

Nuclear World Order and Nonproliferation, I

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Introduction

The decision by India and Pakistan in May 1998 to conduct nuclear weapons tests and declare themselves as nuclear weapon states challenged South Asian regional stability calculations, U.S. nonproliferation policy, and prevailing assumptions about international security. A decade later, the effects of those tests are still being felt and policies are still adjusting to the changed global conditions. This paper will consider non- and counter-proliferation policy options for the United States and Pakistan as they work as partners to prevent the transfer of nuclear technology and further nuclear proliferation.

Nonproliferation and Counter-Proliferation in South Asia

For several decades, one of the lynchpins of U.S. nonproliferation policy was an effort to prevent India and Pakistan from acquiring nuclear weapons. India and Pakistan consistently resisted most of the bilateral and multilateral policies adopted by the United States to achieve that outcome. India, because of its concerns about the threat from a nuclear-armed China and its resistance to the Nuclear Non-Proliferation Treaty (NPT), refused to forgo nuclear weapons and conducted a nuclear test in 1974.^[1] The United States took numerous steps to prevent Pakistan from following the same path, but with limited success. The measures included denying legal access to nuclear technology, whether from the United States or from other nuclear capable states; denying Pakistan access to military equipment, even in the case of F-16 aircraft for which Pakistan had already paid; sanctioning entities within Pakistan as well as the country as a whole; and pressuring Pakistan to join a variety of international regimes whose effect would have been to thwart Pakistan's quest for nuclear weapons. Having been violently divided in the 1971 civil war that created Bangladesh out of East Pakistan, Pakistan feared that India would support additional secessionist elements in the future. Pakistan's security planners feared that India would one day again be tempted to take advantage of Pakistan's internal divisions, but believed that nuclear weapons would prevent that from happening. The quest for the requisite technology defined Pakistan's security policy for the two decades following its December 1971 surrender to India.^[2]

As it became increasingly clear during the 1990s that diplomatic efforts were not sufficient to prevent certain states from acquiring nuclear capabilities, the United States mounted a more aggressive counter-proliferation effort.^[3] The immediate targets of U.S. counter-proliferation policy were states whose foreign policies were considered hostile, such as Iraq, Iran, Libya, North Korea, and Syria. Although the United States focused on what it termed "rogue" states, others feared that they were also in the line of fire. India and Pakistan were both concerned that U.S.

efforts to counter-proliferation might be directed against their own programs. With the United States at the same time pursuing a comprehensive test ban treaty and the permanent extension of the NPT, India saw a window of legitimacy closing on its nuclear options and conducted a series of five nuclear weapon tests in 1998. Pakistan's decision to respond to India's nuclear tests was difficult. The United States pressured Islamabad not to test and offered extensive economic and military aid to desist. Following India's tests, however, the Indian Home Minister, L. K. Advani, warned Pakistan "to roll back its anti-India policy, especially with regards to Kashmir."^[4] Meanwhile, Pakistani opposition politicians asserted that not conducting its own nuclear test would compromise Pakistan's national integrity and dignity.^[5] From a scientific perspective, a nuclear response to India's provocation would also allow Pakistan's scientists to test principles and design parameters that would improve the weapon stockpile. For all these reasons, it was virtually a certainty that Pakistan would follow India's lead; Pakistan demonstrated its own nuclear capability with a series of tests on May 28 and 30. The reciprocal test series thus ended years of U.S. efforts to prevent the nuclearization of the subcontinent.

The nuclear tests forced the United States to impose certain nonproliferation sanctions. The U.S. Congress had passed the Nuclear Proliferation Prevention Act in 1994 that required the imposition of sanctions on any state that conducted a nuclear test.^[6] The law was yet another legal effort to hamstring India. It may have worked in 1995, when the economic consequences of conducting a test apparently convinced India's leadership under P. V. Narasimha Rao to forgo a planned nuclear test.^[7] It did not work in 1998 when the more assertive BJP—supported by the Rashtriya Swayamsevak Sangh's argument that economic autarky was possible and desirable for India and therefore economic sanctions would be irrelevant—authorized the test series.^[8] The United States almost immediately saw the defect in its own policy, when American wheat farmers pointed out to the Administration that the economic cost was more burdensome to the United States than to India.^[9] Some of the sanctions consequently were immediately lifted, and it was only a matter of time—until July 2001—before the rest of the sanctions came off.

