

BOOK REVIEWS

THE SELF-FULFILLING PROPHECY OF BIOTERRORISM

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Bracing for Armageddon? The Science and Politics of Bioterrorism in America, by William R. Clark. Oxford University Press, 2005. 221 pages, \$21.95.

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"Barring a miracle, the United States of America will be devastated by nuclear and CBR [chemical, biological, or radiological] warfare not later than 1980."

—John F. Wharton, "Diary of a Man Struggling With Reality,"
Saturday Review, August 19, 1961

Various forms of cancer kill roughly 565,000 Americans per year; tobacco kills around 440,000, and obesity causes perhaps 400,000 or more deaths.¹ Approximately 1.7 million patients develop infections annually while undergoing treatment in U.S. hospitals, resulting in an estimated 99,000 deaths.² Together these four causes account for roughly 1.5 million U.S. deaths per year, every year. Bioterrorism killed zero U.S. citizens in the twentieth century and five to date in the twenty-first century. Why, then, a review essay on "bioterrorism"?

Most immediately, to review William R. Clark's *Bracing for Armageddon? The Science and Politics of Bioterrorism in America*, an introductory volume to biological weapons (BW) issues. More importantly, because following the "Amerithrax" scare of October and November 2001—in which twenty-two people were sickened, of whom five died—the U.S. government has authorized \$57 billion for biological weapons prevention and defense. The proposed current rate of annual authorization for this purpose is \$10 billion, which can be expected to continue in the future.³

According to many U.S. leaders and experts, this is money well spent fighting a dangerous threat. For example, "Biodefense for the 21st Century"—otherwise known as Homeland Security Presidential Directive 10 (HSPD-10)—states that, "biological weapons in the possession of hostile states or terrorists pose unique and grave threats to the safety and security of the United States and our allies." A recent panel established by the National Academy of Sciences (NAS) went further: "The threat posed by biological agents employed in a terrorist attack on the United States is arguably the most important homeland security challenge of our era."⁴ And then-Senator William Frist (Republican of Tennessee), who coauthored the legislation that initiated these expenditures, said in 2005,

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"The greatest existential threat we have in the world today is biological . . . an inevitable bio-terror attack [would come] at some time in the next 10 years."⁵

For two decades, the overwhelming context in which the potential for bioterrorism was presented was that it would be carried out by terrorist groups with an international presence and international political objectives. These groups, however, have little or no scientific competence, little or no knowledge of microbiology, and no known access to pathogen strains or laboratory facilities. The most recent U.S. National Intelligence Council terrorist assessment makes no reference to any such capabilities.⁶ The report of the Commission on the Prevention of Weapons of Mass Destruction (WMD) Proliferation and Terrorism, released in December 2008, stated, "We accept the validity of intelligence estimates about the current rudimentary nature of terrorist capabilities in the area of biological weapons."⁷

Nevertheless, in July 2008 congressional testimony, Jeffrey Runge, an assistant secretary of the Department of Homeland Security (DHS), claimed that, "The risk of a large-scale biological attack on the nation is significant. We know that our terrorist enemies have sought to use biological agents as instruments of warfare, and we believe that capability is within their reach."⁸ Runge said that what keeps him up at night "is a possibility of a large-scale biological attack on our homeland" and that he would demonstrate "the current biological threat environment as illustrated by the effect a biological attack might have in a city like Providence" in Rhode Island. But such a scenario of BW use—created under certain parameters by modelers—does not at all represent "the current biological threat environment." It is instead a classic vulnerability assessment, without *any* reference to a specific validated threat. Even with a validated threat, one cannot know in advance how devastating an attack might be. This is illustrated by two examples: the use of the chemical agent sarin by the Japanese cult Aum Shinrikyo in Tokyo in 1995, and the anthrax dispersion in the United States in 2001. These attacks (for different reasons) resulted in only a small fraction of the casualties that might have occurred.

Joint testimony by a triumvirate of Runge's DHS colleagues echoed the idea that a serious BW threat to the United States exists:

The Nation continues to face the risk of a major biological event that could cause catastrophic loss of human life, severe economic damages and significant harm to our Nation's critical infrastructures and key resources. . . . The threat of bioterrorism has not subsided, and the impact of a large-scale bioterrorism event, such as the widespread dissemination of an aerosolized form of anthrax or other deadly biological pathogen, would have a serious effect on the health and security of the Nation.⁹

These lines, intermingled with some others containing a fair amount of distorted and misleading information regarding the simplicity of preparation and even weaponization of pathogens, are typical. Pages could be filled with examples of ignorance and/or disinformation on the subject. All beat a tocsin of the bioterrorist threat.

Other examples of the general tenor include successive reports and special commissions emphasizing the supposed threat of bioterrorism that were released during the fall of 2008. In October 2008, the *Washington Post* reported that unidentified "senior military officials and national security experts say major threats before and after the

elections include an al-Qaeda strike on the United States . . . as well as a terrorist attack involving nuclear, biological or chemical weapons.”¹⁰ (It is worth mentioning that in 2004, the public health community noticed an apparent correlation between Orange Alerts and political events, primarily before the presidential election.)¹¹ In September 2008, the Partnership for a Secure America released its evaluation of U.S. efforts to prevent nuclear, chemical, and biological terrorism since 2005, and maintained that, “a nuclear, chemical or biological weapon in the hands of terrorists was ‘the single greatest threat to our nation.’”¹² Also in September, the congressionally mandated Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism previewed its report designed to “deepen both our assessment of the threat today and what we can do about it.”¹³ The commission’s co-chair, former Senator Robert Graham (Democrat of Florida), stated that, “My own assessment at this point is the more likely form of attack is going to be in a biological weapon.”¹⁴ In contrast to this alarmist attitude, a proposed platform statement submitted in August 2008 by the Federation of American Societies for Experimental Biology, an organization composed of twenty-one biomedical research societies and the largest life sciences group in the United States, did not refer to “bioterrorism” at all.¹⁵

