V. Achieving Rollback: The Instruments of Diplomacy

SEVERAL INSTRUMENTS OF diplomacy must be deployed to implement a rollback policy. They include

- Bilateral or regional targeted diplomacy designed to meet the security and other needs of states concerned
- Multilateral or "coalition diplomacy," for example with Russia and others, designed to multiply the influence that the United States alone could bring to bear
- Cooperative threat reduction programs
- Global norms to reinforce the idea of a level playing field, establish standards of expected behavior, and serve as a rallying point for anti-proliferation coalitions
- International organizations to help carry out transparency arrangements and other tasks assigned by the international community
- Coercive diplomacy or enforcement actions when necessary, including military measures as discussed above

Each of these six elements of a coherent U.S. national anti-proliferation policy has been put into practice in the past, but, with changing times, each is in need of being looked at afresh. The connection between military force and statecraft was discussed in a preceding section. The

following sections will review various aspects of the other instruments of diplomacy.

Targeted Diplomacy

To begin with, if the national security of potential proliferants is a prime driver of their decisions to acquire nuclear weapons, specifically targeted policies should be adopted to deal with these concerns. In contrast to the United States' viewing each proliferant simply as a security problem—as a nuisance at best and possibly as a dangerous enemy—such a targeted approach would offer the option of actually trying to respond to the specific issues that are motivating potential proliferants. In the end, this observation applies to all nations, but it applies with special force to de facto or undeclared nuclear weapon states like India, Pakistan, and Israel, which have very real and immediate needs that must be satisfied in some way if they are even to contemplate joining in a rollback program. The point is, of course, immediately relevant to the conduct of diplomacy with North Korea and Iran.

The Bush administration's "National Strategy to Combat Weapons of Mass Destruction" (December 2002) spoke of "targeted strategies against proliferants." Why not think, as well, of "targeted strategies pursued jointly with proliferants"—that is, strategies that would employ cooperative as well as confrontational methods to head off nuclear proliferation? Cooperation between adversaries was possible during the Cold War between the Soviet Union and the United States. It should be possible in other cases now.

It has been clear for some time, to cite one example,

that North Korea has genuine security concerns stemming, in part, from its own antagonistic policies toward its neighbors and toward the United States, and that its leaders are mainly interested in survival of the regime. The United States, like its ally South Korea, should be interested in societal change in North Korea as the best way to improve the lot of the Koreans who live in the North and to bring about changes in state behavior. U.S. policy has veered between engagement and ostracism as ways to achieve that, when the United States thinks about North Korea at all. North Korea is not a state aiming at global or even regional domination. And it is conceivable that a U.S. effort, sustained and high-level, could inaugurate a process of cooperation leading to a resolution of the issues that have festered in the Korean peninsula since the end of the Korean War in 1953. Only in that context is it likely that, short of war, the persistent problem of nuclear proliferation will be solved. The solution will require a mix of cooperation and strong pressure—not all one or the other.

It may be necessary to arrange stronger security assurances to nations that enter into a united effort against nuclear proliferation and voluntarily forgo the acquisition of nuclear weapons. "Negative assurances" already are provided, which oblige the nuclear weapon states to refrain from using nuclear weapons against any non–nuclear weapon state that is a signatory of the Non-Proliferation Treaty. Never viewed as very reassuring, these assurances have been eroded by a public and explicit emphasis by the United States on using nuclear weapons in response to the use of biological or chemical weapons by non–nuclear weapon states. New assurances should include provisions that offer more ironclad guarantees

concerning their sovereignty and territorial integrity. Those provided to Ukraine in the context of its giving up nuclear weapons might be taken as a model. There should also be increasing support for regional treaties in order to assure the total absence of nuclear weapons in their respective territories (Article VII of the NPT). To the several nuclear-free zones already established, it would be desirable to add a Central Asian Nuclear Free Zone, a subject already under discussion.

Economic and trade benefits, especially in the area of energy supplies, should be negotiated as tangible benefits for nations that join in the effort to create and maintain an effective anti-proliferation regime. Economic incentives should add to the attraction to them of selecting national policies that would enhance their security without resorting to the development of nuclear weapons. Such policies should address any perceived damage to their economic health arising from their obeying trade restraints in their support of the Non-Proliferation Treaty. As guaranteed in Article IV of the Non-Proliferation Treaty, parties should reap the benefits from nuclear energy for peaceful purposes and, with proper inspections, should be able to develop the facilities and carry out the research and development necessary to achieve the medical and energy benefits of nuclear technology. But the signatories must also enforce trade restrictions on equipment useful for building nuclear weapons, and allow a broad right of review of dual-purpose technologies and facilities.

