ROUTING

INDEPENDENT POLICY REPORT

Nuclear Nonproliferation in the Post-9/11 World

Charles V. Peña*

Executive Summary

Although the probability of a nuclear terrorist attack is statistically very low compared to the likelihood of a conventional attack—because obtaining (purchasing, stealing, or building) a nuclear device is a difficult undertaking—the consequences of such an attack could have catastrophic effects. Therefore, keeping nuclear weapons (or materials to build weapons) out of the hands of terrorists is of paramount national security concern.

While not giving up completely on the goal of preventing nuclear proliferation, the United States may have to accept the undesirable fact that countries such as North Korea and Iran may become nuclear-weapons powers. But the U.S. strategic nuclear arsenal can continue to act as a powerful deterrent against attacks on the American homeland by such nuclear-weapons powers—thereby precluding the absolute necessity to engage in counterproliferation (particularly the use of preventive military force) as the primary or only response to proliferation.

Therefore, the focus of nonproliferation efforts needs to be on preventing unfriendly nuclear states from transferring their weapons or nuclear know-how to terrorist adversaries of the United States. This requires understanding that such regimes would not automatically give away a nuclear weapon to terrorists and that, in fact, there are significant disincentives to them doing so. It also requires understanding that even hostile countries likely share a common concern over nuclear safety and security, which provides an opportunity for cooperative efforts patterned after the Nunn-Lugar cooperative threat reduction program.

Perhaps most important, the United States needs to have more normalized relations with countries that aspire to attain or eventually acquire nuclear weapons.

As a result, the United States would be creating the conditions and environment—regular communications and formal dialogue and discussion—that might increase the prospects for the success of nonproliferation efforts, especially if those efforts included positive incentives instead of just threats, including the threat of preventive regime change.

***Charles V. Peña** *is Senior Fellow at the Independent Institute's Center on Peace and Liberty.*

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The Independent Institute
100 Swan Way, Oakland, CA 94621-1428
Telephone: 510-632-1366 · Fax: 510-568-6040
Email: info@independent.org
Website: www.independent.org

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Introduction

One of the greatest fears in the post-9/11 world is the prospect of nuclear terrorism. Indeed, this was an image President Bush used to gain public support for U.S. military action to depose Saddam Hussein:

> If the Iraqi regime is able to produce, buy, or steal an amount of highly enriched uranium a little larger than a single softball, it could have a nuclear weapon in less than a year. And if we allow that to happen, a terrible line would be crossed. Saddam Hussein would be in a position to blackmail anyone who opposes his aggression. He would be in a position to dominate the Middle East. He would be in a position to threaten America. And Saddam Hussein would be in a position to pass nuclear technology to terrorists…
>
> Knowing these realities, America must not ignore the threat gathering against us. Facing clear evidence of peril, we cannot wait for the final proof—the smoking gun—that could come in the form of a mushroom cloud.[1]

Although President Bush clearly overstated the nuclear threat posed by Iraq—not only did Saddam Hussein not have weapons of mass destruction (WMD) or an active nuclear weapons program, he had no history of supporting al Qaeda or of giving chemical or biological weapons to the terrorist groups he

did support—the potential threat of nuclear terrorism cannot be dismissed or ignored. After all, Osama bin Laden has previously declared, "We call for the Muslim brothers to imitate Pakistan as to the possession of nuclear, chemical, and biological weapons."[2] In 1998, when asked by ABC News if he had acquired nuclear weapons, bin Laden replied, "I would state that to acquire weapons in defense of Muslims is a religious duty."[3] And according to the former head of the Central Intelligence Agency's (CIA) bin Laden Unit, Michael Scheuer, "We had found that he and al Qaeda were involved in an extraordinarily sophisticated and professional effort to acquire weapons of mass destruction. In this case, nuclear material, so by the end of 1996, it was clear that this was an organization unlike any other one we had ever seen."[4]

