Issues for Debate

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If there's a mushroom cloud in our future it will be a symbol of a double failure: that we have failed to resolve our differences peacefully and that we have failed to keep the most devastating instrument of annihilation ever invented out of the hands of those who do not shrink from mass murder on an unprecedented scale. The atomic bombs dropped on Hiroshima and Nagasaki brought an end to World War II, probably sparing many hundreds of thousands of lives, at the cost of those sacrificed in those two cities.

Ten years later, with the invention of the hydrogen bomb, a thousand times more powerful than the primitive atomic bombs dropped on Japan, Churchill observed that, "by a process of sublime irony," we may have reached a stage where "safety will be the sturdy child of terror; and survival the twin brother of annihilation."

That was indeed the precarious world we all lived in during the Cold War. Nuclear deterrence between the United States and the former Soviet Union was based on the mutual realization that a war with modern thermonuclear weapons would cause catastrophic death and destruction on an unprecedented scale. In the words of President Dwight Eisenhower, all-out nuclear war would come close to "destruction of the enemy and suicide." Recognizing what a nuclear holocaust would mean, the United States and the Soviet Union learned how to coexist with tens of thousands of nuclear weapons. The task was made manageable by the fact that, during much of the

Cold War, only five or six nations possessed nuclear weapons. The existential danger has been greatly diminished since the end of the Cold War sixteen years ago. But new threats have appeared that cause us to believe that a nuclear blast in one of the world's great cities is more likely now than during the Cold War. With the spread of technology on a global scale, the world now faces the prospect that its most terrible weapons will fall into dangerous hands, whether in rogue states or in terrorist organizations, resulting in a world less predictable, more accident-prone, and more susceptible to worst-case thinking. The danger is magnified by regional conflicts and by an extensive nuclear black market that flourished undetected for years.

As the world teeters on the edge of a new and more perilous nuclear era, it is crucial that world leaders do everything within their power to prevent it from happening; to do so they must work jointly in an effort to free the world of the dangers of nuclear weapons. In the next several paragraphs, we delineate some points we hope present and future leaders keep in mind:

The history of the Cold War should provide no grounds for complacency: U.S.-Soviet competition was unique. Nations that for the first time are building nuclear weapons, or planning to, may succeed in using their newfound power to avoid war—but don't count on it. Very special circumstances made nuclear deterrence between the Soviet Union and the United States a successful instrument of peace although one that carried risks of global nuclear war. One of them was that each nation believed it would ultimately prevail largely through peaceful means and thought preventive war was unnecessary. Another was that the United States and the Soviet Union had no territorial claims against the other. They were insulated by thousands of miles from the daily frictions that arise when adversaries live side by side. Given these circumstances, the Soviet Union and the United States had the luxury of time to develop rules, tacit and otherwise, to tilt the scales against the use of nuclear weapons. These circumstances do not exist in South Asia or the Middle East or Northeast Asia. They may not exist in other parts of the world where nuclear weapons competition could suddenly erupt. To assume that nuclear

deterrence will always work successfully, even in very different conditions, is an exercise in wishful thinking.

New hazards in nuclear weapons programs. Competition in nuclear weaponry between the Soviet Union and the United States was tempered, to a degree, by a series of feedback loops, one of which was arms control. Even then, there were pressures to "one-up" the adversary and many mistaken assumptions about what the adversary might do. The Cuban missile crisis has been called the most dangerous moment in human history. Think about how difficult it would be to manage a crisis like that in a world of many nuclear-armed nations. Furthermore, new technologies can work both for and against centralized management of crises by governments. Technology can empower terrorists: think of the potential for chaos if a cyber attack were launched by terrorists in the midst of a major interstate crisis. A miscalculation or a mistaken interpretation of data derived from missile attack–warning systems would be a serious possibility.

It is not necessary to postulate a nuclear explosion in one of the world's great cities to make the point that if the world fails to hold the line against the spread of nuclear weapons, everyone's daily life will be affected. More nuclear weapons in more hands will increase the likelihood that terrorist organizations will acquire nuclear weapons. And terrorists are not influenced in the slightest by the threat of nuclear devastation. They welcome it. Realizing this, governments will have to seal national borders against the smuggling of nuclear bombs. The impact on trade and commerce will be adverse, and civil liberties will be constrained in an effort to detect and prevent nuclear smuggling.