Diplomatic moves to respond to security concerns of potential proliferants, it should be noted, must include strenuous efforts to resolve regional disputes and tensions that generate specific requirements for powerful military

forces. On some occasions, when and where appropriate, those requirements should be met by the provision of conventional weapons by the United States and its allies, or by the insertion of peacekeeping forces.

U.S.-Russia Responsibilities

Coalition diplomacy is necessary to present potential proliferants with a united front in opposition to their nuclear ambitions. In this effort, U.S.-Russian cooperation must play a central role. These two countries—by far the two largest nuclear weapon states—have the capacity either to undermine each other's attempts to roll back proliferation or to make their attempts mutually reinforcing.

A blueprint already is in place for cooperative efforts. It is called the Declaration of Moscow, signed by Presidents Bush and Putin in May 2002. Implementation of the commitments recorded in that document would be of enormous help in rolling back nuclear proliferation. Particularly important would be an increase in the amount of weapons-usable fissile material to be eliminated or placed in internationally monitored secure storage. Presidential attention will be required to overcome current barriers holding up progress on technical issues. It is needed now.

In their joint Declaration of Moscow, President Bush and President Putin called on all nations to strengthen and strictly enforce export controls, interdict illegal transfers, prosecute violators, and tighten border controls to prevent and protect against the proliferation of biological and chemical, as well as nuclear weapons. The importance of this cooperation was made very clear by the joint action

by the United States and Russia in 2002 to remove inadequately protected nuclear material located in Yugoslavia.

The scope of the agenda, and the spirit displayed in this Joint Declaration by Presidents Bush and Putin, provide a good basis for cooperative efforts to strengthen the nuclear non-proliferation regime. The United States and Russia are the possessors of more than 90 percent of all the nuclear weapons in the world and their leadership in moving toward a world of cooperation rather than confrontation is vitally important to sending the right message to other countries.

It is important to show that the two nations are drastically reducing their reliance on nuclear weapons. The Bush-Putin summit meeting in Moscow in May 2002 resulted in a treaty—denoted the Treaty of Moscow, or Strategic Offensive Reductions Treaty (SORT)—to reduce the number of warheads to remain deployed by each on their operational strategic offensive forces to 1,700–2,200 by the year 2012. Consent to the ratification of that treaty has been given by the U.S. Senate, with conditions that strengthen it, and also by the Russian State Duma. It formally entered into force in June 2003.

The very existence of such a treaty negotiated by the two countries within an agreed framework of cooperation is far more important than whether the number of operationally deployed warheads should have been 1,000 or 2,000 or whether the implementation date should have been 2007 or 2012. It is to be regretted, however, that the Treaty provisions are silent concerning the dismantling of non-deployed nuclear bombs and warheads. And so the United States and Russia can each, if they wish to, maintain a much larger arsenal of some 7,000 to 8,000 war-

heads for long-range strategic delivery systems, including warheads held in reserve. The primary impact of the treaty is to reduce the number of deployed warheads by downloading rather than destroying them. Hence there will be many more warheads and much more bomb material—uranium and plutonium—in Russia, and also in the United States, which could fall into dangerous hands. This is a major flaw—unnecessary as well as unwelcome.

There is no plausible reason for the United States and Russia each to maintain 8,000 warheads when it is remembered that just one bomb, whose yield was a little more than what might be a trigger in today's modern weapons, destroyed the entire city of Hiroshima. If each side maintained 8,000 warheads, the total number would add up to more than ten times the number of warheads possessed by all other six nuclear nations combined. That large number, if no irreversible steps are taken toward reducing it, will not help in achieving anti-proliferation goals.

In a regrettable retreat from the START II Treaty, which will now never be ratified, the Treaty of Moscow permits the United States and Russia to retain land-based ICBMs with multiple independently targetable reentry vehicles (MIRVs). This failure to rid the world of monster land-based ballistic missiles with many warheads, like the ten-warhead MIRVd SS18 or newer designs now being built and deployed, perpetuates the threat they pose as accurate first-strike weapons, each one of which is capable of destroying a number of an adversary's silo-based missiles. The threat to stability of such missiles in the new U.S. relationship with Russia is not the same as it was during the Cold War, but extending the service life of such

destructive weapons, particularly under circumstances where Russia's early warning system is not as capable as it should be, is a risky proposition.

An additional concern is the vagueness of the Treaty of Moscow as regards implementation. This is what the U.S. Senate sought to repair with the conditions, which dealt with Nunn-Lugar funding and annual estimates of force levels, that it attached to its resolution of ratification. In order to avoid confusion and allegations of noncompliance, the Bilateral Implementation Commission, to be established under Article III of the Treaty, also must provide a mechanism to clear up and settle compliance issues relating to the definition of "strategic warheads," to counting active vs. deactivated warheads, to setting verification standards, and to settling issues of force reconstitution before these issues become causes of friction. The U.S. Senate appears to be well aware of these problems.