Confidence in the global nonproliferation regime was shaken by India's and Pakistan's tests, but its basic structures remained intact and India and Pakistan continued to remain outside the nonproliferation mainstream. They were nuclear capable, but they were not legal nuclear weapon states. Though their tests challenged the goals of the NPT, their status as non-NPT nuclear weapon states created new obstacles to expanding their diplomatic relations with a variety of states. Although the Clinton Administration tried to overcome the barrier at least with India, it was not prepared to change U.S. nonproliferation and therefore continued the policy of nuclear isolation toward both new nuclear states.^[10]

The tests did not end U.S. concerns about nuclear proliferation in other parts of the world, while they increased concerns about possible nuclear use. From Washington's perspective, the addition of more nuclear weapon states to the so-called club created a range of problems. With more fingers on the trigger, there was a greater chance that nuclear weapons would be used. If nuclear weapons were used in a war, the resulting carnage could have enormous humanitarian implications. More narrowly, it would also make continued U.S. reliance on nuclear weapons for security more problematic. Those in favor of nuclear disarmament would be armed with a fresh example of the terrible consequences of nuclear use. Though not insuperable, such opposition to nuclear weapons would complicate American defense planning. In addition, nuclear use could produce widespread nuclear fallout with negative environmental consequences. On a separate note, nuclear weapons might be used with militarily advantageous results by a smaller power. Even if limited nuclear use produced relatively inconsequential humanitarian and environmental consequences, nuclear weapons might turn the tide of battle. Such a result would make it very difficult to prevent still more proliferation which, from Washington's perspective, would make the world less secure. Finally, with more fissile material and nuclear weapons spread around, the risk would increase that a terrorist or other nonstate actor would be able to seize or assemble a device to blackmail or actually use against the United States or others.^[11] Regarding India and Pakistan, U.S. nonproliferation policy continued to be anchored in the NPT, which prevented the

United States from helping any state to develop or manage nuclear weapons, regardless of its standing in the treaty. Thus, future interactions with India and Pakistan would have to accommodate the fact that both states had nuclear weapons, without at the same time compromising the United States' legal commitments under the NPT.

When the Bush Administration assumed office in January of 2001, the test-related sanctions were lifted with the expectation that India and Pakistan would constrain onward proliferation. Although prevention had in the end failed, it seemed reasonable to expect that both new nuclear states would jealously protect their nuclear capabilities at home and adopt policies to prevent the spread of their nuclear technology abroad. Thus, avoiding onward proliferation—ensuring that Indian and Pakistani nuclear technology not be transferred to third states—became the defining element in proliferation policy toward the two states.

From Counter-Proliferation to Nuclear Cooperation

At the same time, the Bush Administration decided on a policy of de-hyphenating its broader relations with the two South Asian nuclear powers. India and Pakistan had often been treated almost as conjoined twins—separated at birth in 1947 when British colonial rule came to an end, but still viewed as a linked problem set in the minds of Washington's policy makers. Under the new policy of conducting diplomatic relations with each country on its own terms, Washington developed an approach to Pakistan—heavily focused on counter-terrorism—that was designed not to impinge on India. In the same vein, the United States developed a new relationship with India that envisioned cooperation in economics and trade, defense, development, and energy—but not at Pakistan's expense. Achieving such a fine balance in South Asia had been a historic challenge to successive U.S. administrations, and continues to require thoughtful diplomatic negotiations with both countries. Cooperation on energy, in particular nuclear energy, was particularly sensitive due to U.S. commitments under the NPT, the legal restriction created by the Nuclear Nonproliferation Act of 1978, and the Nuclear Suppliers Group policy of restricting nuclear commerce with any state lacking full scope safeguards on its nuclear facilities.^[12] So long as India was prepared to take a number of steps to ensure that it was not allowing onward proliferation of its technology, however, it was possible for the Bush Administration to imagine a change in U.S. law and NSG policy to facilitate establishing a new relationship despite India's nuclear status. The new approach to India therefore evolved from a focus on the so-called trinity issues (civil nuclear, space, and high-technology cooperation) in 2002-2003 into the Next Steps in the Strategic Partnership in 2003-2004, culminating in the agreement reached by President Bush and Prime Minister Manmohan Singh in July 2005.^[13] A cornerstone of the new relationship was the civil nuclear component, which continues to be subject to negotiation between the two sides.

As the new relationship with India was evolving, new measures were taken with Pakistan to expand beyond counter terrorism. Pakistan was designated a major non-NATO ally, defense supply constraints were lifted, substantial debt burdens were forgiven and renegotiated, and a new aid program was initiated. In the middle of this fairly substantial expansion of bilateral ties, however, the activities of Dr. A. Q. Khan came to light.^[14] In 2003 and early 2004, it became evident that A. Q. Khan had conducted a massive world wide nuclear technology transfer operation. Not only was Khan pocketing upwards of \$100 million, he was doing so by selling Pakistan's most sensitive nuclear technology to three states of greatest concern to U.S. foreign policy—North Korea, Iran, and Libya. In its eagerness to develop a nuclear deterrent following the 1971 Bangladesh debacle, Pakistan had evidently failed to exercise sufficient oversight to ensure that its clandestinely acquired goods remained under tight central control. The stain of Khan's action spread to many parts of the Pakistan government. With onward proliferation a key test of responsible stewardship of nuclear technology, Pakistan appeared to have failed.