That same month, the Federal Bureau of Investigation (FBI) announced that Bruce E. Ivins, a staff scientist at the U.S. Army Medical Research Institute for Infectious Diseases (USAMRIID), was responsible for the 2001 anthrax attacks. Ivins had worked at USAMRIID for twenty-seven years, including twenty years of work with anthrax. This disclosure—that a longtime insider, not a non-state terrorist group, was responsible for a deadly BW attack on U.S. soil—changed the entire construct of where the primary risks of bioterrorism lay and of what the likely capabilities of a perpetrator might be.

In 2003 the Department of Defense commissioned a contractor study to investigate journals such as *Scientific American*, *Science*, and *Molecular Microbiology* to see what information contained therein might be used for “Biological Weapons Development Utility,” presumably by unauthorized entities.¹⁶ Five years later, a team from the Centers for Disease Control and the U.S. Army’s Dugway Proving Ground published a peer-reviewed paper describing the methodology for production and aerosol dispersion of weaponized dry powder *B. anthracis* preparations.¹⁷ This information was almost certainly not previously publicly available, and its publication makes a mockery of the oft-repeated claim that “recipes” for BW are readily available on jihadi websites, where the information is practically useless. More importantly, the research and publication also violate the spirit and possibly the words of Article I of the Biological Weapons Convention (BWC). Had such a document been unearthed in Iraq before 2002, it probably would have been considered a *casus belli*.

What then is the current BW threat to the United States? The problem can usefully be separated into four considerations: the state of offensive biological weapons programs being carried out by states; evidence of proliferation from state BW programs; evidence of state assistance to non-state actors to develop or produce biological agents or weapons; and efforts to develop biological agents or weapons by non-state actors that are true international terrorist groups.

Official U.S. government statements of the late 1980s said that four nations possessed offensive biological weapons programs at the time the BWC was signed in 1972 and that this number had increased to ten by 1989.¹⁸ In November 1997, U.S. government officials raised the estimate to twelve—nine of which the United States identified by name in the intervening years—and in July 2001 to thirteen. Since then, the U.S. government has removed Libya, Iraq, and Cuba from the list (it had removed South Africa in the mid-1990s)—a reduction of essentially a third. But strikingly, as early as 2003, official U.S. intelligence assessments became markedly more qualified about which countries were definitively developing biological weapons.¹⁹ Defense Intelligence Agency (DIA) Director Michael Maples's threat assessment presentation on January 11, 2007 accentuated the lack of specifics on the number and status of offensive state BW programs:

- "North Korea's resources include a biotechnical infrastructure that could support the production of various biological warfare agents."
- "Iran has a growing biotechnology industry, significant pharmaceutical experience and the overall infrastructure that could be used to support a biological warfare program. DIA believes Iran is pursuing development of biological weapons."
- "China possesses a sufficiently advanced biotechnology infrastructure to allow it to develop and produce biological agents."
- "We judge Russia also continues research and development that could support its chemical and biological warfare programs."
- "India and Pakistan . . . both . . . have the infrastructure to support biological and some aspects of the chemical warfare programs."
- "Syria's biotechnical infrastructure is capable of supporting limited biological agent development. DIA assesses Syria has a program to develop select biological agents."²⁰

These statements regarding China, Russia, North Korea, India, and Pakistan would, of course, be equally applicable to the United States and to nearly every European country, and to many other countries as well. Only the statements on Iran and Syria refer explicitly to offensive BW programs; the other statements are actually rather shocking since they fail to support the suggestion that these particular countries *possess* an *offensive* BW program. This suggests that not as many countries possessed offensive BW programs as previously believed. In fact, these evolving assessments—and the Maples testimony in particular—raise serious questions about whether the estimates of national BW programs in the 1970s and 1980s, excluding the Soviet Union, had much basis in reality. Because the most recent estimates are so noncommittal and uncertain, and yet have had the benefit of accumulated intelligence, it implies that past estimates, which were presumably generated on less intelligence, should be questioned. It now seems possible that the number of countries thought to have offensive programs in the early 1970s through 1989 might more accurately be estimated at four or five.

Statements by innumerable U.S. government officials, academic analysts, and journalists between 1989 and 2003 nearly uniformly concluded that the proliferation of state-run BW programs was a *constantly increasing* trend.²¹ It now seems clear that was not the case:

- The trend of proliferation of state BW programs was probably more or less flat.
- In recent years, official U.S. estimates of the number of such programs have declined by at least a third, leaving roughly a half dozen at most. In fact, as of 2008, the U.S. government apparently thinks the appropriate number is six.²²
- The U.S. intelligence community has qualified its assessments of those remaining programs to such a significant degree that it is difficult, if not impossible, to judge what degree of “offensive” nature—the development, testing, production or stockpiling of biological agents or weapons—exists in those programs.

As for proliferation from any state-run offensive BW programs, available evidence indicates that it has been minimal. None at all is known to have taken place from the former South African or Iraqi BW programs. As for the Soviet Union, only about ten scientists are known to have emigrated to any country of BW proliferation concern in the post-Soviet period. Some were recruited by Iran, but most of this group worked in institutes belonging to the former Soviet Academy of Sciences and not in research institutes primarily serving the former Soviet BW program. Several others emigrated to Israel. The United States never included Israel in its lists of BW proliferant states, although Israel almost certainly maintained an offensive BW program for many years and may still do so.