The U.S. Senate's conditions and declarations attached to its resolution of ratification of the Treaty of Moscow show clearly that there is strong bipartisan support in the Senate for U.S.-Russian cooperation in putting their nuclear competition behind them. This support should strengthen the hands of the U.S. and Russian administrations in reducing the salience of nuclear weapons in their relationship, and in reducing the total number of warheads. Even though neither the Treaty nor the Declaration of Moscow provides for dismantling warheads or delivery systems, the U.S. Senate has shown its support for this in very strong terms.

There are economic as well as arms control reasons for further reductions in the large force of non–operationally deployed nuclear warheads planned for retention by

the Bush administration and by Russia. To maintain a larger nuclear infrastructure and build a larger pit-manufacturing capacity would require the United States to spend a lot more money. Here is an example of the impact: research during the past five years under the U.S. Department of Energy's Stockpile Stewardship Program has taught the U.S. weapons community a great deal about the behavior of plutonium, one of the most difficult and idiosyncratic metals, a reactor-made product that is the fuel for most nuclear weapons. Research on the effect of aging on the crystal structure of plutonium has shown that the nuclear pits in the warheads can be expected to retain their effectiveness for 50–60 years or longer. To maintain an arsenal of 2,000 pits, if they live 50 years or more, would require an ability to produce approximately 40 new pits a year as replacements. This can be accommodated at the Los Alamos National Laboratory, but if the total warhead number remains at close to current levels of about 8,000, instead of just the 2,000 to be deployed, facilities for manufacturing more than 160 pits per year would be required. This would require the United States to build and operate a major new multibillion dollar facility.

Part of the process of escaping from the mutual deterrence trap should be an attempt by Russia and the United States to cooperate in building and operating suitable defensive programs, as well as continuing to dismantle offensive nuclear weapons. To begin with, the United States should assist Russia in building a modern satellite-based early warning system for detecting attacks against its homeland. The United States has used infrared sensors aboard the Defense Support Program (DSP) satellites for many years for early warning of a missile attack. By all

accounts a more primitive Russian early warning system is in poor operational status, and does not provide early warning from all directions of approach to Russia. U.S. cooperation and support, including joint operations, could greatly enhance Russia's confidence in getting early warning of a missile attack. The technology for such a system is widely available and sharing it would in no way compromise U.S. security. This issue is addressed in a later section of this book. The next step, consistent with the Bush-Putin Declaration of May 2002, would be to develop and, if technically useful, deploy national and Europe-oriented ballistic missile defenses. U.S.-Russian cooperation could be a model, in some respects, for U.S. cooperation with other nations.

Beyond the technical challenges of ballistic missile defense, there are some important strategic and political issues in the U.S.-Russia context that need to be weighed in making decisions as to exactly how the United States should pursue its missile defense program. It is essential for the two nations to preserve an element of predictability in their military relationship. The Joint Declaration of Moscow had it right in stating that:

> The United States and Russia have also agreed to study possible areas for missile defense cooperation, including the expansion of joint exercises related to missile defense, and the exploration of potential programs for the joint research and development of missile defense technologies, bearing in mind the importance of the mutual protection of classified information and the safeguarding of intellectual property rights.

Those words, in fact, hark back to President Reagan's policies on ballistic missile defense. Measures of cooper-

ation and transparency in the area of missile defense as called for in the Bush-Putin Declaration, including the exchange of information on missile defense programs and tests, and reciprocal visits to observe the tests and operations to improve familiarity, should be implemented. Unfortunately, there are no tangible signs of this at present. Indeed, a shroud of secrecy has now enveloped the U.S. ballistic missile defense program so tightly that its plans and the results of any of the actual test flights have become well hidden from the American public.

Beyond its general statements, the Joint Declaration by the U.S. and Russian leaders established a Consultative Group for Strategic Security (CGSS) to be chaired by foreign ministers and defense ministers, with the participation of other senior officials. The CGSS provides operational content to the agreement with this mission statement:

> This group will be the principal mechanism through which the sides strengthen mutual confidence, expand transparency, share information and plans, and discuss strategic issues of mutual interest.

As a general statement of principles this is really significant. The test of its value will come in facing the devil in the details of implementation—including for starters, getting the Consultative Group to operate as a problem-solving mechanism on a continuous basis, something that will require a dedicated, full-time staff.