Faced with these threats to our freedoms, and to our survival, are the nations rising to the challenge and doing everything within their power to deal with them? The honest answer is not yet; because of this the world is veering dangerously toward losing this life-or-death struggle. To reverse this course, the United States must lead the way to a new nuclear bargain that, this time, must be universal. At the core of future U.S. policy should be a bold vision: a world free of nuclear weapons. This vision is not a distraction from the task of devising and carrying out a plan of action to limit and roll back

nuclear weapons programs, as some experts have argued. Great leaders, such as Presidents Franklin Delano Roosevelt and Ronald Reagan, understand instinctively the power of ideas to mobilize public opinion and to provide the motive force behind public policy. This is what the vision of a world without nuclear weapons provides: the inspiration and the compass to keep people moving toward a goal they understand and support. Without it, the journey will be interrupted by a thousand dead ends and fruitless byways.

Moving forward. Some experts believe that nations make decisions about acquiring nuclear weapons solely on the basis of perceived security threats, primarily within their own neighborhoods. They argue that what the United States and other nuclear-armed nations decide about their nuclear arsenals has little or no effect on the decisions made by nations considering their nuclear options. Those experts are right to believe that several impulses go into the decision-making process of would-be nuclear weapons states; they are wrong to believe that expectations about future trends in the world regarding the role of nuclear weapons in international relations have no part in national decision making. If decision makers think the world is going to be increasingly armed with nuclear weapons and that those are going to be seen as normal and legitimate defense postures, they will logically lean toward keeping open the option of building a nuclear arsenal and will exercise that option when conditions seem to require it. Expectations about the actions of others always have played a large part in policy making. Things are no different in the nuclear arena.

Expectations, in fact, are particularly important in this area of national defense because decisions are usually incremental and frequently the subject of some debate. Decisions about major issues such as building a nuclear arsenal and, even more, the daily decisions about carrying out a national policy, are not the prerogative of a single leader. That was not true in Iraq. It is much more likely that there are debates about costs and benefits that present opportunities for diverse opinions to have their effect. If that occurs, then it is imperative that at least some people have the expectation that nuclear weapons will not be the indispensable trump card, always and everywhere.

Of course, the exercise of U.S. power and influence, by itself, cannot stop a cascade of decisions to build a nuclear bomb, but it can help to create a climate of international opinion in which rolling back nuclear weapons programs seems as reasonable an option as developing new programs. Thus we envison a global bargain that must be nearly universal, not essentially bilateral, as it was during the Cold War.

Difficult though it will be, the attempt to strike a new global bargain is far superior to the alternatives. In fact, the Nuclear Nonproliferation Treaty (NPT)—a bargain between those who have nuclear weapons and those who do not—has helped deter some nations that were tempted to think about developing or keeping nuclear weapons, such as Argentina, Brazil, South Africa, Ukraine, Belarus, and Kazakhstan. Still, the handwriting on the wall tells us that the NPT is unlikely to remain an effective barrier against the creeping menace of nuclear terrorism and that a new understanding is needed to validate the basic bargain in stronger terms to get rid of all nuclear weapons eventually.

The new understanding should, at least operationally, reaffirm and strengthen two articles in the current Nuclear Nonproliferation Treaty: the undertakings by the nuclear weapons states to negotiate on nuclear disarmament (Article VI), and the right enjoyed by the nonnuclear weapons states to develop civilian nuclear power programs (Article IV) but refrain from using these programs to acquire nuclear weapons. Both articles have been neglected or abused by a number of countries. And several countries have used civilian nuclear power programs to bring themselves to the threshold of building nuclear weapons. Today the commitment to negotiate on nuclear disarmament is no longer credible.

Begin with Russia. In the new bargain, the nuclear disarmament clauses in the NPT must be more than nice words about intentions and must apply to all states: nuclear, near-nuclear, and nonnuclear and the sooner the better. But an understanding between the United States and Russia, the two nations that possess by far the largest arsenals, is the place to begin.