One can be even more definitive regarding assistance from state-run BW programs to terrorist organizations seeking to develop or to produce biological agents or weapons: there is no evidence whatsoever of any such activity. U.S. intelligence agencies have always considered the likelihood of such assistance to be extremely low, and they expect the same to be the case in the future.²³

Finally, the history of attempts by non-state actors to develop or use biological agents has been remarkably limited. The significant episodes are all well known, and Clark, a research scientist and professor of immunology, briefly summarizes them in *Bracing for Armageddon?* The first was the use of *Salmonella*, a bacterium that causes diarrhea, in the United States in 1984 by the Rajneeshsheel cult, in The Dalles, Oregon, in a failed attempt to influence a local election. The second was Aum Shinrikyo’s 1990–1993 failed effort to obtain and culture strains of *Clostridium botulinum* and *Bacillus anthracis* and disperse the resulting products. The group never succeeded in obtaining a pathogenic strain of either organism, and its culturing and dispersal efforts also came to naught. The third was the effort by Al Qaeda in Afghanistan between 1997 and 2001 to obtain a pathogenic culture of *B. anthracis* and to initiate work with the organism. Once again, the effort failed, as the organization was unable to obtain a pathogenic strain of *B. anthracis*. Al Qaeda’s work was incompetent in the extreme and had barely advanced beyond early speculation by the time a joint allied military team raided and occupied its facilities in December 2001. The last significant episode was the dispersal of a purified, dry powder preparation of *B. anthracis* sent through the U.S. postal system to multiple addressees in September and October 2001—the so-called Amerithrax incidents.

The Al Qaeda and the Amerithrax events are the most significant. The barely initiated, rudimentary, and failed attempt by Al Qaeda is important because of the nature of the group—a true international terrorist organization with a wide organizational

structure, demonstrated initiative, and a record of successful, albeit conventional, attacks. The Amerithrax attacks are significant because of the nature of the material prepared and the perpetrator; the mailings demonstrate what a professional is capable of, but identifying the perpetrator was essential to explaining *who* could make such a product and *under what conditions*. In other words, identification would provide critical insight into both the likelihood of international terrorist organizations developing similar capabilities and how quickly such a threat could emerge. It is notable that since the interruption of the Al Qaeda BW project in December 2001, there are no indications that the group has resumed those efforts.²⁴ (Accounts of Al Qaeda offshoot groups in the United Kingdom, France, or Iraq producing ricin are all spurious.) There have also been no publicly identified indications that any other international terrorist group has initiated the development of BW agents in the intervening years.²⁵

In terms of bioterrorism perpetrated by a terrorist organization, the Amerithrax events are an outlier, as they almost certainly were carried out by a U.S. scientist, fully trained, with access to pathogenic strains and optimum working conditions. A terrorist group has never carried out a mass-casualty bioterrorist event. Yet thanks to the steady stream of prognostications that essentially explain to terrorists why BW would be of great utility to them, such an event may well happen sooner rather than later. Unfortunately, that stream will certainly be continued by those interested in seeing that the current level of government funding for biodefense remains high.

In the late 1990s and early 2000, several Government Accountability Office reports pointedly noted that the government had not performed a comprehensive bioterrorism threat assessment, notwithstanding federal expenditures to counter such a threat before October–November 2001. Even after the initiation of greatly increased biodefense expenditures beginning in fiscal 2002, such a threat assessment was not performed. HSPD-10 states that, “the United States requires a continuous, formal process for conducting routine capabilities assessments to guide prioritization of our on-going investments in biodefense-related research, development, planning, and preparedness.”²⁶ In early 2008, Alan Pearson, director of the Biological and Chemical Weapons Control Program at the Center for Arms Control and Non-Proliferation, described the DHS Bioterrorism Risk Assessment (BTRA) model that was used to generate the DHS threat assessment.

[T]he United States requires a periodic senior-level policy net assessment that evaluates progress in implementing this policy, identifies continuing gaps or vulnerabilities in our biodefense posture, and makes recommendations for re-balancing and refining investments among the pillars of our overall biodefense policy.

The Department of Homeland Security (DHS) is responsible for conducting these assessments, the first one biannually beginning in 2006 and the second one every four years beginning in 2008. In 2005, Homeland Security Secretary [Michael] Chertoff stated that DHS would use a risk-management approach to guide its strategies and activities, consistent with the intent of the Homeland Security Act of 2002 (Section 201(d)(2)). Risk is defined as a function of likelihood and consequence. DHS has adopted this approach for the first of the two assessments mandated by HSPD-10.

