

## ***Repairing the Regime: Stopping the Spread of Weapons of Mass Destruction***

### **Chapter 1 Historical Overview and Introduction Joseph Cirincione**

The first post-Cold War decade was in many ways a period of progress and global growth. The world's population grew 10 percent to 6 billion people. The American economy enjoyed its longest peacetime expansion ever, with the Dow Jones industrial average rocketing from 2600 to almost 12,000. Many other economies also prospered, as Asian countries expanded, crashed, and rebounded. Not coincidentally, the world's nations now spend 30 to 40 percent less on defense than they did during the Cold War, despite several major regional conflicts. Computers increased exponentially in speed, cell phones multiplied even faster, and the Internet grew from a backup system for nuclear war to an indispensable global network linking students, experts, and nations. It was a remarkable decade for the sciences, particularly astronomy, as space- and ground-based instruments extended our vision closer to the far edges of the universe and the beginning of time. In one crucial area, though, the past decade failed to live up to expectations. The threat of the mass destruction of human beings by the most heinous weapons ever invented still haunts world capitals and vexes military and political leaderships. During the 1990s, fears that some group or nation would use internationally banned biological or chemical weapons actually increased. United Nations inspectors after the 1991 Persian Gulf War discovered that Iraq had assembled hundreds of weapons filled with VX and sarin nerve gas and two dozen others with biological agents, including anthrax, botulinum toxin, and aflatoxin (see tables in chapter 11). The 1995 sarin gas attack on the Tokyo subway by the Japanese cult Aum Shinrikyo led some experts to warn of future "super-terrorism" battles. U.S. Secretary of Defense William Cohen calls it "a grave new world of terrorism—a world in which traditional notions of deterrence and counter-response no longer apply."

Other experts caution that the media and fictional novels have exaggerated the chemical and biological weapon threats. Few can ignore, however, the brooding presence of the mountain of nuclear weapons and nuclear materials that still fill global arsenals. As the new millennium begins, eight nations possess almost 32,000 nuclear bombs containing 5,000 megatons of destructive energy. The equivalent of about 416,000 Hiroshima-size bombs, this global arsenal is more than sufficient to destroy the world.

With the collapse of the Soviet Union, the danger is no longer a global thermonuclear war. Americans do not fear thousands of Soviet warheads screaming over the Pole; nor do Russians worry about volleys of American warheads pulverizing their nation. However, there remains a very real danger that nuclear, biological or chemical weapons will be used in smaller—but still horrifically deadly—numbers. Whether delivered in the cargo hold of a ship, the belly of an airplane or the tip of a missile, the use of just one modern thermonuclear weapon would be the most catastrophic event in recorded history. A 1-megaton bomb would destroy fifty square miles of an urban area, killing or seriously injuring one to two million people. Even a smaller, more portable device of 100 kilotons (eight times larger than the Hiroshima bomb but small by today's standards) would result in a radiation zone twenty to forty miles long and two to three miles wide in which all exposed persons would receive a lethal dose of radiation within six hours.

It is not difficult to find official expressions of concern about the mounting proliferation problems.

- President Clinton on several occasions has cited "the unusual and extraordinary threat to the national security, foreign policy, and economy of the United States posed by the proliferation of nuclear, biological, and chemical weapons and the means of delivering such weapons."
- Secretary of Defense William Cohen said, "Of the challenges facing the Department of Defense in the future, none is greater or more complex than the threat posed by weapons of mass destruction."

- Secretary of State Madeleine Albright noted, "The proliferation of weapons of mass destruction is the single most pressing threat to our security." She and then-Russian Foreign Minister Yevgeny Primakov agreed at the 1998 ASEAN summit that non-proliferation was the "premier security issue of the post-Cold War period."
- Lieutenant General Patrick Hughes, Director of the Defense Intelligence Agency, concluded bluntly in his annual testimony to Congress, "The proliferation of nuclear, chemical, and biological weapons, missiles, and other key technologies remains the greatest direct threat to U.S. interests worldwide."
- In January 1992, the member states of the United Nations Security Council declared that the spread of weapons of mass destruction constituted a "threat to international peace and security." Chapter VII of the UN Charter authorizes the Security Council to impose economic sanctions or to use military force to counter such threats.

