. As biophysicist Steven Block proclaimed in a paper published in January 2001:

There are also indirect benefits associated with such an investment [in civilian biological defense] — one that nuclear spending certainly can't claim to match. Money spent on research to develop new types of sensitive detectors and related monitors for biowarfare agents will almost certainly carry over to the public-health sector in the form of rapid, improved diagnostics for disease. Money spent on coordinating and developing emergency response teams at federal, state and local levels will also establish better mechanisms for dealing with natural outbreaks of emerging diseases. Money spent on innovative surveillance approaches for detecting biowarfare attacks should also improve medical epidemiology. Money spent on vaccine research and delivery may help to buttress our limited capacity to protect the civilian, as well as the military, population. And money spent on stockpiling and positioning depots of smallpox vaccine may turn out to be the smartest hedge-bet of all.<sup>353</sup>

In practice, funding arrangements turned out to be considerably more complex and less productive than this confident prediction; some funding arrangements even turned out to be counterproductive. Up to Fiscal Year 2004, a total of \$14.5 billion was spent on civilian biodefense. Yet, only four years after Block's prediction, over 700 research biologists addressed an open letter to the director of the National Institutes of Health warning that funding for research for public-health purposes was being seriously threatened by the diversion of funds to projects deemed high priorities for biodefense despite having little if any dual-purpose promise.<sup>354</sup> Two reports issued by the Century Foun-

ation in 2004 warned of “supplantation,” wherein federal dollars earmarked exclusively for local-level counterbioterrorism efforts substitute for state dollars which otherwise would be spent on local-level public-health programs.<sup>355, 356</sup> Finally, as secrecy increasingly enshrouded work deemed vital for counterbioterrorism, many researchers, including a president of the ASM, complained that the free exchange of scientific ideas was being blocked, threatening both scientific development and public health itself.<sup>357</sup>

A further question is why Congress, after initial resistance to requests to fund counterbioterrorism measures, reversed course and ended up not only supporting the Clinton administration's requests but also increasing support for the Department of Health and Human Services (Parts VI and IX). In the first place, Congress switched from resistance to support only in the late 1990s after a deluge of one-sided media coverage that almost completely ignored skeptical views of bioterrorism. Judith Miller's coverage for the *New York Times* and her book, *Germs*, written in collaboration with William Broad and Stephen Engelberg, are cases in point. Although *Germs* takes a descriptive, reportorial approach to its subject, it reports on just one dimension of the claims that were being discussed and contested in Washington in the 1990s: the alarmist position, supported by virtually all the sources taken seriously in the book. The skeptical position was not addressed. This omission allowed Miller, Broad, and Engelberg to deviate from their reportorial neutrality by arriving at the following conclusion in their final chapter:

The emergence of the United States as the world's most powerful nation has made biological attack more likely. Adversaries that resent America's global dominance, envy its wealth, or fear its overwhelming military power can fight back most effectively with unconventional weapons . . . In the coming years, those willing to die for their cause may well choose instead to become smallpox carriers or Marburg martyrs.<sup>358</sup>

Furthermore, bioterrorism was, as Bruce Hoffman described it, the “sexiest” of all the terrorism scenarios, the one that gripped the fertile imaginations of television producers, news reporters, headline writers, and thriller writers on one hand, and, thus magnified, captured editorial writers, the public, and politicians on the other hand. There is certainly something corrosive

about the idea of bioterrorism: fear of disease goes deeply into the human psyche. In the absence of anything remotely close to balanced coverage, images of the nation stricken by dread disease dominated perceptions of the issue. In addition to the factors that influenced the Clinton National Security staff and Clinton himself, media coverage — its default bias being, naturally, toward the sensational — furthered the influence of alarmist ideas then circulating within government.

The arguments for the importance and immediacy of the bioterrorist threat and for the dual purpose of defense against bioterrorism were repeated in conference after conference, report after report, during the Clinton administration's final year as Washington policy think tanks and the counterbioterrorism centers established in the late 1990s anticipated a change of administration. As scientists responded to the lure of counterbioterrorism research funding, they embraced alarmist presumptions and dual-purpose justifications. What was good for counterbioterrorism was good for peace and good for public health. Counterbioterrorism funding in turn initiated fundamental changes in the practice of biomedical research. As Secretary of HHS Donna Shalala had announced in January 1999, the nation's public-health institutions — including, in particular, its biomedical-research institutions — would be “integrated directly into the national security system.” A participant in the Johns Hopkins symposium in 2000 who was well positioned to judge this change, George Poste, the chairman of a classified study for the Defense Science Board entitled “Technologies for Biodefense,” described this reframing of biomedical research more acutely: “The issue of biology losing its innocence is something we have to seriously consider, and I think it will become an increasingly problematic issue for the academic research community. In physics, high energy physics, people have got used, not to forbidden knowledge but to *constrained* knowledge. Biology has yet to make that transition [emphasis added].”<sup>359</sup>

Biology's “loss of innocence,” with the reframing of biological inquiry in terms of defense goals and the constraining of communication that this entailed, would be accomplished by Clinton's successor, George W. Bush. But the Clinton administration was responsible for forging the conceptual linkage that justified this

fundamental transformation and for initiating the policies to promote it.

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## References

1. President George W. Bush, Remarks, National Defense University, 11 February 2004.
2. Joseph Cirincione *et al.*, *WMD in Iraq: Evidence and Implications* (New York: Carnegie Endowment for International Peace, January 2004).
3. Howard Friel and Richard Falk, *The Record of the Paper: How the New York Times Misreports US Foreign Policy* (London: Verso Books, 2004).
4. Milton Leitenberg, “Assessing the Biological Weapons and Bioterrorism Threat,” Report for the Strategic Studies Institute, U.S. Army War College, December 2005; <http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB639.pdf>, accessed 16 February 2006.