According to President Musharraf's own account of the A. Q. Khan episode, the Pakistan government observed suspicious activity as early as 1999.^[15] In his telling, the establishment of a nuclear command structure in February 2000 opened up new windows to Khan's activities, but

not enough to make a case against him. To clip his wings, Musharraf required in 2001 that he resign as Director of the eponymous Khan Research Laboratories. Recognizing Qadir's stature in the popular Pakistani imagination as the father of the nuclear bomb and to avoid any appearance that he was being persecuted, Musharraf also asked Dr. Ishfaq Ahmad to resign at the same time as Director of the Pakistan Atomic Energy Commission. Though out of office, Khan was not out of business, and it was only two years later that the extent of Qadir's enterprise came clear. At President Bush's request, Musharraf received a briefing in September 2003 from U.S. CIA Director George Tenet that detailed A. Q. Khan's network. Though Pakistan itself had tried without success to figure out what Khan was doing, U.S. intelligence information revealed for Musharraf the full story. As Musharraf commented, "The whole ugly episode... blew straight into Pakistan's face."^[16] At this point Pakistan's investigators apparently grew more aggressive, as in early November 2003 revelations about his activities began to flow. Pakistan was acutely embarrassed, but nonetheless took responsibility for mismanaging its own sensitive nuclear technology.

Despite this failure, Bush and Musharraf addressed broader issues in the bilateral U.S.–Pakistan relationship when they met and signed the U.S.–Pakistan joint statement of March 4, 2006, putting the relations on a new cooperative track.^[17] Chastened by the A. Q. Khan affair, the Pakistanis are now understandably more cautious about the spread of nuclear technology around the world. Indeed, Pakistan is acutely aware that the possibility that terrorists might acquire a nuclear weapon or fissile material poses as much of a threat to itself as to any other country. If a terrorist seized a Pakistani weapon, it is quite likely that it would stay inside Pakistan and be used to blackmail the Pakistan government. Pakistan's porous border with Afghanistan also creates a possibility for a terrorist to move sensitive nuclear material outside of Pakistan. The broader problem of unsettled borders and an international black market for nuclear material worries nuclear plant managers throughout Central Asia and Europe as well as in Pakistan. The United States and Pakistan therefore have a common interest in preventing the further spread of nuclear weapons and nuclear technology, and in ensuring that all forms of sensitive nuclear material stay safe and secure in storage facilities inside Pakistan. The Bush-Musharraf joint statement noted that the new relationship was based on shared interests in "promoting peace and security, stability, prosperity, and democracy in South Asia and across the globe."^[18] Combined efforts to prevent proliferation and secure nuclear material will make a major contribution to that shared vision.

Having achieved a nuclear weapons capability, Pakistan is now in the same position as other nuclear weapon states in that it must responsibly safeguard its own stockpile and ensure that it is not again a source for onward proliferation. Where some states in the past have argued that it is the right of all sovereign nations to possess nuclear weapons if they wish, it is clear to the global community that this is not the case. Every state with a nuclear technology capability has an unusual responsibility to guarantee that its own hard-won capability stays safe and secure. It is therefore appropriate that the United States and Pakistan together consider what measures can be adopted to prevent nuclear technology transfer without compromising Pakistan's legitimate defense requirements. It should be clear to Pakistan, as was evident in the negotiations between India and the United States, that cooperation to prevent further proliferation does not amount to an endorsement of the decisions Pakistan made about nuclear weapons. The United States is still governed by its own prior policy decisions to prevent proliferation.

Just as the United States was able to construct a post-nuclear test relationship with India, it is imperative that Washington do the same with Pakistan. As noted, the U.S.–Pakistan defense relationship is already expanding. Pakistan's social and political issues are also an important part of the policy convergence, especially regarding the threat from terrorism, but also in terms of education, social welfare, human rights and democratic reform. It is an enormous challenge now for both states to find common ground and a shared approach to nuclear proliferation. This issue has cast a shadow over U.S.–Pakistan relations for over thirty years. The fact that Pakistan and the United States disagreed on this issue in the past, however, does not mean that the two states

must continue to disagree. The United States cannot facilitate Pakistan's nuclear weapons program, but a range of concerns will bring them together as they seek to increase regional stability and prevent nuclear spread. In many cases, it may be necessary to work out new rules of the road. This may have to be case specific as Pakistan tries to solidify its nuclear deterrent while the United States follows its legal and policy obligations.

Prospects for Civil Nuclear Cooperation

Before considering where the United States and Pakistan can cooperate in preventing further proliferation, it must be noted that there will be roadblocks in the area of civilian nuclear technology. From Pakistan's perspective this seems unfair, as the United States' decision to amend its laws to allow civilian nuclear cooperation with India looks like one more example of a double standard that impedes Pakistan's development while helping India's. The structure of international export controls that was swiftly established after India's nuclear test in 1974 had a more harmful effect on Pakistan, yet it came in response to actions taken in India. The NSG states in its brief history that it was "created following the explosion in 1974 of a nuclear device by a non-nuclear weapon State."^[19] The only non-nuclear weapon state to test in 1974 was India, but the NSG's policies affected Pakistan and forced its procurement network underground. As Pakistanis see it, they paid the price for India's nuclear test. Now they see Pakistan paying a price for a series of tests initiated by India. Despite that series of tests, India now enjoys a cooperative relationship with the United States on nuclear issues, while Pakistan is relegated to the sidelines.