The first "Bioterrorism Risk Assessment," prepared by the DHS National Biodefense Analysis and Countermeasures Center (NBACC) using a methodology developed by Battelle Memorial Institute, was completed on January 31, 2006 and a report on the assessment was published on October 1, 2006. The assessment used threat scenarios and consequence modeling to rank 28 biological agents . . . according to their relative risk. For this purpose, the estimated likelihood of agent use in a range of different scenarios ("the probability that an adversary acquires, produces, and disseminates a biological weapon," based on intelligence community input and the judgment of subject matter experts) was multiplied by the projected consequences resulting from each scenario (using data vetted by the Department of Health and Human Services). The risk calculation was weighted towards high-consequence events.²⁷

The computer model produced a massive compilation of more than one million different combinations of variables, many of which were run in hundreds of iterations. In September 2008, an NAS review committee released an extensive critique of the Battelle/DHS assessment model. The NAS review group described the DHS model as resulting

from a complex federation of integrated computer-based models to estimate the risks associated with the intentional terrorist release of each of 27 natural pathogens and one engineered agent (multidrug resistant *Bacillus anthracis*). The BTRA ranks each pathogen according to its level of risk, based on subjective event probabilities and their consequences. The subjective event probabilities were elicited from dozens of biological weapons experts.²⁸

The DHS model claimed that frequency of initiation and "estimated likelihood of agent use" was to be promulgated at least in part "based on intelligence community input." However, it seems likely that there was little or no information available to the intelligence community of that nature, particularly if there were very few or no terrorist groups in the field actively operating BW development programs. The "intelligence input" was to include expression of interest, almost all the examples of which are publicly known, and these almost never include reference to particular pathogens. That would turn the model into a theoretical exercise *not* based on actual intelligence, transforming the entire exercise from a threat assessment into a risk assessment. It is known that the BW program of the former Soviet Union prior to 1992 had developed a multidrug-resistant *B. anthracis* strain. However, the statement that the model depended on "subjective event probabilities . . . elicited from . . . experts" again suggests a lack of actual intelligence concerning all twenty-seven agents. Ostensibly in order to compensate for the lack of verified intelligence input, the NAS committee urged that the model should undertake to evaluate the choices of an "intelligent," or "adaptive," adversary. That only drastically compounds the model's removal from reality and further biases it to high-end estimates, at least as far as terrorists are concerned. The actual record of these organizations indicates that not a single one has yet mastered the most elementary aspects of microbiology. (Ricin extraction from a crushed seed pulp is a chemical process that requires no culturing of organisms.) To suggest that for purposes of "research, development, planning and preparedness" the U.S. government should now assume an "intelligent" and "adaptive"

enemy posits capabilities that no terrorist group currently has or is likely to have for years to come. The “intelligent” or “adaptive” adversary was the perpetrator of the Amerithrax events.

The preceding discussion provides an introduction to *Bracing for Armageddon?*, a small, useful book for students and the general reader. The book is a primer designed to introduce this subject matter to an uninitiated audience. At 221 pages, its ambition is perforce limited, and it cannot be very detailed. Unfortunately, perhaps as a tactical enticement, Clark made the dubious choice of devoting the first sixteen pages to a replay of the notorious 2001 “Dark Winter” exercise, which Clark later notes was “intended to put a real scare into government policy makers and members of Congress.” It is space he cannot afford to waste, and it is difficult for the reader to have any idea exactly why the exercise—based on an extravagantly fictional scenario—was unrealistic until many chapters later. In ensuing chapters Clark recaps the history of bioterrorism and then essentially explains what the “select agents” are—those pathogens selected by the Centers for Disease Control to be subjected to various controls because of their historical salience as BW agents. He explains and discusses genetically modified pathogens, natural epidemics, and agroterrorism. These chapters, together with a very useful chapter in the second half of the book concerning pandemic influenza, comprise more than half the book. They provide essentially introductory material before Clark addresses larger policy questions.

The meat of the book arrives in its final fifty pages. In the penultimate chapter, Clark turns to the book’s subtitle to examine “the politics of bioterrorism in America” and asks, “How did we arrive at our current national posture regarding bioterrorism?” Answering this question should have been given significantly more pages than the eleven Clark dedicates to it. The answer is provided by a too-brief survey of developments between 1985 and 2001. (Presumably because it is targeted at a general reader, the book also contains only a short reference section. If the book appears in a second edition, it should expand the sources provided and correct a small number of technical errors. For example, the destruction of the U.S. BW stockpile took place in 1970 and 1971, *before* the 1972 signature of the BWC, not between signature in 1972 and ratification in 1975.)

To explain the situation after 2001, Clark quotes terrorism expert Bruce Hoffman:

[Bioterrorism] was where the funding was, and people were sticking their hands in the pot. 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 archetypical Washington politics in the sense that you generate an issue and it takes on a life of its own.²⁹

The depiction is valid, although a bit expressionistic, but much more substantive detail should have been provided, such as the instrumental role of Vice President Dick Cheney, described briefly below. Clark’s final chapter, “Assessing the Threat,” examines the lessons of the Rajneeshes, Aum Shinrikyo, and Amerithrax events and why these respectively failed or succeeded. He again reviews the specific pathogens usually considered likely candidates for illegitimate use and considers who might carry out a bioterrorist attack. He

compares the potential consequences of such an event to natural disease mortality (specifically HIV/AIDS mortality in the United States). Clark concludes:

It's time . . . to refocus our attention—and our resources and creative energies—more specifically toward some of nature's own threats, rather than depending on spin-offs from our concern about bioterrorism. . . . The social and economic disruptions accompanying a bioterrorist attack do not even show up as a single pixel on the screen of what will happen when the world's glaciers are gone and sea levels have risen by twenty feet.