5. Hans Kochler, *Hans Kochler Lecturers 2002: Terrorism and the Quest for a Just World Order* (Quezon City, Philippines: Foundation for Social Justice, c.2002), p. 15.
6. Edward Herman and Gerry O'Sullivan, *The Terrorism Industry* (New York: Pantheon, 1989), p. 46.
7. Bruce Hoffman, *Inside Terrorism* (London: Victor Gollancz, 1998), p. 13.
8. Ibid, p. 31.
9. Richard Falk, "Terrorist Foundations of US Foreign Policy," in Alexander George, ed., *Western State Terrorism*, p. 109.
10. Amin Saikal, "Islam, the West, and the War on Terror," 30 August 2005; [www.cranlana.org.au/PDF0000000347.pdf](http://www.cranlana.org.au/PDF0000000347.pdf), accessed 16 January 2007.
11. Edward Said, "The Essential Terrorist," *The Nation*, 14 June 1986; <http://www.thenation.com/doc/19860614/said>, accessed 16 January 2007.
12. U.K. Foreign Office, "Record of Informal Talks Between British and United States Officials on Arms Control Prospects for Biological and Chemical Weapons held at the Foreign Office, London, 12–13 October 1967," 15 November 1967, originally classified "secret," FCO 10/170, Public Record Office, cited in Susan Wright, "The Biological Weapons Convention: Geopolitical Origins," in S. Wright, ed., *Biological Warfare and Disarmament: New Problems/New Perspectives* (Lanham, Maryland: Rowman & Littlefield, 2002), p. 325.
13. Seth Carus, *The Poor Man's Atomic Bomb? Biological Weapons in the Middle East* (Washington, D.C.: Washington Institute for Near Eastern Studies, 1991).
14. Ibid.
15. Seth Carus, "Working Paper: Bioterrorism and Biocrimes: The Illicit Use of Biological Agents Since 1900," Center for Counterproliferation Research, National Defense University, Washington, D.C., rev. ed., February 2001.
16. U.K. Foreign Office, R. Hope-Jones to Mr. Moss, 4 July 1968, FCO 10/181, Public Record Office, cited in Wright, "The Biological Weapons Convention: Geopolitical Origins," p. 320.
17. Jonathan Tucker, "A Farewell to Germs," *International Security*, Summer 2002, 27(1):122, n. 54.
18. American Academy of Arts and Sciences and the Salk Institute, *Proceedings of the Conference on Chemical and Biological Warfare* (25 July 1969), in U.S. House Committee on Foreign Affairs, *Hearings on Chemical-Biological Warfare: U.S. Policies and International Effects*, pp. 454, 467.
19. Richard Preston, "The Bioweaponers," *The New Yorker*, 9 March 1998, p. 60.
20. Stockholm International Peace Research Institute, *The Problem of Chemical and Biological Warfare*, vol. 2 (Stockholm: Almqvist and Wiksell, 1973), p. 316.
21. Bernard Feld, comment, *Proceedings of the Conference on Chemical and Biological Warfare*, p. 494.
22. U.S. Senate, Committee on Foreign Relations, *Hearing: Prohibition of Chemical and Biological Weapons*, 93rd Cong., 2nd sess., 10 December 1974, pp. 15–16.
23. Evelyn Fox Keller, *The Century of the Gene* (Cambridge, Mass.: Harvard University Press, 2000).
24. Richard Strohmman, "The Coming Kuhnian Revolution in Biology," *Nature Biotechnology*, 1997, 15:194–200.
25. E.g., Steven Block, "The Growing Threat of Biological Weapons," *American Scientist*, January/February 2001, 89(1):28.
26. William C. Patrick III, "Potential Incident Scenarios," presentation, U.S. Public Health Service, Office of Emergency Preparedness, Proceedings, Seminar, *Responding to Consequences of Chemical and Biological Terrorism*, 11–14 July 1995, 1:58–63; <http://purl.access.gpo.gov/GPO/LPS15853/Proceedings.pdf>, accessed 13 September 2006.
27. Carus, *Bioterrorism and Biocrimes*, pp. 22–24.
28. U.S. Biological Weapons Anti-Terrorism Act of 1989.
29. Susan Wright, ed., *Preventing a Biological Arms Race* (Cambridge, Mass.: MIT Press, 1990).
30. Eileen Choffnes, "Bioweapons: New Labs, More Terror?" *Bulletin of the Atomic Scientists*, September/October 2002, 58(5):29–32.
31. The Sunshine Project, "Emerging Technologies — Genetic Engineering and Biological Weapons," Background Paper No.12, November 2003; <http://www.sunshine-project.org/publications/bk/bk12.htm>, accessed 21 February 2006.
32. Mark Wheelis and Malcolm Dando, "Back to Bioweapons?" *Bulletin of the Atomic Scientists*, January/February 2003, 59(1):40–46.
33. Stockholm International Peace Research Institute, *The Problem of Chemical and Biological Warfare*, Vol. IV: *CB Disarmament Negotiations, 1920–1970* (Stockholm: Almqvist and Wiksell, 1971–1975), chapter 7.
34. Michael Klare, *Rogue States and Nuclear Outlaws: America's Search for a New Foreign Policy* (New York: Hill and Wang, 1995), chs. 1 and 2.
35. Caspar Weinberger to Senator James Sasser, 20 November 1984, cited in Wright, *Preventing a Biological Arms Race*, p. 67, n. 75.
36. President Ronald Reagan, Remarks at the Annual Convention of the American Bar Association, 8 July 1985;



## Terrorists and biological weapons

<http://www.reagan.utexas.edu/archives/speeches/1985/70885a.htm>, accessed 11 November 2005.

37. Charles Krauthammer, "The Reagan Doctrine," *Washington Post*, 18 July 1985.

38. Michael Klare and Peter Kornbluh, eds., *Low Intensity Warfare: Counterinsurgency, Proinsurgency, and Antiterrorism in the Eighties* (New York: Pantheon, 1988), pp. 49–79.

39. Michael Klare, *Rogue States and Nuclear Outlaws*, pp. 46–47.

40. "Shaking Hands With Saddam Hussein: The United States Tilts Towards Iraq, 1980–1984," Joyce Battle, ed., 25 February 2003, National Security Archives, George Washington University; [www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB82/](http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB82/), accessed 7 December 2005.

41. U.S. Defense Science Board Task Force, Report, *Chemical Warfare/Biological Defense*, 1985, quoted in U.S. Department of the Army, Army Science Board, *Final Report of the Ad Hoc Group on Army Biological Defense Research Program*, July 1987, p. 6.

42. National Academy of Sciences, Ad Hoc Meeting, sponsored by the N.A.S. Committee on International Security and Arms Control, Summary Minutes, 18 October 1985.

43. Joshua Lederberg papers, National Library of Medicine; <http://www.profiles.nlm.nih.gov/BB>, accessed 23 September 2006.

44. Defense Intelligence Agency, *Soviet Biological Warfare Threat*, DST-1610F-057-86 (1986), p. iii.

45. U.S. Commission on Integrated Long-Term Strategy, *Discriminate Deterrence* (Washington, D.C.: U.S. Government Printing Office, 1988).

46. Edward S. Herman Gerry O'Sullivan, *The Terrorism Industry: The Experts and Institutions that Shape Our View of Terror* (New York: Pantheon, 1989), p. 163 ff.

47. Joseph Douglas Neil Livingstone, *America the Vulnerable: The Threat of Chemical and Biological Warfare* (Lexington, Mass.: Lexington Books, 1987).

48. Jeffrey Simon, "Terrorists and the Potential Use of Biological Weapons: A Discussion of Possibilities," RAND Corporation Report, prepared for the U.S. Armed Forces Medical Intelligence Center, December 1989, pp. vi–vii.