Cooperative Threat Reduction

To make the existing bulwarks of the non-proliferation regime more effective, the Nunn-Lugar Cooperative

Threat Reduction Program should be extended to apply on a global basis. So far, the United States has focused its efforts on the countries of the former Soviet Union, which have been repositories of the largest stockpiles of nuclear fuel and weapons. This work, initiated in 1992, has contributed significantly to improving safeguards of this dangerous material against spreading into dangerous hands. Although much has been accomplished, more than half of this material in the former Soviet Union still remains to be protected with improved security. The Harvard Project on Managing the Atom (see page 21) estimates that less than 40 percent of the more than a thousand tons of special nuclear material—that is, material that can be used as fuel for nuclear weapons—in the former Soviet Union has been given "rapid upgrade," and less than half of that has been secured with "comprehensive" protection. A senior bipartisan group led by former senator Howard Baker and former White House counsel Lloyd Cutler in their 2001 report for the Department of Energy, titled "A Report Card on the Department of Energy's Non-Proliferation Programs with Russia," wrote:

> The most urgent unmet national security threat to the United States today is the danger that weapons of mass destruction or weapons usable material in Russia could be stolen and sold to terrorists or hostile nation states.

Three major recommendations of this panel are (1) this threat to the United States should be designated as top priority; (2) a strategic plan for addressing it as rapidly as practical should be put in place; and (3) a senior official at the White House level in the United States should be put in charge of carrying it out.

To implement these recommendations the Baker-Cutler panel recommended that more resources be provided than at the current level. In rough numbers the United States contributes $1 billion per year and is committed to do so for the next ten years, with a slight funding increase to include work on securing chemical and biological weapons. Roughly two-thirds of that amount is devoted to programs relating to managing nuclear weapons material and expertise. The Department of Energy supports the material protection, control, and accountability program for special nuclear material and the Department of Defense has the responsibility for the nuclear weapons protection part of the program. Smaller grants from the international community are awarded to individual scientists to keep them active and engaged in productive scientific civilian research as an alternative to selling their expertise to would-be proliferators in other nations around the world. In addition to this support, the non-U.S. members of the Group of Eight (G8) have committed collectively to add $10 billion to the effort to supplement $10 billion provided by the United States over the next decade. Known as the "Global Partnership Against the Spread of Weapons of Mass Destruction," it now includes nations beyond the G8 who also have pledged to make contributions.

Most of that amount has recently been confirmed in the form of national pledges, although unfortunately there is now a tendency to view the pledges as ceilings, rather than floors. The Senior Officials Group of the G8 reported to the G8 Summit at their June 2–3, 2003, meeting in Evian, France, that this collective commitment has been translated into firm national commitments over ten years

of up to: United States, $10 billion; Germany, 1.5 billion euros; United Kingdom, $750 million; France, 750 million euros; Japan, $200 million; Italy, 1 billion euros; Canada, Can$1 billion. The European Union has pledged 1 billion euros and Russia $2 billion. Finland, Norway, Poland, Sweden, and Switzerland have indicated their interest in joining the Global Partnership as donors. The G8 also agreed to improve the security of radioactive materials in order to reduce the threat of radiological weapons, or the so-called "dirty bombs." In particular, the G8 will identify elements of the IAEA's Code of Conduct on the Safety and Security of Radioactive Sources that are of the greatest relevance to preventing terrorists or states that harbor them from gaining access to high-risk radioactive sources, and will consider developing recommendations on how those elements could be applied at the national level.

These are encouraging developments, but they should be seen in the context of the Baker-Cutler recommendation, which is that the annual funding authorized by the United States Congress should be tripled to $3 billion, still less than 1 percent of the U.S. national defense spending, and, when translated into G8 terms, far more than the Global Partnership Program is contemplating.

Specific actions for strengthening the Nunn-Lugar Cooperative Threat Reduction program should start with a stronger vote of confidence by the U.S. government in the program with steady financial support increased to the levels recommended by the Baker-Cutler panel. In addition, steps should be taken to expand technical cooperation in sensors and methods for physically protecting both the weapons and material using the best technologies, and to improve transparency to assure that all weap-

ons-usable fissile material is stored properly. This work might also include collaborative research and development on advancing proliferation-resistant nuclear technologies that could be made available under IAEA monitoring to other countries for peaceful purposes.

Global Norms: The Non-Proliferation Treaty

Global norms help to establish an anti-proliferation regime among all responsible nations of the world. A challenge raised frequently is: "But what value are such norms if rogue states or terrorists ignore and flout them?" Their value is in enabling coalitions of responsible nations opposing proliferation to be formed. Without this aura of legitimacy and shared expectations that nuclear proliferation should be opposed, it would be more difficult to assemble international support for anti-proliferation actions.

