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The New Nuclear Threat

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THE NEW NUCLEAR THREAT

The threat of nuclear weapons spread across the world has displaced the fear of superpower nuclear conflict on the international agenda. Diplomatic and export control efforts arising from the 1970 Nuclear Nonproliferation Treaty (NPT) have succeeded in some measure in reducing diffusion of nuclear capability over the past two decades. In that time only India detonated a nuclear device (1974), although experts agree that Israel, Pakistan and South Africa also have a nuclear weapons capability. Several other nations have demonstrated interest in obtaining one.

The world now knows, however, that even though Iraq signed the NPT it managed to mount a massive covert program to acquire nuclear and other weapons of mass destruction. Governments and international organizations, including the International Atomic Energy Agency (IAEA), were largely ignorant of Iraqi intentions and capabilities. While aspects of the Iraqi case are unique, it is widely acknowledged that several states in the Middle East, notably Algeria, Iran and Libya, are moving toward nuclear weapons capability, as is North Korea.

A new element of the proliferation problem is the collapse of the Soviet Union, which removes the influence of a strong central government that was relatively responsible in its control of nuclear weapons and technology. The present fluid situation in the former U.S.S.R. increases the risk that significant nuclear expertise, material and technology might be made available to proliferators. Most former Soviet states lack effective policy mechanisms to address the various aspects of proliferation control.

The experience of the United Nations and IAEA in carrying out sanctions against Iraq, alongside the challenge of mounting effective inspections, has sharpened interest in the roles of

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international mechanisms for enforcing nonproliferation agreements.

II

Two heavy metal elements are suitable for making a nuclear fission explosive device. The first, uranium, occurs naturally in ore in two isotopic forms: uranium 235 (U-235) and the more common U-238 isotope. The rare U-235 isotope must be enriched to greater than approximately 90 percent to make a useful explosive device. Because isotopes of the same element have identical chemical behavior, the enrichment process requires special physical separation techniques.

These separation technologies include gaseous diffusion, long in use by the United States, France and the Soviet Union; centrifugation, the choice of the European consortium URENCO and Pakistan; and electromagnetic, under development by Iraq. South Africa has pursued an aerodynamic technique, and the United States has developed laser isotope separation, which is more economical in terms of cost, space and time but requires greater technical sophistication. All enrichment techniques must rely on separating isotopes based on their different masses. The selection of the technique used depends on several factors: the intended scale, level of knowledge and the cost in terms of energy and money. For all techniques, however, considerable engineering sophistication is required to achieve the high enrichments needed for nuclear explosives.

The United States, Britain, France and the Soviet Union began with gaseous diffusion in the 1940s, when there was considerably less knowledge about other techniques, contemplating large scale operation. Today a country has a wider range of choices and would be expected to pick a technique that is easily concealed. Until the example of Iraq it was expected that centrifugation would be the separation technique of choice for a nation with a covert weapons program and moderate technical sophistication. In the long run laser isotope separation is of greatest concern because the process can be carried out in a compact space with few external signatures, such as massive power consumption.

The second isotope suitable for a nuclear fission explosive device is plutonium 239 (Pu-239). Plutonium does not occur in nature and must be made from uranium. The most common technique is to irradiate the relatively abundant U-238 in a nuclear reactor; absorption of a neutron converts U-238 into

the fissile Pu-239. Once produced in the reactor Pu-239 can be separated from the remaining heavy metal by chemical reprocessing. Chemical separation is possible, rather than the more demanding isotope separation, because uranium and plutonium are different elements.

A nation can thus obtain fissile nuclear material either by enriching U-235 by some isotope separation technique or by producing plutonium in a nuclear reactor, followed by chemical separation. From the standpoint of nonproliferation the problem is that a nuclear reactor need not be dedicated to producing plutonium for weapons. Plutonium is produced in all nuclear reactors fueled by uranium, including those built for generating civilian electric power. The United States, Israel and China have relied on special reactors dedicated to plutonium production. The Soviets made frequent use of civilian power reactors to produce special nuclear materials, and the United States had one reactor in Hanford, Washington, which produced both electricity and plutonium for weapons.

Over time a nation with a peaceful nuclear power fuel cycle that includes reprocessing will acquire significant quantities of plutonium that can be used for bombs. A clear distinction between civilian and military applications, therefore, is a major objective of any nonproliferation regime. The traditional role of the IAEA is to maintain this distinction by inspection of civilian nuclear facilities. This inspection, however, is exclusively concerned with accounting for the amount of nuclear material produced at the facility and its custody.