49. Raymond Zilinskas, "Terrorism and Biological Weapons: Inevitable Alliance?" *Perspectives in Biology and Medicine*, Autumn 1990, 34(1):44–72.

50. Judith Miller, Stephen Engelberg, and William Broad, *Germ: Biological Weapons and America's Secret War* (New York: Simon and Schuster, 2001), pp. 98–123.

51. House Committee on Foreign Affairs, *Hearing: Foreign Assistance Legislation for FY92–FY93 (Part 1)*, Statement of Secretary of Defense Richard Cheney, 19 March 1991.

52. Miller, Engelberg, and Broad, *Germ*, pp. 111–12.

53. U.S. Congress, Office of Technology Assessment, *Technology Against Terrorism: The Federal Effort* (Washington, D.C.: U.S. Government Printing Office, July 1991).

54. U.S. Congress, Office of Technology Assessment, *Technology Against Terrorism: Structuring Security* (Washington, D.C.: U.S. Government Printing Office, January 1992).

55. Alison Muscatine, "Georgetown's Media Profs," *Washington Post*, 11 May 1986.

56. Herman O'Sullivan, *The Terrorism Industry*, p. 146.

57. Simon, pp. 21–22.

58. Ibid, pp. 34–5.

59. Ibid, p. 39.

60. Ibid, pp. 43–44.

61. Richard A. Clarke, *Against All Enemies: Inside America's War on Terror* (New York: Free Press, 2004), p. 74.

62. Department of Defense, *Annual Report to the President and the Congress*, February 1995; <http://www.dod.mil/execsec/adr95/index.html>, accessed 14 September 2006.

63. OTA, *Proliferation of Weapons of Mass Destruction: Assessing the Risks* (Washington, D.C.: U.S. Government Printing Office, 1993), p. 54.

64. Clarke, *Against All Enemies*, p. 74.

65. Daniel Benjamin and Steven Simon, *The Age of Sacred Terror* (New York: Random House, 2003), p. 220.

66. President William J. Clinton, State of the Union Address, 25 January 1994.

67. Benjamin and Simon, p. 234.

68. Clarke, *Against All Enemies*, p. 92.

69. Brian Jenkins, "International Terrorism: A New Mode of Conflict," in David Carlton and Carlo Schaerf, eds., *International Terrorism and World Security* (London: Croon Helm, 1975), p. 15.

70. Joshua Lederberg, "A Treaty Proposal on Germ Warfare," *Washington Post*, 24 September 1966.

71. Joshua Lederberg, testimony, U.S. Congress, House Committee on Foreign Affairs, *Hearing: Chemical-Biological Warfare: U.S. Policies and International Effects*, 2 December 1969.

72. Susan Wright, *Molecular Politics: Developing American and British Regulatory Policy for Genetic Engineering* (Chicago: University of Chicago Press, 1994), pp. 70, 119, 135, 152.
73. Miller, Engelberg, and Broad, *Germes*, pp. 140–141.
74. National Academy of Sciences, *Controlling Dangerous Pathogens: A Blueprint for U.S.-Russian Cooperation* (Washington D.C.: National Academies Press, 1997).
75. Miller, Engelberg, Broad, *Germes*, pp. 140, 156.
76. Interviews, former members of the Clinton national security staff, the CIA, and aides to members of Congress, 2006.
77. Miller, Engelberg, and Broad, *Germes*, p. 91.
78. Nicholas King, *Infectious Disease in a World of Goods*, Doctoral Dissertation, Harvard University (2001), chapter 3.
79. Theodore M. Brown and Elizabeth Fee, “Biosecurity: The Risks of Social Myopia and Historical Analysis,” (unpublished paper, c. 2004), p. 24.
80. Institute of Medicine, *The Future of Public Health* (Washington, D.C.: National Academy Press, 1988).
81. Brown and Fee, “Biosecurity: The Risks of Social Myopia and Historical Analysis.”
82. Laurie Garrett, *The Coming Plague: Newly Emerging Diseases in a World Out of Balance* (New York: Farrar, Strauss, and Giroux, 1994).
83. U.S. Centers for Disease Control and Prevention, “Addressing Emerging Infectious Disease Threats: A Prevention Strategy for the United States,” 1994.
84. U.S. National Science and Technology Council, Committee on International Science, Engineering, and Technology Working Group on Emerging and Re-emerging Infectious Diseases, *Infectious Disease — A Global Health Threat*, September 1995.
85. Peter Barss, “Round Table: Epidemic Field Investigation as Applied to Allegations of Chemical, Biological, or Toxin Warfare” and Commentaries, *Politics and the Life Sciences*, February 1992, 11(1):5–34.
86. Joshua Lederberg, “Our CBW Facilities Could Help Against Pestilence,” *Washington Post*, 7 March 1970.
87. King, *Infectious Disease in a World of Goods*, chapter 3.
88. Joshua Lederberg statement in classified Defense Science Board 1993 Summer Study Task Force, quoted in Richard Danzig, “A Nation at Risk — A Time to Act,” *Strategic Forum* 58, January 1996; [http://www.ndu.edu/inss/strforum/SF\\_58/forum58.html](http://www.ndu.edu/inss/strforum/SF_58/forum58.html).
89. S. Wright, *Molecular Politics*, pp. 268–277.
90. Miller, Engelberg, and Broad, *Germes*, p. 151.
91. Sheldon Krimsky, former member of the NIH Recombinant DNA Advisory Committee, personal communication.
92. Frank Young, testimony, House Committee on Energy and Commerce, Subcommittee on Oversight and Investigations, Hearings: *A Review of Federal Bioterrorism Preparedness Programs from a Public Health Perspective*, 10 October 2001.
93. Miller, Engelberg, and Broad, *Germes*, p. 138.
94. Ibid, pp. 156–158.
95. Clarke, *Against All Enemies*, 73.
96. Steve Coll, *Ghost Wars: The Secret History of the CIA, Afghanistan, and bin Laden, from the Soviet Invasion to September 10, 2001* (New York: The Penguin Press, 2004), p. 388.
97. Benjamin and Simon, *The Age of Sacred Terror*, pp. 232–233.
98. Coll, *Ghost Wars*, p. 388.
99. Miller, Engelberg, and Broad, *Germes*, p. 152.
100. Clarke, *Against All Enemies*, p. 155.
101. U.S. Public Health Service, Office of Emergency Preparedness, Proceedings, *Seminar on Responding to Consequences of Chemical and Biological Terrorism*, vol. 1, pp. 16–17.
102. Clarke, *Against All Enemies*, pp. 73–79.
103. Steve Coll, *Ghost Wars*, pp. 257–262.
104. Suzy Hansen, “We stood by while this happened,” interview with Steve Coll, Salon.com, 3 March 2004; <http://dir.salon.com/story/books/int/2004/03/03/coll/index.html>, accessed 14 July 06.
105. CIA document, “Usama bin Laden: Islamic Extremist Financier,” 1996; <http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB55/ciaubl.pdf>.
106. Lawrence Wright, “The Agent: Did the C.I.A. Stop an F.B.I. Detective from Preventing 9/11?” *The New Yorker*, 10 & 17 July 2006, pp. 70–71.
107. Clarke, *Against All Enemies*, pp. 91–92.
108. Benjamin and Simon, *The Age of Sacred Terror*, p. 227.
109. Steve Coll, *Ghost Wars*, pp. 253–256.
110. Wright, “The Agent,” pp. 62–73.
111. Executive Order 12947, 23 January 1995.
112. Clarke, *Against All Enemies*, pp. 93–94.
113. Benjamin and Simon, *The Age of Sacred Terror*, p. 238.