One might expect that the response would be to redouble efforts to stop the spread of these deadly weapons, including the ratification of treaties and agreements to prevent and reduce the threats. In fact, the reverse is occurring.

### **The Non-Proliferation Regime**

The first and strongest line of defense against the spread or use of weapons of mass destruction remains the non-proliferation regime—an interlocking network of treaties, agreements, and organizations. Centered around a series of treaties including the nuclear Non-Proliferation Treaty (NPT), the Chemical Weapons Convention, and the Biological Weapons Convention, the regime is buttressed by numerous multilateral and bilateral agreements, norms and arrangements.

The non-proliferation regime has been built over the past fifty years by many nations, but almost always with the leadership of the United States. It has grown most quickly and most surely when both major U.S. political parties shared in the construction. The initiatives of one president or Congress would often be fulfilled by the next, regardless of party affiliation. Over these decades, Republican presidents have often led the efforts, as described below.

Now, a series of crises has shaken confidence in the regime. It urgently needs repair and revitalization but suffers from inattention and the mutual mistrust of many of its members. As we enter the new century, concerns with missile and nuclear programs in North Korea, Iran, and Iraq remain unresolved; the slow-motion arms race in South Asia keeps both nations intent on deploying nuclear weapons; Russia—the world's largest warehouse of nuclear weapons, materials and expertise—spirals in economic decline; China modernizes its nuclear arsenal, Japan partners with the United States in missile defense, and the three nations link with the Koreas, Taiwan, India, and Pakistan to form an Asian nuclear reaction chain that vibrates dangerously with each nation's defense deployments. Meanwhile, international negotiations at the Conference on Disarmament and the Non-Proliferation Treaty review sessions drift inconclusively. The Republican-dominated U.S. Senate delivered a stunning rejection of the Comprehensive Test Ban Treaty three years after it was signed; and it appears that President Clinton may complete his eight years in office without signing a single strategic nuclear reductions treaty, as compared with the two his predecessor signed during his four-year term.

This volume is dedicated to a detailed discussion of the problems confronting the regime—and the potential solutions—in the hope that greater knowledge will inspire greater actions. The writings concentrate on nuclear proliferation, but increasingly the once distinct areas of nuclear, chemical, and biological weapons proliferation form an integrated whole. Developments in one area—good or bad—inevitably reverberate throughout the system.

The authors also tackle one of the central issues confronting a regime under assault by hard-line conservatives in the United States: Is it military might or "pieces of paper" that best ensure national security.

### **The Regime Works**

The need for military counters to the proliferation of weapons of mass destruction remains a necessary condition of international affairs. Certainly, the threat of devastating retaliation helps deter the use of these weapons. Today, conventional forces alone threaten national destruction

on a scale that few leaders would risk. Nations also have a variety of counterforce options deployed and in development to strike mass destruction weapons, launchers, and facilities before they can be used. Finally, should all else fail, a third line of active missile defenses might provide some protection. Missile defenses, however, have a dual nature. While they promise an alluring technological solution to one type of mass destruction delivery system, mere talk of their introduction stimulates the very arsenals they hope to deter. Whatever their shortcomings, military defenses are essential elements of a successful non-proliferation strategy.

Historically, the non-proliferation regime has one great factor in its favor: It works. Not even the most fervent advocate would claim the regime works perfectly, and there exists a long line of experts (as this volume demonstrates) ready to discuss in detail the flaws in the regime. Nonetheless, since its birth in the 1960s, the non-proliferation regime has, if not prevented, at least greatly restricted, the spread of mass destruction weapons. President John F. Kennedy worried in the early 1960s that while only the United States, the Soviet Union, the United Kingdom, and France then possessed nuclear weapons, fifteen or twenty nations could obtain them by the end of the decade. However, with determined bipartisan presidential efforts and global cooperation, only China had joined the ranks of the five recognized nuclear-weapon states by 1970.