For example a trained inspection team will arrive at a facility with a knowledge of the amounts of material and their location at the time of the last inspection. By examining plant records and conducting tests it is possible to determine changes in these inventories, adjusted for any acquisition of newly enriched material, and thus arrive at a final inventory. The results of the inspection are reported to IAEA headquarters, which investigates any discrepancies that arise.

III

Designing a crude nuclear device is difficult but not impossible, especially given the knowledge of nuclear physics and technology dispersed around the world. There are two classes of nuclear weapons. Fission weapons release energy as a result of the splitting of U-235 and Pu-239; thermonuclear weapons

release greater amounts of energy through the fusion of light isotopes, mainly tritium, a heavy isotope of hydrogen. Fusion reactions, however, must first be ignited by the energy of a fission explosion.

Current estimates are that only the United States, Russia, Britain, France and China have the capability to detonate a thermonuclear device, although it is possible that Israel may also be able to do so. The proliferation of thermonuclear capability is a long-range threat that differs quantitatively, not qualitatively, from the present threat of proliferation of fission devices.

The central problem facing a nation seeking a bomb is obtaining an adequate quantity of uranium or plutonium. Unique equipment and technology are required for high enrichment or chemical separation. Acquisition of these nuclear materials and technology thus signals the intention and capability of proliferating states and provides a useful basis for establishing export controls. Weapons of mass destruction based on chemical or biological agents, on the other hand, require no correspondingly unique materials or techniques, making export controls more difficult.

A conventional high explosive trigger and fusing are required to initiate a critical nuclear reaction by implosion. This expertise and equipment are unique to nuclear weapons, with the possible exception of application to advanced conventional munitions, such as shaped charges for piercing tank armor. High explosive triggers also require a good deal of experimentation. Acquisition of high explosive technology, then, may indicate a nation's intention for nuclear weapons capability and can be targeted for export control.

Assembling a nuclear device requires specific knowledge of machining heavy metal, forming a high explosive shaped charge and integrating a fusing device. These demanding tasks present the greatest engineering challenges to a would-be proliferator. The quality of assembly determines whether the device will have the desired yield, a problem not of central importance to a nation seeking its first bomb.

Testing a device is technically desirable but politically risky. The political reaction to India's 1974 detonation led other states to eschew testing. Thus Israel, Pakistan and South Africa, while credited with nuclear capability, have never detonated a device (one should exclude a single suspicious event in the south Atlantic in 1979). The consequence is

modest uncertainty about whether the device will indeed work, though no initial test of a nuclear device has been known to fail. It also creates considerable uncertainty as to whether the bomb will have the intended yield.

Finally for a nuclear device to be a credible threat it needs a means of delivery. Ballistic missiles provide potentially accurate delivery. Simultaneous proliferation of nuclear and ballistic missile capability is of special concern, such as intermediate-range Scud missiles in Iraq and North Korea and the Israeli Jericho missile. The longer-range Chinese CSS-2 is a particularly worrisome export; it has already been acquired by Saudi Arabia. Although canceled in 1990, joint development of the Condor missile by Argentina, Egypt and Iraq is another troublesome example.

Producing ballistic missiles is difficult and requires a significant supporting industrial base. Many nations thus import ballistic missiles; currently North Korea and China are the countries that export ballistic missiles to any buyer.

Air delivery can also be used for a nuclear device. A crude device might weigh 500 kilograms, and could of course be delivered by either military or civilian aircraft. An at least rudimentary system must be in place to control, target and command the use of the weapon. An unstable fragile command and control system could be as threatening as any menacing dictator because of the possibility of accidental or unauthorized use.

As concern mounts about attack from even a rudimentary weapon of mass destruction, increased attention is devoted to defensive systems, especially those against ballistic missiles. One could perhaps imagine an expensive and complicated defensive system that could destroy a significant fraction of a several-dozen-weapon attack. It is impossible, however, to guarantee complete protection, particularly against a single device surreptitiously delivered.

IV

The conventional view of proliferation is that a country's leadership at some point makes an explicit decision to seek a nuclear weapon, launches a secret program and finally achieves nuclear status by testing a device on a particular date. In reality the path to nuclear weapons capability requires many important and complex choices along the way.