As noted earlier, however, the U.S.–India agreement is unfinished and it may be premature to draw conclusions about double standards. The United States and India still need to complete their negotiations on a 123 nuclear cooperation agreement, and India will then need to negotiate a safeguards agreement with the IAEA. At that point, the Nuclear Suppliers' Group will in turn have to evaluate the merits of the proposed change to NSG policy. Thus, it is too soon to draw any conclusions or to generalize about the effect of the change in law and proposed change in policy. In Pakistan's view, though, the spirit of the change is as important as the law itself. If a new principle has been established, why should Pakistan not also be a beneficiary? Furthermore, the opening proposed by the United States, regardless of its current diplomatic status, has opened the door for other states to engage in nuclear cooperation with India. Indeed, from Pakistan's perspective, the agreement will allow India to expand its military nuclear capability in ways that will profoundly affect Pakistan's defense calculations.^[20] Why should India be allowed this exception, but not Pakistan? The simple answer is that the effects of the revelations about the A. Q. Khan network still linger. It required many scientists to contribute to Pakistan's nuclear defense, but it only took one to sully the nation's reputation for probity. It will take time to change the perception Khan created of a program out of control.

Pakistanis from President Musharraf on down argue that the network was the act of one man and that Pakistan has changed its laws and internal oversight to prevent a repetition of Khan's activities. These long-overdue measures, which are very positive, do not resolve the issue entirely. A number of questions have not been answered, for example regarding the activities of individuals who previously worked with Khan and may now be operating their own networks abroad. The book *Timbuktu: City in the Middle of Nowhere*,^[21] which details Khan's travels through Africa, offers only one example of the range of participants involved in what appeared to be as much a shopping trip as a tourist's itinerary. In the book, the author recounts what appears to be a simple vacation. Yet some of the key participants in Khan's illegal activities are members of the group, which frequently is treated more as an official delegation than a tourist group. In particular, Henk Slebos, B. S. A. Tahir and Nazeer Ahmed are all part of the delegation that visits such unusual tourist sites as a display on the processing of yellowcake in the Niamey Museum in Niger. These activities occurred before Pakistan fully investigated Khan, and no doubt contributed to official suspicions about his far-flung travels. The book begs the question, however, as to what they and the other travelers are doing now. Some were apprehended at the same time as Khan,

but it remains unclear who else they may have contacted, what clandestine companies may have been established, and what blueprints and/or photocopies may be available in black market circles. Slebos and Tahir are not Pakistani nationals, but other members of the group in addition to Nazeer are, and they raise additional questions about Pakistan's internal investigations into Khan's activities at home and abroad. Who else was involved and remains free to carry on the network's activities? What technology remains on the market? Are Pakistan's continuing efforts to acquire technology opening up new opportunities for black market exchanges? Are potential Al Qaida or other terrorists infiltrating the supply chains? Pakistan does not have all the answers; other countries were penetrated. But the malfeasance of a single Pakistani ringleader selling Pakistan's technology, as Musharraf put it, blows right into Pakistan's face. It may not be fair, but as progress is achieved in answering these and other questions, the effects of Khan's actions will diminish. Despite powerful international opposition and the concentrated efforts of the United States and other governments to prevent it, Pakistan acquired this high-value technology to ensure the defense of the nation. The ability of a single individual, even though highly placed, to compromise Pakistan's security has cast doubt on the nation's ability to maintain internal control over nuclear technology. It will be difficult to convince states around the world to share nuclear technology, given this tarnished record.

It is fair to ask, however, how long Pakistan will have to remain in the docket and what steps it must take to redeem itself. It is notable that Pakistan has passed laws since the Khan affair was exposed in an effort to ensure that the technology is not transferred again. But Khan broke laws already on the books in Pakistan when he transferred the technology in the first place. It is not just a matter of new laws, therefore, but how they are implemented that will be an important bell weather of change. Pakistan has made it clear that it has conducted its own internal investigation and does not require outside assistance. Yet this approach has a look of circling the wagons on the Khan affair rather than being transparent about his reckless conduct. Khan himself has confessed to transferring technology and President Musharraf has acknowledged that Khan transferred actual centrifuges.^[22] Despite this, Musharraf felt compelled to grant Khan a pardon for his transgressions because, "the public would be sure to protest any prosecution, no matter what the facts were."^[23] In this comment Musharraf is acknowledging the difficult task he faces in balancing national security requirements with domestic politics and upholding the law. Pakistan is ruled by law but must recognize Khan's self-made status as the father of Pakistan's bomb and his popular support. He deserves credit for playing an important role, but Pakistan's bomb took a village to raise it. Thus Musharraf had to assert executive authority in his response to the crime in recognition of the demands of national security and public opinion. As the balance tips toward harsh punishment for those violating Pakistan's laws against technology transfer, the perception of Pakistan as an irresponsible guardian of nuclear technology will inevitably soften.