Fifteen years ago, experts and governments warily eyed the nuclear proliferation risks posed by the top ten states of concern: India, Israel, South Africa, Pakistan, Argentina, Brazil, Iraq, Libya, South Korea, and Taiwan. Today, three of these (South Africa, Argentina, and Brazil) have abandoned their nuclear-weapon programs, two (South Korea and Taiwan) would be a risk only if their regional situation sharply deteriorates, one (Libya) is of moderate concern, one (Iraq) remains of high concern, and three (India, Pakistan, and Israel) now have nuclear weapons. There are other states that bear watching, but over the past fifteen years only two other nations of high concern must be added to the list: North Korea and Iran, for a total of seven countries remaining on the active nuclear proliferation "watch list."

At the same time, the governments have used the instruments of the regime on a number of fronts with impressive results. Perhaps the most historically significant is the successful denuclearization of Ukraine, Belarus, and Kazakhstan (after those new nations had inherited thousands of nuclear weapons from the dissolution of the Soviet Union in 1991) and the implementation of the Nunn-Lugar-Domenici Cooperative Threat Reduction programs in the states of the former Soviet Union. These programs provide, for example, financial and technical assistance to help the states of the former Soviet Union fulfill their obligations under the first Strategic Arms Reduction Treaty (START I). For the cost of one B-2 bomber (\$2.5 billion over the last seven years) these programs have funded the deactivation of 4,838 nuclear warheads and the elimination of 387 nuclear ballistic missiles, 343 ballistic missile silos, 136 nuclear submarine launch tubes, and 49 long-range nuclear bombers in the former Soviet Union.

On other diplomatic fronts, the Intermediate Nuclear Forces Treaty eliminated an entire class of missiles from the arsenals of the United States and the Soviet Union (846 U.S. and 1,846 Soviet missiles, including the modern Pershing II and SS-20 systems). UNSCOM inspectors in Iraq uncovered and verified the destruction of far more biological and chemical weapons and facilities than were destroyed in the massive bombing and ground assaults of the 1991 Persian Gulf War. The Agreed Framework with North Korea, for all its problems, is successfully containing and perhaps reversing a nuclear weapons program that threatened to plunge the Korean peninsula into war in 1994. A Council on Foreign Relations Task Force concluded, "The Agreed Framework stands as the major bulwark against a return to the kind of calamitous military steps the United States was forced to consider in 1994 to stop North Korea's nuclear program."

Meanwhile, South Africa dismantled its arsenal of six clandestine nuclear devices in the early 1990s and joined the NPT and the African Nuclear Free Zone. Algeria flirted with a secret nuclear program but renounced such ambitions and joined the NPT in 1995. Argentina and Brazil formalized the end of their nuclear programs by acceding to the NPT in 1995 and 1998, respectively.

The regime has sustained serious setbacks and defeats; there may very well be more in the near future; and there remains a distinct possibility of a catastrophic collapse of the regime. Overall, however, the treaty regime has done a remarkable job of checking the unrestricted global proliferation Kennedy feared.

## **A Global Leadership, Now Divided**

The regime is a true international effort. Large states and small have all played crucial roles. Ireland, for example, introduced the United Nations resolution in 1961 that began the negotiations for the Non-Proliferation Treaty. South Africa played a key role in the extension and strengthening of the NPT in 1995, and Australia was instrumental in securing the successful negotiation of the Comprehensive Test Ban Treaty in 1996. As the discussion in chapter 18 details, states capable of making nuclear weapons but who have eschewed their development, such as Canada, Sweden, South Africa, and Brazil, are critical to efforts to forge a new agenda for the regime. The United States, however, plays a unique role. While some demonize it as the source of many of the regime's problems, the United States remains the one nation in the world with the resources, status, and potential leadership capable of galvanizing international nonproliferation efforts. That leadership role has always been strongest when it has enjoyed the support of both major political parties. The relative inability of the United States to lead now can be traced in large part to the fierce partisan divide that characterizes American politics at the turn of the century. The proliferation policy debates of the past few years have been dominated by calls from influential members of the U.S. Congress and their allies for increases in military spending, for more resolute opposition to arms control treaties, and for the rapid deployment of new weapons systems, particularly missile defenses.