President Bush has subscribed to a requirement to bolster the nuclear non-proliferation treaty (NPT), both in the Declaration of Moscow and in his administration's "National Strategy to Combat Weapons of Mass Destruction." The latter document commits the Bush administration to working to improve compliance with the NPT. There are some voices of despair who say that the non-proliferation regime has failed. In fact, that regime has been highly successful, as noted earlier, measured by the small number of nuclear weapon states that exist and by the number of states that turned away from programs or actual possession of nuclear weapons. It can be even more successful if rollback is adopted as the U.S. strategy in this field.

The Non-Proliferation Treaty, which was signed in 1968 and entered into force in 1970, stands as a major success of the patient application of diplomacy. Its five-year treaty review cycles have helped to forge anti-proliferation coalitions. In very broad terms the regime is designed (1) to prevent the spread of nuclear weapons; (2) to provide assurance through international safeguards that the peaceful nuclear activities of states that have not already developed nuclear weapons will not and cannot be diverted to making such weapons; (3) to promote, to the maximum extent consistent with other purposes of this treaty, the peaceful uses of nuclear energy by non-nuclear weapon parties under appropriate international safeguards; and (4) to express the determination of the parties that the treaty should lead to further progress in comprehensive arms control and toward nuclear disarmament in the long term, the famous Article VI of the treaty. All but four countries in the world—India, Israel, Pakistan, and North Korea, which withdrew recently—are formally committed to NPT. As noted earlier, during the decades since Hiroshima and Nagasaki a significant number of nations that had started down the road to nuclear weapons abandoned them.

Global Norms: The Comprehensive Test Ban Treaty

Another, and related regime, also is in place: so far as is known, the only nuclear test explosions that have occurred since the Comprehensive Test Ban Treaty was opened for signature on September 24, 1996, were those conducted by India and Pakistan, and those nations themselves have

not tested in five years. The United States has not conducted a test explosion since 1992. Nuclear weapons tests may not be essential for states determined to build simple, first-generation nuclear weapons, but they are necessary for states that intend to develop more advanced or mature nuclear weapons capabilities. A ban on such tests provides a strong reinforcing mechanism for the NPT and helps to assure compliance with it.

Many nations signed on to the indefinite extension of the NPT in 1995 on the explicit condition that the nuclear powers would cease all nuclear-yield testing. This situation presented the United States and the other nuclear powers with a strong political and strategic incentive to formalize the moratorium on testing by ratifying and working to bring into force the Comprehensive Test Ban Treaty (CTBT) signed by the United States in 1996. It is obviously one of the critical cornerstones of the NPT, which, as Secretary Colin Powell said in his testimony before the Senate Foreign Relations Committee on July 9, 2002, "is the centerpiece of the global non-proliferation regime." A U.S. decision to resume testing to produce new nuclear weapons would therefore dramatically undermine the NPT. Conversely, a U.S. decision to ratify the already signed CTBT and lead the effort to bring the treaty into force would be an effective way of strengthening the NPT and, through it, worldwide anti-proliferation efforts.

Bringing the treaty into force would have the added technical advantage of allowing for the full implementation of the verification system described in the treaty to verify compliance. Full implementation would add to the worldwide remote-monitoring network a challenge-inspection protocol that would permit on-site inspections

of suspicious events. Currently, the Bush administration has declined to participate in the on-going work in Vienna to develop the on-site inspection regime and is refusing to fund the U.S. share of that activity. All U.S. allies in NATO, including Great Britain, Germany, and France, have signed and ratified the CTBT, as have Japan and Russia. Israel has signed the CTBT and is participating energetically in the work of setting up a verification system. Others, including China, have indicated they will work to bring the treaty into force once the United States has ratified it. As of May 2003, 31 of the 44 states that have built nuclear reactors, the so-called "nuclear-capable states," that must ratify the treaty for it to enter into force, have done so. In all, 97 states have ratified and 166 have signed. It is time for the United States to reconsider the issue of ratifying the CTBT. The White House and the Senate should enter into a serious debate to clarify the underlying issues, both the concerns and opportunities. This debate was not adequately joined in 1999 when the CTBT first came before the Senate for its advice and consent to ratification, and regrettably the Bush administration has thus far refused to reopen the question.

Why is the United States reluctant? In addition to the dubious need to develop "concepts for follow-on nuclear weapons better suited to the nation's needs," including nuclear earth penetrators against HDBTs, opponents of the CTBT have raised two questions: (1) "How can we be sure that many years ahead, we will not need to resume yield testing in order to rebuild the stockpile?"; and (2) "How can we monitor compliance by other CTBT signatories to standards consistent with U.S. national security?"