## Terrorists and biological weapons

114. The White House, Fact Sheet on the Omnibus Counterterrorism Act," 10 February 1995; <http://www.clintonfoundation.org/legacy/021095-fact-sheet-on-omnibus-counterterrorism-act.htm>, accessed 18 May 2005.
115. Congressional Research Service, Charles Doyle, "President Clinton's Terrorism Proposal: Omnibus Counterterrorism Act of 1995, H.R. 896/S.390 as Introduced: A Summary," 3 May 1995.
116. Anthony Lewis, "Abroad at Home; Back to McCarthy," *New York Times*, 24 February 1995, p. 29.
117. Congressional Research Service, "President Clinton's Terrorism Proposal, Omnibus Counterterrorism Act of 1995, H.R. 896/S.3909: A Summary," Report No. 95-558 S, 3 May 1995, pp. 9-13.
118. Clarke, *Against All Enemies*, p. 97.
119. Paul Pillar, interview with author, 7 August 2006.
120. Miller, Engelberg, and Broad, *Germs*, pp. 161-162; U.S. Senate, Committee on Governmental Affairs, Permanent Subcommittee on Investigations, *Hearing: Global Proliferation of Weapons of Mass Destruction*, part I, 31 October 1995, pp. 603-607.
121. Clarke, *Against All Enemies*, p. 156.
122. PDD-39, "U.S. Policy on Counterterrorism," 21 June 1995, redacted and declassified, 24 January 1997; <http://www.fas.org/irp/offdocs/pdd39.htm>, accessed 17 February 2006.
123. Benjamin and Simon, *The Age of Sacred Terror*, p. 230.
124. PDD-39, "U.S. Policy on Counterterrorism," 21 June 1995, redacted version at <http://www.fas.org/irp/offdocs/pdd39.htm>, accessed 17 February 2006.
125. Benjamin and Simon, *The Age of Sacred Terror*, p. 230.
126. Clarke, *Against All Enemies*, p. 92.
127. Miller, Engelberg, and Broad, *Germs*, p. 162.
128. Jonathan Tucker, "National Health and Medical Services Response to Incidents of Chemical and Biological Terrorism," *JAMA*, 6 August 1997, pp. 362-368.
129. Benjamin and Simon, *The Age of Sacred Terror*, p. 230.
130. President Bill Clinton, "Remarks on the 50th Anniversary of the United Nations Charter in San Francisco, California, June 26, 1995."
131. U.S. Public Health Service, Office of Emergency Preparedness, *Proceedings of Seminar on Responding to Consequences of Chemical and Biological Terrorism*, 11-14 July 1995; <http://purl.access.gpo.gov/GPO/LPS15853>, accessed 14 September 2006.
132. *Ibid.*, Part 1, pp. 5-6.
133. *Ibid.*, Part 1, pp. 11, 16, 17.
134. *Ibid.*, Part 1, pp. 1-63 at p. 63.
135. *Ibid.*, Part 2, pp. 173-174.
136. *Ibid.*, Part 2, pp. 173-174.
137. *Ibid.*, Part 2, p. 176.
138. *Ibid.*, Part 2, pp. 2-176 at 176.
139. *Ibid.*, Part 2, p. 177.
140. *Ibid.*, Part 2, p. 179.
141. U.S. National Science and Technology Council, Committee on International Science, Engineering, and Technology Working Group on Emerging and Re-emerging Infectious Diseases, *Infectious Disease — A Global Health Threat*, September 1995, p. 11.
142. Brian Jenkins, "The Limits of Terror," *Harvard International Review*, Summer 1995, 17(3).
143. Robert Kupperman, "A Dangerous Future," *Harvard International Review*, Summer 1995, 17(3).
144. Survey of editorials in major papers, March-May 1995, using the Lexis-Nexis news data base.
145. Editorial, "Tokyo Unnerved," *New York Times*, 22 March 1995, p. 18.
146. Editorial, "A Hasty Response to Terrorism," *New York Times*, 9 June 1995, p. 28.
147. Holly Idelson, "Law/Judiciary: Details of Anti-Terrorism Proposals," *CQ Weekly*, 29 April 1995, p. 1178.
148. Holly Idelson, "Law/Judiciary: Senate Gets Started on Bill to Combat Terrorism," *CQ Weekly*, 27 May 1995, p. 1509.
149. Congressional Research Service, Raphael Perl, "Terrorism: Background and Issues for Congress," 15 December 1995.
150. Benjamin and Simon, *The Age of Sacred Terror*, pp. 227-228.
151. "Remarks by the President at U.S. Air Force Academy Graduation Ceremony," U.S. Air Force Academy, Colorado Springs, 5 June 1995.
152. U.S. Senate Foreign Relations Committee, Subcommittee on Near Eastern and South Asian Affairs, *Hearing*, 3 August 1995.
153. U.S. President Bill Clinton, address to the United Nations, 22 October 1995.
154. Amin Saikal, "The Coercive Disarmament of Iraq," and Steven Black, "UNSCOM and the Iraqi Biological Weapons Program," in S. Wright, ed., *Biological Warfare and*

*Disarmament: New Problems/New Perspectives*, pp. 265–309.

155. Middle East Reference, “The Interview with Hussein Kamel”; <http://middleeastreference.org.uk/kamel.html>, accessed 21 November 2005.

156. John Barry, “The Defector’s Secrets,” *Newsweek*, 3 March 2003, p. 6.

157. John Donnelly, “Confronting Iraq/Weapons Destruction; UN, CIA Don’t Accept Hussein Kin’s ’95 Claim,” *Boston Globe*, 1 March 2003.

158. UNSCOM/IAEA, “Note for the File,” classified “sensitive,” taken by N. Smidovich, on Debriefing of General Hussein Kamel by Ambassador Rolf Ekeus (chairman, UNSCOM), Professor M. Zifferero (IAEA) and Nikita Smidovich (UNSCOM), Amman, Jordan, 22 August 1995; <http://www.casi.org.uk/info/unscom950822.pdf>, accessed 22 November 2005.