Numerous senators took to the Senate floor in the days after the India tests, citing the "India threat" as justification for a crash program to field a national missile defense system. Although the legislation was blocked (twice) by Democrats, Senate Majority Leader Trent Lott said in support of the bill, "Only effective missile defense, not unenforceable arms control treaties, will break the offensive arms race in Asia and provide incentives to address security concerns without a nuclear response."

Hundreds of articles and speeches by conservatives have used the South Asian tests and the Korean and Iranian missile launches as proof that future threats are inherently unpredictable, intelligence estimates are consistently unreliable, the proliferation of weapons of mass destruction is fundamentally unstoppable, and, thus, the only truly effective response is reliance on American defense technology. Conservatives have skillfully deployed expert commissions and congressional investigations to endorse this view.

The reports of the Rumsfeld Commission on the Ballistic Missile Threat to the United States in 1998 and the Cox Committee on U.S. National Security and the People's Republic of China in 1999 were particularly influential in shaping media and political elite opinion. The Clinton administration's response has been to cede ground, embracing increased defense budgets and missile defense (the Republican bill cited above has been passed and signed into law) while husbanding the political and personal capital that could be devoted to threat reduction. With the most conservative elements of the Republican Party in control of congressional committees, treaty ratifications and diplomatic appointments have been delayed for years. The Senate's rejection of the test ban treaty (an agreement supported by every U.S. ally and friend) on October 13, 1999 capped a dismal congressional record of disdain for multi-lateral solutions. The impact is global. A regime in need of repair and revitalization remains in a state of suspended anticipation.

## **A Republican-Built Regime**

It was not always this way. The nonproliferation regime has enjoyed bi-partisan support in the United States for most of the past fifty years. In fact, a quick historical review indicates that many may have overlooked the important role Republican presidents played in creating and nurturing the regime.

Efforts to contain the spread of weapons of mass destruction began immediately after World War II, spurred by the initiatives of Presidents Truman, Eisenhower, and Kennedy. As part of his efforts, President Dwight D. Eisenhower proposed the creation of the International Atomic Energy Agency (IAEA) to promote the peaceful uses of atomic energy while the world's nuclear powers "began to diminish the potential destructive power of the world's atomic stockpiles."

President Kennedy presented a "Program for General and Complete Disarmament" to the United Nations on September 25, 1961. His ambitious plan included all the elements that negotiators still pursue today: a comprehensive nuclear test ban; a ban on the production of fissile materials for

use in weapons (plutonium and highly enriched uranium); the placement of all weapons materials under international safeguards; a ban on the transfer of nuclear weapons, their materials, or their technology; and deep reductions in existing nuclear weapons and their delivery vehicles, with the goal of eventually eliminating them. In his short tenure, President Kennedy was able only to secure the Limited Test Ban Treaty, ending nuclear tests in the atmosphere, underwater, and in outer space.

In 1968, President Lyndon Johnson successfully completed negotiations for the Treaty on the Non-Proliferation of Nuclear Weapons. President Richard Nixon signed the treaty, bringing it into force, at a Rose Garden ceremony on March 5, 1970. "Let us trust that we will look back," he said, "and say that this was one of the first and major steps in that process in which the nations of the world moved from a period of confrontation to a period of negotiation and a period of lasting peace."