This even-keeled assessment is a very far cry from that reached in another 2008 book, *Bioviolence: Preventing Biological Terror and Crime*, which author Barry Kellman of DePaul University says is based on "the realization that no other problem facing humanity is so potentially cataclysmic and has been so inadequately addressed."³⁰

The intellectual history of touting the bioterrorist threat is a dubious one. It began in 1986 with an attack on the validity of the BWC by Douglas Feith, then an assistant to Richard Perle in President Ronald Reagan's Defense Department and more recently undersecretary of defense for policy until August 2005. Feith introduced the idea that advances in the microbiological sciences and the global diffusion of the relevant technology heighten the threat of BW use. Though advances in molecular genetics and globalization increased drastically by 2008 in comparison to 1986, the number of states that maintain offensive BW programs has not. And despite the global diffusion of knowledge and technology, the threat of terrorist networks creating BW is low. But the invocation of overly alarmist themes continues. In 2005, Tara O'Toole, chief executive officer and director of the Center for Biosecurity at the University of Pittsburgh Medical Center, said, "This is not science fiction. The age of Bioterror is now."³¹ It hardly comes as a surprise to learn that the office of Vice President Cheney was the driving force behind the Bush administration's emphasis on bioterrorism.³² But one vital point missed by Clark is that Cheney was influenced by, among other things, the very same "Dark Winter" scenario with which Clark opens his book. The other influences on Cheney were a veritable hysteria of fears and phantoms in the White House following the 9/11 and the Amerithrax attacks, several of which concerned the potential of terrorist use of BW and which reportedly led Cheney to believe he might soon become a victim.³³

What must be noted is that although Al Qaeda's interest in BW failed, the group's efforts were specifically provoked by the severely overheated discussion in the United States about the imminent dangers of bioterrorism. A message from Ayman al-Zawahiri to his deputy on April 15, 1999, noted that "we only became aware of them [BW] when the enemy drew our attention to them by repeatedly expressing concerns that they can be produced simply with easily available materials."³⁴ (In a similar vein, terrorism expert Brian Jenkins of the RAND Corporation has been at pains to point out that, "We invented nuclear terror.")³⁵ If in the coming decades we do see a successful attempt by a terrorist organization to use BW, blame for it can be in large part pinned on the incessant scaremongering about bioterrorism in the United States, which has emphasized and reinforced its desirability to terrorist organizations.

In a recent book written by former national security advisers Brent Scowcroft and Zbigniew Brzezinski, Scowcroft refers to the propagation of an "environment of fear" in

the United States, which Brzezinski adds has made us “more susceptible to demagoguery” which “distorts your sense of reality” and “channels your resources into areas which perhaps are not of first importance.” He continues:

We have succumbed to a fearful paranoia that the outside world is conspiring through its massive terrorist forces to destroy us. Is that a real picture of the world, or is it a classic paranoia that’s become rampant and has been officially abetted? If I fault our high officials for anything, it is for the deliberate propagation of fear.³⁶

I know of no statistical survey, but warnings regarding the bioterrorist threat have certainly been one of the major components in producing that “environment of fear.” A major contribution to that has been the work of a few, very determined, and very vocal nongovernmental purveyors of the bioterrorism threat, backed by one or two private foundations. The Sloan Foundation has also funded at least fourteen conferences in the United States and overseas; four of these were held by Interpol and three by the Department of Homeland Security.³⁷ Building on the fear emerging from the 9/11 and the Amerithrax attacks, this movement has generated \$57 billion in federal budget authority to date, a large federal bureaucracy, strong congressional advocates, multiple research institutes and journals, and a thriving contractor industry—the same “stakeholders” who now call for the continuation of efforts to fight and prevent bioterrorism.

In October 2008, David Koplow, professor of law at Georgetown University Law Center and a former deputy legal counsel in the Department of Defense, wrote:

It’s bad enough when an important federal government program designed to deal with a pressing national security threat turns out to be mostly a waste of money; it’s worse when that program also turns out to distract people and agencies from the more serious and fruitful approaches to the problem; it’s worst of all if that program actually contributes to making the problem even worse than it otherwise would be. The current bioterrorism program, tragically, accomplishes all three of these. . . .

[F]ar too little has been done to address the genuine biological threats to Americans and to suffering people around the world—the quotidian scourges of AIDS, tuberculosis, malaria, measles, and cholera—that not just “threaten” us in the abstract, but that actually kill and incapacitate millions of people annually. The most pressing public health threat to our national well-being might be the annual surge of ordinary influenza, but it has not benefited from the same sort of political anguish, emergency funding, and public attention that the national security entrepreneurs have discovered in the ever-looming fear of international bioterrorism. . . .

Bioterrorism is a serious, important danger, one that deserves serious, focused attention. But empowering a bioterrorism-industrial complex, and fostering a needless climate of fear, paranoia, and helplessness cannot lead to fashioning reliable, long-term solutions. Rational policy requires a genuine, level-headed risk assessment, and a sustained, balanced approach, not a knee-jerk public relations drama.³⁸

That same month, a World Health Organization report noted that, “Disproportionate investment in a limited number of disease programmes considered as global priorities in

countries that are dependent on external support has diverted the limited energies of ministries of health away from their primary role."³⁹ Attempting to convince ministries of health in African countries to make bioterrorism a primary concern, as Barry Kellman has advocated, can only divert them further from their primary role. Nor is this a concern only in the developing world. Even as the United States authorized \$57 billion since 2001 to defend against select agents, U.S. life expectancy stood at forty-second in the world, and child mortality ranked twenty-ninth—despite the fact that the United States spends more on health care per person than any other country.⁴⁰

To take one specific example, U.S. vaccine manufacturing capacity has been declining for years. In 1967 there were twenty-six licensed vaccine manufacturers in the United States; in 2005 only six remained. Not all U.S.-licensed vaccines are produced in the United States, and "since 2000, the United States has experienced an unprecedented series of shortages of vaccines recommended for widespread use."⁴¹

One cause has been the unwillingness of manufacturers to continue production for economic reasons. Vaccines against such childhood diseases as measles, mumps, rubella, meningitis, and pneumonia began to be in short supply in the summer of 2001. The 2003–2004 influenza vaccine shortage was due to a manufacturing supply disruption in the United Kingdom. Throughout the summer and fall of 2008, rabies vaccine was in such short supply in the United States that it needed to be rationed carefully by public health agencies.

