VIEWPOINT: ON PROLIFERATION WATCH: SOME REFLECTIONS ON THE PAST QUARTER CENTURY

by Lewis A. Dunn

India's test of three nuclear weapons on May 11, 1998, followed by two additional nuclear weapon tests on May 13 and then a little over two weeks later by a series of tests by Pakistan, has focused renewed attention on the threat of a nuclear arms race in South Asia. Nearly a quarter-century ago, India's May 1974, detonation of a nuclear explosive device triggered comparable concern. India's nuclear detonation also set in motion a wave of academic, think tank, and governmental attention, both in the United States and increasingly in other countries, to the proliferation challenge. This wave has ebbed and flowed over the years. But it is now widely agreed that the proliferation of nuclear, biological, and chemical (NBC) weapons and their means of delivery is the major threat to global peace and stability in the 21st century.

As the new century nears, it is timely for policymakers and analysts, both in the United States and elsewhere, to step back to distill the lessons to be learned from the past quarter century. To help provide a framework for these efforts, this article addresses three questions. First, how has our understanding of the proliferation process, its driving forces, and its potential dangers been proven right, proven wrong, or simply changed? Second, what lessons, insights, and issues stand out for crafting effective policies to contain proliferation or deal successfully with future proliferation threats, including the dangers of escalating nuclear arms competition between India and Pakistan? Third, how well have the United States and other countries done in seeking to meet the proliferation challenge—and what does that portend for the future?

In answering these questions, the perspective taken is largely an American one. In part, this stems from the author's personal involvement over the past quarter century—both as a senior nonproliferation policymaker inside the U.S. government and as an outside consultant—with U.S. efforts to meet the proliferation challenge. But it also reflects the fact that throughout the past quarter century, the United States, working both with close allies as well as with former adversaries, frequently has been in the forefront of international initiatives in this area. At the same time, looking ahead, it is increasingly clear that international cooperation among many countries is essential to meet the proliferation challenge successfully—whether most immediately by lessening the risk of a nuclear confrontation in South Asia or over the longer term by strengthening the global taboos against the possession or use of nuclear, chemical, and biological weapons.

DEFINING PROLIFERATION AND THE PROLIFERATION PROCESS

Not "Just Nukes"— Not "Just Arms Control and Diplomacy"

In the mid-1970s, proliferation meant *nuclear* proliferation.[1] In part, this nuclear bias reflected the origins of heightened and renewed interest in proliferation in India's nuclear test. But this definition of the proliferation problem also had its roots in a prior analytic tradition of concern about the so-called "Nth + 1" problem, as well as in long-standing international efforts to prevent the spread of nuclear weapons.

By the early-1980s, this view of proliferation as meaning nuclear proliferation had slowly begun to change. Growing attention came to be paid first to the dangers posed by the proliferation of ballistic missiles. Even here, however, the nuclear bias was reflected in the negotiation and drafting of the new Missile Technology Control Regime (MTCR). In making the case for missile controls, for example, the United States stressed their use as means of delivering nuclear weapons. Not until the 1990s was the language of the MTCR amended to include explicitly missiles with chemical or biological warfare payloads. By this time, Iraq's use of chemical weapons in its war with Iran in the mid-1980s and

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the post-Gulf War revelations about Iraq's pursuit and production of biological weapons agents had gone far to redefine proliferation to include chemical and biological weapons (CBW).

The Gulf War contributed in yet another way to redefining the proliferation problem. A quarter century ago, proliferation was seen by virtually all governments and outside analysts to be an arms control, foreign policy, export control, or diplomatic challenge. Nonproliferation was the name of the game. To the extent that the professional military or the defense policy communities in the United States, for example, thought at all about the implications of possession of nuclear weapons by countries other than the Soviet Union, it was viewed as a lesser included threat. That is, existing U.S. military capabilities were assumed sufficient to deal with any new threats to U.S. interests, forces, or friends from new proliferators. This, too, has changed after Iraq.

Preventing proliferation remains the essential policy foundation. But it now is widely acknowledged that the proliferation of NBC weapons and missile delivery systems also is a difficult defense planning challenge. Among U.S. defense planners, this new emphasis has been termed *counterproliferation*. Over the past half-decade, it has resulted in new initiatives to enhance U.S. capabilities to deter, and should deterrence fail, to operate successfully in the face of hostile use especially of chemical or biological weapons. Within the NATO alliance, a parallel set of assessments of the defense planning implications of proliferation has taken place under the Senior Defense Group on Proliferation (DGP). More widely, countries from Israel to South Korea, confronting enemies armed with nuclear, biological, or chemical weapons and missiles, have placed a new focus on enhancing their military capabilities to deal with proliferation threats.[2]

At much the same time, the end of the Cold War and the collapse of the former Soviet Union has led to one further major change in the nature of the proliferation challenge. Until the Soviet collapse, Moscow was a strong supporter of international efforts to prevent other countries from acquiring nuclear weapons.[3] Moreover, no questions arose about the ability of the Soviet authorities to control exports of potential proliferation concern—whether of materials, technology, or people—or to ensure that its own weaponry was effectively controlled against theft or insider diversion.

By contrast, the political, social, and economic instability that has followed the collapse of the old Soviet regime has created a major new proliferation problem. The old Soviet systems of control—from bureaucratic arrangements covering exports to physical security procedures preventing nuclear theft—have broken down. New systems have yet to be put fully in place. In turn, economic and political incentives are strong for Russian authorities to engage in supply deals that previously might well have been ruled out on nonproliferation grounds, as evidenced by Russian dealings with Iran's nuclear program. Not least, in this uncertain domestic climate, highly trained Russian personnel, with nuclear, chemical, biological, or missile backgrounds, all comprise a pool of expertise to be possibly tapped by aspiring proliferators. In response, the United States, other Western countries, and Japan have all initiated cooperative programs to help Russian authorities put in place a new system of regulations, controls, and procedures. While considerable technical progress has been made, this new proliferation threat from within Russia is likely to remain for some time to come.

Ladders and Chains—Analogies in Search of Realities

In the immediate aftermath of India's May 1974 nuclear test, there was a widespread presumption that India had crossed a decisive proliferation threshold and even in some quarters a concern that a second test could be in the offing. Reflecting that view, analytic thinking and popular discourse about the nuclear proliferation process was sometimes couched in terms of "*proliferation ladders*."[4] This conveyed an image of new proliferators gradually moving upward in capabilities either *in toto* or along a variety of parallel paths—toward, for example, larger numbers of nuclear weapons, more advanced weapons, open rather than non-declared programs, more sophisticated doctrine, enhanced command and control, more advanced means of delivery, and the ultimate integration of nuclear weaponry into overall military postures. Though stopping short of simplistic determinism, there was, nonetheless, an underlying assumption that once a country had crossed the nuclear threshold, strong political, military, bureaucratic, and technological pressures were likely to push its program further along.

The results in this regard over the past quarter century appear mixed. Despite the fact that both India and

Pakistan were publicly presumed by the early 1990s to be able to assemble nuclear weapons on short notice, both Delhi and Islamabad had until India's 1998 tests apparently exercised considerable nuclear restraint across the most critical dimensions of nuclear capability. Even now, after the decisions by India and Pakistan to test nuclear weapons, the ultimate characteristics of the next stage of proliferation in South Asia remain uncertain. First India, then Pakistan could deploy nuclear weapons openly with their military forces, resulting in competition to produce larger numbers of more sophisticated weapons, periodic exercises, more open declarations of doctrine and nuclear threat-making, and the creation of small nuclear forces. Or, both countries might again follow a more restrained path, deciding that their respective security requirements were better served by capping their nuclear postures and competition. In this latter case, both countries might possess nuclear weapons but stop short of deploying them in the field, carrying out additional tests, and moving up the many nuclear rungs. For its part, South Africa stated in the early 1990s that it had produced six nuclear weapons but had dismantled its program. By contrast, if frequent public allegations are to be believed, Israel's nuclear program may well have advanced considerably in size, complexity, and technical sophistication since its inception.

Combining these considerations, the "ladders" analogy still provides a useful checklist of the types of decisions that the leaders of a new proliferator—nuclear or otherwise—will confront. But perhaps more so than was thought initially, it is necessary to view proliferator programs as subject to possible halts and starts, as not necessarily following an outsider's technically or politically determined image of what would occur once a country crossed the NBC or missile threshold.

Shifting attention from individual countries to the regional dynamics of proliferation, there has always been considerable concern that in the proliferation process, *proliferation begets proliferation*. This has sometimes been expressed in terms of regional or intra-regional proliferation chains, linking specific countries together on the grounds of security or prestige. At other times, this presumption has been reflected in a more diffuse fear of a proliferation chain reaction—whether fueled by widespread availability of technology, a demonstration effect of successful use of NBC weaponry, or a breakdown of existing international norms and institutions, such as the Treaty on the Non-Proliferation of Nuclear Weapons (NPT).[5]

Though perhaps sometimes overdrawn, this concern that proliferation begets proliferation is not unfounded. In many respects, the programs of the first five acknowledged nuclear powers—the United States, the-then Soviet Union, the United Kingdom, France, and China—are linked together, as is India's program and that of China. Once the United States had nuclear weapons, Stalin had every incentive to match that capability. The United Kingdom and France both acquired nuclear weapons partly as a means to stake their claim to a "seat at the table" with the two other great powers, partly in response to fears of Soviet nuclear blackmail. For its part, China's program was initially driven by concerns about U.S. nuclear threats, enhanced later by fears of the Soviet Union. Most recently, Indian officials have pointed to concerns largely about China in explaining their decision to test nuclear weapons. Further afield, while other factors also are at work, Israel's nuclear program has contributed to proliferation incentives in both Iraq and Iran.