The concern about a nuclear terrorist attack prompted the creation within the Department of Homeland Security (DHS) of the Domestic Nuclear Detection Office (DNDO) "to improve the Nation's capability to detect and report unauthorized attempts to import, possess, store, develop, or transport nuclear or radiological material for use against the Nation."[5] But trying to detect a nuclear weapon to prevent a terrorist attack is a last-ditch effort and amounts to a needle-in-the-haystack operation, because simply being able to detect the presence of radiation (as one indicator of nuclear material) is not sufficient (if the concern is a nuclear device rather than a radiological weapon such as a dirty bomb). For example, there are legitimate commercial sources of industrial and medical radiation that do not constitute a nuclear threat. Moreover, there are many naturally occurring sources of radiation, such as fertilizers, ceramics, bananas, kitty litter, and smoke detectors. The difficulty of being able to detect nuclear materials, and the technical gap that exists to do so, is best illustrated by the fact that twice (in September 2002 and September 2003) ABC News was able to smuggle a fifteen-pound (6.8-kilogram) cylinder (about the size of a soda can) of depleted uranium metal, loaned by the Natural Resources Defense Council (NRDC), into the United States. In 2002, the cylinder was inspected by and passed through U.S. Customs in Staten Island, New York.[6] In 2003, the same cylinder was inspected by and passed through U.S. Customs in Long Beach, California.[7]

Therefore, the best way to prevent nuclear terrorism is to keep nuclear weapons (and the nuclear material to create a weapon) out of the hands of terrorists in the first place—that is, dealing with the problem at its source, which is the focus of nuclear nonproliferation efforts.

The problem of keeping nuclear materials from being transferred into the wrong hands is exacerbated by the fact that the quantities of weapons-grade plutonium (WGPu) or highly enriched uranium (HEU) required to build a nuclear weapon are relatively small. According to the International Atomic Energy Agency (IAEA), a "significant quantity" of WGPu to make a first-generation nuclear bomb is eight kilograms;[8] a Natural Resources Defense Council study concluded that only one kilogram of WGPu was needed to build a nuclear fission weapon.[9] According to the IAEA, a "significant quantity" of HEU is twenty-five kilograms;[10] the NRDC study concluded that only two kilograms of HEU were needed

to build a nuclear fission weapon.[11] This problem is further compounded by the fact that potential sources of fissionable nuclear material are widespread. According to the Nuclear Threat Initiative (NTI), in 2003 there were more than fifty tons (more than 45,000 kilograms, or enough nuclear material to build 1,800 weapons) of HEU in civilian power and research programs in more than fifty countries.[12]

Consequently, in the post-9/11 world, nonproliferation efforts have taken on even greater importance and urgency. Although the probability of a nuclear terrorist attack is statistically very low compared to the likelihood of a conventional attack—because obtaining (purchasing, stealing, or building) a nuclear device is a difficult undertaking—the consequences of such an attack could have catastrophic effects (see figure 1). Therefore, keeping nuclear weapons (or materials to build weapons) out of the hands of terrorists is of paramount national security concern.

But how can nonproliferation efforts reduce the threat of nuclear terrorism—especially since they are necessarily focused on nation-states, not nonstate actors? To better understand the answer, this study provides an overview of the nuclear nonproliferation system and U.S. government nonproliferation efforts, as well as a critical examination of nonproliferation policy.

The Nuclear Nonproliferation System

The nuclear nonproliferation system can be defined as the various treaties, agreements, regimes, programs, and initiatives intended either to prevent the acquisition of nuclear weapons capability or to contain the spread of nuclear weapons capability. Table 1 (page 27)