If the United States and Russia are perceived as working together

in a serious way to roll back the world's nuclear arsenals, it will help bring the other states possessing atomic weapons into the common enterprise. And that, in turn, will help secure a binding commitment by those states not possessing such weapons never to acquire them, in accord with the NPT bargain. Their expectations about future nuclear trends will have changed. Prospects for achieving such a commitment will also be enhanced by convincing guarantees that nuclear fuel will be available to them when needed and that arrangements will be made to dispose of the spent fuel. Agreements to ensure adequate monitoring of nuclear developments will then be required.

Be inclusive. We cannot emphasize enough that our nation and the world can become safer and more secure if all those nations presently armed with nuclear weapons proceed carefully and in close concert with one another to reduce the saliency of nuclear weaponry in their national security postures. Russia and the United States can start the ball rolling, but it will lose momentum unless others quickly join the campaign. Furthermore, we believe that the long-term safety and security of people everywhere would be well served by a serious and sustained high-level effort on the part of all states that possess nuclear weapons to move toward a world free of these weapons, using that goal also as a compass to chart the future course of nuclear policies. All this should start sooner rather than later and, of course, will require mutual accommodation. No preconceived "made in America" blueprint will do the job.

The Hoover Institution conferences. A conference convened at the Hoover Institution at Stanford University on October 24–25, 2007, "Reykjavik Revisited: Steps toward a World Free of Nuclear Weapons," was a follow-on to a conference organized in 2006 at Hoover. That conference marked the twentieth anniversary of the extraordinary meeting between President Ronald Reagan and General Secretary Mikhail Gorbachev at Reykjavik, Iceland on October 11–12, 1986, when both men talked about the possibility of eliminating nuclear weapons.

The 2006 conference, entitled "Implications of the Reykjavik Summit on its Twentieth Anniversary," analyzed the relevance for today's world of the issues discussed at Reykjavik. The particular focus

was to identify steps toward achieving the vision of a world free of nuclear weapons embraced by Reagan and Gorbachev during their two-day summit. These steps were spelled out in an op-ed piece that appeared in the *Wall Street Journal* on January 4, 2007, with former secretaries of state George Shultz and Henry Kissinger, former secretary of defense William Perry, and former senator Sam Nunn as the principal signators. The article represented a broad consensus among the participants in the 2006 conference on the steps necessary to make progress toward realizing that vision. It emphasized that current efforts, commendable though they may be, do not rise to the level of the challenge and that "U.S. leadership will be required to take the world to the next stage—to a solid consensus for reversing the reliance on nuclear weapons globally as a vital contribution to preventing their proliferation into potentially dangerous hands and ultimately ending them as a threat to the world." The article concluded:

> Reassertion of the vision of a world free of nuclear weapons and practical measures toward achieving that goal would be, and would be perceived as, a bold initiative consistent with America's moral heritage. The effort could have a profoundly positive impact on the security of future generations. Without the bold vision, the actions will not be perceived as fair or urgent. Without the actions, the vision will not be perceived as realistic or possible. We endorse setting the goal of a world free of nuclear weapons and working energetically on the actions required to achieve that goal, beginning with the measures outlined above.

That essay received a strong positive response from people all over the world who agree with both the vision and the importance of the steps identified for countering today's growing nuclear dangers. A number of previous U.S. secretaries of state and defense and national security advisers also gave their support to the general goals of the program.

The second Hoover Institution conference, in October 2007, cosponsored by the Nuclear Threat Initiative, was attended by the participants in the first conference plus a number of highly qualified

scholars and veterans of the past six administrations—Republican and Democratic. In preparation for the conference a series of papers was commissioned, analyzing in-depth each of the individual steps that the *Wall Street Journal* article identified as essential for progress. These papers were available to the participants well in advance and provided a focus for the discussions at the conference. Summaries of these papers are included in this publication.