The fundamental motivation to seek a weapon is the per-

ception that national security will be improved. Most nations prefer nuclear weapons because the devices are highly destructive and confer a symbolic status; chemical and biological weapons provide an alternative, however, if the nuclear option is unavailable. Most nuclear proliferating states also have chemical and biological programs and vice versa.

The more sophisticated a nation's technological capability, the easier are the steps to gain a nuclear weapon, especially if the nation already has a civilian nuclear power industry. It would be a simple matter for nations like Japan, Germany, Switzerland and Canada to build a number of weapons in a matter of months, with no advanced preparation.

Less industrialized nations face more complex choices. Nations like Israel, Pakistan and Iraq established covert nuclear weapons programs at the outset. Other nations like India, Argentina and Brazil moved closer to weapon capability through ambitious civilian nuclear power programs. India produced plutonium from natural uranium in a heavy-water reactor provided by Canada for a "peaceful" nuclear energy program. Brazil and Argentina attempted to acquire reprocessing capability in the late 1970s, much earlier in their civilian power programs than made economic sense.

North Korea's and Algeria's pursuit of nuclear technology for civilian purposes may well conceal nascent weapons programs. Given the significant international political penalty incurred by a proliferating nation, it is not surprising that many seek to shroud their intentions in ambiguity. American law, for example, requires the president to deny foreign aid to any nation known to be seeking nuclear weapons capability; the United States thus denied aid to Pakistan in 1990.

It is important to distinguish between intentions and capabilities. A country might wish to keep its nuclear option open in order to reduce the time required to acquire a weapon, without risking adverse international reaction in advance. Such a state would then advocate an aggressive civilian nuclear energy program with enrichment and reprocessing components. It would be neither necessary nor politically desirable to have a national-level policy decision; there would be no need to inform the foreign ministry, and the nation might well adhere to the NPT and agree to the full scope of IAEA inspections. In a few years the state would realize significant improvement in its ability to produce a nuclear weapon, yet its intentions would remain purposely ambiguous and above

international suspicion. Over time actions to improve nuclear capability would become detectable, but not through normal IAEA inspections.

Announcement that a nation is abandoning a nuclear weapons program may be a reliable indicator of its intentions but it does not provide any indication of its nuclear weapons capability. Brazil and Argentina, for example, have "abandoned" nuclear weapon ambitions, but there has been no accompanying change in their civilian nuclear power programs or nuclear technology export efforts: their capability to acquire a bomb remains undiminished.

Willingness to sign the NPT is not a guarantee against proliferation, as the examples of Iraq, Iran, Libya and North Korea illustrate. Nations have signed the NPT for widely different reasons. North Korea's and Iran's signatures were undoubtedly the price for receiving further nuclear assistance from their principal nuclear suppliers, respectively, the Soviet Union and the United States. It is even possible that when Iraq and Libya signed, they had no nuclear ambitions.

V

The nature of the Iraqi deception provides important lessons for nonproliferation. Iraq's case exquisitely illustrates how the international community has been willing to delude itself.

Iraq's interest in a bomb was dramatically highlighted by the 1981 Israeli bombing of Iraq's French-supplied Osirak reactor. Yet Western governments still wildly underestimated the scope and magnitude of the Iraqi effort. U.S. and U.N. on-site inspection teams have since learned that Iraq had a massive covert program that encompassed every aspect of nuclear weapons development—from mining uranium ore, through enrichment by electromagnetic separation, to weapons design. The Iraqi program involved more than 10,000 qualified technical people who remain in place as a competent cadre. Can such a failure be avoided in the future?

The Iraqi program was greatly assisted by transfer of sensitive technology through trade, mostly from Germany. Most exporting companies would claim that the equipment, such as precision lathes, had multiple uses and that they had no knowledge of Iraqi intentions. Moreover the Iraqis concealed their efforts to acquire technology by systematically placing orders through cover agencies and businesses. Success-

ful export control requires greater appreciation of the potentially dangerous use of equipment and technology. Proper safeguards for dual-use items should include export licenses specifying ultimate destination and enforcement mechanisms able to detect diversion.

The mission and culture of the IAEA has been to focus narrowly on material accountability in declared facilities without regard to other activity. Before the Gulf War IAEA inspectors in Iraq confined themselves strictly to accounting for material at those facilities declared by Iraqi authorities. They did not have responsibility for investigating or reporting the obviously high level of activity in the buildings surrounding those facilities. The IAEA did not report any material discrepancies; it is now known that the Iraqis diverted a few grams of plutonium from one of the declared reactors for radiochemical testing.