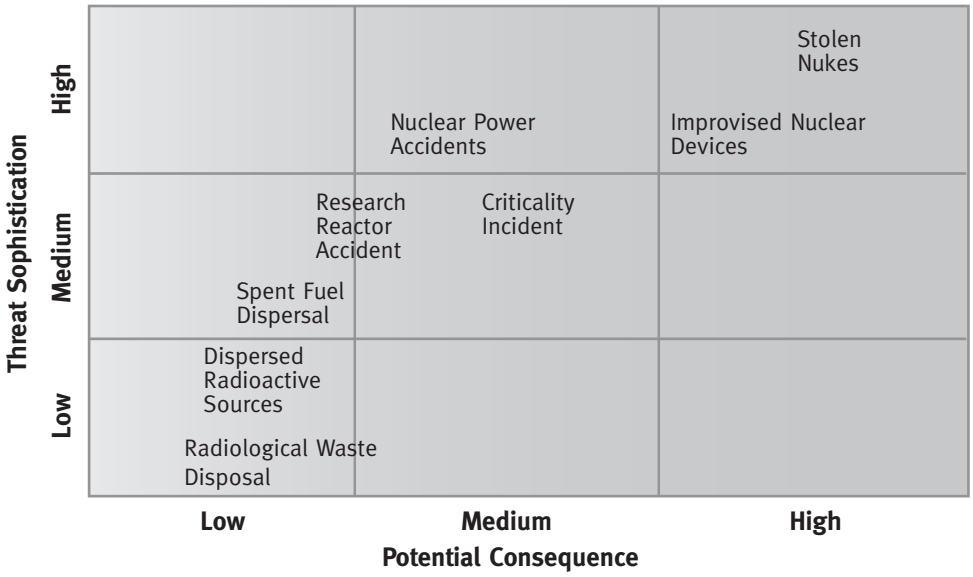

FIGURE 1: The Radiological/Nuclear Threat

Source: Department of Homeland Security[13]

shows state membership in the various parts of the nuclear nonproliferation system. This collective whole represents a broad network of diplomatic and political efforts.

Among the treaties and agreements, the most fundamental to nuclear nonproliferation efforts is the Nuclear Nonproliferation Treaty (NPT). The NPT, which has 188 signatories, stipulates that nuclear weapons states (NWS) are not to transfer nuclear weapons or other nuclear explosive devices to nonnuclear weapons states (NNWS). Additionally, the NWS can take no steps to aid or encourage the production and development of nuclear weapons or other nuclear explosive devices in NNWS. Furthermore, the NNWS are not to receive, manufacture, or transfer nuclear weapons or explosive devices to any other state—whether it has a developed nuclear capability or not. Both NWS and NNWS are allowed to engage in the exchange of equipment, material, and scientific and technological information for peaceful nuclear energy use while also working to pursue good-faith negotiations for nuclear disarmament and the cessation of the nuclear arms race.

Other elements of the nonproliferation system (described in more detail in Appendix 1) include the following:

- The International Atomic Energy Agency (IAEA)—138 countries,
- The IAEA Safeguards Agreement—115 countries,
- The Zangger Committee—36 countries,
- The Wassenaar Arrangement—40 countries,
- The Nuclear Suppliers Group—45 countries,
- The Nuclear Safety Convention—65 countries,
- The Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management—42 countries,
- The Convention on the Physical Protection of Nuclear Material—115 countries, and
- The Conference on Disarmament—65 countries.

Because the number of countries participating in the various treaties, agreements, and regimes varies greatly, this unevenness means that the nuclear nonproliferation system is not well integrated. So while there are 188 countries that are party to the NPT, there are considerably fewer countries in many of the other agreements and regimes, making it problematic to use the other venues to support the goals and objectives of the NPT.

U.S. Government Nonproliferation Programs and Efforts

Just as the nuclear nonproliferation system consists of a large number of elements, so too are there many U.S. government agencies, bureaus, directorates, and offices working on nuclear nonproliferation. Within the Department of Defense (DoD), the Defense Threat Reduction Agency (DTRA) is the focal point for nonproliferation and is responsible for implementing the Cooperative Threat Reduction (CTR) program and conducting onsite inspections to monitor compliance with arms control treaties and other

agreements. The Department of Commerce is the primary government organization responsible for overseeing compliance among the government and private business sectors with existing arms control and export regimes. The Department of Energy has a large number of programs that address everything from nuclear material safety and security to research and development efforts for nuclear detectors. The Department of State has responsibility for policy formulation and diplomatic cooperation initiatives. The Department of Homeland Security is largely focused on programs to interdict weapons and fissile materials (such as the Proliferation Security Initiative). (See Appendix 2 for a more detailed description of the Department of Defense's nonproliferation programs and efforts and Appendix 3 for other U.S. government nonproliferation programs and efforts.)

Currently, there are two high-profile U.S. nonproliferation programs and initiatives: the Cooperative Threat Reduction program (also known as the Nunn-Lugar Program, from the legislation creating the program crafted by former Georgia Senator Sam Nunn and Indiana Senator Richard Lugar) and the Proliferation Security Initiative (PSI). Finally, there are two new nonproliferation initiatives: the International Convention for the Suppression of Acts of Nuclear Terrorism and the Global Initiative to Combat Nuclear Terrorism.