159. UN Special Commission on Iraq, Report to the UN Security Council, S/1995/864, 11 October 1995.

160. Tim Trevan, *Saddam’s Secrets: The Hunt for Iraq’s Hidden Weapons* (London: HarperCollins, 1991), pp. 329–345.

161. President William J. Clinton, Remarks to the 51st Session of the United Nations General Assembly, New York, September 24, 1996.

162. John Felton, “The Nunn-Lugar Vision, 1992–2002, Nuclear Threat Initiative Report; [http://www.nti.org/e\\_research/nunn-lugar\\_history.pdf](http://www.nti.org/e_research/nunn-lugar_history.pdf), accessed 15 September 2006.

163. National Academy of Sciences, *Controlling Dangerous Pathogens: A Blueprint for U.S.-Russian Cooperation* (Washington D.C.: National Academies Press, 1997), preface.

164. John Sopko, interview with author, 27 April 2006.

165. Miller, Engelberg, and Broad, *Germs*, pp. 159 ff.

166. Senate Government Affairs Committee, Permanent Subcommittee on Investigations, *Hearings: Global Proliferation of Weapons of Mass Destruction*, October 31 and November 1, 1995; March 20 and 27, 1996.

167. John Sopko, interview with author, 27 April 2006.

168. Senator Sam Nunn, Prepared statement, Senate Government Affairs Committee, Permanent Subcommittee on Investigations, *Hearings: Global Proliferation of Weapons of Mass Destruction* (31 October 1995).

169. Staff Statement, U.S. Senate Permanent Subcommittee on Investigations, *Hearing: Global Proliferation of Weapons of Mass Destruction: A Case Study on the Aum Shinrikyo*, 31 October 1995.

170. Val Mirzayanov, Frank Young, testimony, Senate Government Affairs Committee, Permanent Subcommittee on Investigations, *Hearing: Global Proliferation of Weapons of Mass Destruction*, 1 November 1995.

171. John Deutch, testimony, Senate Permanent Investigations Subcommittee, *Hearings: Global Proliferation of Weapons of Mass Destruction*, 20 March 1996.

172. Gordon Oehler, Testimony, Senate Armed Services Committee, 27 March 1996.

173. Milton Leitenberg, testimony, Senate Government Affairs Committee, Permanent Subcommittee on Investigations, *Hearings: Global Proliferation of Weapons of Mass Destruction*, 1 November 1995.

174. Frank Young, testimony, Senate Government Affairs Committee, Permanent Subcommittee on Investigations, *Hearings: Global Proliferation of Weapons of Mass Destruction*, 1 November 1995.

175. Senate Minority Staff Statement, Senate Government Affairs Committee, Permanent Subcommittee on Investigations, *Hearings: Global Proliferation of Weapons of Mass Destruction*, 27 March 1996.

176. Senator Sam Nunn, “Terrorism Meets Proliferation: The Convergence of Threats in the Post Cold War Era,” *Congressional Record*, Senate, 28 September 1996, S11759–S11761.

177. Joseph Kennedy, testimony, Senate Judiciary Committee, Hearing: Interstate Transportation of Human Pathogens,” 6 March 1994, p. 3.

178. PL 104–132.

179. Rebecca Carr, “Appropriations: Clinton’s Terrorism Proposal Tough to Oppose in Election Year,” *CQ Weekly*, 14 September 1996, p. 2582.

180. John Sopko, interview with author, 27 April 2006.

181. GAO, “Combating Terrorism: Observations on the Nunn-Lugar-Domenici Domestic Preparedness Program,” 2 October 1998. GAO/T-NSAID-99-16], p. 2.

182. GAO, “Combating Terrorism: Spending on Governmentwide Programs Requires Better Management and Coordination,” December 1997, GAO/NSIAD-98-39, p. 6.

183. *Ibid*, p. 3.

184. John Sopko, interview with author, 27 April 2006.

185. David E. Kaplan, “Everyone Gets Into the Terrorism Game,” *U.S. News and World Report*, 17 November 1997, quoting John Sopko.

186. John Sopko, interview with author, 27 April 2006.



## Terrorists and biological weapons

187. Department of Health and Human Services, *Health and Medical Services Support Plan for the Federal Response to Acts of Chemical/Biological (C/B) Terrorism*, 21 June 1996.
188. General Accounting Office, *Combating Terrorism: Spending on Governmentwide Programs Requires Better Management and Coordination* Report No.GAO/NSIAD-98-39, December 1997, pp. 5–6.
189. Joshua Lederberg, “Infectious Disease — A Threat to Global Health and Security,” *JAMA*, 7 August 1996, 276(5): 417–419.
190. Joshua Lederberg and Annette Flanagan, “The Threat of Biological Weapons — Prophylaxis and Mitigation,” *JAMA*, 7 August 1996, 276(5):419–420.
191. *Ibid.*
192. Coll, *Ghost Wars*, pp. 367; 367, n. 32; 301–307.
193. Brad Roberts, ed., *Terrorism with Chemical and Biological Weapons* (Alexandria, VA.: Chemical and Biological Arms Control Institute, 1997).
194. *Ibid.*, pp. 113–120.
195. *Ibid.*, p. 44.
196. *Ibid.*, p. 45.
197. John Parachini, “The World Trade Center Bombers (1993),” in Jonathan Tucker, ed., *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons* (Cambridge, Mass.: MIT Press, 2000), pp. 185–206.
198. Roberts, ed., *Terrorism with Chemical and Biological Weapons*, p. 50.
199. *Ibid.*, p. 51.
200. *Ibid.*, pp. 2–3.
201. GAO, “Combating Terrorism: Federal Agencies’ Efforts to Implement National Policy and Strategy,” GAO/NSIAD-97-254, September 1997.
202. GAO, “Combating Terrorism: Spending on Governmentwide Programs Requires Better Management and Coordination,” GAO/NSIAD-98-39, December 1997.
203. GAO, “Combating Terrorism,” September 1997, pp. 15–16.
204. GAO, December 1997, p. 3.
205. Jeffrey Simon, “Biological Terrorism: Preparing the Meet the Threat,” *JAMA*, 6 August 1997, 278(5):428–430.
206. Richard Danzig and Pamela Berkovsky, “Why Should We Be Concerned About Biological Warfare?” *JAMA*, 6 August 1997, 278(5):431–432.
207. Joshua Lederberg, “Infectious Disease and Biological Weapons: Prophylaxis and Mitigation,” *JAMA*, 6 August 1997, 278(5):435–436.
208. ABC Television, *This Week*, Transcript of Interview, William Cohen, 16 November 1997.
209. Miller, Engelberg, and Broad, *Germs*, p. 203.
210. Cameron Forbes, *The Australian*, 18 November 1997.
211. William S. Cohen, “In the Age of Terror Weapons,” *Washington Post*, 26 November 1997, p. A19.
212. Miller, Engelberg, and Broad, *Germs*, p. 195.
213. William Broad and Judith Miller, “Scientist at Work: Bill Patrick,” *New York Times*, 3 November 1998.
214. Richard Preston, *The Cobra Event* (New York: Ballantine, 1997), “Acknowledgments.”
215. Anthony Rimmington, “The Soviet Union’s Offensive Program: The Implications for Contemporary Arms Control,” in S. Wright, ed., *Biological Warfare and Disarmament*, pp. 103–148.
216. Tim Weiner, “Soviet Defector Warns of Biological Weapons,” *New York Times*, 25 February 1998, p. A1.
217. Miller, Engelberg, and Broad, *Germs*, p. 144.
218. Statements of Michael Osterholm, Bill Patrick, and Richard Preston: *ABC Primetime Live, Germ Warfare: Weapons of Terror*, 25 February 1998, transcript.
219. *Ibid.*
220. A.P. Pomerantsev *et al.*, “Expression of Cereolysine AB Genes in *Bacillus anthracis* Vaccine Strain Ensures Protection Against Experimental Hemolytic Anthrax,” *Vaccine*, December 1997, pp. 1846–70.
221. ABC Primetime Live, *Germ Warfare: Weapons of Terror*, 25 February 1998, transcript.
222. Miller, Engelberg, and Broad, *Germs*, pp. 223–25, 351–52.
223. William Jefferson Clinton, *My Life* (New York: Knopf, 2004), p. 788.
224. Miller, Engelberg, and Broad, *Germs*, p. 226.
225. Department of Defense, Office of the Under Secretary of Defense for Acquisition and Technology, Defense Science Board, *1997 Summer Study Task Force on DoD Responses to Transitional Threats*, volume I (October 1997).
226. *Ibid.*, pp. vii, xiii.
227. *Ibid.*, p. 48.
228. *Ibid.*, p. 50.
229. *Ibid.*, p. 51.
230. National Defense Panel, “Transforming Defense: National Security in the 21st Century,” vol. III, December 1997.