President Nixon followed his treaty signing with efforts that successfully established in the early 1970s the Non-Proliferation Treaty Exporters Committee (known as the Zanger Committee) to control the export of nuclear-weapons-related materials and equipment. He negotiated and implemented the Anti-Ballistic Missile Treaty limiting defensive armaments and the companion Strategic Arms Limitation Treaty (SALT) limiting offensive arms, both signed in May 1972. President Nixon also dramatically announced in November 1969 that the United States would unilaterally and unconditionally renounce biological weapons. He ordered the destruction of all U.S. weapons stockpiles and the conversion of all production facilities for peaceful purposes. At the same time he announced that after forty-four years of U.S. reluctance, he would seek ratification of the 1925 Geneva Protocol prohibiting the use in war of biological and chemical weapons (subsequently ratified under President Gerald Ford on January 22, 1975). The president renounced the first use of lethal or incapacitating chemical agents and weapons, unconditionally renounced all methods of biological warfare, and threw the resources of the United States behind the effort to negotiate a Biological Weapons Convention. The treaty, signed by President Nixon on April 10, 1972, and ratified by the Senate in December 1974, prohibits the development, production, stockpiling, acquisition, and transfer of biological weapons.

As a candidate, Ronald Reagan opposed the SALT II treaty negotiated by President Jimmy Carter, but as president, Reagan observed the treaty's limits for years after assuming office. In his second term, President Reagan negotiated and signed on December 8, 1987, the landmark Intermediate-Range Nuclear Forces Treaty, a process begun by President Jimmy Carter's two-track policy of deployment and negotiation. The treaty required the destruction of all U.S. and Soviet missiles and their launchers with ranges between 500 and 5,500 kilometers (a treaty some argue should be globalized to prohibit all missiles of this range anywhere in the world). As Richard Speier details in chapter 14, President Reagan also began the first effort to control the spread of ballistic missile technology—the Missile Technology Control Regime—in 1987, and he negotiated the first strategic treaty that actually reduced (rather than limited) deployed strategic nuclear forces.

President George Bush signed the Strategic Arms Reduction Treaty in 1991 and kept the momentum going by negotiating and signing in January 1993 the START II treaty, the most sweeping arms reduction pact in history. That same month President Bush also signed the treaty he had negotiated, the Chemical Weapons Convention, prohibiting the development, production, acquisition, stockpiling, transfer, or use of chemical weapons. Of particular significance in this time of negotiations deadlock, President Bush on September 27, 1991, announced that the United States would unilaterally withdraw all of its land- and sea-launched tactical nuclear weapons and would dismantle all of its land- and many of its sea-based systems. The president also announced the unilateral end to the twenty-four-hour alert status of the U.S. bomber force and the de-alerting of a substantial portion of the land-based missile force. (On October 5, 1991, President Mikhail Gorbachev reciprocated with similar tactical withdrawals and ordering the de-alerting of 503 Soviet intercontinental ballistic missiles.)

In his first term, President Clinton seemed to be continuing the momentum established by his predecessors. Secretary of Defense William Perry and Secretary of Energy Hazel O'Leary firmly established and expanded cooperative threat reduction programs with the states of the former Soviet Union and helped convince Ukraine, Belarus, and Kazakhstan to abandon their inherited nuclear weapons and join the NPT regime. President Clinton successfully managed the indefinite

extension and strengthening of the NPT in 1995; led efforts to conclude and sign the Comprehensive Test Ban Treaty in 1996; failed in 1996 but came back in 1997 to win Senate ratification of the Chemical Weapons Convention; and resisted repeated efforts to repeal the Anti-Ballistic Missile Treaty.

Today, thousands of dedicated civil servants in the United States and around the world toil to implement and strengthen the institutions Republicans and Democrats have built for pragmatic security needs and as a legacy for future generations.

### **The Book Ahead**

This volume seeks to provide a comprehensive assessment of the global non-proliferation regime as it currently exists, to identify weakened areas, and to offer positive suggestions for repair.