Yet the U.S. government has spent approximately \$1 billion since 2002 in the effort to produce a vaccine and other pharmaceutical countermeasures against anthrax.⁴² In 2005, Congress additionally passed the Public Readiness and Emergency Preparedness Act, which provided manufacturers with liability protection in developing vaccines and other countermeasures against select agents. (The measure was inserted into a Defense Appropriations bill in the middle of the night by the Republican leadership and passed the next morning with no discussion.)⁴³

Just as the Department of Health and Human Services (HHS) contributed to a Sanofi Pasteur vaccine plant in Pennsylvania that would have sufficient production capacity to fulfill all U.S. annual influenza vaccine needs—influenza virus kills an average of 36,000 people in the United States annually—at least a large portion of the billions that have been invested in vaccines and other countermeasures against select agents would more profitably have been used to construct a dedicated vaccine production facility with the capacity to manufacture vaccine against a pandemic influenza strain, avian H5N1 influenza, or any other influenza, in sufficient quantities for the U.S. population as well as for export. According to Michael Osterholm, director of the Center for Infectious Disease Research and Policy at the University of Minnesota Medical School, "Over the past two years, all the governments in the world have collectively invested less than \$2.5 billion in developing new influenza vaccine technologies."⁴⁴ Estimates of global mortality in the 1918 pandemic flu epidemic reach as high as 100 million, and a 2008 UN/World Bank report estimated that a severe pandemic might claim the lives of more than 70 million people.⁴⁵

Although it is a subject not taken up in Clark's book, President Barack Obama should institute oversight of all relevant biodefense research and development programs carried out by all departments, agencies, and sub-agencies to ensure that they comply with U.S.

obligations under Article I of the BWC, which prohibits the development (as well as production, stockpiling, acquisition, and retention) of biological weapons. In addition, oversight of all biodefense research carried out by federal agencies, or contracted to private contractors, should also be reviewed at the level of the National Security Council for the same purpose. All oversight should include classified research.⁴⁶

Equally important, Obama should make a concerted effort to end the abstract fear-mongering and huckstering of the bioterrorism threat, which has been divorced from reality for years.⁴⁷ Unfortunately, such overheated rhetoric appears to be spreading to other countries. Gross exaggeration, propaganda, and alarmism about BW are critically counterproductive, inducing interest by non-state actors in precisely the kind of activities that the United States would like to prevent.

NOTES

1. For U.S. annual cancer mortality statistics see: American Cancer Society, "Cancer Statistics 2008 Presentation," PowerPoint, <www.cancer.org/docroot/PRO/content/PRO_1_1_Cancer_Statistics_2008_Presentation.asp>. For statistics on mortality due to smoking see, "Cigarette Smoking Among Adults—United States, 2006," *Morbidity and Mortality Weekly Report* 56 (November 9, 2007), pp. 1157–1161. Because smoking is estimated to contribute roughly 160,000 of the cancer deaths per year, that amount was subtracted from the total to avoid double counting. For statistics on mortality due to obesity, see, Ali Hl Mokdad et al., "Actual Causes of Death in the United States, 2000," *Journal of the American Medical Association* 291 (March 10, 2004), pp. 1238–1245; David B. Allison et al., "Annual Deaths Attributable to Obesity in the United States," *Journal of the American Medical Association* 282 (October 27, 1999), pp. 1530–1538; JoAnn E. Manson et al., "The Escalating Pandemics of Obesity and Sedentary Life," *Archives of Internal Medicine* 164 (February 9, 2004), pp. 249–258; and Katherine M. Flegal, Barry I. Graubard, David F. Williamson, et al., "Underweight, Overweight, and Obesity," *Journal of the American Medical Association* 298 (2007), pp. 2028–2037. Mortality due to obesity costs the United States \$90 billion in direct health costs per year. The obesity mortality figure of 365,000 was based on U.S. data for 2000 and has certainly been surpassed by now.
2. Kevin Sack, "Guidelines Set for Preventing Hospital Infections," *New York Times*, October 9, 2008, p. A21. The cost alone of treating these infections is estimated at \$20 billion per year.
3. "Federal Funding for Biological Weapons Prevention and Defense, Fiscal Years 2001 to 2009," Center for Arms Control and Non-Proliferation, April 14, 2008, <www.armscontrolcenter.org/media/fy2009_bw_budgetv2.pdf>. An additional billion was added in August 2008, but the fiscal 2009 figure includes a one-time allocation of \$2.5 billion, possibly leaving expected future annual levels at \$7.5 billion.
4. White House, "Homeland Security Presidential Directive 10: Biodefense for the 21st Century," April 2004, <www.fas.org/irp/offdocs/nspd/hspd-10.html>. Gregory S. Parnell et al., "Department of Homeland Security's Threat Risk Assessment: A Call for Change," National Research Council, 2008.
5. "US Senate Leader Urges 'Manhattan Project' Against Bio-Terror Threat," Agence France Presse, January 27, 2005.
6. National Intelligence Council, "The Terrorist Threat to the Homeland," National Intelligence Estimate, July 2007.
7. Bob Graham and Jim Talent, et al., *World At Risk: The Report of the Commission on the Prevention of WMD Proliferation and Terrorism* (New York: Vintage Books, 2008), p. 11, <www.preventwmd.gov/report>.
8. Jeffrey W. Runge, testimony before the U.S. House of Representatives, Committee on Homeland Security, Subcommittee on Emerging Threats, Cybersecurity, and Science and Technology, July 22, 2008.
9. "Joint Statement of Mr. Robert Hooks, Mr. Eric Myers and Dr. Jeffrey Stiefel, U.S. Department of Homeland Security regarding "One Year Later 'Implementing the Biosurveillance Requirements of the