The answer to the first question is that total certainty

can never be achieved. But it is possible to ensure that there is a strong program in place with the necessary support of competent engineers and scientists who would sound a warning bell should a serious, unforeseen problem arise. With the enhanced, multifaceted, science-based program of stockpile stewardship established during the past eight years, the United States can have confidence in its ability to understand the character of the stockpile and the way in which special bomb materials age. As a result of the stockpile surveillance program, a number of flaws have been reported and dealt with appropriately. The flaws thus far uncovered within the nuclear devices themselves are related primarily to design oversights. That is, the flaws, or their precursors, were present when the weapons were put into the stockpile.

The United States can be assured that the CTBT is consistent with the ability to retain high confidence in the reliability of its existing nuclear force for decades. This conclusion has been demonstrated convincingly by a number of detailed technical analyses. In 1995 a team of independent scientists working with colleagues from the weapons community, including technical leaders involved in creating the current nuclear arsenal, reached this finding (Nuclear Testing; JASON 1995 report for the Department of Energy). It was that determination that led the United States to negotiate the CTBT and sign it in 1996. Most recently, in August 2002, a panel of the National Academy of Sciences published a comprehensive study on Technical Issues Related to the Comprehensive Test Bam Treaty. The study group, which included retired directors of weapons laboratories, bomb designers, and technical and scientific experts, concluded that the United States can

maintain confidence in its enduring stockpile under a ban on all nuclear-yield testing, provided it has a well-supported, science-based stewardship and maintenance program, together with a capability to remanufacture warheads as needed.

A similar detailed analysis that addressed strategic as well as technical issues, led by General John M. Shalikashvili, former chairman of the Joint Chiefs of Staff, was conducted in 2000–2001 with government cooperation and authorization and it reached the same conclusion. In his letter to the President, General Shalikashvili affirmed that the CTBT "is a very important part of global non-proliferation efforts and is compatible with keeping a safe, reliable U.S. nuclear deterrent."

Concerning the question of compliance, there is broad agreement that the United States could monitor CTBT compliance to standards consistent with its national security. Based on its technical analysis, the National Academy of Sciences study group concluded that

> The worst-case scenario under a no-CTBT regime poses far bigger threats to U.S. security—sophisticated nuclear weapons in the hands of many more adversaries—than the worst-case scenario of clandestine testing in a CTBT regime, within the constraints posed by the monitoring system.

As noted by General Shalikashvili in his study, "Ironically the more testing expertise a country has, the better able it would be to conduct an evasive test and extract useful information—but the less difference that information would probably make in advancing the country's nuclear capabilities." Conversely, it is true that the less experience

in nuclear weapons that a country has, the more difficult it is to carry out successfully a useful test without actually exceeding the low detection threshold of the fully implemented verification system.

When fully implemented under a CTBT, the verification system becomes more robust and difficult to evade, since it will then acquire challenge rights to check out data initially derived from remote sensors by conducting short-notice, on-site inspections of suspicious events. For a very modest cost, the international monitoring network could be improved—for example, by incorporating private or government seismic stations as full-time participants in the detection system. A further strengthening of the sensitivity of the CTBT to detect covert, treaty-violating activities could be negotiated by adding appropriate bilateral transparency and confidence-building measures with the other nuclear powers, Russia and China in particular. These would permit on-site sensors to be introduced at their instrumented test sites to monitor for signals—seismic and radiological—from possible underground tests that are banned by the CTBT. The Bush administration should clearly state its willingness to initiate such an arrangement, reciprocally with the Russians, at Novaya Zemlya and the Nevada Test Site. Bilateral forums that supplement, but cooperate with, the existing CTBT organization would be needed to manage this process.

The CTBT does not increase the requirements for the United States to monitor and identify underground testing. The United States will want all information on testing activities, with or without the treaty. It does, however, add to the difficulties for a country to evade the treaty not only by strengthening the system but also by adding the inspec-

tion rights. Furthermore, given that the United States has the most advanced and sophisticated diagnostic, analytical, experimental, and computation facilities, it is in a stronger position than other nations to maintain a deterrent under a test ban. As General Shalikashvili concluded in his study, "I believe that an objective and thorough net assessment shows convincingly that U.S. interests, as well as those of friends and allies, will be served by the Treaty's entry into force."

Pending entry into force, the United States should do whatever it takes to strengthen the present moratorium, which has now lasted eleven years. This would involve stronger statements of no intention to resume nuclear testing than the administration has yet made. And it would include stronger support for the International Monitoring System (IMS) that the treaty has established, components of which already exist. The administration should continue to support the IMS financially and also begin to fund the development of the on-site inspection regime so that it could be implemented voluntarily even before the treaty enters into force. It also should facilitate the addition of seismic research stations to the network, as mentioned earlier, and try to supplement them with bilateral monitoring agreements with other nuclear weapon states, especially China and Russia. Without question, the United States should maintain and strengthen existing national technical capabilities for verifying treaty compliance.