United Nations Under-Secretary-General Jayantha Dhanapala provides his informed view of the overall health of the regime in chapter 2. He details the threats from outside the regime, noting, "If countries are perceived to derive certain benefits from ignoring such fundamental global norms, the risk could grow that others will either follow suit or seek various forms of compensation for continued participation." He recalls his closing remarks as president of the 1995 NPT conference to underscore the serious threats that arise from inside the regime: "Permanence of the Treaty does not represent a permanence of unbalanced obligations...non-proliferation and disarmament can be pursued only jointly, not at each other's expense." We are fortunate to have this seasoned and senior diplomat provide his insights in this volume.

Secretary of Energy Bill Richardson and National Security Adviser Sandy Berger give us the U.S. administration's agenda in chapters 3 and 4. Secretary Richardson reminds us that the futures of the United States and Russia "remain inexorably linked." It is essential, he argues, that as Russia navigates perilous economic conditions, "we take steps to help the scientists and engineers behind the Russian nuclear complex find other ways of supporting themselves." We must also help to secure Russian nuclear materials and install modern security and accounting systems in their nuclear complexes, he says. Mr. Berger discusses the mounting challenges to international security and outlines America's policy initiatives for preventing and addressing proliferation in the new century. He warns in particular, "If the Senate rejected or failed to act on the Test Ban Treaty, we would throw open the door to regional nuclear arms races and a much more dangerous world."

In chapter 5, three officials and experts discuss the crisis in Russian's "nuclear cities" cited by Secretary Richardson. Russia's First Deputy Minister of Atomic Energy Lev Ryabev reveals that government plans call for "a deep reduction of those working in the weapons complex from 75,000 to 40,000 by the year 2005. This is one of the most serious issues today." Assistant Secretary of Energy Rose Gottemoeller cites the new Nuclear Cities Initiative as "an ideal model of how the NGO community can work together with government to develop a concept and make it happen." Former Energy Department official Ken Luongo describes his efforts, now as the director of the Russian-American Nuclear Security Advisory Council, to bring the key people in both nations together first to generate this concept and then to shepherd it through both administrations. Matthew Bunn suggests some alternative employment solutions for Russian's former nuclear weapon scientists.

U.S.-Russian negotiations to reduce global nuclear arsenals have always been a critical part of the non-proliferation regime. In chapter 6, Alexander Pikayev describes the deadlock in this process from his unique vantage point as a former staff member of the Russian Duma and now as a scholar-in-residence at the Carnegie Endowment Moscow Center. He marshals an impressive historical analysis to support his unfortunately pessimistic view: "This deadlock has jeopardized the future of negotiated, bilateral strategic arms control. Prospects for future talks on tactical nuclear weapons and warhead transparency measures, which could be conducted parallel to negotiations on a START III agreement, are dim"

By far, the greatest security challenge facing the United States and the world today is the continued danger of nuclear proliferation resulting from the collapse of the Soviet Union and the current state of Russian security over nuclear materials and technology. As such, chapter 7, provides the most comprehensive assessment to date of the risks posed by the collapse of Russia nuclear infrastructure. Harvard scholar Matthew Bunn offers a masterful account of the dire state of the nuclear complex and the formidable challenges posed by the massive stockpiles

of often poorly secured fissile material. Bunn outlines a series of provocative recommendations for how to marry political will with effective technical solutions to the problems.

In chapter 8, China's highest-ranking arms control official, Ambassador Sha Zukang, presents his nation's views on the regime and proposals for expansion and improvement. He notes that "missile non-proliferation is the most under-developed part of the entire international non-proliferation regime" and proposes serious consideration of ideas to globalize the ABM treaty. He warns, "If a country, in addition to its offensive power, seeks to develop advanced TMD or even NMD in an attempt to attain absolute security and unilateral strategic advantage for itself, other countries will be forced to develop more advanced offensive missiles."

South of China, the implications of India and Pakistan's nuclear tests for each country and for the region are examined by Neil Jock of Lawrence Livermore National Laboratory in chapter 9. Issues such as strategic planning, weaponization, deployment, and command and control, "which" he says, "heretofore were relegated to the back burner, may no longer be deferred." In a nuclear accounting supplement to the chapter, David Albright of the Institute for Science and International Security provides new estimates of the fissile material and nuclear weapons in South Asia.