- 9/11 Act," before the House Committee on Homeland Security, Subcommittee on Emerging Threats, Cybersecurity, and Science and Technology, July 16, 2008.
10. Ann Scott Tyson, "Military Prepares for Threats During Presidential Transition," *Washington Post*, October 26, 2008, p. A18.
 11. David Ignatius, "Don't Politicize Terrorism," *Washington Post*, August 17, 2004, p. A15; "Officials Discuss How to Delay Election Day," CNN.com, July 12, 2004; and Fred Barbash, "Homeland Security Requests Informal Election Review," *Washington Post*, July 12, 2004, <www.washingtonpost.com/wp-dyn/articles/A44676-2004Jul12.html>.
 12. Spencer S. Hsu, "In WMD Report, US Gets a C," *Washington Post*, September 19, 2008, p. A21.
 13. Ibid.
 14. Siobhan Gorman and David Crawford, "WMD Panel Urges Focus on Biological Threats," *Wall Street Journal*, September 9, 2008.
 15. Letter to Kevin McCarthy, Chair, Platform Committee, Republican National Committee, by the Federation of American Societies for Experimental Biology, August 1, 2008.
 16. SRS Technologies, "Quantification of Open Source Research Publications in Biological Sciences for Biological Weapons Development Utility," Final Report, Prepared for Defense Threat Reduction Agency, June 16, 2003.
 17. This citation is being withheld to prevent the further spread of information to those interested in developing *B. anthracis* as a weapon.
 18. Milton Leitenberg, *Assessing the Biological Weapons and Bioterrorism Threat* (Carlisle, Pennsylvania: U.S. Army War College, December 2005) pp. 11–20, <www.strategicstudiesinstitute.army.mil/pdffiles/PUB639.pdf>.
 19. CIA, "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 July Through 31 December 2003," <www.fas.org/irp/threat/july_dec2003.htm>.
 20. Lieutenant General Michael Maples, "Current and Projected National Security Threats to the United States," Statement for the Record before the U.S. Senate Select Committee on Intelligence, January 11, 2007, <intelligence.senate.gov/070111/maples.pdf>.
 21. I have picked at random one example from many. It appears in a chapter by the deputy director of the U.S. Air Force Counterproliferation Center that sets out to dispel "important myths" suggesting that the BW threat was less than imminent. "The likelihood that biological weapons will be used against our nation continues to rise. . . . Additionally, more countries today have active BW programs than at any other time." Col. Jim Davis, "A Biological Wake-Up Call: Prevalent Myths and Likely Scenarios," in Jim Davis and Barry Schneider, *The Gathering Biological Warfare Storm* (Maxwell Air Force Base, Alabama: USAF Counterproliferation Center), April 2002, pp. 289–91.
 22. Personal communication, senior U.S. intelligence official, June 2008.
 23. Personal communications, senior U.S. intelligence official, 1997–99.
 24. The 2005 Silberman-Robb Commission report claims that Al Qaeda in Afghanistan did obtain "Agent X," which is understood to have meant a *B. anthracis* pathogenic strain, and not a vaccine strain. The claim appears to be incorrect. See Leitenberg, *Assessing the Biological Weapons and Bioterrorism Threat*, pp. 36–38.
 25. Cross-topical comparisons can often provide useful insights. Although not a biological pathogen, the chemical contamination of a wide variety of food products in China with the small chemical compound melamine demonstrated that the motive of financial profit and not "terrorism" led to the use of the compound as an adulterant in a wide array of processed foods.
 26. White House, "Homeland Security Presidential Directive 10: Biodefense for the 21st Century," April 2004, <www.fas.org/irp/offdocs/nspd/hspd-10.html>.
 27. Alan Pearson, "Documents on the Department of Homeland Security 2006 Bioterrorism Risk Assessment," Center for Arms Control and Non-Proliferation, January 9, 2008.
 28. Gregory S. Parnell, Luciana L. Borio, Gerald G. Brown, David Banks, Alyson G. Wilson, "Scientists Urge DHS to Improve Bioterrorism Risk Assessment," *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science* 6 (October 2008).
 29. Clark does not provide the original source but relies on the quotation in a secondary source. Quoted in Susan Wright, "Terrorists and Biological Weapons: Forging the Linkage in the Clinton Administration," *Politics and the Life Sciences* 25 (2007), p. 100.