Somewhat differently, the successful—and still unpunished—Iraqi use of chemical weapons during its 1980s war with Iran in violation of its obligations under the 1925 Geneva Protocol banning the use of such weapons may well have heightened incentives for chemical weapons proliferation. A successful and unpunished use of biological weapons in some future conflict would almost certainly have a comparable impact in stimulating still further proliferation.

The "Usual Suspects"—Who, Why, and How Many?

There have been important changes in the countries of nuclear proliferation concern over the past quarter century since India's test. Some of the countries that figured prominently in mid-1970s tallies of "the usual suspects" are still countries of concern in the late-1990s—India and Pakistan in South Asia, and Israel, Iran, Iraq, and Libya in the Middle East.[6] Several other countries, however, no longer stand out as potential proliferators—not least, Argentina, Brazil, and South Africa, all of whom have become examples of proliferation "rollback." Two other countries of high proliferation concern in the mid-1970s—Taiwan and South Korea—have receded from attention, not without periodic signs of starting to fall off the nonproliferation wagon. Either country could yet become a future source of renewed proliferation concern. By contrast, while oc-

casionally highlighted in speculative proliferation chains, North Korea—one of today's key nuclear proliferation challenges—was not prominently included in public speculation about countries of proliferation concern two decades ago. Similarly, Ukraine, Kazakhstan, and Belarus became nuclear proliferation challenges only with the 1991 collapse of the former Soviet Union.

Given the relative inattention paid until the mid- to late-1980s by most members of the mainstream nonproliferation community to chemical, biological (and less so missile) proliferation, comparisons across the past quarter century in this area are less fruitful. Of greater interest, publicly available reports suggest considerable (but most definitely not complete) overlap between today's countries respectively of nuclear, chemical, and biological weapons proliferation concern. Acquisition of ballistic missiles appears increasingly viewed by all proliferators as the most politically-useful, cost-effective delivery means, thereby making efforts to produce or purchase missiles a virtual "given" for proliferators by the late-1990s. A few countries possess or are seeking the full spectrum of proliferation capabilities—nuclear, chemical, biological, and missiles. This was the case, for example, with Iraq and is believed to be so with Iran and North Korea. But other countries appear to be pursuing only the acquisition of either or both chemical and biological weapons—and missiles for delivery. Syria and Libya in the Middle East are good examples. Still others seem to have stopped at possession of a nuclear and missile capability—or perhaps nuclear, chemicals, and missiles. In that regard, India's recent declaration under the Chemical Weapons Convention (CWC) that it had produced chemical weapons is a case in point, as somewhat differently are the cases of Pakistan, Israel, and South Africa prior to its renouncing its nuclear weapons. [7]

In explaining *why* different countries have made these proliferation choices, the past quarter century's experience has tended to confirm initial thinking, which though focused on the drivers of nuclear proliferation, has wider applicability across the NBC proliferation spectrum. Technological opportunities and possiblities for circumventing existing suppliers' controls undoubtedly have contributed, either facilitating or slowing programs. Technical affinities between chemical and biological weapons have made it easier for more advanced countries to slide gradually from acquisition of the former to pursuit of the latter. Conversely, technological weaknesses appear clearly to have constrained some countries' nuclear ambitions. Bureaucratic factors and domestic political calculations, as well as key personalities, also have been important determinants of the evolution of today's programs. Not least, the more specific political-security calculations of given proliferators—how possession of nuclear, chemical, or biological weapons or missile delivery means, would allow their leaders either to enhance their country's security or, in a few cases, to pursue more aggressive regional and global ambitions—have been critical in shaping these program choices.

Indeed, many of these factors are evidenced by India's May 1998, decision to test nuclear weapons. The decision to test clearly has been partly driven by the domestic political situation, including the key personality of the new Bharatiya Janata Party (BJP) Prime Minister Atal Bihari Vajpayee. Bureaucratic considerations also may have been at work, assuming that the BJP's ability to test so quickly after coming into power built on continuing plans and preparations within the Indian Department of Atomic Energy and the Defense Research and Development Organization. Security calculations and technical considerations played a part as well, with Indian spokesmen stating that testing was needed to ensure reliable nuclear warheads that could be delivered by missiles and other systems.

India's recent decision to test nuclear weapons bears, as well, on how to weight one additional proliferation incentive—status and prestige.[8] After India's first test in 1974, the role of prestige and the pursuit of international status often was singled out within the nonproliferation analytic community as one of the key potential driving forces of more widespread nuclear proliferation. At that time, India's may well have hoped that its prestige would be enhanced. Those hopes for the most part proved false. Over the next quarter century, the decisions by both Argentina and Brazil to renounce pursuit of a nuclear option—as well as the demonstrated international status of Japan and Germany as non-nuclear weapon states—called into question the importance of prestige as an incentive to seek nuclear weapons. India's 1998 tests, however, have served as a reminder that at least for some leaders, acquisition of nuclear weapons may still be viewed as a means to claim international status. What remains to be determined, however, is whether India's nuclear testing proves any more successful today in winning it the status it seeks than was the case a quarter century ago.

In one important respect, however, mid-1970's thinking about the dynamics of the proliferation process is open to question, or at least in need of refinement. Though there was some concern about how India would behave after its 1974 nuclear test, the oft-encountered consensus within the nonproliferation community at the time was that no country that had acquired nuclear weapons would officially help another country to "join the club." (Official government-to-government assistance needs to be distinguished from sales by firms within given countries, sometimes benefiting from loose enforcement of export control regulations. The latter possibility was well-recognized.) Even then, this presumption about the first proliferators was questionable. In the course of the 1950s and 1960s, the United States had helped Great Britain, the Soviet Union had helped China, and France had helped Israel. Over the next quarter century, persistent (if publicly denied) reports about official or semi-official Chinese nuclear and missile assistance to Pakistan, Israeli nuclear assistance to South Africa, and Russian missile and nuclear cooperation with Iran have further eroded its credibility. (For its part, India appears to have resisted a series of post-1974 entreaties for nuclear assistance.)

Finally, what else is striking in looking back at the dynamics of proliferation over the past quarter century is the *numbers*—both how few unexpected or new countries of NBC or missile proliferation concern emerged and how small the group of "usual suspects" remains. Speculation is possible about over-the-horizon or surprise proliferation problem countries. But North Korea stands out as the one major current proliferation problem country that did not figure prominently in the mid-1970s. In turn, despite official fears and outside analytic speculation at that time and a few years before about a "proliferated world" of dozens of new nuclear powers, the number of aspiring nuclear powers appears to have not simply remained constant but to have shrunk somewhat. In turn, the absolute number of countries that are publicly reported to possess or to be seeking nuclear, chemical, and/or biological weapons has been constant for some time at around 20 or so. Barring some shock, e.g., successful and unpunished use of biological weapons or use of nuclear weapons, this threshold could well hold.

Gauging the Proliferation Danger—Some Ground Truth, Some New Risks

With India's 1974 nuclear test raising the prospect of a nuclearized South Asia, one of the most heatedly debated issues a quarter century ago concerned the impact of proliferation on *regional stability*. This debate has persisted over the ensuing decades, both in the United States and abroad. It will undoubtedly accelerate again in the wake of both India's and Pakistan's 1998 nuclear tests. What ground truth has emerged in the past decades on proliferation's regional impact appears to leave the basic debate unresolved, though suggesting that the relative impact may depend heavily on the particular region and the particular leaders in question.[9]

In South Asia, Indian and Pakistani possession of the capability to assemble and deploy a limited number of nuclear weapons (prior to the recent tests) does appear to have exerted a cautioning impact on both countries' behavior in potential crisis situations. Similarly, as already noted, both countries have so far avoided that type of spiraling nuclear and missile deployments that once was feared, though this situation could be severely tested in the next year or so. Still elsewhere, Iraqi success during the Gulf War in hiding its mobile missile force from U.S. counterforce operations has called into question the once-canonical assumption that proliferators' capabilities almost certainly would be highly vulnerable to preemptive first strikes. UNSCOM's difficulties in detecting what are widely-presumed to be residual, hidden Iraqi chemical weapons, biological weapons, and missile stockpiles have done so as well.

By contrast, statements that during the Gulf War Iraqi President Saddam Hussein had pre-delegated authority to his commanders for use of Iraq's biological and chemical weapons lend support to concerns about the command and control practices that some proliferators might adopt. Reports that Saddam Hussein's decision to invade Kuwait was made by him alone virtually on the spur of the moment, as well as his later miscalculations concerning U.S. will and capabilities to reverse that invasion, also raise questions about Iraqi decisionmaking. UNSCOM revelations after the Gulf War that Iraq's safety procedures for chemical weapons were weak at best also tends to support earlier concerns about the risk of NBC accidents in new proliferators. Similarly, other evidence suggests that the safety culture in both India and Pakistan is relatively weak.