Daniel Morrow and Michael Carriere provide in chapter 10 the first concrete analysis of the actual impact of the sanctions on India and Pakistan following those nations' nuclear tests. With details on the direct and indirect financial consequences of the sanctions, Morrow and Carriere find the impact may well have been understated at the time. They note, for example, that while the direct impact of the sanctions on India was modest, "foreign investment in India fell sharply in May 1998 and remained well below the levels of 1997...Receipts from external commercial borrowing were also significantly lower after May 1998."

The participants in the Carnegie conference were honored to have Ambassador Richard Butler address the assembly. Then the chairman of the United Nations Special Commission on Iraq, Butler waged an heroic effort in the face of determined Iraqi obstructionism to hold that nation to its pledge to disclose and destroy its chemical and biological weapons of mass destruction and missile systems. He modestly recounts these efforts in chapter 11, which is enriched by the addition of charts prepared by the Non-Proliferation Project staff and special background material prepared by Toby Dalton and Mathew Rice on the ability of Iraq to reconstitute its weapons of mass destruction capabilities.

One of the more illuminating sessions of the conference was the fascinating debate on Russian assistance to Iran by three officials intimately involved in the dialogue. Reproduced in chapter 12, the discussion features Ambassador Robert Gallucci, a skilled diplomat and now dean of the Georgetown University School of Foreign Service, who presents his personal observations as he engaged the Russians as a special envoy of the United States government on these issues. Dr. Viktor Mizin of the Russian Foreign Ministry responds with, understandably, quite a different view of the situation. Israel's Deputy Director for Arms Control and Disarmament Robbie Sabel rings the alarm about Iran's intentions with a detailed description of that nation's nuclear and missile programs.

Chapter 13 closes out the treatment of the Near and Middle East with another exchange of views among U.S., Israeli, and Iraqi experts. While the Arab-Israeli conflict in the Middle East has been the principal focus of international attention to the region, attention is turning to the development of weapons of mass destruction capabilities by Iraq and Iran. Soon, these nations may challenge Israel's strategic monopoly in the region. Ariel Levite, director of the Israeli Bureau of International Security and Arms Control, Benjamin Frankel, editor of *Security Studies*, former Iraqi nuclear official Khidhir Hamza, and Bruce Jentleson of the United States Institute for Peace provide a dynamic examination of the key issues.

Chapter 14 tackles the thorny issue of missile proliferation. Richard Speier, who helped construct the Missile Technology Control Regime while an official in the Reagan and Bush administrations, argues that a "false dichotomy" has emerged. Many believe that missile non-proliferation and missile defense excluded each other. In fact, he argues, "from the earliest days of the MTCR, many advocates of each had seen the other as substantially complementary." He presents an historic guide to demonstrate his point, in the process helping readers understand this part of the regime and reach their own conclusions on whether missile non-proliferation has failed.

Jonathan Tucker of the Monterey Institute for International Studies reminds us in chapter 15 of the serious risks represented by biological warfare materials and expertise that were once part of

the Soviet Union's offensive biological warfare program. Brad Roberts of the Institute for Defense Analysis joins in with an examination of the potential threat and the corresponding implications for the use of biological weapons in warfare, noting that many existing constraints may be gradually disappearing. Finally, Elisa Harris, a CBW expert on the staff of the National Security Council, presents an alternative view: that the risk of chemical and biological weapons use may actually be waning.

In chapter 16, French analyst Camille Grand takes us to the core of the issue as he looks at efforts to negotiate a treaty ending the production of fissile material (plutonium and highly-enriched uranium). The treaty, he believes, "is not so much a Cold War arms control measure finally signed, as it is a key event defining the future of nuclear weapons in the next decades: an end to nuclear arms races, tighter limits on existing weaponry, and enhanced transparency of the nuclear complexes."