Pakistan is clearly in a difficult position, since the actions of one prominent official has brought the entire country into disrepute. His efforts for the country have made him a hero in the popular imagination, well out of proportion to the contribution he made. The patient, quiet, and professional efforts of scientists such as Munir Ahmed Khan, Ishfaq Ahmed, and Samar Mubarakmand, were every bit as substantial, yet have not been played up in the popular press.^[24] While their efforts were kept out of the spotlight, A. Q. Khan was busy lining his own pockets and embarrassing the country. The problem continues, given the country's continuing need for nuclear technology and weapons. Pakistan must continue to keep its nuclear cards close to its vest, as it fears outside intervention. Yet the very process of keeping its nuclear capabilities and intentions opaque makes outsiders suspicious about what is going on inside the country. This conundrum will resurface in other areas of potential cooperation, but at least one consequence will be that Pakistan's desire to exploit civilian nuclear technology may be frustrated in the near term. Civil nuclear power is symbolically linked to proliferation, and Pakistan continues to be tarnished by Khan's irresponsible behavior. Nuclear weapons and nuclear energy have quite different policy implications, and one might argue that Khan's actions regarding nuclear weapons should not prevent Pakistan from exploiting civilian nuclear technology. But they are nonetheless

linked symbolically, and perceptions matter. Failure to act responsibly in one area inevitably undercuts arguments for cooperation in the other.

Some Pakistani analysts also argue that India is getting a free ride, since it too has violated export control laws. India has repeatedly claimed that it has not transferred nuclear technology, yet two Indian scientists were sanctioned by the United States in 2005 for providing assistance to Iran's nuclear program.^[25] Moreover, an Indian firm, Cirrus, Inc. was indicted for "working as an agent of the Indian government to obtain sensitive missile and weapons technology for its military programs."^[26] These examples challenge India's claims but they do not compare in magnitude to the Khan network. Khan tried to sell an entire centrifuge capability and a nuclear weapon design to Libya. When he switched from being an importer to an exporter, he also switched from being a patriot to a mercenary, offering up Pakistan's most valued secrets for a hefty sum of money. Drawing a comparison between the cases tends to underscore Pakistani inattentiveness rather than condemn Indian malfeasance.

It would be unfortunate if Pakistan's frustration with what looks like a double standard resulted in a contrary approach to countering proliferation and working with the international community to ensure that dangerous actors do not acquire nuclear technology. Pakistan lives in a difficult neighborhood and has a clear interest in making sure that nuclear technology remains in responsible hands. Thus, though the expansion of civilian nuclear power in Pakistan will be somewhat complicated for the near term, counter-proliferation policy can expand significantly through Pakistan's unilateral, multilateral, and bilateral efforts. Indeed, the more vigorously that Pakistan supports international efforts, the more likely it will be seen as a good candidate for extended nuclear cooperation.

Unilateral Actions

One of the measures pressed on Pakistan for several years involves suspending production of fissile material for weapons. Yet cutting off the production of fissile material for weapons may undercut Pakistan's nuclear deterrent. As Peter Lavoy has argued:

... the emergence of new political and military challenges arising from the U.S.–India strategic partnership—particularly the U.S.–India initiative for civilian nuclear cooperation and possible defense technology and military equipment transfers—will further test the ability of Pakistan's military leadership to maintain a robust, credible, and secure nuclear deterrent.^[27]

Lavoy notes that Pakistan's nuclear planners do not intend to engage in an arms race with India, by which they mean that they will confine themselves to a limited quantity of weapons and therefore of fissile material. This approach is also consistent with Pakistan's stated plans to construct a minimum deterrent capability. The possibility that India may acquire even a limited missile defense capability from the United States or elsewhere, however, complicates Pakistani planning about what quantity of weapons it will need. Pakistan is also convinced that India enjoys a sizable lead in its stockpile of fissile material, which, as noted earlier, will be enhanced by the new agreement with the United States. Thus as a hedge it would make sense, as Pakistani strategic planners see it, to avoid a unilateral commitment that may compromise Pakistan's deterrence requirements.

Recent developments suggest that Pakistan may be thinking about a larger stockpile and is already in an arms race with India. The Institute for Science and International Security (ISIS), an American nongovernmental organization, continues to monitor the construction of what appears to be a new plutonium production reactor and reprocessing facility at Chashma.^[28] Completion of these facilities will provide Pakistan an expanded stockpile of plutonium, which will significantly add to Pakistan's weapon stockpile. This suggests that Pakistan's defense planners have

concluded that the country needs substantial additional quantities of plutonium for weapons. If this does not contradict Pakistan's assertions that it will confine itself to a minimum stockpile, it at least raises the question of what "minimum" means.