30. Barry Kellman, *Bioviolence: Preventing Biological Terror and Crime*, (Cambridge: Cambridge University Press, 2008), p. 1. Kellman's book is also flawed by serious errors in its historical details as well as in its description of the epidemiology of diseases it discusses. However, given the book's publisher and the author's reputation as an international expert, the book is likely to be seen worldwide and considered authoritative. See George P. Schmid and Arnold F. Kaufman, book review of *Bioviolence*, *Bulletin of the World Health Organization* 86 (October 2008), p. 815. Three other 2008 books of related interest are David P. Fidler and Larry Gostin, *Biosecurity in the Global Age* (Stanford: Stanford University Press, 2008); Jacqueline Langwith, ed., *Bioterrorism*, Opposing Viewpoints Series (Detroit: Gale/Cengage Learning, 2008), a book designed for students, pairing essentially opposite viewpoints on twelve individual issues within the overall subject; and Anne L. Clunan, ed., *Terrorism, War, or Disease* (Stanford: Stanford University Press, 2008), a more scholarly examination of case studies to determine whether an outbreak of disease is a deliberate use of biological weapons, a deliberate false allegation, or a natural disease outbreak.
31. Anne Applebaum, "Only a Game," *Washington Post*, January 19, 2005, p. A19.
32. Personal communication, former senior Department of Homeland Security official, March 8, 2007.
33. Elisabeth Bumiller and Eric Schmitt, "Threats and Responses: The Vice President; Cheney, Little Seen by Public, Plays a Visible Role for Bush," *New York Times*, January 31, 2003; and Jane Mayer, "Excerpt: *The Dark Side*," National Public Radio, July 15, 2008, <www.npr.org/templates/story/story.php?storyid=92528583>. Clark erroneously refers to *Dark Winter* as "a government exercise." It was not. It was staged by a collaboration of several private groups.
34. Alan Cullison, "Inside al-Qaida's Hard Drive," *Atlantic Monthly*, September 2004, <www.theatlantic.com/doc/200409/cullison>; Alan Cullison and Andrew Higgins, "Forgotten Computer Reveals Thinking Behind Four Years of Al-Qaida Doings," *Wall Street Journal*, December 31, 2001; and Andrew Higgins and Alan Cullison, "Terrorist's Odyssey: Saga of Dr. Zawahiri Illuminates Roots of Al-Qaida Terror . . .," *Wall Street Journal*, July 2, 2002.
35. Brian Jenkins, *Will Terrorists Go Nuclear?* (Amherst, NY: Prometheus Books, 2008) and Rand Corporation Capitol Hill briefing, September 9, 2008. The success of ideas of Graham Allison, a major proponent of the imminence of nuclear terrorism, and like-minded others are indicated by public opinion polls that show that 40 percent of Americans reportedly believe that terrorists will detonate a nuclear weapon within five years. When American nuclear scientists were asked what that likelihood was within ten years, the median answer was 10–20 percent likely; the reply from European nuclear scientists was 1 percent likely. This is described by Jenkins in his Capitol Hill briefing referenced above.
36. Zbigniew Brzezinski and Brent Scowcroft, *America and the World: Conversations on the Future of American Foreign Policy* (New York: Basic Books, 2008), pp. 239–40.
37. Richard Danzig, "Preparing for Catastrophic Bioterrorism: Toward a Long-Term Strategy for Limiting Risk" (Washington, DC: Center for Technology and National Security Policy, National Defense University, May 2008), p. 47.
38. David Koplow, "Losing the War on Bioterrorism," Security Law Commentary, Georgetown Law Center on National Security and the Law, October 6, 2008, <www.securitylawbrief.com/commentary/2008/10/losing-the-war.html>.
39. Laura MacInnis, "WHO Tells Governments to Focus on Health Care," Reuters, October 14, 2008.
40. Gardiner Harris, "Infant Deaths Fall in US, Though Rate is Still High," *New York Times*, October 16, 2008; "29th on Infant Mortality," *New York Times* editorial, October 19, 2008, p. WK11.
41. Alan R. Hinman et al., "Vaccine Shortages: History, Impact and Prospects for the Future," *Annual Review of Public Health* 27 (2006), pp. 235–259; Frank A. Sloan et al., "The Fragility of the U.S. Vaccine Supply," *New England Journal of Medicine* 351 (December 2, 2004), pp. 2443–47; Jerome O. Klein and Martha Geyers, "Vaccine Shortages: Why They Occur and What Needs to be Done to Strengthen Vaccine Supply," *Pediatrics* 117 (June 2006), pp. 2269–75; Institute of Medicine, *Calling the Shots: Immunization Finance Policies and Practices* (Washington, DC: National Academies Press, 2000); and Institute of Medicine, *Financing Vaccines in the 21st Century: Assuring Access and Availability* (Washington, DC: National Academies Press, 2004).
42. Data compilation prepared by Alan Pearson, Center for Arms Control and Non-Proliferation, Washington, DC, October 2008.
43. On October 13, 2008, DHS Secretary Chertoff invoked the liability protection provisions of the act for anthrax countermeasures by a determination that "there is a credible risk that the threat of exposure

of *B. anthracis* and the resulting disease constitutes a public health emergency." For the full text of the notice in the *Federal Register*, see <www.libertycoalition.net/chertoff-waives-liability-emergency-anthrax-shots>.

44. Michael T. Osterholm, "Unprepared for a Pandemic," *Foreign Affairs* 82 (March/April 2007), pp. 47–57.
45. Maryn McKenna, "The Pandemic Vaccine Puzzle: A Seven-Part Series on the Chances for Immunizing the World against Pandemic Flu," Center for Infectious Disease Research and Policy, 2005; "No Room for Complacency About Bird Flu—Experts," IRIN, October 27, 2008.
46. "Biodefense Research and the Biological Weapons Convention," pp. 68–85 in Leitenberg, *Assessing the Biological Weapons and Bioterrorism Threat*.
47. Brian Jenkins offered a similar recommendation regarding nuclear terrorism: "The first thing we have to do is truly understand the threat. Nuclear terrorism is a frightening possibility but it is not inevitable or imminent, and there is no logical progression from truck bombs to nuclear bomb." See James Kitfield, "Interview: How I Learned Not to Fear the Bomb," *Global Security Newswire*, October 20, 2008, <www.nti.org/d_newswire/issues/2008_10_20.html#1D29B503>.