231. National Academy of Sciences, Institute of Medicine, *Improving Civilian Medical Response to Chemical or Biological Terrorist Incidents, Interim Report on Current Capabilities* (Washington, D.C.: National Academy of Sciences, 2004).
232. *Ibid.*, p. 2.
233. William J. Clinton, State of the Union address, 27 January 1998.
234. Steve Coll, *Ghost Wars*, p. 432.
235. Steven Simon, interview with author, 26 April 2006.
236. Paul Pillar, interview with author, 7 August 2006.
237. Paul Pillar, *Terrorism and U.S. Foreign Policy* (Washington, D.C.: Brookings Institution, 2001), p. 203.
238. Paul Pillar, interview with author, 7 August 2006.
239. Barton Gellman, "Annan Suspicious of UNSCOM Role; U.N. Official Belies Evidence Shows Inspectors Helped U.S. Eavesdrop on Iraq," *Washington Post*, 6 January 1999, p. 1.
240. Colum Lynch, "US Used UN to Spy on Iraq, Aides Say," *Boston Globe*, 6 January 1999, p. 1.
241. Barton Gellman, "U.S. Spied on Iraqi Military Via UN," *Washington Post*, 2 March 1999.
242. Susan Wright, "The Hijacking of UNSCOM," *Bulletin of the Atomic Scientists*, May/June 1999, 55(3):23–25.
243. Amin Saikal, "Coercive Disarmament of Iraq," in S. Wright, ed., *Biological Warfare and Disarmament*, pp. 271–72.
244. U.S. Senate, Select Intelligence Committee, *Hearings: Chemical and Biological Threats to the United States*, 4 March 1998 and 23 April 1998.
245. Lawrence Altman, "Smallpox Vaccine Urged to Fight Terrorist Attacks," *New York Times*, 11 March 1998, p. A21.
246. *Emerging Infectious Diseases*, July–September 1998, 4(3).
247. Clarke, *Against All Enemies*, p. 163.
248. Miller, Engelberg, and Broad, *Germs*, p. 232.
249. Clarke, *Against All Enemies*, pp. 163–165.
250. Miller, Engelberg, and Broad, *Germs*, pp. 231–232.
251. Judith Miller and William Broad, "Exercise Finds U.S. Unable to Handle Germ War Threat," *New York Times*, 26 April 1998, p. A1.
252. Jules Crittenden, "Hub Fighters Prepared for Threats from Terrorists," *Boston Herald*, 18 March 1998, p. 29.
253. "U.S. Military Will Set Up 10 Anti-Terrorist Teams; They Will Help Agencies Respond to Biological or Chemical Weapons Attacks," *St. Louis Post-Dispatch*, 18 March 1998, p. A3.
254. Steven Simon, interview with author, 26 April 2006.
255. Steven Simon, interview with author, 26 April 2006.
256. Miller, Engelberg, and Broad, *Germs*, p. 235.
257. Miller, Engelberg, and Broad, *Germs*, p. 238.
258. Oliver Thränert, "The Compliance Protocol and the Three Depositary Powers," in S. Wright, ed., *Biological Warfare and Disarmament*, pp. 343–368.
259. Gerald Epstein, interview with author, 18 December 2006.
260. Miller, Engelberg, and Broad, *Germs*, pp. 242–243.
261. Broad and Miller, "Thwarting Terror: A Special Report; Germ Defense Plan in Peril As Its Flaws Are Revealed," *New York Times*, 7 August 1998, p. A1.
262. *Idem.*
263. Eliot Marshall and Elizabeth Pennisi, "Sequencing: Hubris and the Human Genome," *Science*, 15 May 1998, 280:994–995.
264. Ilan Zipkin, "EluSys Therapeutics Inc.," *BioCentury*, 20 December 1999.
265. Erik Baard, "Inventing Millionaires: Silicon Alley Duo Turn Scientists Into Fat Cats," *The Village Voice*, August 30–September 5, 2000
266. EluSys, Press Release: EluSys Enters Collaborative Research Agreement With the U.S. Army," 27 September 2000; [http://www.elusys.com\\_news\\_pr/php?article+28](http://www.elusys.com_news_pr/php?article+28), accessed 9 September 2004.
267. Bill Clinton, *My Life*, p. 789.
268. Clarke, *Against All Enemies*, pp. 166–171.
269. The White House, Fact Sheet, Combating Terrorism: Presidential Decision Directive 62; <http://www.fas.irp/offdocs/pdd-62.htm>.
270. The White House, Fact Sheet, Protecting America's Critical Infrastructures: PDD 63; <http://www.fas.org/irp/offdocs/pdd-63.htm>.
271. PDD-NSC-67, Enduring Constitutional Government and Continuity of Government Operations, 21 October 1998 (21 October 1998), a classified directive; <http://www.fas.gov/irp/offdocs/pdd-67>.
272. Benjamin and Simon, *The Age of Sacred Terror*, pp. 232–233.
273. Clarke, *Against All Enemies*, p. 171.