The importance of achieving a world free of nuclear weapons, both as a goal and as a compass to guide the thinking of policy makers about nuclear policies, was reaffirmed at the conference. Specific programs aimed at reaching the goal of zero nuclear weapons were discussed, together with verification methods that would be required to monitor progress. There was also general agreement that there is an urgency attached to taking actions designed both to reduce today's nuclear dangers and to improve the prospects for eliminating nuclear arsenals. Both criteria should be applied to policy choices. A broad consensus emerged on a specific set of steps that the United States and Russia, who possess between them close to 95 percent of the world's nuclear bombs, should initiate in the near future. Some are already in progress, such as the ongoing reductions in the number of nuclear warheads deployed on long-range (strategic) bombers and missiles (intercontinental ballistic missiles and submarine-launched ballistic missiles). Eight additional actions can and should be taken in 2008:

1. Extend key verification provisions of the 1991 strategic arms reduction treaty, which will expire in December 2009, and make them the legal basis for verifying further reductions in nuclear forces to the levels agreed to in the Treaty of Moscow of 2002, which should be achieved as soon as possible.
2. Take steps to increase the warning and decision times for the launch of all nuclear-armed ballistic missiles, thereby reducing risks of accidental or unauthorized attacks.
3. Discard any existing operational plans for massive attacks that still remain from the Cold War days. Interpreting deterrence as re-

quiring mutual assured destruction (MAD) is an obsolete policy in today's world.

4. Undertake negotiations toward developing cooperative multilateral ballistic missile defense and early-warning systems as proposed by Presidents Bush and Putin at their 2002 Moscow summit meeting. A first step would be agreement on plans for an anti–ballistic missile (ABM) site and technology against potential missile threats to Europe, Russia, the United States, and other countries emanating from the Middle East.
5. Expedite the task of providing the highest possible standards of security for nuclear weapons materials everywhere in the world. The United States and Russia should play a key role in helping implement United Nations Security Council Resolution 1540 relating to improving nuclear security by offering jointly to assist any nation in meeting their obligations under this resolution.
6. Start a dialogue with NATO and Russia on consolidating nuclear weapons designed for forward deployment to enhance their security as a first step toward their eventual elimination.
7. Strengthen the means of monitoring compliance with the Nonproliferation Treaty to counter the global spread of advanced technologies.
8. Adopt a process for bringing the Comprehensive Test Ban Treaty (CTBT) into effect, which would strengthen the NPT and aid international monitoring of nuclear activities. This calls for a bipartisan review to assess improvements and technical progress made over the past decade, both in the capability of the international monitoring system to identify and locate explosive underground nuclear tests in violation of the CTBT, and in maintaining high confidence in the reliability, safety, and effectiveness of the nation's nuclear arsenal under a test ban.

In a slightly longer time frame, the United States, working with other nations, should develop an international system for guaranteeing nuclear fuel supplies and maintaining complete control of the fuel cycle for civilian nuclear power, from uranium enrichment to

spent fuel reprocessing, to avoid the worldwide spread of bomb-making technologies and infrastructures.

The goal of a world without nuclear weapons has to be a joint enterprise among nations. To this end, the United States and Russia should enter into consultations aimed at declaring that their goal is zero deployed nuclear warheads and ultimately a world without nuclear weapons. This will also entail initiating consultations with several other nations, both those possessing nuclear weapons and those that do not, regarding their vision of how to achieve a world without nuclear weapons.

The papers on these issues that were prepared for the conference are organized in three groups:

A. Getting to Zero
B. Managing Nuclear Programs
C. A Diplomatic Offensive

The issues they raise are outlined in the next several pages. The summaries and key findings of the conference papers as prepared by their authors are included in the next part. The full texts will be included in the final conference report.

A. Getting to Zero: The Issues.

These papers describe specific actions to reduce and redeploy nuclear weapons en route to zero and analyze key challenges to implementing them. In his paper "Further Reductions in Nuclear Forces," David Holloway addresses whether the United States and Russia can each make substantial reductions in their strategic nuclear forces and still maintain a stable relationship within the framework of mutual deterrence. Is there a need for thousands of operationally deployed intercontinental forces if their primary role today is as a hedge against possible future danger rather than an ability to retaliate against an immediate and pressing threat? Are there opportunities to transfer some of these forces from operationally deployed, ready-to-launch status to deployment in a responsive mode? Can we move to a force structure consisting exclusively of responsive forces that can be activated as required?