An alternate explanation for Pakistan's plan to expand its fissile material production capacity may be its own version of the technological imperative. Because less plutonium is needed to fabricate a weapon than highly enriched uranium, expanding the production of plutonium may offer advantages to Pakistan's scientists. The establishment in 2000 of the Strategic Plans Division under the National Command Authority created a mechanism for ensuring that force structure was dictated by military requirements. The integration of science and strategy was thus ensured, but both are dynamic. New scientific advances can influence strategy, and a changed strategic environment can call for technological change. As scientists develop new concepts, it may make sense for military planners to be more responsive to potential technical advances. Thus the expansion of Pakistan's plutonium stockpile may serve scientific preferences, but may also put certain stress on military planning, potentially creating a contradiction between what scientists would like and what the country needs. Determining the right quantity and the right quality of the force structure—not just how many weapons, but also what type of weapons—to ensure deterrence requires a balance between strategy and science. An expanded stockpile of fissile material, whether plutonium or HEU, may address scientific opportunities, but only Pakistan's defense planners can assess what balance is needed to provide minimum deterrence.

Given these security demands, it is unlikely that Pakistan would unilaterally suspend its production of fissile material for weapons. If, however, Pakistan were to limit fissile material production, it would reduce the demands for monitoring and accounting that necessarily accompany larger stockpiles. It is not the case that if you produce less fissile material, you are thereby a more responsible nuclear power. But with more fissile material, there are greater demands for site security, transportation security, and reliable protective forces. Additional fissile material may be stored in additional storage sites, which increases the number of vulnerabilities. Additional material can also be stored in existing storage sites, but that would increase the value of those sites for targeting. Limiting further production would help to keep the accounting and monitoring more manageable. These issues will have to be addressed as Pakistan expands its fissile material supplies.

Multilateral Actions

In trying to fortify the global nonproliferation regime, a number of activities and laws have been developed over the past several years. They provide Pakistan an opportunity to cooperate in multilateral fora to prevent the transfer of nuclear technology worldwide.

The Proliferation Security Initiative (PSI) is aimed at stopping shipments of "weapons of mass destruction, their delivery systems, and related materials worldwide."^[29] Pakistan has not endorsed the principles of PSI yet, but has attended an exercise as an observer. As they are written, these objectives may pose problems for Pakistan. Islamabad is not inclined to oppose them *per se*, but they are the same objectives that were pursued for years in U.S. efforts to stop Pakistan from acquiring nuclear weapons in the first place. Endorsing a policy that was used against it will require a large psychological shift in Islamabad. "Related materials" is a sufficiently broad term that Pakistan may fear its current efforts to acquire equipment to meet new technical challenges from India may put it at loggerheads with the Proliferation Security Initiative, as PSI does not contain exceptions for *de facto* or *de jure* nuclear weapon states.

The breakup of the Khan smuggling ring is usually cited as the best example of a PSI success, and except for the embarrassment the disclosure caused, Pakistan benefited from having the ring broken up. Yet this does not take away from the possibility that Pakistan may itself be a target of PSI. If PSI is nothing more than a multilateral effort to stop Pakistan's nuclear program,

Islamabad is unlikely to join the activity. Such fears, however, could drive Pakistan into a policy *cul de sac*. If Pakistan feels that it cannot join an organization whose goal is to prevent the activity that Pakistan itself decries—the illegal shipment of nuclear technology—this will inevitably cast doubt on Pakistan's *bona fides* regarding stopping illicit nuclear transfer. The result will be that it will be difficult to defend civil nuclear cooperation. Pakistan does not favor the illegal transfer of nuclear technology and has taken steps to shore up its laws that allowed the Khan network to operate. But Pakistan's continued desire to maintain a credible nuclear deterrent against India may require it to obtain materials "related" to WMD and their delivery means. This is a security imperative for Islamabad that will trump international concerns. Therefore Pakistan may find itself unable to join PSI even though it may agree with its principles. This would again complicate Pakistan foreign policy decision-making. Pakistan has already taken steps domestically to ensure that its own technology does not again get out of the country. Yet if it still needs to acquire technology abroad, it will be hard-pressed to join an activity intended to prevent that very outcome, even though PSI may be the best place to start on a multilateral basis, what Pakistan has already done domestically.