Building New Regimes: Avoiding Miscalculation and Strengthening Defense Cooperation

As noted earlier, the security environment of the future may include crises in which more than two nuclear weapon states are involved and thus may pose greater uncertainty about the origins and intent of nuclear explosions. Worst-case planning and worst-case assumptions generally promote tensions and reduce the opportunities for cooperation. More effective early warning systems could help with these problems. As also noted earlier, the technology required for such systems is widely available and has existed for many years. Sharing it would in no way compromise U.S. security on technical grounds. On strategic grounds, the stability that such a system would enhance for many countries against the fear of surprise attack would contribute to security worldwide, including that of the United States.

Would countries other than Russia, and perhaps some U.S. allies, be interested in early warning cooperation as a first step toward even deeper military cooperation? The specific answer, of course, would be different for each country and would depend, in part, on the levels of technical expertise in this area possessed by individual countries. Related factors include receptivity to transparency in fairly sensitive security areas and the availability of funding. Political questions, such as the nature of the relations between potentially cooperating states and perceptions regarding the purposes of early warning cooperation, also would be important.

In general, the purpose of early warning cooperation would be to reduce or eliminate miscalculations by pro-

viding a more accurate picture of what is happening and extra minutes of time for threat assessment; to minimize incentives for prompt launch procedures; and to support national decisions to keep offensive nuclear forces at the lowest levels judged necessary for security. The support for these objectives should be fairly widespread.

The first steps in setting up programs of cooperation in early warning should consist of bilateral talks between the United States and potential participants, with the exception of the NATO countries where multilateral forums already exist. If a series of bilateral programs of cooperation were established, some method of creating transparency among the programs should be developed to minimize suspicion and to help the learning process.

There would be political and security benefits from multinational cooperation. They include

- Building a coalition of nations whose enemies would be seen to be rogue states and terrorist organizations, not each other
- Creating conditions conducive to mutual restraint in strategic matters generally
- Developing a forum for coordinating anti-proliferation activities and presenting a common front against nuclear proliferation
- Facilitating a harmonized response to the use by any nation or terrorist group of any type of weapon of mass destruction or terror

Anti-proliferation coalitions should not, of course, be limited to nuclear weapon states. Those major nations that have renounced the acquisition of nuclear weapons, even

though they have all the ingredients for producing robust nuclear weapons arsenals, also should be included. This would include Germany, Japan, South Korea, South Africa, Argentina, Brazil, Sweden, Canada, Australia, Ukraine, and probably one of the leading states of the Middle East, of which Iran would be the best choice.

International Organizations: The International Atomic Energy Agency

Nations require international organizations to carry on some of the work they want done in the external realm. Such organizations are not independent entities, as some critics of them mistakenly believe. Rather they are servants of their member states, delegated to carry out certain well-defined functions assigned to them. This is the case regarding the international organizations created to help monitor treaties dealing with deadly weapons, for example, the CTBT and the chemical weapons convention. The International Atomic Energy Agency (IAEA) looms very large in nuclear non-proliferation matters because it was assigned responsibility for monitoring certain aspects of the nuclear Non-Proliferation Treaty (NPT).

Unfortunately, in the international climate that existed nearly forty years ago when the NPT was being negotiated, the IAEA had only token inspection responsibilities. Its main task was to confirm that no nuclear materials diversions were taking place from nuclear facilities being assisted by nuclear weapon states. When the NPT came into effect, the IAEA was asked to monitor all nuclear activities of the non–nuclear weapon states, but its access was limited to those facilities declared by those states.

Although the statute of the IAEA could be interpreted as permitting very broad inspection rights and responsibilities, the Board of Governors of the IAEA, an agent of the member states, never could agree that the Agency should exercise those rights and responsibilities. The IAEA was not empowered to look for undeclared facilities. That climate of low expectations began to change in the 1990s when the IAEA was asked to monitor North Korea's nuclear facilities. The then director-general of the IAEA, Dr. Hans Blix, having been burned by the revelations of undeclared nuclear activities in Iraq, already had decided to ask for more authority to inspect undeclared suspect sites. That authority still has not been granted by all the member states as of this writing.