The Cooperative Threat Reduction program works cooperatively with Russia and other states within the former Soviet Union (FSU)—and, for the first time beginning in 2005, with states outside the FSU—to help the recipient states eliminate or reduce stockpiles of nuclear weapons, their components, and their delivery mechanism, as well as to reduce the proliferation threat from unsecured chemical, biological, and nuclear arsenals, materials, and related scientific expertise/knowledge. The CTR is a collection of programs and projects overseen and coordinated through the interagency process but implemented by the Department of Defense in conjunction with various U.S. departments, bureaus, agencies, and organizations in cooperation with their appropriate counterparts in the recipient nation governments. These programs are enforced through bilateral agreements between the United States and the host-nation governments, as well as through trust-building and transparency measures designed to facilitate greater access to stockpiles, facilities, and scientists potentially at risk. In addition to deactivating more than six thousand warheads, CTR efforts have included delivery systems destruction; nuclear weapons storage security; chemical weapons destruction; biological weapons proliferation prevention; reactor core conversions; nuclear material protection, control, and accounting; export control initiatives; and defense conversion.

The Proliferation Security Initiative, announced by President George W. Bush on May 31, 2003, is a U.S.-led initiative to increase cooperation among an informal group of member states to prevent shipments of chemical, biological, and nuclear weapons—as well as missiles or other delivery goods and technologies—on the high seas, in the air, and on the ground. Through a variety of legal, diplomatic, economic, military, and other means, the PSI member states

(there are currently seventeen member states: Australia, France, Germany, Italy, Japan, the Netherlands, Poland, Portugal, Spain, the United Kingdom, and the United States are the original participants; Canada, Denmark, Norway, Singapore, and Turkey joined in January 2004; and the Russian Federation joined in June 2004) work together on preemptive interdiction of WMD. Cargo interdictions of vessels and various craft are carried out on land, at sea, and in the air consistent with national legal authorities and relevant international law. The most successful PSI operation was the October 2003 interdiction of centrifuge parts bound for Libya, which likely contributed to Libya's decision to terminate its WMD program three months later.

A new initiative designed to combat nuclear terrorism is the International Convention for the Suppression of Acts of Nuclear Terrorism. This initiative seeks to stimulate the adoption of effective preventative measures in that arena and to establish a reliable international legal mechanism for cooperation between nations at all stages of combating nuclear terrorism. Parties to this agreement would be obligated to prevent and prosecute all acts of nuclear terrorism by adopting necessary legislative and technical means to protect nuclear material, nuclear installations, and nuclear devices as well as to forestall access to these by any unauthorized third party.

A second new initiative is the Global Initiative to Combat Nuclear Terrorism announced by President George W. Bush and Russian President Vladimir Putin on July 15, 2006. This initiative calls upon like-minded nations to expand and accelerate efforts that develop partnerships to combat nuclear terrorism, including improving capabilities to ensure accounting, control, and physical protection of nuclear material and radioactive substances, as well as security of nuclear facilities; to detect and suppress illicit trafficking or other illicit activities involving such materials, especially measures to prevent their acquisition and use by terrorists; to respond to and mitigate the consequences of acts of nuclear terrorism; to ensure cooperation in the development of technical means to combat nuclear terrorism; to ensure that law enforcement takes all possible measures to deny safe haven to terrorists seeking to acquire or use nuclear materials; and to strengthen respective national legal frameworks to ensure the effective prosecution of, and the certainty of punishment for, terrorists and those who facilitate such acts.

It is important to note that because no one department has been tasked with the lead role in overseeing nuclear nonproliferation efforts, the various parts of the federal government are engaged in overlapping and potentially duplicative efforts. For example, both DTRA and DNDO are currently engaged in very similar efforts to develop nuclear detection technology. But if achieving nuclear nonproliferation is an important component of U.S. national security strategy and policy—and to the extent that various parts of the federal bureaucracy need to be engaged in nonproliferation efforts—a more coordinated effort and approach within and across government are needed.

Currently, there are two independent efforts examining how to restructure the U.S. national security apparatus to create a greater

joint interagency effort. The Center for Strategic and International Studies' Beyond Goldwater-Nichols (BGN) program recognizes that "success requires unity of effort not only from the military but also from across the U.S. government" and that "in the post-Cold War, post-9/11 security environment, it is likely that future operations will be both interagency and international in character, requiring a high degree of integration and coordination."[14] Yet, "the U.S. government as a whole lacks established procedures for developing integrated strategies and plans."[15] The Project for National Security Reform (PNSR), sponsored by the Center for the Study of the Presidency, argues that "threats interrelate and are no longer confined in the vertical departmental categories (that is, diplomacy, defense, and commerce) but rather in missions."[16] Although both BGN and PNSR were created primarily to address problems associated with overseas stability operations, clearly the principles of a more integrated, interagency approach can and should be applied to nonproliferation as well. Moreover, both BGN and PNSR point to the fact that the U.S. government needs to be more efficient and agile to meet the needs of national security in the twenty-first century, which include nonproliferation. Therefore, one way of streamlining such efforts would be to reduce the number of government programs and offices conducting nonproliferation work and to pare down to those that are the most critical or cost-effective, for example, cooperative threat reduction.