Even armed with the full force of U.N. sanctions and intelligence supplied by the United States and other governments, the IAEA has had considerable difficulty locating and inspecting Iraqi nuclear facilities. While IAEA inspectors are familiar with the commercial power fuel cycle—enrichment, power reactor operation and reprocessing—they have no experience with nuclear weapons programs. Thus IAEA efforts had to be augmented with American, French, British and Russian nuclear weapons experts.

Limited to declared facilities IAEA inspections will obviously have difficulty detecting covert programs. There is thus enthusiasm for strengthening the IAEA's implicit authority to carry out challenges to suspected, undeclared sites. While expanding IAEA authority is worthwhile, as the example of North Korea illustrates, its effectiveness will have limits. To know which undeclared facilities to challenge, the IAEA will need to rely on external sources of information, primarily intelligence supplied by Western nations. Moreover intrusive inspections are only possible with near-unanimous backing by the U.N. Security Council. In cases more ambiguous than Iraq's it will be difficult for the IAEA to act. Most nations with suspect covert weapons programs will not agree to proposed inspections, and it is far from clear what mechanisms will be available to the IAEA to assure compliance.

There thus must be greater efforts to collect intelligence on the capabilities and intentions of countries considered proliferation threats. The willingness of intelligence analysts to com-

pile a picture—necessarily based on fragmentary information—and to present that view to policymakers is essential. But policymakers themselves must be willing to listen to intelligence estimates. The failure of American policymakers to receive or believe realistic assessments of the Iraqi threat was undoubtedly influenced by Iraq's political role as a counterweight to Iran and Syria; acknowledging Iraq's proliferation threat would have complicated the pursuit of other diplomatic objectives in the Persian Gulf.

The point is not how wrong the United States was about Iraq's timetable for acquiring a bomb, but rather how greatly the United States underestimated the magnitude of the Iraqi covert effort. As it stands, such a massive miscalculation of a nation's capability, high or low, can surely happen again.

VI

Of the several mechanisms in place to inhibit the spread of nuclear weapons the Nonproliferation Treaty is politically the most important. The NPT requires nonnuclear weapon signatories to forgo nuclear weapons capability, not to transfer or receive nuclear weapon-related technology and to submit facilities to IAEA safeguards. In exchange nuclear weapon states agree to cooperate fully in supplying nuclear technology for peaceful purposes and to negotiate on arms control. The treaty also includes a provision for peaceful application of nuclear explosives, an unfortunate item since the dangers of peaceful nuclear explosives outweigh imaginable benefits.

By establishing the illegitimacy of proliferation the treaty politically constrains its 144 signatories and nonsignatories as well from openly seeking nuclear weapons. The treaty's openly discriminatory distinction between nuclear and nonnuclear states, however, has been a continuing point of contention at NPT review conferences held every five years. Most nations are simply unwilling to accept a status quo in which the United States, Russia and a few other nations have the right to possess nuclear weapons while the remainder of the world does not.

A second nonproliferation mechanism is the London Nuclear Suppliers Group, which in 1978 adopted guidelines intended to regulate commerce in material, equipment and technology with potential nuclear weapons application, including sensitive enrichment and reprocessing technology. The

success of these export controls depends on the willingness of supplier nations to accept export constraints and to keep watch on other exporting nations and problem countries. The credibility of such observations frequently depends on intelligence that provides crucial evidence of misuse. Participating nations must thus balance the benefits of controlling sensitive exports against the cost of revealing intelligence sources and methods. A similar export control effort to slow the spread of ballistic missile technology, through the Missile Technology Control Regime, also contributes to nonproliferation.

The disintegration of the Soviet Union presents entirely new problems for export control. Several republics, notably Russia, Ukraine, Belarus and Kazakhstan, have had significant nuclear arsenals and facilities on their territories. With the exception of Russia these nations have limited technical or political capacity to formulate and enforce nuclear nonproliferation policies. Moreover desperate economic conditions in these countries provide considerable incentive for individuals, laboratories or factories to profit by exporting nuclear materials and technology. Even if leakage of nuclear devices and materials can be avoided, there is significant opportunity for personnel at facilities to export know-how. While there is a good deal of agreement about Western financial assistance to prevent such leakage, the prospects for credible assistance are too dim to be reassuring.