A second area for Pakistani engagement in nonproliferation is United Nations Security Council Resolution 1540, which calls for UN member states to prevent non-state actors from acquiring WMD materials, establish laws prohibiting transfers to non-state actors, and develop domestic measures to ensure proper accounting, physical control, border control, and transfer of WMD technology.^[30] In its annual reports to the UNSCR 1540 Security Council Committee, Pakistan extensively reports on the array of laws and policies it has adopted to demonstrate compliance with UNSCR 1540. Pakistan asserts that it is fully compliant with the law, and it is noteworthy that Pakistan has volunteered, as appropriate, "to provide assistance... to the states lacking the legal and regulatory infrastructure, implementation experience and/or resources for fulfilling the provisions" of UNSCR 1540.^[31] It is clear, however, that many of the laws Pakistan cites in its *note verbale* to the UN 1540 committee pre-date the activities of the Khan network. Thus although Pakistan's actions are impressive and set high standards, implementation of the norms contains some gaps. This is not unusual, as criminals, smugglers, and terrorists continue to exploit gaps where they can be found. It does suggest, though, that there is room for cooperation, perhaps with respect to training, technology assistance, and the sharing of best practices in order to improve current standards and ensure against future leakage.

A third area for possible cooperation was made evident in the Bratislava summit in February 2005 between Presidents George Bush and Vladimir Putin. That summit highlighted the continuing concern of those two states for the security of nuclear facilities. With well over 100 years of experience between them in securing nuclear materials, it may be surprising that this issue continues to be a central concern at such a high level. It captures, however, how critical this issue continues to be and how the major nuclear powers continue to struggle to get it right. It is therefore an object lesson for the newer nuclear states. Nuclear security is the dominant responsibility a state assumes when it develops nuclear weapons. It is therefore essential that guard forces are adequately trained to deal with emergencies, psychologically screened to eliminate deviant personalities, and loyal to Pakistan to prevent infiltration by terrorist agents. The forces need to receive adequate pay to eliminate any temptation to sell access to nuclear material; they need up-to-date equipment and arms so that they can overwhelm hostile forces; and they need sufficient education to understand the handling of sensitive nuclear material. The United States and Pakistan can cooperate in many of these areas, as needed. As President Musharraf said in his autobiography, "Every American official from the president down who spoke to me or visited Pakistan raised the issue of the safety of our nuclear arsenal."^[32] There is clearly no need to belabor this point, only to cite it as a priority on the list of areas for U.S.–Pakistan cooperation.

Another area where Pakistan can become part of the international solution to the proliferation danger again involves illicit transfer. Pakistan has agreed to join the Megaports and Container Security Initiatives, important efforts that draw like-minded states together to prevent nuclear material transfer. Megaports has three main objectives: to deter terrorists from using seaports for

illicit shipping, detect materials that may be shipped, and interdict harmful materials on board.[33] The Container Security Initiative works in tandem with Megaports to target high-risk containers by pre-screening containers and using tamper-proof containers.[34] With respect to CSI, the groundwork has been laid for Pakistan's involvement but implementation remains to be done. In the Bush-Musharraf statement, the United States committed itself to supporting Pakistan's participation in the Department of Energy's Megaports Program. Some groundwork also remains to be done on this effort, but it will be a major contribution from Pakistan in preventing illicit nuclear transfer.

On export control more generally, the key concern for the members of each of the major international WMD control regimes is to ensure that lists of controlled items are harmonized and fully implemented. Pakistan has responsibly developed lists that are in conformance with international standards. It is important that Pakistani guidelines are fully harmonized with the relevant international guidelines to ensure that all parties control the same technology in the same way.

Membership in the relevant organizations remains to be determined. In the Nuclear Suppliers Group, for example, membership cannot be granted by the United States but rather must be agreed by consensus. Since the Khan expose, Pakistan has taken steps to conform to the basic objective of the NSG, "to ensure that nuclear trade for peaceful purposes does not contribute to the proliferation of nuclear weapons or other nuclear explosive devices..."[35] Yet a condition for membership in the NSG is that Pakistan be a member of the NPT. Given the amendment provisions of the NPT, it is unlikely that Pakistan would be able to join as a NWS, even if it were so inclined, and joining as a non-nuclear weapon state is out of the question. For now therefore, though formal participation is not an option, Pakistan can establish an excellent record of control and support for the principles it endorses. There may one day be room for an accommodation at the NSG for the non-NPT states, but that is not currently on the agenda. This places an important limitation on NSG effectiveness, but it would be an ironic twist to have the two states whose activities the NSG tried to prevent become members, after having circumvented and defied it. Keeping in mind that the NSG objective remains important and indeed shared by the outside states, some creative thinking is certainly warranted to find room in the NSG for all states now committed to preventing nuclear technology transfer.

Bilateral Actions

As previously noted and as Musharraf commented, physical security at storage sites is a high priority to prevent any unauthorized access, and most of what needs to be done will be taken care of by Pakistan. Pakistan asserts that it currently ensures weapon safety and security by separating the weapon components—that is, the fissile core is not mated with the remaining high explosive components of the weapon until such time as it is necessary for possible use.[36] By its own account, Pakistan has yet to mate its weapons or prepare them for delivery in any of its crises or conflicts with India. This policy complicates the task for a would-be thief, but does not eliminate the danger if a mated weapon were to go missing during a crisis. In crisis conditions, weapon control inevitably would have to shift to field commanders, and heightened transportation security would be necessary. Developing fail-safe mechanisms may be worth exploring, though cooperation in this area by NPT member states might violate their Article I commitments. It requires that a member state not "in any way ... assist, encourage, or induce a non-nuclear weapon State to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices." [37] From the point of view of ensuring global security, however, if Pakistan's weapons were to fall into terrorist hands, passive restraints should be in place to ensure against unauthorized use. If a weapon went missing, Pakistan and the world would want to be sure that the stolen weapon would be extremely difficult, if not impossible to use. Such safety features would thwart the immediate use of the weapon and allow time to investigate the loss and recover the weapon.