U.S. Nonproliferation Policy

The *National Security Strategy of the United States*, published in March 2006, states that "there are few greater threats than a terrorist attack with WMD [weapons of mass destruction]."[17] The *National Security Strategy* also states that "countering proliferation of WMD requires a comprehensive strategy involving strengthened nonproliferation efforts to deny these weapons of terror and related expertise to those seeking them."[18] Two of the objectives listed in the *National Strategy for Combating Terrorism*, published in September 2006, are to "deny terrorists access to the materials, expertise, and other enabling capabilities required to develop WMD" and to "detect and disrupt terrorists' attempted movement of WMD-related materials, weapons, and personnel."[19] A complementary document, the *National Military Strategy to Combat Weapons of Mass Destruction*, published in February 2006, states that "our military strategic goal is to ensure that the United States, its Armed Forces, allies, partners, and interests are neither coerced nor attacked with WMD."[20]

These national strategies highlight the importance of nonproliferation efforts to combat the threat posed by WMD, especially by terrorist organizations. Another national strategy document, the *National Strategy to Combat Weapons of Mass Destruction*, published in December 2002, outlines three principal pillars of a strategy to combat the WMD threat:

- Nonproliferation—the ability "to prevent states and terrorists from acquiring WMD."[21]
- Counterproliferation—the ability to

"counter the threat and use of WMD by states and terrorists against the United States, our military forces, and friends and allies."[22]

- Consequence Management—the ability "to respond to the use of WMD against our citizens, our military forces, and those of friends and allies."[23]

Although characterized as pillars, these three elements cannot function separately—they are interdependent. The more successful the nonproliferation efforts are, the less likely it is that the United States and our allies will be forced to resort to counter-proliferation to destroy WMD and employ consequence management to respond to the use of WMD. Nonproliferation can thus be viewed as the first step—or foundation—in a continuum of efforts to combat WMD (see figure 2).

The nonproliferation–counter-proliferation–consequence management construct is certainly logical, but it raises important questions about nonproliferation policy. Do U.S. policies and actions discourage or encourage countries from wanting to acquire nuclear weapons? If nonproliferation efforts fail (or are being seen to fail), is military action the only response option? Are proliferation concerns for nation-states the same as for non-state actors? And does preventing the former from acquiring nuclear capability necessarily result in keeping it out of the hands of the latter?

Rethinking Nonproliferation Policy

A traditional nonproliferation approach is to negotiate treaties or agreements and create nonproliferation regimes (including inspections and onsite monitoring) as a way to curb the spread of materials, technology,