A third mechanism for controlling proliferation is the IAEA's inspection regime. Conventional IAEA inspections serve a useful role, and there are no significant examples of diversion from safeguarded facilities. Expanding IAEA inspections to suspect sites is also welcome. But since IAEA inspections are not designed to detect covert programs, there should be realistic expectations about how much warning the IAEA can provide, even with expanded authority for challenge inspections. These limitations make it necessary to maintain the option of insisting on inspections outside the IAEA framework. This could be done through bilateral arrangements, such as the United States is encouraging between North and South Korea and like Brazil's and Argentina's agreement under the 1968 Treaty of Tlatelolco. It could also be done, perhaps, under the direct auspices of the U.N. Security Council.

Under its present leadership the IAEA is willing to take a more aggressive posture toward inspecting suspect facilities. If greater reliance is placed on IAEA safeguards, however, many

IAEA member states will wish to see accompanying expansion of the agency's peaceful nuclear cooperation activities. This undoubtedly will require increases in member state contributions to the IAEA budget, increases that have, until recently, been resisted by the United States and other nations.

Several nations, notably India and Pakistan, stress the discriminatory aspects of the nonproliferation regime and the unwillingness of nuclear states to meet NPT obligations to negotiate arms control agreements. These states argue that, by taking actions with regard to their own arsenals, the major nuclear powers can strongly influence nonproliferation elsewhere. In particular there is a call for the United States and other nuclear powers to adopt a comprehensive test ban. The CTB proposal recently received new attention and support in the United States on the premise that the collapse of the Soviet Union makes nuclear weapons less important to U.S. security, and nuclear weapons testing less necessary.

The need for testing must be balanced against possible nonproliferation benefits of testing restraints. There are, however, several reasons to distrust linkage between testing by nuclear weapon states and the pace of proliferation. The motivation of most nations to acquire a nuclear weapon has little to do with the size or characteristics of the U.S. arsenal. Their motivations reflect security concerns or geopolitical ambitions. These concerns will not go away if nuclear weapon states cease testing. Indeed regional security concerns are more likely to be reduced by security guarantees extended by the United States and other nuclear weapon states, which hopefully will persuade have-not nations to forgo acquiring weapons of their own. The effectiveness of U.S. security guarantees in deterring conflict relies on America's political-military strength, which is, in part, supported by its nuclear arsenal.

Even if a CTB might reduce the likelihood of proliferating nations crossing the bright line to testing, it does not mean those nations have not already acquired a nuclear weapons capability. To be sure a prohibition on testing may slow the pace of proliferating nations to acquire thermonuclear weapons, but possession of crude fission weapons is the essential threat that the world seeks to avoid. A CTB (or a similar proposal to ban production of special nuclear materials) is not a solution to serious proliferation problems.

VII

The examples of North Korea and Algeria illustrate the difficulties of making progress on nonproliferation. North Korea has major nuclear facilities in Yongbyon, about 90 kilometers north of the capital Pyongyang. That site, operating since 1987, has a 30-megawatt thermal graphite reactor fueled by natural uranium.

There have been suspicions since the late 1960s that North Korea has had a nuclear weapons program. What brought these fears to center stage was the discovery of Yongbyon's large reprocessing facility; though as yet not operational, it could be used to separate plutonium for nuclear weapons production. Possession of both a reprocessing plant and operating nuclear reactors means that North Korea could be close to acquiring the plutonium needed to make a bomb. North Korea's characterization of this sizable facility as a "radiochemistry laboratory" is simply unbelievable. It has been publicly reported that French SPOT satellite photographs have confirmed the presence of these facilities, as well as nearby craters that appear to be the result of high explosives testing. Experience with Iraq makes the United States and other nations more concerned about what North Korea is actually doing and more prone to taking serious steps to stop it from acquiring nuclear weapons.

North Korea denies having a nuclear weapons program and claims to be pursuing nuclear power development to supply badly needed electricity. Under Soviet pressure Pyongyang agreed to sign the NPT in 1985 and place its reactor facilities under IAEA inspection. But implementation of a full-scope safeguards agreement did not occur until January 30, 1992, and only preliminary inspection visits have been made.

Algeria presents a more ambiguous case. In the late 1980s the world was surprised to learn that Algeria had a Chinese-supplied reactor under construction at Oussera, about 123 kilometers south of Algiers. The reactor, originally estimated at 40-megawatts thermal, is now believed to be smaller, approximately 15-megawatts thermal, and is therefore less troubling. Acquisition of the reactor nonetheless increases Algeria's capability over time to acquire sufficient plutonium for a nuclear bomb.