Choosing options for reductions and redeployments raises the question of what criteria these options should be evaluated against. It will be essential to maintain stability, to monitor compliance with agreements on total numbers of both responsive and operationally deployed weapons, and to enhance the prospects for deeper reductions. What rate of reduction is practical, and to what extent will reductions require coordinated actions and negotiated agreements among all the nuclear powers? Getting to zero operationally deployed nuclear warheads and, even more so, to absolute zero will require political changes. At what stage in the process do these changes need to be addressed?

Bruce Blair, in his paper "Dealerting Strategic Forces," asks why the risks and dangers of retaining many hundreds of operationally deployed strategic missile forces on alert, ready for prompt launch procedures, should be retained at this point in the U.S.-Russian relationship. These risks include false attack alarms due to a decaying Russian early-warning system or cyber attacks that succeed in compromising highly automated and sophisticated command and control links. What is the feasibility of dealerting forces, partially to totally, in view of practical operational limits? How will it be possible to confirm, beyond simply accepting policy statements, that they have been actually implemented as agreed? What actions can be taken to increase warning time and reduce the number of operationally deployed nuclear weapons that have procedures in place for a prompt launch? Different levels of dealerting postures, from procedural to physical separation of firing components, are considered and analyzed in terms of the physical challenges they present and how they would rely on growing levels of mutual trust, starting with the U.S.-Russian relationship. More broadly, sixteen years after the demise of the Soviet Union and the end of the Cold War, should not the United States and Russia reject the interpretation of deterrence as requiring mutual assured destruction and discard any operational plans for massive attacks? Procedural changes could be introduced to extend the launch time line for nuclear forces by dropping prompt launch and massive attack options from the emergency war plans.

Rose Gottemoeller, in her paper "Eliminating Short-Range Nu-

clear Weapons Designed to Be Forward Deployed" asks what it will take to get NATO and Russia talking about those weapons. Will agreeing to withdraw U.S. weapons from Europe and consolidate Russian weapons at a few facilities deep in Russia be a necessary prelude to eliminating them anywhere else in the world? How will other nations be affected by U.S. and Russian actions in this arena?

A common view between the United States and its allies regarding the importance of nuclear weapons for security in Europe will be one requirement for getting talks started. Gottemoeller emphasizes that Russia's new dependence on nuclear weapons to compensate for its conventional weakness is a key issue that will have to be dealt with, as will resolving differences over the Conventional Forces in Europe (CFE) treaty. Greater transparency will be needed with data exchanges and protocols for verifying their repositioning of these weapons for maximal safety and security. Eventually there will be the challenge of bringing in other nuclear powers with suitable confidence-building measures. And how will warheads designed for shorter-range systems be taken into account as reductions are made in warheads designed for use with longer-range systems?

Gottemoeller suggests that, ultimately, short-range weapons should be placed in the same category as strategic arms in negotiating the actual elimination of the weapons. This approach would acknowledge the reality that nuclear weapons are impossible to differentiate when they are divorced from their launch vehicles.

Getting to zero will put demands on monitoring and verifying that are far more challenging than anything that arms control agreements have attempted heretofore. The issues raised by such requirements are discussed from different angles in three papers. Operational challenges that have to be faced include verifying and accounting for all nuclear weapons, both delivery systems and warheads, whose elimination has been agrreed to; verifying the disassembly of warheads without compromising sensitive design information; and verifying the use or disposal of fissile material.

Ray Juzaitis and John McLaughlin raise fundamental questions in their paper "Challenges of Verification and Compliance within a State of Universal Latency." They point out that eliminating nuclear

weapons will not remove the capacity to relatively swiftly reconstitute nuclear arsenals. How can verification be designed to deal with that situation? The authors emphasize that achieving a world free of nuclear weapons will require a monitoring and verification effort more challenging, comprehensive, and systematic than anything attempted in arms control heretofore. This effort will have to grow to involve all aspects of the nuclear fuel cycle and weapons cycle and encompass actors ranging from established nuclear states to nonstate entities.