Put in a broader context, these later examples suggest that the major cause for concern about proliferation's regional impact may have less to do with the technical vulnerabilities of proliferator programs or with an inexorable regional arms race dynamic than with the nature of certain leaders and their regimes. That conclusion—acceptance of the possibility that proliferation is dangerous because it quite frequently will entail acquisition of NBC weaponry by aggressive leaders, in dictatorial regimes in which decisionmaking is distorted and based on poor information—was one that many analysts were reluctant to make a quarter century ago lest they be branded as ethnocentric and Western-biased.[10] In retrospect, it now appears perhaps one of the most compelling reasons for concern about proliferation's impact on regional stability and the risk of war in both the Middle East and Northeast Asia. Further, fears in some quarters that a more nationalistic BJP government may view nuclear weapons as a means of enforcing its political will and preeminence on the sub-continent is one major reason for concern about the prospects for stability there.

This latter recognition points as well to the main reason why preventing proliferation—or dealing successfully with its consequences—remains a critical national security challenge both for the United States and its friends and allies as well as the international community more broadly. For several of today's countries of proliferation concern, possession of nuclear, chemical, or biological weaponry increasingly appears a means to pursue aggressive regional objectives. Iraq, Iran, Libya, and the North Korea provide examples. Those weapons also can provide a means to threaten and damage if not necessarily defeat the forces of any Gulf War-style international coalition or regional alliance seeking to counter aggression. From a more narrowly American perspective, NBC weapons in the hands of hostile proliferators are a means to level the playing field with a United States whose conventional military forces provide a decisive advantage for any international coalition response. A quarter century ago, this was less so. With a few obvious exceptions, the countries of greatest proliferation concern—India, Pakistan, Taiwan, South Korea, Argentina, Brazil; Israel, Iraq, Libya, a then-still pro-Western Iran; and South Africa—were not motivated by the pursuit of regional aggrandizement or aggression.

Today's global proliferation danger differs in two other important respects from what once was envisaged. For the first time, widespread access to biological and chemical weapons will provide hostile proliferators in distant regions with an unprecedented capability to threaten the national homelands of far-off countries. In a future Gulf War-type confrontation, the civilian populations in the United States, Europe, Russia, and Japan all would be at risk. From an American perspective, a Cold War threat of nuclear-armed missiles may have given way to a more insidious threat of covert unleashing of disease. In turn, at various times over the past quarter century, the risk of nuclear terrorism has been assessed—and then discounted. But with the collapse of the Soviet Union, the concatenation of changing availability of nuclear weapons materials and new types of terrorist groups requires that this judgment be questioned. Perhaps more important, the ready availability of both chemical and biological weapons agents may raise an even greater risk of future terrorist action against countries in all regions of the globe.

POLICY LESSONS, INSIGHTS, AND ISSUES

Looking back across the past quarter century, a variety of lessons can be drawn for crafting an effective international response for containing NBC weapons and missile proliferation and dealing with its consequences. Though drawn from the American experience and written from an American perspective, many (if not all) of these lessons have wider applicability to how other countries think about or respond to the proliferation challenge. In particular, those lessons touch upon all aspects of successful international policies—from developing needed national intelligence to cooperating multilaterally to buttress technical and supplier constraints; from international actions to strengthen nonproliferation incentives and institutions to collaborative actions to deal with treaty non-compliance; from putting in place new national and coalition defense capabilities for countering threats from new aggressors armed with NBC weaponry to building an international coalition to enforce a taboo against use.

Our Way, Their Way, and Avoiding Proliferation Surprises

Accurate, timely, and usable intelligence remains the bedrock of successful policies to contain proliferation—whether by cooperative international nonproliferation initiatives to prevent further NBC proliferation or rollback existing programs or by prudent defensive responses to deal with the new military threats that proliferation

may pose to the United States, its friends, and its allies. Obtaining that intelligence is a daunting task, given the numbers of countries to be watched, the breadth of technical issues to be covered, the increasingly dual-use nature of CBW programs, and not least, the efforts of such countries to hide their activities. India's unexpected decision to test nuclear weapons and demonstrate its nuclear capability, moreover, is but one of a number of reminders over the past quarter century that proliferation surprises can occur—on the part of both policymakers and intelligence analysts.

Judging by the American experience, such surprises have not been a matter of a new and unexpected problem country coming up "on the radar screen." Instead, many surprises have reflected underestimates of the breadth of proliferation activities in particular countries, misjudgments about the specific program choices and directions that might be pursued, faulty estimates of timing, and put most broadly, mistakes concerning how a country might proliferate, to what end, and why. These surprises were often rooted in a mindset about particular countries and the proliferation process held within the overall intelligence and policy communities. These mindsets ranged from an underestimation of the technical and organization skills of third world countries to a tendency to think that proliferators would do it "our way."

In the case of India, for instance, there appears to have been a tendency to assume that since India had for so long adopted a posture of nuclear ambiguity that this posture would continue indefinitely. The BJP's prior statements that it would move forward on the nuclear program were too readily discounted on the grounds that, once in power, the party's leaders would recognize that India's "true future" lay with economic modernization. At the start of the decade, the discovery after the Gulf War that Iraq had engaged in a mini-Manhattan project equally came as a surprise to virtually all outside officials and observers. Here, a mindset about "third world countries" as well as about what technical choices would make sense in seeking the bomb were both among the causes. Or, for many Western countries, a mindset that no country would adhere to an arms control treaty and then be prepared to violate it—rather than simply not joining at all—made them unwilling to accept U.S. arguments in the 1980s that the Soviet Union had a clandestine biological weapons program in violation of the BWC. A similar mindset may now be at work in comparable skepticism about Iran's nuclear weapon intentions.

Today, this danger of mirror-imaging also needs to be guarded against in thinking about whether and how new proliferators could threaten or employ nuclear, biological, or chemical weapons in a crisis or conflict. Only now are senior policymakers and defense planners in the United States, in Europe, and elsewhere beginning to grapple with this issue. As they do so, it is especially important to focus partly on the unexpected or unanticipated ways in which such weaponry might be employed, especially by a hostile proliferator confronting an international coalition. Attention needs to be paid, as well, to how their unique strategic personalities could shape their policies and postures toward NBC use. Absent an accurate assessment, there is a danger either that the threat will be exaggerated or significant risks unappreciated.

Export Controls and Buying Time—For What?

Since India tested its first nuclear device in 1974, using material taken from a Canadian-supplied research reactor in violation of its commitments to Canada, the global net of proliferation-related supplier regulations and export controls has been steadily tightened. Major milestones include the creation of the Nuclear Suppliers Group (NSG) in the 1970s, the creation of the MTCR and the establishment of the Australia Group to control chemical and biological exports in the 1980s, agreement to a new regime for dual-use exports in the 1990s, and the 1995 CWC. These formal institutions have been paralleled by continuing export control diplomacy, including exchanges of information and cooperation among many supplier countries.

With isolated exceptions, the country-by-country record suggests that export and supplier controls have only succeeded in slowing proliferators' pursuit of NBC weapons and in buying time. This outcome is not surprising. In part, the continuing global process of trade, industrialization, and economic development has undercut international control regimes—and will continue to do so. Creative efforts by proliferators to circumvent controls via false front companies, monetary enticements, and the many other aspects of gray market behavior have been a continuing problem. As already noted, the collapse of the Soviet Union is a considerable wild card that has further eroded the effectiveness of existing supplier controls.

The relative impact of these global trends on the effectiveness of export controls, however, may vary across the different dimensions of proliferation. Experience sug-

gests that controls related to nuclear and missile proliferation may have had the most impact, as partly evidenced by the relatively few countries that have succeeded either in acquiring nuclear weapons or producing longer-range missiles in recent years. Both nuclear and missile proliferation also still require a substantial industrial undertaking, with items that are more readily identified, tracked, and controlled. By contrast, the Australia Group appears to have been relatively less successful in holding down the number of countries that have successfully acquired at least rudimentary chemical or biological weapons capabilities. In both cases, the dual-use nature of the inputs for producing chemical and even more so biological weapons—as well as the global spread of chemical, pharmaceutical, and related industries—makes the export control task that much harder.

Nonetheless, the importance of slowing programs and buying time should not be underestimated. Buying time is important to allow outsiders to try to influence countries' incentives to acquire NBC weaponry, sometimes beginning dialogues on nonproliferation that may bear fruit only years later. By slowing programs, export controls have on several occasions also made it possible for "other things to happen," not least new thinking by old leaders or new leaders rejecting old thinking. During the 1980s, for instance, the military in both Argentina and Brazil transferred power to new civilian leaders. These new leaders saw economic modernization and technological advancement to be the key to their respective countries' global status and domestic well-being. For them, pursuit of the nuclear option threatened instead to heighten mutual suspicions, tensions, and regional instability. In response, this new leadership set in motion a process of regional political and nuclear confidence-building, which has led to the entry into force of the Treaty of Tlatelolco, creating a Latin American nuclear-weapon-free zone, to a new Argentina-Brazil safeguards regime, and to Argentina's adherence to the NPT (as well as the prospect of eventual Brazilian adherence). Similarly, the decision of the government of South African President de Klerk to end apartheid and hold free elections was accompanied by a rethinking of that country's decision to build nuclear weapons. The result has been the rollback of the South African bomb.