The lack of progress in U.S. and Russian strategic negotiations, dissected in chapter 17, poses a serious threat to the non-proliferation regime, which is conditioned in large part on the pledge made by the nuclear powers to reduce and eventually eliminate their nuclear arsenals. Michael Krepon, president of the Henry L. Stimson Center, summarizes the recommendations of leading experts for jump-starting the strategic reduction process. Bruce Blair of the Brookings Institution describes in elegant detail his proposals for supplementing this process by duplicating the Bush-Gorbachev actions that took large parts of the respective arsenals off hair-trigger alert without time-consuming negotiations. The former special representative of the president for non-proliferation Thomas Graham summarizes the case for improving U.S. and global security by embracing a doctrine of pledging never to be the first to use nuclear weapons. Robert Bell of the National Security Council staff, a chief architect of the Clinton administration arms control policies, defends the approaches he helped craft during the 1990s.

Progress in building the non-proliferation regime has historically depended on the agreement of the nuclear-weapon states. But progress does not necessarily begin with these states. As chapter 18 demonstrates, the historic tradition of small- and medium-size states serving as catalysts for global change is alive and well. Darach MacFhionnbhairr from Ireland (one of the key architects of the New Agenda Coalition) and Luiz Machado from Brazil discuss the New Agenda Coalition proposals. Marina Laker from Canada discusses her nation's Human Security Agenda, and Patricia Lewis, director of the United Nations Institute for Disarmament Research, provides an overview of these new initiatives and the role of non-governmental organizations.

Finally, the appendices provide rich detail and a valuable research resource for students and scholars on the specifics of the non-proliferation regime, the characteristics of the various weapons of mass destruction commonly deployed, and the facts and figures on who has what where.

### **The Critical Role of Non-governmental Organizations**

It is fitting that this first chapter ends by citing the founder of the Carnegie Non-Proliferation Project and the Carnegie International Non-Proliferation Conferences. For thirteen years, Leonard "Sandy" Spector guided this project and its work. He established an international reputation for scholarship, dependability, and cordiality. He addressed the Carnegie conference from his current position as director of non-proliferation and arms control at the Department of Energy. For those outside government who may despair that their words and work fall on fallow fields, we close this introductory chapter with these words of solace:

"The contribution that the non-proliferation community, this astonishing community of experts, makes to the United States Government, is very singular, indeed. If you look at the government programs in the field of arms control and non-proliferation, you'll see the great importance of this group. For example, the Pentagon's Cooperative Threat Reduction program was initiated by a group at Harvard University prior to their joining the Clinton Administration. The HEU purchase agreement, which is purchasing highly-enriched uranium from Russia and blending it down so it can no longer be used for weapons, is the brainchild of Thomas Neff. At DOE, the program for material protection, control, and accounting was spurred by a number of outsiders, including Thomas Cochran of the Natural Resources Defense Council, and steered and guided by other experts, such as William Potter of the Monterey Institute, Todd Perry of the Union of Concerned Scientists, and others.



"The Pentagon's programs go into the billions of dollars, the HEU purchase agreement is hundreds of millions of dollars, and the Reduced Enrichment for Research and Test Reactors program at DOE is a multi-million dollar program launched with the thoughts and efforts of Paul Leventhal at the Nuclear Control Institute. Most recently, the Department of Energy launched the Nuclear Cities Initiative, stimulated by the work of Ken Luongo and Frank von Hippel of Princeton University.

"There is also the enormous benefit that is provided by the training that goes on in the organization represented at the Carnegie conference. From the Arms Control Association, the Monterey Institute for International Studies, the Carnegie Endowment, of course, and others, we have seen some of the best and brightest people throughout the government cut their teeth and then join us on the other side. It is an enormous contribution. Finally, there are the support efforts that non-governmental groups mount on behalf of the number of important arms control initiatives sponsored by this administration.

"I hope I have reinforced the judgement that the work you do is very important and a tremendous help to all of us inside government. We welcome your continued involvement and depend on it a great deal more than many of you may realize. Thank you."