It will be challenging to establish counting rules and monitoring procedures for nondeployed and reserve warheads, as distinct from launchers, with which there is an extensive experimental base from previous treaties. Most important will be developing trust among nations as the negotiations on reductions proceed. Particularly when it comes to limits on nondeployed or virtual warheads and stockpiles of fissionable material, establishing a satisfactory balance between declarations and intrusive inspections must be established.

Matthew Bunn, writing about the "Transparent and Irreversible Dismantlement of Nuclear Weapons," emphasizes that the disassembly of warheads, beyond the dismantlement of weapons, will be an essential part of any effort to achieve a world without nuclear weapons. Can the United States and Russia make headway in this area, perhaps building on efforts that were frustrated in the past?

Although dismantling many thousands of nuclear weapons will pose major operational challenges, Bunn suggests that facilities and procedures are in place to accomplish it. Technologies and procedures are available, he believes, that, with some refinement and negotiation, can make it possible to be confident that these warheads have been placed in secure storage and then disassembled as agreed, without compromising sensitive nuclear weapon design information. Technologies and procedures are also available to confirm secure storage and disposition of the fissile materials from these weapons.

Edward Ifft writes about "Monitoring Nuclear Warheads," asking questions about monitoring nondeployed nuclear warheads. What techniques are currently available and what more may be required? He discusses the challenges of distinguishing among four types of weapons that must be monitored: deployed warheads, nondeployed

warheads, virtual warheads, and disassembled/dismantled warheads. Fortunately, as Ifft points out, the successful implementation of the SALT, INF, and START treaties has provided us with a number of powerful and proven tools. Monitoring the numbers of nondeployed warheads, however, has never been attempted in an arms control agreement. Because this was on the agenda of the 1997 Helsinki Framework (START III), some work was done in the United States on how one might approach the task. The appropriate level of intrusiveness also became an issue in the Cooperative Threat Reduction Program.

B. Managing Nuclear Programs: The Issues.

The papers on this subject focus on what needs to be done to manage today's nuclear programs so as to prevent the growth of new nuclear weapons capabilities while, at the same time, reducing the number of weapons. The world is awash with nuclear weapons and material—approximately 25,000 warheads and stockpiles of fissionable material that could fuel perhaps 100,000 more—all of which will have to be managed and guarded carefully during the long voyage to the goal of zero.

Matthew Bunn, in his paper "Securing Nuclear Stockpiles Worldwide" addresses this challenge as today's real and urgent threat. Providing the highest possible standards of security for all stocks of weapons, weapons-usable plutonium, and highly enriched uranium everywhere in the world is the most effective tool for reducing this risk. It would prevent a short-cut to a nuclear capability by would-be nuclear terrorists. Is the United States giving sufficiently high priority to the Nunn-Lugar Cooperative Threat Reduction program? Is progress being made fast enough and to a high enough level of security? Could United Nations Security Council Resolution 1540, which concerns controls against proliferation, be expanded and its implementation supported more effectively? Bunn believes that recommitment to nuclear disarmament by the nuclear weapons states could transform the politics of nuclear security upgrades, reduce the need for secrecy surrounding nuclear stockpiles, and greatly ease international nuclear security cooperation.

Robert Einhorn, in his paper "Controlling Fissile Materials Worldwide: A Fissile Material Cutoff Treaty and Beyond," addresses the challenge of controlling fissile materials globally. Noting that international efforts to negotiate a ban on the production of fissile material for nuclear weapons—a fissile material cutoff treaty (FMCT)—have been deadlocked for a decade, he addresses several key questions related to the content of, and prospects for, an FMCT. Should the treaty cover only new production of fissile materials or should it also deal with existing stocks? Should it ban only production of highly enriched uranium and plutonium for nuclear weapons or also for other applications, such as fuel for naval reactors? Can a verification system be developed that can provide confidence in compliance?