Algeria's intentions remain unclear. Unlike North Korea, Algeria has plentiful hydrocarbon resources and cannot cred-

ibly argue that it needs nuclear power for electricity. Moreover Algeria and China kept the project secret for some years—a matter for concern since China has not always responsibly exported sensitive nuclear technology. Argentina supplied a reactor to Algeria in 1987, believing itself to be Algeria's only vendor, and required that the reactor be placed under IAEA safeguards. The Argentine-supplied reactor is a one-megawatt thermal natural uranium research reactor, too small to be a proliferation risk. Algeria is not a NPT signatory; international pressure nonetheless led Algeria to agree to IAEA inspections of the Oussera complex beginning February 1992.

In both North Korea and Algeria progress has been made toward full inspection of known and declared nuclear facilities. This permits international verification of the technical characteristics of these facilities and accountability for nuclear material at those sites. There is no monitoring of technical personnel in these countries, no systematic knowledge of their technology imports and no control over plutonium or other strategic nuclear material. The extent of covert military technology efforts lies outside the scope of IAEA safeguards. There is broad international support for requiring the two states to accept full IAEA safeguards. But it is doubtful whether the IAEA board of governors or the U.N. Security Council would support challenge inspections against suspect sites, especially in Algeria. North Korea, Algeria and other nations will continue to be sources of concern in proliferation matters for some years to come.

VIII

The United States needs to move nonproliferation to a higher priority. Washington has been too quick to sacrifice nonproliferation goals to other foreign policy objectives. Perhaps the most flagrant example is Pakistan. In the late 1970s the United States reduced diplomatic pressure on Pakistan to abandon its nuclear weapons program in order to gain Pakistani assistance for the Afghan rebels. That may well have seemed a reasonable decision at the time, and there is no certainty that U.S. pressure would have ended Pakistani efforts. But Pakistan now has the bomb, and this makes southwest Asia a more dangerous place.

In all recent cases of proliferation—Israel, India and Pakistan—the United States and the United Nations have not acted decisively. South Africa has recently moved away from a

nuclear weapons program, but not in response to nonproliferation pressures. Significant action occurred only in the case of Iraq—following a war and Iraq's military defeat. Such a record can only breed cynicism on the part of would-be proliferators about the risks of acquiring nuclear weapons and violating the NPT.

The United States, preferably in a multilateral context, should state that any use of a nuclear weapon would be considered a casus belli and that violation of the NPT would trigger specific sanctions, including the possibility of multilateral and, in exceptional cases, unilateral military action. A step in this direction was taken on January 31, 1992, when the U.N. Security Council, at the heads of state level, unanimously declared that proliferation constituted a threat to international peace and security. Corresponding policies should be adopted for chemical and biological weapons once a multilateral chemical weapons treaty is adopted. The United States should maintain military forces appropriate to make such a threat credible.

Intelligence is critical to carrying out nonproliferation policies. In particular the United States must make a major effort to obtain information about nations that present a proliferation risk. In order to arrive at a net assessment of the proliferation risk posed by a particular country, information about technical capabilities must be blended with informed estimates of a nation's intentions. This means that, while communications and photographic intelligence are important, human intelligence is especially vital in obtaining information about the plans and intentions of a country's leadership in political, military and technical affairs.

Such intelligence is not only needed to provide warning but also to support diplomatic efforts and international sanctions on a multilateral basis. The effectiveness of export controls, international IAEA inspections and sanctions depends in great measure on the intelligence provided by the United States, as experience demonstrates with the U.N. special commission on Iraq. Without access to U.S. intelligence all international efforts to control proliferation will be weaker.

It will take a combination of measures to slow the spread of nuclear weapons: security guarantees, multilateral technical and export constraints as well as unilateral measures. Avoiding an epidemic of new weapons states is the highest priority. If governments are uncomfortable with dealing with the prolif-

eration problem, they will be all the more uncomfortable managing a proliferated world.

In the final analysis several nations are determined to seek nuclear weapons capability, and some may eventually attain that goal. The world will almost certainly confront additional nations that either overtly or covertly possess a nuclear capability. This altered balance of power will influence political and military events in unpredictable and dangerous ways. It must always be remembered that the ultimate objective is to assure that there is no nuclear use.