In addition, export controls still can help to contain the eventual scope and sophistication of existing programs, even in cases in which countries have crossed the NBC or missile threshold. Indeed, there are reasons to believe that the main impact of the MTCR may not be to block proliferators from developing all ballistic missiles, but to make it harder for them to acquire the technology, components, and equipment needed to produce longer-range missiles.[11] This importance of export and supplier controls as a means of containing the scope and sophistication of existing nuclear weapons programs takes on added significance now that India and Pakistan have tested nuclear weapons and declared their nuclear status. Export controls can make it technically harder and more costly for both countries to deploy increasingly sophisticated capabilities, even if they cannot block proliferation.

Looking ahead, a number of *future challenges* confront Western policymakers in the export control arena. Aspiring proliferators can be expected to continue to seek new ways to circumvent existing control regimes. The major suppliers will also need to intensify their efforts to demonstrate to developing countries that by helping to slow proliferation, those regimes serve all countries' interests. Recent efforts by the NSG to enhance transparency and begin a dialogue between suppliers and recipients are a good first step. Closely related, efforts to bring China's policies more into line with internationally accepted export control regimes remain essential. Cooperation with Russia and the other states of the former Soviet Union in buttressing their export control mechanisms also needs to continue. Finally, within the limits set by the need to protect sensitive intelligence sources, sharing of information on countries of potential proliferation concern remains essential. Quite frequently differences related to particular exports, e.g., those between the United States and Russia over nuclear reactor sales to Iran, have their roots partly in different appraisals of the proliferation risk of dealings with specific countries.

Back—to the Nuclear Back-End

In the late-1970s, a contentious and often heated debate over civilian nuclear power issues was close to the center of the international nonproliferation agenda.[12] On the one side, U.S. officials used a mixture of nuclear jawboning, the exercise of American legal rights related to nuclear trade, and international diplomacy to try to convince European countries and Japan to revise their plans to reprocess the spent fuel from nuclear power reactors—whether for use in breeder reactors and for recycling in light water reactors and as a means of managing the spent fuel from light water power reactors. Ameri-

can thinking feared that reprocessing would lead to a global plutonium economy, with greatly heightened risks of national or subnational diversion. Unsuccessful efforts also were made to generate support for international spent fuel storage, thereby providing an alternative to reprocessing. On the other side, Europeans were skeptical, frequently stressing that no country had used the civilian nuclear fuel cycle "to get the bomb." The ill will generated by American activism lingered into the 1980s and made it more difficult to build a consensus on other nuclear nonproliferation matters.

From one vantage point, experience in the ensuing years supports the European and Japanese contention. None of the countries of current nuclear proliferation concern has diverted material or facilities from a civilian nuclear power program to make nuclear weapons. Nonetheless, the growing stockpile of separated civil plutonium in Japan has become a source of suspicion among its neighbors about Tokyo's longer term nonproliferation intentions. In turn, the presence of large stockpiles of unseparated plutonium in civil reactor fuel in South Korea, as well as in Taiwan, has also sometimes been a source of regional concern. Outside of Asia, future stocks of spent fuel in Iran would heighten proliferation risk and almost certainly exacerbate regional tensions. At the same time, there are signs in a number of countries, including, for example, Japan, Germany, and to a lesser degree France, of rethinking their earlier choice for reprocessing and civil reactor use of plutonium. Breeder reactor programs have been sharply curtailed and plutonium recycle has moved far more slowly than once anticipated. Pressures to find a safe, environmentally sound means to manage spent fuel, however, remain strong.[13]

In this changing situation, it may be desirable to revisit earlier concepts for international spent fuel storage. This idea could be reexamined on a regional basis, perhaps beginning in Asia where incentives may be strongest and the idea of a PACATOM for nuclear cooperation among countries of the Asian-Pacific region has been a subject of considerable industry and expert discussion. Or, internationalization might be pursued more globally. One specific possibility would be to internationalize one or more national storage sites; another could be to encourage creation of a multinational spent fuel storage corporation, with several national entities participating. Creation of an international interim storage organization also may warrant more detailed consideration[14]

As was so two decades ago, finding a country (or countries) prepared to host a site would be the most critical obstacle. Economics and free market entrepreneurship, however, could play a role here. For private sector firms and national fuel cycle entities, storing spent fuel could well be a potential money-maker given utilities' quest for an assured solution to the storage problem. Political considerations also could provide an important incentive, especially since internationalized storage could be a significant confidence-building measure in certain regions.

In one other, quite different way, nuclear back-end issues have regained prominence in recent years. Due to the combination of the collapse of the Soviet Union and unprecedented prospects for nuclear arms reductions, the safe and secure disposition of the nuclear weapon materials taken from Cold War nuclear warheads has emerged as a major proliferation challenge. As is well-known, this is only part of the much larger problem of ensuring effective control over the large stocks of separated military plutonium and highly enriched uranium at many dozens of sites in the former Soviet Union. That task is underway but its successful completion will likely require a sustained political, financial, and technical commitment over many decades by many countries, including especially Russia itself, the United States, its European allies, and Japan.

Influencing Proliferation Incentives—Regional Security and National Economics

The importance of influencing countries' *security incentives* to acquire NBC weaponry has long been recognized by nonproliferation policymakers and analysts. In that regard, both American and Soviet Cold War alliance ties, though created for other reasons, had a major nonproliferation payoff. American security ties with the countries of Western Europe, Japan, South Korea, and less formally now Taiwan, for example, have provided these countries with a surrogate nuclear umbrella. In turn, the Soviet presence in Eastern Europe served to restrain proliferation in that region.

What stands out across the past quarter century equally, however, has been the reluctance of American officials—or for that matter officials of other great powers—to extend comparable security guarantees to other countries. Though Israel floated the idea of such a security guarantee in the 1960s at a time prior to the realization of

its nuclear option, U.S. officials were unwilling to take that step. Similarly, in South Asia, there was little if any U.S. enthusiasm in the late 1960s or 1970s for the idea of providing Pakistan with a security guarantee against what it perceived to be an emerging Indian nuclear threat. Immediate U.S. statements aimed at reassuring India after China's 1964 nuclear test never went any further. In part, this reluctance reflected a U.S. unwillingness to take on new commitments; in part, it reflected the varied foreign policy interests at stake both in the Middle East and South Asia.

Perhaps not so well recognized by the policy and analytic communities in the immediate aftermath of India's 1974 test was the extent to which *economic incentives* could exert a decisive impact on key countries' proliferation calculations. As already noted, decisions by both Argentina and Brazil to take steps in the mid-to-late 1980s to defuse what could have been increased nuclear competition probably were greatly influenced by domestic economic changes in both countries and their belief that nuclear restraint would better facilitate access to advanced technology and future economic prosperity. In that vein, by restricting parties' chemical trade with nonparties, the new CWC clearly seeks to use economic incentives as a means to influence countries to give up the chemical weapons option. More broadly, past experience suggests that considerably more thought needs to be given to what types of specific economic and technology incentives might be offered to today's countries of proliferation concern and how best to do so.

In some instances, however, there may be little that outsiders—whether the United States alone, the other great powers, or the wider international community together—can do to influence certain countries' incentives to acquire NBC weapons and missiles. At least some such countries, perhaps most typified by Iraq, are seeking such weapons to pursue regional ambitions of enhanced economic control, political power, or territorial aggrandizement. For these countries, only an unquestioned capability to deny them the political or military benefits they seek from NBC weaponry may hold out the prospect, admittedly slim, of influencing their calculations.

Perhaps the most complex situations are those in which a country appears to have mixed incentives—partly regional aggrandizement, partly more defensive in nature. Incentives may also shift over time. Iran, fearful of an NBC-armed Iraq, and North Korea, fearful of its imminent collapse, both may be cases in point. The policy of outsiders needs to walk a fine line between unintended appeasement and costly demonization in trying to work these situations.

Institution- and Regime-Building—Dangers Within not Dangers Without

The past decades have witnessed a steady spiral of nonproliferation institution and regime building. Across proliferation, a network of commitments, obligations, and constraints has been put in place. Recall only a few aspects that are often cited in listing institution-building achievements: attaining virtual universal membership in the NPT and its indefinite extension; creation and expansion of the MTCR; establishment, extension, and expansion of the membership in the NSG; the creation of the Australia Group in the CBW field; entry-into-force of the Biological and Toxin Weapons Convention (BWC), as well as more recent efforts to negotiate a verification protocol for that treaty; negotiation and entry into force of the CWC; and negotiation of the Comprehensive Test Ban Treaty (CTBT), in the context of a far broader set of bilateral nuclear arms control agreements.