## Terrorists and biological weapons

274. Judith Miller, "Clinton Seeks Additional \$300 Million to Fight Bioterrorism," *New York Times*, 9 June 1998.
275. Steve Bowman and Helit Barel, "Weapons of Mass Destruction — the Terrorist Threat," Congressional Research Service Report No. RS20412, 8 December 1999, p. 2.
276. ABC Television, *Nightline*, "One of America's Most Dangerous Enemies: Profile of a Saudi Businessman Turned Terrorist," transcript, 10 June 1998.
277. Steve Coll, *Ghost Wars*, pp. 403–407.
278. Barton Gellman and Dana Priest, "U.S. Strikes Terrorist-Linked Sites in Afghanistan, Factory in Sudan," *Washington Post*, 21 August 1998, p. A1.
279. Vernon Loeb and Michael Grunwald, "Officials Won't Detail Evidence on Bin Laden," *Washington Post*, 21 August 1998, p. A19.
280. Howard Schneider and Nora Boustany, "A Barrage of Criticism in Mideast; U.S. Accused of 'State Terrorism,'" *Washington Post*, 21 August 1998, p. A20.
281. Steve Coll, *Ghost Wars*, p. 412, n. 27.
282. Michael Barletta, "Chemical Weapons in the Sudan: Allegations and Evidence," *The Nonproliferation Review* (Fall, 1998), pp. 115–136.
283. Daniel Benjamin and Steven Simon, "A Failure of Intelligence?" *New York Review of Books*, 20 December 2001, 48(20).
284. Timothy Noah, "Khartoum Revisited," Part I, *Slate*, 30 March 2004, and Part II, *Slate*, 31 March 2004.
285. David Cloud, "Colleagues Say C.I.A. Analyst Played by the Rules," *New York Times*, 23 April 2006.
286. "Saddam Wins," *Washington Post*, 28 August 1998, p. A24.
287. "Eliminating Hidden Weapons; Illusory Inspections in Iraq," *New York Times*, 28 August 1998
288. William Jefferson Clinton, "Remarks to the United Nations General Assembly," 21 September 1998.
289. National Academy of Science, Institute of Medicine, *Chemical and Biological Terrorism: Research and Development to Improve Civilian Medical Response* (Washington, D.C.: National Academy of Sciences, 1998), p. 21.
290. Michael Osterholm, testimony, Senate Appropriations Committee, Subcommittee on Labor, Health, and Human Services Hearing, *Education, Epidemics, and Bioterrorism*, 2 June 1998.
291. Ronald Atlas, "The Medical Threat of Biological Weapons," *Critical Reviews in Microbiology*, 1998, 24(3): 157–168.
292. *The New Terror: Facing the Threat of Biological and Chemical Weapons*, Sidney Drell, Abraham Sofaer, and George Wilson, eds., (Stanford, CA.: Hoover Institution Press, 1999), p. 71.
293. Richard Falkenrath, Robert Newman, and Bradley Thayer, *America's Achilles Heel: Nuclear, Biological, and Chemical Terrorism and Covert Attack* (Cambridge, Mass.: MIT Press, 1998).
294. Ashton Carter, John Deutch, and Philip Zelikow, "Catastrophic Terrorism: Tackling the New Danger," *Foreign Affairs*, November/December 1998, 77(6):80–94.
295. James Hughes, testimony, Senate Appropriations Committee, Subcommittee on Labor, Health, and Human Services Hearing, *Epidemics and Bioterrorism*, June 2, 1998.
296. Frank Cilluffo, testimony, House Government Reform and Oversight Committee, Subcommittee on National Security, International Affairs, and Criminal Justice Subcommittee Hearing, *Combating Terrorism: Implementation and Status of the Department of Defense Domestic Preparedness Program*, 2 October 1998.
297. Judith Miller, "Clinton Seeks Additional \$300 Million to Fight Bioterrorism," *New York Times*, 9 June 1998, p. A16.
298. Eliot Marshall, "Bioterror Defense Initiative Injects Shot of Cash," *Science*, 26 February 1999, 283(5406):1234–1235.
299. Office of Management and Budget, "Annual Report to Congress on Combating Terrorism," 18 May 2000, p. 49.
300. John Parachini, "Federal Funding to Combat Terrorism, Including Defense Against Weapons of Mass Destruction, FY 1998–2001," Monterey Institute of International Studies; <http://cns.miis.edu/research/cbw/terfund.htm>, accessed 9 October 2000.
301. Jeff Nesmith, "Smallpox was Eradicated but Protection is Needed," *The Atlanta Journal and Constitution*, 2 August 1998, p. 2E.
302. Clarke, *Against All Enemies*, p. 171.
303. Judith Miller and William Broad, "Clinton Describes Terrorism Threat for 21<sup>st</sup> Century," *New York Times*, 22 January 1999, p. A1.
304. "Keeping America Secure for the 21<sup>st</sup> Century," (Speeches by Joshua Lederberg and President Bill Clinton), *Proceedings of the National Academy of Sciences*, 30 March 1999, 96(7):3486–4388.
305. Clarke, *Against All Enemies*, pp. 171–175.
306. The White House, Office of the Press Secretary, "Fact Sheet: Funding for Domestic Preparedness and Critical Infrastructure Protection," 22 January 1999.