Assuming that an FMCT will address only the new production of fissile material, Einhorn proposes a voluntary, multilateral arrangement—a fissile material control initiative (FMCI)—that would deal with the vast and growing stocks of separated plutonium and highly enriched uranium that exist worldwide. FMCI would encourage participating countries to declare their fissile material stocks, adopt nuclear security measures to protect stocks against theft or seizure, place stocks excess to military needs under international safeguards, and transform fissile materials as soon as practicable to forms no longer usable in nuclear weapons.

Einhorn points out that building the necessary international support for both FMCT and FMCI will not be easy and that strong leadership by the United States will be needed to get the growing problem of fissile material stocks under control.

The growing worldwide demand for energy to meet civilian needs and aspirations has led to a resurgence of interest in building nuclear reactors to provide energy for the increased civilian demand. This will inevitably lead to an increase in the potential for the spread of sensitive nuclear fuel cycle technologies through enrichment of uranium at the front end and reprocessing spent fuel at the back end of the fuel cycle. This, of course, will pose a challenge to efforts to prevent nuclear proliferation. James Timbie addresses this problem in his paper "Preventing the Spread of Enrichment and Reprocessing." Can international mechanisms, such as a fuel bank, be devised

that will guarantee that the low-enriched uranium required for power reactors is available and can be obtained at the going market price; that the fuel will remain under appropriate multilateral controls; and that the spent fuel will be removed to internationally operated facilities? Otherwise, individual nations that develop the indigenous infrastructures to power a civilian reactor will increase substantially the number of latent nuclear weapon states, further challenging the current nonproliferation regime. How can a global effort to head off indigenous bomb-building capabilities be mounted? Timbie discusses a package of incentives that advanced nuclear countries can offer to nonnuclear nations as an alternative to their initiating sensitive fuel-cycle activities. This also raises the sensitive issue of what to do about existing national infrastructures in the current nuclear weapons and weapons capable nations.

The final paper in this section is by Raymond Jeanloz, who addresses the "Comprehensive Nuclear Test Ban Treaty and U.S. Security." During the past decade the United States has pursued an aggressive stockpile stewardship program to maintain a safe and reliable nuclear deterrent without relying on explosive underground tests. Do the scientific, technical, and diagnostic advances over this period provide a confidence, perhaps lacking during the 1999 abbreviated ratification debate in the Senate, that the CTBT is in U.S. interests? Will the international monitoring system, supplemented by existing private networks of seismograph stations, be able to monitor other nations' compliance with an effectiveness that meets our own security needs? Clearly, establishing a bipartisan consensus in the Senate based on an in-depth public review of developments since 1999 will be essential. Jeanloz analyzes the current situation, pointing out important progress since the 1999 debate that supports the argument in favor of ratification.

C. A Diplomatic Offensive: The Issues.

The final two papers address the diplomatic challenge to turn achieving a world free of nuclear weapons into a joint international effort at the highest levels of government, lacking which it will be doomed to failure.

Jack Matlock, in his paper "Regional Confrontations and Nuclear Weapons Proliferation," discusses a number of regional confrontations and the political pressures, both domestic and external, that provide incentives for governments to acquire a nuclear infrastructure and weapons. How should global norms and specific regional considerations be combined to construct an effective policy? What role can threats of military action play? Matlock emphasizes that proliferation problems can only be solved through multilateral cooperation but that direct U.S. negotiations with nations that are potential proliferators can be useful and should be pursued when conditions warrant.

In "Turning the Goal of a World without Nuclear Weapons into a Joint Enterprise," Max Kampelman and Steven Andreasen focus on the mechanisms for getting leaders to agree on the vision and on appropriate steps to achieve it. They suggest that a hybrid process involving both public UN diplomacy and behind-the-scenes diplomacy with individual nations might be the best answer.

Taken together, these papers constitute the building blocks for creating a safer world. At first glance, the summaries provided by each of the authors look like a collection of fairly technical points. But look more deeply. The separate papers mostly share a common assumption. Their authors believe that first steps can and should be taken in the near future. They also share the common hope that sufficient momentum can be developed in each of the separate elements so that the nuclear threat to humanity can be rolled back and ultimately eliminated. What they are saying is that the inspiration provided by the vision of what *ought* to be makes possible the accretion of individual achievements that will gradually change what *is*.