Despite this impressive tally, however, there are reasons for concern, all reflecting dangers more from *within* these institutions and regimes than from without. It is worthwhile to consider several of the more important concerns—as well as their implications for international nonproliferation efforts.

Though often cited as the centerpiece of the global nonproliferation regime, the NPT continues to be divided by two cultures—non-nuclear weapon states that view the treaty primarily as a means to press the nuclear powers for quick progress to a world without nuclear weapons, and nuclear powers that remain deeply skeptical about the feasibility of achieving that goal at acceptable risks to global peace and stability. Continuing difficulties in restoring full North Korean compliance with its International Atomic Energy Agency (IAEA) safeguards obligations, earlier revelations about Iraq's clandestine nuclear weapons program, and U.S. allegations that Iran has a nuclear weapons program underway all raise questions about the treaty's effectiveness.

Closely related, the IAEA safeguards system failed the test of providing warning of Iraq's virtual Manhattan Project—in large part because that system was designed to look only for diversion from declared nuclear facilities,

in part because of the very culture of the IAEA. As a result, the IAEA under former Director General Hans Blix took significant steps to revitalize the use of its existing rights to conduct so-called "special inspections" of suspect sites, to shake-up its internal inspection culture, and to undertake an overall revision of its safeguards system under the "93+2" Program. This latter program is intended to provide enhanced access and information to the Agency. But even when the post-Iraq IAEA sought to take a tough stand with North Korea in 1993 and 1994 in exercising its existing inspection rights, it received at best limited support from its member states.

Shifting ground, the legitimacy of the BWC was undermined from the start by a Soviet decision to join the treaty *and* cheat, as well as by the long-standing reluctance of virtually all BWC parties to acknowledge that American concerns about Soviet non-compliance were not simply "Soviet bashing." Even now, questions continue to be raised in public about whether the Russian government has fully shut down this Soviet BW inheritance. More broadly, efforts have been underway for some time now to negotiate a verification protocol to the BWC, which, unlike the CWC, lacks detailed verification procedures. But putting into place a regime that seeks to mirror the CWC, despite the far greater technical ease of clandestinely producing BW agents, may only result in a false sense of confidence that is later shattered by revelations of undetected violations.

In thinking about how to *meet and deal with these dangers within*, what stands out is the need to remind ourselves periodically that creating nonproliferation institutions is only a first step. Continuing efforts by all countries are needed to strengthen these institutions' international legitimacy and to ensure their effective implementation. Specifics vary across the different nonproliferation regimes.

For instance, more dramatic progress by all of the five acknowledged nuclear powers in rolling back the Cold War nuclear legacy needs to be accompanied by a greater recognition by the non-nuclear powers of their stake in preventing proliferation. Prompt ratification of the new IAEA safeguards protocol, designed to fill the gaps revealed by Iraqi violations, would be one way to demonstrate their support. As for the CWC, ensuring that those of its new parties that may have had previously undeclared CW programs make full declarations and begin the process of eliminating those capabilities, as India has now done, will be a critical compliance challenge to meet successfully. In turn, the BWC's parties need to explore ways to buttress verification, while stopping short of an ill-advised attempt to replicate the CWC's verification regime. Some mixture of mandatory declarations, greater transparency measures, and non-routine inspections may provide part of the answer.

More broadly, an international consensus needs to be created for stepping-up decisively to future non-compliance with the existing set of nonproliferation treaties. This will not be an easy task. Particularly given the dual-use nature of many of the building blocks of CBW programs as well as ambiguities concerning when a country has set out on the nuclear weapon path, conclusively determining that a treaty violation is occurring will be difficult and controversial. Working both bilaterally and in appropriate regional and multilateral fora, nonetheless, the supporters of international nonproliferation treaties will need to make the case that non-compliance is "every country's problem."

In meeting this compliance challenge, it may also be desirable to revisit the idea of creating a U.N. Security Council "rapporteur" on proliferation. The initial proposal met with considerable skepticism for various reasons—on the grounds that the IAEA already was carrying out this function (though only in the nuclear area), due to political inertia, and partly because of a reluctance of developing countries to empower further the Security Council.[15] But taking this step would serve several purposes. It would provide a means to keep nonproliferation on the Security Council's agenda, create a presumption that the Security Council would become actively involved in future instances of non-compliance, and build on the Council's 1991 declaration that proliferation is a threat to international peace and security.

Defense Planning against the Proliferation Threat

During the 1991 Gulf War, the belated discovery of significant gaps in the capability of the coalition to deal with Iraqi missile attacks on Israel and Saudi Arabia, as well as with Iraq's potential use of CBW against coalition forces, drove home the point that proliferation also is a defense planning problem. The stakes are high. Absent effective capabilities to deter or defend against the use of NBC weapons, future efforts to put together and sustain an international coalition to respond to a regional aggressor armed with NBC weapons would be far more difficult. Such an aggressor also could inflict very heavy casualties on the military forces and civilian populations

of coalition members.

Efforts are underway, as already noted, to respond to this new dimension of the proliferation challenge. In light of this heightened attention, it is timely to reflect briefly on possible defense planning priorities, primarily with reference to U.S. and NATO initiatives but with implications for other national and coalition responses.[16]

Given the likely near-term capabilities of hostile proliferators, more attention probably should be focused on measures to deal with the threat posed by the possible use of CBW in future regional conflicts than that of nuclear use. In particular, enhancing defense *capabilities to counter the BW threat* almost certainly ought to be foremost. Like nuclear weapons, BW can truly be weapons of mass destruction. For example, if either anthrax or smallpox were used against unprotected civilians, either as a result of missiles that went astray or intentionally out of a desire for revenge, hundreds of thousands (if not more) casualties could result. Moreover, certain limited uses of non-lethal BW agents, whose main impact would be to incapacitate infected personnel, could greatly impede efforts by a future Gulf War-type coalition to come to the aid of a country facing an aggressor.

Concerning more specific initiatives, measures to enhance the passive protection accorded U.S., allied, or other friendly forces operating in the face of a chemical or biological weapon threat clearly are of high importance. The recent decision to vaccinate all U.S. military personnel against anthrax, widely regarded as the "queen" of the biological warfare agents, exemplifies the type of action that is needed. Comparable actions by other countries need to be encouraged and supported, not least those front-line countries facing this threat. Enhanced conventional counterforce capabilities also stand out, both to detect, target, and destroy mobile missiles and to destroy deep underground storage sites and bunkers.

Though considerably more controversial, pursuit of an effective theater missile defense (TMD) needs to remain a high priority. This is not to deny that serious technical problems exist or even that it may not prove technically feasible to achieve the levels of defensive protection sought. Nevertheless, there are several reasons not to give up the pursuit of TMD. Specifically, the threat of attack by missiles armed with NBC weaponry can be a highly potent means of regional blackmail, whether in peacetime, crisis, or conflict. Actual use of ballistic missiles armed with either chemical or biological warfare agents could appeal to a regional aggressor as a means to make it more difficult for an outside coalition to come to the support of an attacked country. While other means of delivery exist (e.g., clandestine operations, crude cruise missiles, or aircraft) the continued investment of many proliferators in ballistic missile programs clearly suggests that many of them view missiles as their politically and militarily preferred delivery means. But most important, pursuit of missile defense is warranted because of the very real threat to innocent civilian populations posed by missiles armed with lethal biological weapons. But, it also will be important to pursue next generation missile defenses in a manner consistent with U.S. obligations under the Anti-Ballistic Missile Treaty signed with Moscow in 1972, lest U.S.-Russian relations be undercut.

Heightened cooperation with other countries—both those that might be threatened by an NBC-armed aggressor and those that could form part of an international coalition to respond—also stands out as a defense planning priority for responding to the proliferation threat. This includes, for instance, cooperative actions within the NATO alliance and between the United States, its NATO allies, and key regional partners in Asia and the Gulf, to strengthen CBW active and passive defense capabilities. Joint planning for measures to protect civil populations under CBW attack also warrant attention, especially on the part of potential coalition partners. Absent such cooperation, there may be significant differences in the capability of U.S. forces and those of potential coalition partners to deal with CBW threats. Fears for the vulnerability of their populations could in turn make neighboring countries reluctant to join in future coalitions.

Not least, *enhancing deterrence* of NBC use by a hostile proliferator remains a continuing and controversial proliferation defense planning challenge. Existing U.S. policy highlights many of the dilemmas that confront the United States but also the wider international community in this regard. In particular, U.S. policy now stresses that the American response to any use of weapons of mass destruction involving the United States will be "overwhelming and devastating." Responding to questions, top-level U.S. defense officials have refused to rule out any means of response, including implicitly use of nuclear weapons not only in retaliation to the use of nuclear weapons but also chemical or biological weapons. This declaratory policy partly takes its cue from

statements made by senior Iraqi officials that fear of a nuclear reprisal had a lot to do with Saddam Hussein's decision not to use chemical or biological weapons during the Gulf War.[17] In effect, it seeks to manipulate the nuclear shadow to enhance deterrence. It also reflects skepticism about the deterrent effectiveness of conventional forces alone, given the many past failures of conventional deterrence. How the United States actually would respond if such weapons were used, of course, would be determined at the time.