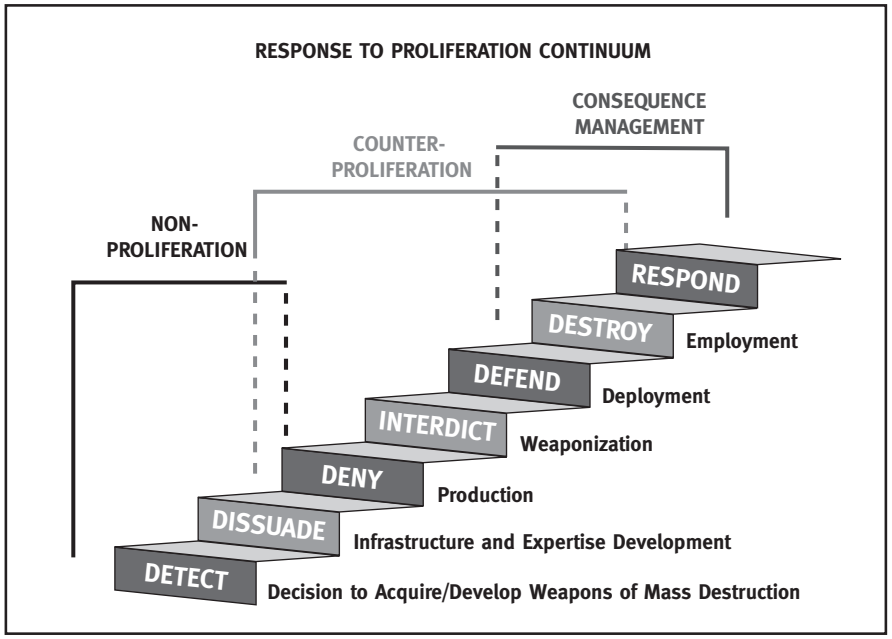

FIGURE 2: Responses to Proliferation
Source: Joint Doctrine for Combating Weapons of Mass Destruction, 8 July 2004, pg. 1–7

and weapons. Those who are skeptical of such nonproliferation efforts argue that the United States should instead seek to dissuade countries from acquiring nuclear weapons by developing weapons—including the development and acquisition of precision low-yield nuclear weapons or mini-nukes[24]—that can hold high-value targets (including underground WMD facilities) at risk. Moreover, they argue that the United States must be willing to use military force—unilaterally if necessary—to prevent the acquisition of nuclear weapons if diplomacy fails. Indeed, this was the Bush administration's argument for conducting preventive war against Iraq—which yields some very important lessons for thinking about nonproliferation in a post-9/11 context.

In the case of Iraq, the Bush administration argued that the United Nations Monitoring, Verification, and Inspection Commission (UNMOVIC) efforts had failed to prevent Saddam Hussein from acquiring weapons of mass destruction. The allegation was not based on any discovery of WMD but on the presumption that the Iraqi regime was engaged in an elaborate deception to prevent UN weapons inspectors from finding WMD. In effect, the administration's argument rested on not being able to prove a negative, that is, just because WMD could not be found did not mean they did not exist. Unable to accept the risk of a failed nonproliferation effort, the Bush administration decided that the only alternative was to take military action against the regime in Baghdad.

Much of the nonproliferation community, on the other hand, disagreed with the Bush administration. Most felt that the inability to find any WMD meant that the UN weapons inspections were indeed working. And if there were any problems, they could be remedied by increasing the number of inspectors and strengthening the inspection regime. But if the nonproliferation effort was, in fact, failing, this would be akin to verifying a definition of insanity attributed to Albert Einstein: continuing to do the same thing but expecting different results.

Iraq thus highlights a potential Catch-22 for the nonproliferation community. If a nonproliferation regime is failing, the use of military force may be necessary (otherwise it is a hollow threat). But if there is no consensus on or an aversion to the use of force (for whatever reasons), then the only recourse is to redouble nonproliferation efforts. But if the previous efforts have already failed, why would simply trying harder be any more effective? And if renewed efforts fail, then the only option left is military action, which was previously unacceptable. And so on, ad infinitum.

The only way out of this potentially endless loop is to rethink nonproliferation—not to rethink how to be better at nonproliferation efforts, but the nonproliferation paradigm itself. But doing so means asking questions that the nonproliferation community may find uncomfortable, because the answers are likely to fall outside the conventional wisdom of nonproliferation.

Whither Deterrence?

The conundrum of Iraq for the traditional nonproliferation community was that they could not disagree with the Bush adminis-

tration's assertion that Iraq's possession of WMD was a threat that required a response, because to disagree would have meant admitting that proliferation was an acceptable outcome. Instead, they were left to disagree about the evidence that Iraq was in violation of UN Security Council resolutions and the need to obtain international consensus on an appropriate response, including the use of military force. For example, Jessica Tuchman Mathews, president of the Carnegie Endowment for International Peace (CEIP), argued that "[g]iven the immense costs and risks of war, which rise sharply without broad international support, inspections should continue until they are seriously obstructed (which should trigger an immediate invasion) or succeed."[25] Another CEIP report published before the war asserted that "Iraq's failure to produce a complete declaration does constitute a material breach of [UN] Resolution 1441. The question, however, is whether it constitutes a wise, compelling, and necessary *casus belli*. We believe that it does not."[26] And Daryl Kimball from the Arms Control Association argued that a "prudent course for the [UN] Security Council is to further strengthen the inspections regime, maintain pressure on Iraq, and restore consensus on how best to achieve its disarmament."[27]

But the question never should have been whether Iraq had WMD or not, which presumed that if it did, it was an undeterrable threat. Rather, the fundamental question should have been: Even if Iraq had WMD—however undesirable that situation might be—was it a threat to the United States that could not be deterred?