In 2002, it was learned that the North Koreans had not just one, but two weapons development programs, the visible one designed to build a plutonium bomb and the covert one designed to enrich natural uranium for an HEU bomb. And Iran is engaged in building a large gas centrifuge facility for the enrichment of uranium, presumably for use as bomb material. These developments underscore the importance of expanding the authority of the IAEA for verifying compliance with the provisions of the Non-Proliferation Treaty. The Bush administration has proposed that the IAEA Additional Protocol, which gives the IAEA more authority for monitoring, should be generally accepted. This is the right point to make, but unless aggressive moves are made to accomplish this, the Additional Protocol will not be applied in the most critical cases. Its value, and the effectiveness of IAEA in preventing proliferation, would be further strengthened by a UN agreement to prohibit plutonium reprocessing facilities and

uranium enrichment plants from being included as components of the nuclear infrastructure of non-nuclear weapon states.

The U.S. administration also has called for "appropriate increase in funding" for the IAEA. This is certainly necessary, for the IAEA has been starved of funding for years. Probably, the administration will have to campaign among other IAEA member states to change the situation, as well as put more money into its own FY2004 budget.

The Non-Proliferation Treaty requires those non-nuclear weapon states that have subscribed to its provisions to negotiate a Safeguards Agreement with the IAEA. The Safeguards Agreement that is in effect with many adherents to the NPT dates back some years and does not include the access rights that most experts now believe are necessary to monitor undeclared nuclear facilities. This is why it is so essential for the Additional Protocol to be applied as soon as possible.

There should be a deadline declared by the Board of Governors of the IAEA, or by the UN Security Council, for states to conclude an agreement with the IAEA to put into effect the provisions of the Additional Protocol. After that date, states that have not accepted it would be denied nuclear-related assistance. Similar penalties, as appropriate, would be applied to those states, like India and Pakistan, nonadherents to the NPT, that assist other nations that have not accepted the Additional Protocol after the deadline declared by the IAEA or the UN Security Council.

The UN Security Council should undertake the task of enforcing the inspection provisions of the IAEA, including those penalties to be imposed in the event of non-adher-

ence to the Additional Protocol, or in the event of assistance being provided to another state to develop nuclear weapons by a non-adherent to the NPT, or in the event of a refusal by a state to accept inspections requested by the IAEA. Enforcing these essential elements of an effective anti-proliferation program may require the authorization of military force by the UN Security Council, including the use of force to impose an inspection that has been declared necessary by the IAEA and endorsed by the UN Security Council.

The nuclear weapon states, all members of the IAEA, also could give the Agency more responsibilities regarding their own nuclear-weapons related activities. The IAEA, for example, may have a shared responsibility, with the United States and Russia, for monitoring dismantled nuclear warheads stored at the Mayak facility constructed with Nunn-Lugar assistance near Chelyabinsk in the Urals. It is also possible to think of an IAEA responsibility for some aspects of the supplemental nuclear test monitoring system for Russia, China, and the United States mentioned previously.

Finally, the IAEA could be assigned a larger role in collecting data concerning transfers of nuclear materials and equipment. Member states should be asked to register all such transfers, receiving as well as shipping, with the IAEA on a regular basis. The Nuclear Suppliers Group also should be requested to file reports with the IAEA, although not the details of all its deliberations.

Such actions would strengthen the capabilities for verifying the NPT. This would not only provide greater confidence in compliance with its provisions by all signatories but also answer those in the United States and elsewhere

who doubt the durability and continuing value of the current non-proliferation regime. As noted earlier, George Tenet, Director of Central Intelligence, questioned the prospects of continuing the present non-proliferation regime in his report to the Senate on February 11, 2003, when he said, "We have entered a new world of proliferation," observing that "more has changed on proliferation over the past year than any other issue." His concern and pessimism about maintaining the non-proliferation regime in the future centered on those "non-state purveyors"—that is, private companies or, in some cases, individuals, who are making technology and equipment available to potential nuclear proliferants for cash. Such sources are increasingly able to provide the technology and equipment that previously could only be supplied by countries with established nuclear capabilities.

Director Tenet's remarks emphasize the importance of greatly strengthening the means of verifying such activities. This will require broad international cooperation in monitoring commerce and illegal trafficking in nuclear materials in the years ahead. The complexities that have multiplied and the increasingly brazen challenges that have been flung at the international community are sufficiently alarming to make this issue one that should be given the highest priority by the U.S. government. A vigorous diplomatic campaign must be carried forward with the necessary resources. If that is done, there is every hope that this generation of American leaders can do as well as those who established a non-proliferation regime during the most threatening conditions throughout the Cold War years and bequeathed this nation a world with only eight nuclear weapon states.

There is evidently great urgency in enlarging the authority of IAEA and backing it with the enforcement responsibilities of the United Nations Security Council in matters of verifying compliance with the Non-Proliferation Treaty. This will be necessary if this regime is to have any real hope of surviving into the future. And until someone can come up with a better model for reducing nuclear danger, the nations of the world have no better alternative than to make this system work, no matter how difficult and protracted the effort may be.