For their part, critics of this approach have charged that a policy of implicitly threatening nuclear retaliation to deter CBW use will undermine the NPT and stimulate other countries to seek their own nuclear weapons as means to deter CBW attack. Despite official arguments to the contrary, critics also contend that the implied nuclear threat runs counter to traditional U.S. negative security assurances—the commitment not to use nuclear weapons against non-nuclear weapon states party to the NPT or a comparable agreement unless those states are engaged in a conflict in alliance with a nuclear power. They fear, as well, that such a posture will make it harder to delegitimize nuclear weapons and drastically reduce reliance on them over the longer term. This, itself, could add to global instability and lessen American security.

Balancing these conflicting considerations is neither straightforward nor easy. In effect, we may confront a "Hobson's choice," with no good or fully satisfactory alternative. Lingering images of Hiroshima and Nagasaki in the global consciousness, as well as no doubts about nuclear weapons' potential destructiveness, both provide reason to believe that fear of nuclear retaliation would make the leaders of hostile proliferators think more than twice about certain, highly destructive uses of chemical or biological weapons. At the same time, an open threat of nuclear reprisal or too blatant attempts to manipulate the shadow of possible nuclear reprisal could well have some of the corrosive impacts on overall nonproliferation interests that critics fear. Serious questions also arise concerning the credibility of threatening nuclear reprisal against limited uses of chemical or biological weapons.

There may be one way to help square this circle, at the least making it considerably less necessary to rely openly on the nuclear shadow to buttress CBW deterrence. From Saddam Hussein in the Gulf to Kim Jong Il in Northeast Asia, what the leaders of those countries of most proliferation concern value most is their own lives and their own regimes. A posture of *holding leaderships personally at risk* for actual use of NBC weapons, therefore, could have a high payoff. What is less clear is how that might be done, with what international coalition support, and with what associated risks in terms especially of counter-responses and adversary use of NBC weapons. How U.S. adoption of such a posture would affect the continued American reluctance to renounce the first use of nuclear weapons also would need to be addressed. Other countries' readiness to support such an approach, which would, in effect, make clear that if a country used nuclear, chemical, or biological weapons "all hands would be against it," also would need to be confronted. Nonetheless, if practicable (and with acceptable risks), such an approach might help both to keep the nuclear shadow very much in the background and fill a potential deterrence gap in those situations in which other threats, nuclear or conventional, might either lack credibility or be too weak.

Coalition Building—Over Time, Not "Just in Time"

The importance of effective coalition building and international cooperation for meeting the proliferation challenge stands out repeatedly across the past quarter century. Indeed, one of the immediate impacts of India's 1974 test was to help generate a readiness among the major suppliers to join together in the NSG to strengthen nuclear export controls and practices. Over two decades later, coalition building was the key to success in winning the indefinite extension of the NPT.

American leadership has often played a critical role in forging such coalitions. That leadership was critical to the negotiation of the NSG, creation of the MTCR, and indefinite NPT extension. In other instances, however, other countries have played a leadership role, typified, for example, by Australia's role in the creation of the Australia Group, Canada's contribution to indefinite NPT extension, the Netherlands' role in the early 1990's revival of the NSG, and the part played by the United Kingdom in pressing to reopen the issue of verification of the BWC.

At times across the past quarter century, however, coalition fissures and lack of international cooperation have equally been only too clear. Two recent examples stand out. During the winter 1998 crisis with Iraq, differences among the United States, its Western allies,

Russia, and China made it impossible to craft a unified international approach in response to Saddam Hussein's decision not to allow the UNSCOM inspectors full access to suspected sites in violation of U.N. Security Council Resolutions. Instead, Russia used the crisis partly as a means to demonstrate its independence, France went its own way, and Saudi Arabia refused permission for U.S. aircraft to operate from its territory in carrying out any strikes against Iraq. Similarly, after India's five nuclear tests In May 1998, the Group of Eight (G-8) countries proved unable to agree on imposing strong international sanctions against Delhi. This reflected not only disagreements in principle about the usefulness of such sanctions but also underlying differences of interest.

These difficulties in crafting a united coalition response in the 1998 Iraqi crisis and following the nuclear tests first by India, then by Pakistan suggest a further lesson—whether for the United States (to which many countries continue to look for international leadership) or for whatever other countries seek to play a leadership role in meeting the future proliferation challenge. Unlike restocking grocery stores or meeting the logistics demands for a major military engagement, a "just in time" approach to coalition building will not work. Coalition building requires a continuing process of dialogue, discussion, and contingency planning. It calls for a steady investment of diplomatic and political capital up to and including the highest political officials.

Here, too, some specific additional steps to foster greater regional and international dialogue on proliferation might be considered. Discussion of the overall proliferation challenge could be made a routine topic of the meetings of the G-8. An annual debate of the "Proliferation State of the World" could be made part of the Security Council's established agenda, thereby helping to bring China and key developing countries, as well as countries outside the G-8 in Europe, into this dialogue. In turn, discussions of proliferation could form part of possible future routine discussions on global security issues among the P-5. Proliferation needs to remain on the NATO and European Union agenda, as well. The objective of such a set of overlapping discussions would be to move over time toward a greater international consensus both on the seriousness of the challenge and on the range of possible initiatives to deal with it. In so doing, it would likely become easier to forge *ad hoc* coalitions to respond in future proliferation crises.

IT'S NEVER OVER UNTIL IT'S OVER—WHAT NEXT WITH INDIA AND PAKISTAN?

One final lesson from the past quarter century, with bearing on the current situation in South Asia, stands out. In several very different ways, both policymakers and analysts should not forget, as an American aphorism reminds us, "it's never over until it's over."

Looking at efforts to influence countries of proliferation concern, it is important not to assume that an initial nonproliferation success means that a particular proliferation problem has been definitively resolved. Instead, the record is quite different. Despite its adherence in 1985 to the NPT and its eventual signing of a safeguards agreement with the IAEA, for example, the DPRK appears to have continued its nuclear weapons program. Countries also may sometimes only suspend not renounce their NBC ambitions. On more than one occasion over the past decades, both South Korea and Taiwan have seriously contemplated acquisition of nuclear weapons. Under certain conditions, both countries could do so again.

In this regard, the recent nuclear tests by India and Pakistan provide suggest two other but very different ways in which nonproliferation is not over until it's over. On the one hand, the long period of relative quiescence of India's nuclear weapons program may well have lulled many outsiders into believing that since India had not tested for nearly 25 years it would not do so even under a new BJP government. Few doubted that the nuclear *status quo* would not last. Instead, India's tests once again jumped it to the top of today's nonproliferation policy challenges. On the other hand, faced with the Indian test, matching Pakistani tests, and the prospect of more open nuclear competition in the region, it is important to avoid defeatism

Realism suggests *three goals in the aftermath of India's nuclear tests*: to cap both countries' nuclear weapons programs, if at all possible avoiding the open deployments of nuclear weapons and a continuing expansion of both sides' reliance on nuclear weaponry for security; to lessen the risk of a crisis escalating to a nuclear confrontation or to the use of nuclear weapons; and to contain possible wider proliferation spillover effects. No single, clear-cut course of action or even set of actions stands out, however, in thinking about how to pursue these three goals. In particular, some possible actions aimed at inducing Indian nuclear restraint could have the opposite

impact in Pakistan—and *vice versa*. Traditional incremental approaches almost certainly will be too little, too late. But bold new initiatives may not prove politically feasible to sell to the great powers or politically acceptable to Delhi and Islamabad. By way of illustrating these dilemmas, let us consider some specifics.

Any attempt *to cap proliferation* in South Asia short of an accelerating nuclear arms race needs to take its bearings from the underlying incentives that led India to test, resulted in a Pakistani response, and could fuel open competitive nuclear deployments. In that regard, it will be important for the great powers especially but also the wider international community to send the signal to India that its global status and prestige will not be enhanced by seeking to become a mini-nuclear power. One virtue of the economic sanctions imposed by the United States and Japan is that they send this message. Making clear that the P-5 will not support India's claim for a Security Council seat does so as well. But diplomacy also has a role to play. Here, it will be important that not only the Western developed countries but also key industrializing countries, e.g., Brazil and Argentina as well as India's traditional allies in the non-aligned movement, e.g., South Africa, Egypt, Indonesia, and Mexico, continue to express their opposition to India's actions. Were such efforts, however, to be taken too far, becoming, for example, an attempt to isolate India and bar its participation in relevant international bodies such as the IAEA, the result might be only to stiffen the resolve of Indian officials to go up the nuclear ladder.

Initiatives aimed at dealing with the underlying security dynamic of South Asian proliferation are even more important, but also considerably more difficult to define and pursue successfully. Within the United States, for example, discussion of amending American legislation to permit resumed sales of military equipment to Pakistan for the moment has been overtaken by Pakistan's tests. In any case, such sales would all but certainly be opposed in India, again feeding into nationalist sentiments there. Moreover, the considerably more extensive American military relationship with Pakistan in the 1980s proved unavailing in convincing Pakistan not to acquire a nuclear weapons capability.