Another possible cooperative effort could be with Nuclear Emergency Support Team (NEST) training. It is more likely—though still a low probability—that a significant quantity of fissile material would be stolen, rather than a nuclear weapon. Pakistan will necessarily be the first—and possibly only—responder in such an event. Pakistan's Strategic Plans Division takes its responsibilities seriously and has commissioned a unit specifically focused on the problem of safety and security.[38] This unit would benefit from advanced training to ensure effective pursuit and recovery of stolen material. Security at additional sites should be addressed as well, and may be less sensitive targets for cooperation.

Significant progress on the preceding measures will re-establish Pakistan's credentials and overcome the ill effects of the A. Q. Khan episode. This could open up opportunities for expanded energy cooperation. On the nuclear side, some steps could be taken that do not violate current laws or policy. Pakistan's Chasma I reactor suffers from a loose parts problem that could be ameliorated with the provision of a loose parts monitoring system currently restricted under U.S. policy and practice.[39] The problem does not create criticality dangers, but rather tends to impede optimally efficient functioning of the plant. It could be addressed by closing the plant, but that would not help Pakistan to meet its energy needs. The United States is looking into this and reconsidering action. To ensure against an accident that would call global nuclear energy expansion into question and undercut the current U.S. commitment to a Global Nuclear Energy Partnership, enhanced cooperation with Pakistan should be considered. A full-blown agreement might be unnecessarily complicated, but some collaboration with China, for example, could be possible and constructive. The fact that Pakistan's problems are based on the Qinshan reactor design opens the possibility for multilateral cooperation with China and Pakistan. Although not of U.S. construction, Chasma (and its twin, Chasma-II, which is planned to begin operations in 2009) uses some Westinghouse technology. A broad-based study group led by energy officials on design-specific safety issues could include technical managers from all three countries.

Pakistan's energy planners foresee a major role for nuclear power in the future, but for now it makes an insignificant contribution (<1%) to Pakistan's overall energy supply. This and the problems noted earlier make non-nuclear energy cooperation all the more important over the near-term.[40] There could be more substantive cooperation in the other areas of energy production in Pakistan. In particular, coal reserves are substantial but remain under utilized. Gas continues to be Pakistan's major energy asset. Hydro utilization is relatively high but can be politically fraught due to provincial land use disputes. Oil also only marginally contributes, with about 250 million barrels of proven reserve. Thus, coal exploitation and new clean coal technology may be optimal areas for expanded cooperation. In addition, fixing Pakistan's power grid will add a significant quantum of energy without requiring capital investment. Repairing and modernizing the grid, improving standards, and then expanding the grid to all parts of the country will play an important role in delivering the electricity that is available to where it is needed.

Conclusion

The Bush-Musharraf joint statement pointed the United States–Pakistan relationship on a new trajectory running along a number of key axes: economic growth, energy, peace and security, social sector development, science and technology, democracy, and nonproliferation. Nonproliferation has perhaps been the biggest impediment in the past and holds some of the greatest challenges for the future. Success on this axis will open up the enormous potential on the others. Failure in addressing nuclear proliferation and the new dangers it poses in the 21st century will not just impede the wide-ranging progress both nations seek but will create enormous difficulties in achieving the peaceful global order that the world requires. Based on prior experience, however, both sides continue to feel what has been referred to as a “trust deficit.” Lacking trust in the other, achieving such ambitious goals will be difficult. Pakistan continues to feel that the United States is opportunistic in its support of Pakistan and will again “abandon” Pakistan, especially given the apparent vigor in the new U.S.–India relationship. De-hyphenating, from Pakistan's perspective, may be the equivalent of Pakistan being cut adrift so long as India

anchors U.S. involvement in South Asia. The United States tends to misread Pakistan's strategic imperatives, interpreting steps Pakistan takes to enhance its regional security in the West (especially regarding Afghanistan) and ensure deterrence against India in the East as inconsistent with its stated commitments to the peaceful resolution of conflict in South Asia. Converting nuclear proliferation, one of the major contributors to this "trust deficit," from a point of disagreement to one of cooperation will challenge the negotiating skills and strategic vision of both sides. The issue can draw them to the same side of the table or continue to stand between them as they pursue separate agendas. Certain of the issues proposed in this paper may provide small steps toward solving some of the larger issues that continue to undercut trust and increase insecurity in the region.

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