307. Office of Management and Budget, "Annual Report to Congress on Combating Terrorism," 18 May 2000, p. 49.
308. U.S. Information Service, Transcript: Reno, Shalala, Clarke Briefing on Terrorism, 22 January 1999; [http://www.fas.org/spp/starwars/program/news99/99012207\\_tlt.htm](http://www.fas.org/spp/starwars/program/news99/99012207_tlt.htm), accessed 12 October 2005.
309. *New York Times*, "Thwarting Tomorrow's Terrors," 23 January 1999.
310. Office of Management and Budget, *Annual Report to Congress on Combating Terrorism*, 18 May 2000, p. 49.
311. King, *Infectious Disease in a World of Goods*, p. 211.
312. *Emerging Infectious Diseases*, July 1999, 5(4).
313. Eugene Russo, "Bioterrorism Concerns Heightened," *The Scientist*, 15 March 1999.
314. Eliot Marshall, "Bioterror Defense Initiative Injects Shot of Cash," *Science*, 26 February 1999, 283:1234–1235.
315. Ehud Sprinzak, "Terrorism, Real and Imagined," *The Washington Post*, 19 August 1998, p. A21.
316. Ehud Sprinzak, "The Great Superterrorism Scare," *Foreign Policy*, Fall 1998, pp. 110–124.
317. Milton Leitenberg, "The Experience of the Japanese Aum Shinrikyo Group and Biological Agents," in Brad Roberts, ed., *Hype or Reality? The "New Terrorism" and Mass Casualty Attacks* (Alexandria, VA: The Chemical and Biological Arms Control Institute, 2000), pp. 159–170.
318. Brian Jenkins, "The WMD Terrorist Threat — Is There a Consensus View?" pp. 241–251.
319. Alan Cullison, "Inside al-Qaeda's Hard Drive," *The Atlantic*, September 2004.
320. Jenkins, "The WMD Terrorist Threat — Is There a Consensus View?" p. 247.
321. Bruce Hoffman, "The Debate Over Future Terrorist Use of Chemical, Biological, Radiological, and Nuclear Weapons," pp. 207–224.
322. Hillel Cohen, Robert Gould, and Victor Sidel, "Bioterrorism Initiatives: Public Health in Reverse?" *American Journal of Public Health*, November 1999, 89(11): 1629–31.
323. David Rapoport, "Terrorism and Weapons of the Apocalypse," *Georgetown National Security Studies Quarterly*, Summer 1999, pp. 49–67.
324. Amy Smithson and Leslie-Anne Levy, *Ataxia: The Chemical and Biological Terrorism Threat and the US Response* (Washington, D.C.: Henry L. Stimson Center, October 2000).
325. *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons*, Jonathan Tucker, ed. (Cambridge, Mass.: MIT Press, 2000).
326. John Parachini, Testimony, House Subcommittee on National Security, Veterans Affairs, and International Relations Hearing: *Combating Terrorism: Assessing the Threat*, 20 October 1999, pp. 2, 5–6.
327. GAO, *Combating Terrorism: Observations on Biological Terrorism and Public Health Initiatives*, Statement of Henry L. Hinton, Jr., Report No. GAO/T-NSIAD-99-112, 16 March 1999, pp. 2–3, 8.
328. GAO, *Combating Terrorism: Need for Comprehensive Threat and Risk Assessments of Chemical and Biological Attacks*, Report No. GAO/NSIAD-99-163, September 1999.
329. United States Commission on National Security in the 21<sup>st</sup> Century, *New World Coming: American Security in the 21<sup>st</sup> Century*, Preface; <http://www.fas.org/man/docs/nwclnwc.htm>, accessed 20 February 2006.
330. Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction (the "Gilmore Commission"), *Volume I: Assessing the Threat*, 15 December 1999.
331. *Ibid.*, p. viii.
332. *Ibid.*, pp. 25–26.
333. *Ibid.*, p. 35.
334. *Ibid.*, p. viii.
335. R. H. Melton, "Panel Criticizes U.S. Anti-Terrorism Preparedness," *Washington Post*, 16 December 1999, p. A6.
336. Evan Thomas and Michael Hirsh, "On guard: America is the dominant nation entering the new century — and the top target for extremists," *Newsweek*, 10 January 2000, p. 34.
337. Office of Management and Budget, "Annual Report to Congress on Combating Terrorism," 18 May 2000, p. 49.
338. John Parachini, "Federal Funding to Combat Terrorism, Including Defense Against Weapons of Mass Destruction, FY 1998–2001," Center for Non-Proliferation Studies, Monterey Institute of International Studies; <http://cns.miis.edu/research/cbw/terfund/htm>, accessed 22 February 2006.
339. Daniel Greenberg, "The Bioterrorism Panic," *Washington Post*, 16 March 1999, p. A21.
340. Lois Ember, "Bioterrorism," *Chemical and Engineering News*, 5 July 1999, 77(27):8–17.
341. Peter Pringle, "A Deadly Cloud of Paranoia Drifts Across the US; Mr. Clinton Has Cleverly Conflated Domestic Panic Over Terrorism with an Exaggerated Report on Iraq's Arsenal," *The Independent*, 20 December 1998.



## *Terrorists and biological weapons*

342. Bruce Hoffman, interview with author, 1 December 2005.
343. Senator Edward Kennedy, presentation, Johns Hopkins Center for Civilian Biodefense Studies, Second National Symposium on Medical and Public Health Response to Bioterrorism, 28–29 November 2000; [http://www.upmc-biosecurity.org/pages/events/2nd\\_symposia/presentations.html](http://www.upmc-biosecurity.org/pages/events/2nd_symposia/presentations.html); presentation online, accessed 14 December 2005.
344. Richard Falkenrath, “U.S. Domestic Preparedness and the Complex Threat of Bioterrorism,” Johns Hopkins Center for Civilian Biodefense Studies, Second National Symposium on Medical and Public Health Response to Bioterrorism, 28–29 November 2000; [http://www.upmc-biosecurity.org/pages/events/2nd\\_symposia/presentations.html](http://www.upmc-biosecurity.org/pages/events/2nd_symposia/presentations.html); presentation online, accessed 14 December 2005.
345. Paul Pillar, *Terrorism and U.S. Foreign Policy*, p. 233.
346. Gerald Epstein, interview with author, 18 December 2006.
347. John Sopko, interview with author, 27 April 2006.
348. Steven Simon and Daniel Benjamin, “America and the New Terrorism,” *Survival*, Spring 2000, 42(1):59–75.
349. Frank Cilluffo *et al.*, *Defending America in the 21st Century: New Challenges, New Organizations, and New Policies* (Executive Summary of Four CSIS Working Group Reports on Homeland Defense), (Center for Strategic and International Studies: Washington D.C., 2000).
350. Joshua Lederberg, “The Diversity of Bioweapons,” Speech, RAND Corporation Symposium, *Bioterrorism: Homeland Defense: The Next Steps*, Santa Monica, California, 9 February 2000; <http://www.rand.org/nsrd/bioterr/agenda1.htm>, accessed 24 November 2004.
351. Steven Block, “The Growing Threat of Biological Weapons,” *American Scientist*, January/February 2001, 89(1):28.
352. Bruce Hoffman, interview with author, 31 January 2006.
353. Steven Block, “The Growing Threat of Biological Weapons.”
354. Sidney Altman *et al.*, “An Open Letter to Elias Zerhouni,” *Science*, 4 March 2005, 307:1409–10.
355. Working Group on Bioterrorism Preparedness, *Breathing Easier?* (New York: The Century Foundation, 2004).
356. Bernard J. Turnock, *Public Health Preparedness at a Price: Illinois* (New York: The Century Foundation, 2004).
357. Abigail Salyers, “Science, Censorship and Public Health,” *Science*, 26 April 2002, 296:617.
358. Miller, Engelberg, and Broad, *Germs*, p. 316.
359. George Poste, “Advances in Biotechnology: Promise and Peril,” address at the Second National Symposium on Medical and Public Health Response to Bioterrorism, 28–29 November 2000; [http://www.upmc-biosecurity.org/pages/events/2nd\\_symposia/presentations.html](http://www.upmc-biosecurity.org/pages/events/2nd_symposia/presentations.html); presentation online, accessed 14 December 2005.