A more explicit Chinese security guarantee to Pakistan, were it conceivable, would likely be considerably more reassuring to Islamabad. But, so far, China has not been prepared to take this step. Were it to do so, moreover, one side effect would be to heighten Indian perceptions that China uses Pakistan to destabilize India. This could add to pressures in India for a more robust, deployed in the field nuclear weapons posture.

More far-reaching, it may be timely to consider what a five-power security guarantee for South Asia might entail. Under such an arrangement, the United States, Russia, France, the United Kingdom, and China would undertake both jointly and severally to ensure the territorial integrity of each country in the region and to provide a guarantee against nuclear blackmail or attack. The principle that existing borders would not be modified by force of arms could be built into any such guarantee and a means found for India, Pakistan, and China to affirm that principle. In effect, this would defer as too tough efforts now to resolve the Kashmir question. China's position would admittedly be somewhat anomalous, being both a guarantor in its role as one of the great powers and at least in India's eyes a potential security threat to be guaranteed against. Assuming a readiness to explore this possibility, one way to proceed would be for the great powers to convene an international conference to address these security concerns.

On the arms control front, there is little reason not to seek both Indian and Pakistani adherence to the CTBT, as well as both countries' acquiescence to the start of negotiations on a fissile material cut-off treaty (FMCT) in Geneva. Despite its verification weaknesses, a CTBT regime would be an additional political and technical constraint on further nuclear testing in the region. Readiness to sign in Delhi and Islamabad would be a useful mutual signal of each country's desire to constrain future nuclear competition. As for an FMCT, its limits on the future production of plutonium and highly enriched uranium for nuclear weapons would also place a significant technical constraint on the numbers of nuclear weapons either side could produce. For that reason, an FMCT may prove unacceptable but still should be explored.

Somewhat differently, a possible regional restraint agreement could be explored. With both countries on the verge of missile deployments, it is not too soon to try to encourage discussions between them of possible arms control limits on the numbers, deployments, and basing of missiles. An agreement on non-deployment of nuclear weapons might be pursued. Here, how to define non-deployment would be the key, since both countries now must be assumed at the least capable of assembling and

moving nuclear weapons into the hands of field units on short notice. With that baseline, non-deployment could mean any of the following: not providing nuclear weapons to front-line units near the India-Pakistan border; not standing-up publicly nuclear missile units, comparable to the former U.S. Strategic Air Command or the Soviet Strategic Rocket Forces; or not carrying out nuclear exercises and routine training deployments.[18] Both countries may have one significant incentive to consider non-deployment along these lines. To the extent that nuclear weapons remain non-deployed and less easy to track, they may well be less vulnerable to a first strike. By contrast, special nuclear units at clearly identified bases would pose targets for attack.

Thinking about possible steps to take to try to convince India and Pakistan to restrain their future nuclear weapons activities raises one further question—whether to find a way to restart the START process absent Russian ratification of START II, if not to move more decisively to restructure and reduce to residual levels the Cold War nuclear arsenals. Suffice it to suggest that intensified efforts to roll back those Cold War nuclear arsenals to levels more consistent with the state of political relations between Russia and the West are desirable in their own right. Greater progress in doing so, moreover, would stand in sharp contrast to India's decision to move in the opposite direction. At the most, however, this might make it somewhat more difficult for the existing Indian leadership to generate needed political support for sharp nuclear advances. But even a very extensive rollback of the Cold War nuclear legacy would leave unchanged many of the most critical incentives for South Asian proliferation.

Turning to possible ways to *lessen the risk* that future South Asian nuclear competition could escalate to a nuclear confrontation, there may be little that the acknowledged nuclear powers—consistent with their obligations under the NPT—can do directly to ensure that whatever nuclear forces may be deployed by Delhi and Islamabad are safe, well-controlled, survivable, and not subject to accidents. How much outsiders should or would need to do also is not an easy question to answer. Assistance in control technologies and procedures would remove a possibly important disincentive to open deployments and more extensive nuclear posturing—that is, the fear of accident or loss of control. At the same time, there already is considerable information about the principles of nuclear safety and control available in an extensive open source literature on the subject. Given the relatively cautious approach that both India and Pakistan have so far followed in their nuclear dealings, it can be expected that both countries' militaries and technical personnel will seek to draw on such writings regardless of outside urgings.

Rather more controversial, it even could be suggested that too much emphasis on encouraging both countries to "master nuclear theology" could well prove destabilizing. It might result in those types of self-fulfilling fears of delicate balances of terror, bomber and missile gaps, and windows of vulnerability that partly drove the expanding Cold War nuclear forces of Moscow and Washington. From this, admittedly contrarian perspective, a decision by outsiders to stand back might not only be more consistent with their basic NPT obligations but paradoxically more supportive of the goal of capping nuclear deployments in the region.

However, outside powers should be prepared to use their good offices to help defuse future crises between India and Pakistan. For instance, though both countries already were taking steps on their own to ratchet down their confrontation, the United States successfully played this role between the two countries in 1990. Diplomacy, support to both countries in accurately interpreting the types of high-resolution satellite imagery to which both countries increasingly have access, sharing of accurate intelligence aimed at countering faulty assessments, and high-level personal political intervention all could prove useful means to foster restraint in a future crisis. It may also be valuable for the great powers, not least China, Russia, and the United States, to consult in greater detail about what actions each might be prepared to take in this regard.

Still another issue is whether to encourage India and Pakistan to negotiate an agreement pledging each side not to use nuclear weapons first. As a means to lessen the risk of a nuclear confrontation, however, even a formal no-first-use agreement would have only political value since it could easily be reversed in a crisis. Indian officials have indicated their interest in no-first-use. But absent credible security guarantees, Pakistan has signaled its unwillingness to take this step.

Containing proliferation spillovers raises a further set of considerations. In the past, both India and Pakistan acted cautiously in the face of entreaties for assistance from other aspiring proliferators. This caution needs

to be acknowledged in official diplomatic dealings with Delhi and Islamabad and encouraged. China may have a major role to play here with Pakistan and Russia with India.

Direct linkages between India and other potential proliferators are difficult to identify. But Pakistan's nuclear tests are likely to add further to existing proliferation incentives in Iran, given tensions between the two countries on regional matters as well as Iran's deeply-rooted claim to international status. Some indirect spillovers may need to be watched as well. Perhaps the most important concern is that leaders in some other industrializing countries might come to view possession of nuclear weapons as a source of global prestige and status. This makes it all the more important that the international community send a different signal to India on this score. In turn, if India deploys growing numbers of nuclear weapons and justifies those deployments as needed to meet a threat from China, the possible impact on internal Chinese debates about that country's future nuclear requirements also bears some watching.

One final proliferation spillover should not be overlooked—the danger of a more general loss of confidence in the NPT and the overall nonproliferation regime. Already, both the NPT and the broader regime have come under attack from self-styled realists for failing to prevent India and Pakistan from acquiring and testing nuclear weapons. In their view, efforts to prevent proliferation are inherently doomed to failure. At the same time, officials from a number of critical NPT parties, including, for example, Japan, Egypt, and South Africa, have stressed that their adherence to the treaty was based on the assumption that there would be no additional nuclear weapon states after the five acknowledged nuclear powers. For these countries, not making significant efforts to reverse the decisions by India and Pakistan to escalate their nuclear competition—let alone openly welcoming them into the nuclear club—would be viewed as breaking a fundamental condition for their own NPT adherence.

Containing this latter threat to the overall regime partly demands meeting the critics head-on, a task that has long been part of NPT diplomacy. In that regard, such criticism neglects the regime's undoubted successes over the past decades and its contribution to avoiding that world of dozens of nuclear weapon states which once was feared to be all but inevitable. Making this case serves, as well, as a partial response to the concerns of NPT onlookers, since it reminds them of their own security benefits from the NPT regime. It will be equally important to strike the right balance between imposing costs and offering incentives in an attempt to cap India and Pakistan. Too great a readiness to offer "sweeteners" for nuclear restraint, e.g., extensive peaceful nuclear cooperation, could be viewed by the NPT non-nuclear weapon state onlookers as a betrayal.

TALLYING THE RESULTS—HOW WELL HAVE WE DONE?

In many capitals around the globe, India's five nuclear tests followed by those of Pakistan have again focused highest-level political attention on the proliferation challenge. A quarter century after India's first nuclear test, how well have we done in meeting the nuclear, biological, and chemical weapons proliferation challenge? There are many possible ways to tally the results and answer this question. Success can be measured, for instance, in terms of intelligence gathered and surprises encountered, supplier regimes established and exports blocked, proliferator NBC programs contained or rolled back, treaties negotiated and parties' compliance, military R & D programs launched and new capabilities fielded, or defense planning guidance issued and warfighting readiness attained. From this perspective, there clearly have been considerable wins but also some important losses—as well as some draws in which the results are yet to be determined or could change over time.

Measuring Success—Non-Use Taboos?

Success also can be measured, however, in a very different way. This is terms of the establishment of global taboos against the *use* of nuclear, chemical, or biological weapons, however delivered. Here, the results so far are decidedly mixed.

Over the past decades, a global taboo against the use of nuclear weapons appears increasingly to have emerged. Its origins are several-fold—the psychological impact of images of first use in Hiroshima and Nagasaki, the possibly fortuitous non-use of atomic weaponry in the Korean War, the thermonuclear revolution that engendered fears of global destruction, the impact on public perceptions of concerns about the longer-term health effects of above-ground nuclear testing until the 1963 Limited Test Ban Treaty, and the habit of decades of non-use. Today's acknowledged and unacknowledged nuclear powers both view nuclear weap-

ons as different, as other than readily usable military power. For its part, the near-universal adherence to the NPT also reflects the widespread norm against the possession of these weapons.

By contrast, Iraq's successful use of chemical weapons in its war with Iran—far more than Egypt's more limited and less effective use of chemical weapons in Yemen in 1963—demonstrated that use of chemical weapons could be militarily and politically advantageous. More important, the failure of the international community to respond to this breach of Iraq's obligations under the 1925 Geneva Protocol sent the signal that the risks of using chemical weapons were low. It taught that a country could use such weapons and get away with it because the world's great powers had other interests at stake, were politically reluctant to become involved, or simply failed to see the need to take a stand to support a CW non-use taboo. Successful conclusion of the CWC, reaffirming the ban on use, is a small start to reverse the Iraqi lesson. Whether a non-use taboo can be restored is uncertain.

The situation with regard to a taboo against BW use is still unfolding. Over 50 years ago, Japan used biological weapons agents against China during World War II. Again on a limited basis, crude biological weapons were possibly used in the early-1980s in Southeast Asia, though whether so-called "yellow rain" has a natural origin remains a very hotly debate issue. As a result, the next or perhaps the first recent use of biological weapons—and how nations respond to that use—will decisively shape global perceptions and proliferator assessments of the costs and risks of BW use.

Toward an Enforceable Global Non-Use Taboo

Measuring success in this manner, the task ahead is clear. It is absolutely essential to strengthen or establish global taboos against the use of nuclear, chemical, or biological weapons. The biggest challenge concerns restoring the CW non-use taboo and building a BW non-use taboo. This will not happen, however, by itself. Instead, some country or set of countries will need to step up to the challenge and take the lead. As has been so on many nonproliferation issues over the past quarter century, the United States remains the most obvious candidate. Conversely, if the United States is unprepared to take on a leadership role in meeting the challenge of buttressing non-use taboos but instead opposes such efforts, past experience also suggests that little will likely be accomplished.

More specifically, as a first step, U.S. officials need to launch a dialogue first with our closest allies, then with widening circles of other countries to gain their agreement to the principle that the international community cannot stand aside following the next use of chemical or biological weapons. That is, the goal should be a new consensus that it is critical to send the signal after such use that the great powers and the international community will not tolerate it. As part of this dialogue, the types of responses that might be made by the great powers and others would need to be discussed. Such responses might range from declaring a state that had used these weapons to be an international outlaw, to seeking to bring its leaders to justice, to international punitive action. It needs to be acknowledged, however, that neither the United States nor other countries that might be prepared to respond to next use can be expected to prejudge in advance exactly what measures it would be prepared to take or support to punish the next CBW user. Assuming agreement to the principle, a common declaration or parallel national statements might be used to signal that the great powers would not again stand aside.

Pursuing such actions to create an enforceable CBW non-use norm would not be easy. National reluctance to give up freedom of action, other foreign policy and national security interests, domestic political constraints on getting involved, and lingering ideological reluctance would all need to be overcome. For all of the nuclear powers except China, which has adopted a no-first-use of nuclear weapons doctrine, concern that steps to strengthen a CBW non-use taboo would ultimately spill back to affect their nuclear doctrines and posture would have to be addressed.[19] But the stakes are very high. Given the inherent weaknesses and limits of traditional nonproliferation policies, some NBC proliferation has occurred—and as the recent nuclear tests by India and Pakistan graphically demonstrate, more is likely. Equally important, it already is becoming evident in many capitals that implementing needed military responses to the threat of NBC use will be a costly and very difficult task. Even then, critical vulnerabilities, especially of civilian populations, must be expected to remain. From this final perspective, global security and stability in the 21st century may depend heavily on the success of cooperative international efforts to enhance and implement taboos against the use of nuclear, chemical, or biological weapons.

[1] See, for example, Albert Wohlstetter, *et. al., Moving Toward Life in a Nuclear Armed Crowd?*, Report Prepared for the U.S. Arms Control and Disarmament Agency, Pan-Heuristics, 1976; Lewis A. Dunn and Herman Kahn, *Trends in Nuclear Non-Proliferation*, Report Prepared for the U.S. Arms Control and Disarmament Agency, Hudson Institute, May 15, 1976; Joseph Yager, ed., *Nonproliferation and U.S. Foreign Policy* (Washington, D. C.: The Brookings Institution, 1980).

[2] For an official U.S. perspective, see *Proliferation: Threat and Response* (Washington, D. C.: Office of the Secretary of Defense, November 1997).

[3] At the same time, as President Yeltsin has since confirmed, the Soviet Union was violating its obligations under the Biological and Toxin Weapons Convention by producing BW weaponry.

[4] This concept was originally put forward in Dunn and Kahn, *Trends in Nuclear Non-Proliferation*.

[5] For an explicit focus on many potential proliferation chains, see Dunn and Kahn, *Trends in Nuclear Non-Proliferation*. On relationships among potential proliferators also see, e.g., William Epstein, "Why States Go—and Don't Go—Nuclear" in Joseph Coffey, ed., *Nuclear Proliferation: Prospects, Problems, and Proposals*, in The Annals (Philadelphia: American Academy of Political and Social Science, 1977), pp. 16-28; Yager, *Nonproliferation and U.S. Foreign Policy*; and Leonard S. Spector, *The Undeclared Bomb* (Cambridge, MA: Ballinger Publishing Company, 1988).

[6] For 1970s tallies, see, for example, Dunn and Kahn, *Trends in Nuclear Non-Proliferation*; Yager, *Nonproliferation and U.S. Foreign Policy*; Robert M. Lawrence and Joel Larus, eds., *Nuclear Proliferation: Phase II* (Lawrence: The University Press of Kansas, 1973); William H. Overholt, ed., *Asia's Nuclear Future* (Boulder, Co.: Westview Press, 1977).

[7] A useful recent public assessment is provided in Office of the Secretary of Defense, *ProliferationThreat and Response*.

[8] Prestige considerations have not been viewed as an incentive to acquire chemical or biological weapons, in light of existing global norms and perceptions of these weapons. This appears accurate.

[9] Scott Sagan and Kenneth Waltz have been in the forefront of this debate, with the former stressing the dangers of proliferation, the latter contending that the prospects are good for the establishment of stable balances. See their book *The Spread of Nuclear Weapons: A Debate* (New York: Norton, 1995). On the author's earlier views, see Lewis A. Dunn, *Controlling the Bomb* (New Haven: Yale University Press, 1982).

[10] The possible adverse impacts on stability of poor information and organizational weaknesses, however, has been stressed by Scott Sagan.

[11] See, for example, Aaron Karp, *Ballistic Missile Proliferation: The Politics and Technics* (Oxford: Oxford University Press and SIPRI, 1996).

[12] This debate is reflected in Atlantic Council's Nuclear Fuels Policy Working Group, *Nuclear Power and Nuclear Weapons Proliferation* (Washington, D.C.: The Atlantic Council, 1978).

[13] For a good discussion of the situation today, see David Albright, William Walker, and Frans Berkhout, *Plutonium and Highly Enriched Uranium 1996: World Inventories, Capabilities, and Policy* (Oxford: Oxford University Press and SIPRI, 1997), chapters 6 and 7.

[14] Several international nuclear experts, including Chauncey Starr of the United States and Wolf Haefele of Germany, have proposed creating an Internationally Monitored Retrievable Storage System, or IMRSS.

[15] The idea was put forward by a mid-1990's task force of the United Nations Association of the United States, which was chaired by the late McGeorge Bundy and included representatives of both developing and developed countries.

[16] The discussion that follows focuses primarily on what actions the United States and its allies or close friends can take to enhance existing capabilities to deter or respond effectively to the threat or use of NBC weapons in a future Gulf War type contingency. This is warranted for two reasons: first, U.S. policies remain in the forefront of national responses to this challenge; and second, the success of these policies is likely to have a significant impact on dangers posed by proliferation in the 21st century.

[17] The credibility of these statements is itself a subject of debate. Ambassador Rolf Ekeus, the former head of UNSCOM, to whom one of these statements was made by Iraqi Deputy Prime Minister Tariq Aziz, tends to discount them for reasons that are unclear. Other specialists give great credence to these statements, not least the one made by a former head of Iraqi intelligence who defected to Syria. Only Saddam probably knows what was in his mind at the time of the Gulf War.

[18] Particularly with regard to the latter, there is a trade-off. The risk of accident may be considerably higher in the midst of a crisis, if neither side has conducted routine training exercises but then moves to deploy nuclear weaponry with field units.

[19] One way to do so would be to pursue a global convention banning the first use of weapons of mass destruction, as suggested above. This would further restrict the purposes for which nuclear weapons might be threatened or used, thereby adding to the nuclear taboo. But it would not be seen by three of the established nuclear powers as eroding deterrence of BW use.