The answer is that there was no historical evidence of Iraq or any other rogue state using weapons of mass destruction against enemies capable of inflicting unacceptable retaliatory damage. It is certainly true that Saddam Hussein used chemical weapons against helpless Kurdish villages and the Iranian infantry in the 1980s. But during the Gulf War in 1991, when Hussein had vast stocks of chemical weapons, he was deterred from using them against the coalition and Israel by credible threats of retaliation, including a possible U.S. nuclear response. For example, in August 1990, then-Defense Secretary Dick Cheney stated that "it should be clear to Saddam Hussein that we have a wide range of military capabilities that will let us respond with overwhelming force and extract a very high price should he be foolish enough to use chemical weapons on United States forces."[28] And according to Keith Payne, a former deputy assistant secretary of defense in the first term of the current Bush administration: "By Iraqi accounts, nuclear deterrence prevented Iraq's use of chemical and biological weapons."[29]

The bottom line is that even if Saddam Hussein possessed a few nuclear weapons, he would not have been able to escape the reality of a credible U.S. nuclear deterrence any more than the Soviet Union or Communist China before him or even North Korea today.

Yet the Bush administration's *National Security Strategy of the United States of America*, approved in September 2002, seems to eschew deterrence and instead embraces the doctrine of preventive military action to stop so-called rogue states from acquiring weapons of mass destruction:

- "We must be prepared to stop rogue states and their terrorist clients *before* they are able to threaten or use weapons of mass destruction against the United States and our allies and friends."
- "As a matter of common sense and self-defense, America will act against such emerging threats before they are fully formed."[30]

The principle of prevention was reiterated in the March 2006 update of the Bush administration's national security strategy:

> "If necessary, however, under long-standing principles of self defense, we do not rule out the use of force before attacks occur, even if uncertainty remains as to the time and place of the enemy's attack. When the consequences of an attack with WMD are potentially so devastating, we cannot afford to stand idly by as grave dangers materialize. This is the principle and logic of preemption. The place of preemption in our national security strategy remains the same."[31]

What the Bush administration calls "preemption" is really prevention and implies an apparent loss of faith in deterrence. But why? Shadowy nonstate actors—such as al Qaeda—are not deterrable, since they do not operate from known, specific geographic locations and have no obvious targets for retaliation. President Clinton's decision to retaliate against the 1998 U.S. embassy bombings in Tanzania and Kenya is a good example. Cruise missile strikes were launched against al Qaeda training camps in Afghanistan and a pharmaceutical factory in Sudan suspected of making chemical weapons for al Qaeda. The primary target, Osama bin Laden, had already fled from one of the targeted camps, and the attack did little to disrupt terrorist training there. The pharmaceutical factory was later discovered to be exactly that. But nation-states have a return address, and their leaders understand that any attack on the United States risks being met with an obliterating retaliatory attack by the massive U.S. nuclear arsenal. Also, while individual fanatics may sometimes be willing to commit suicide for a cause, prominent political leaders rarely display that characteristic.

For example, over the years, the United States deterred the likes of Joseph Stalin, Nikita Khrushchev, Leonid Brezhnev, and Mao Zedong. None of those leaders seriously contemplated attacking the United States, because they knew that such an attack would mean certain retaliation, resulting in their own annihilation. Why, then, do we now apparently believe that leaders of so-called rogue states are undeterrable? It cannot be that those leaders are more brutal than America's previous adversaries. Khrushchev and Brezhnev were thuggish, and Mao and Stalin were genocidal monsters. Likewise, a credible case cannot be made that the current crop of tyrants is more erratic and unpredictable than the tyrants the United States deterred in the past. Stalin epitomized paranoia, and Mao was the architect of China's utterly bizarre Cultural Revolution in the late 1960s and early 1970s—at the very time that China was acquiring a nuclear-weapons capability.

If the United States could deter both the Soviet Union and China, certainly it can deter much lesser threats from countries such as Iran and North Korea. The quandary is that if deterrence works, not only is it an argument against the necessity to use military force to prevent or respond to proliferation, but it is also an argument against an absolute imperative for a successful nonproliferation regime. This is not to say that nonproliferation is undesirable (or that proliferation is desirable)—just that the lack of total nonproliferation may not be necessary as a prerequisite for national security.

The Unintended Consequences of Preventive War

Preemptive action may sometimes be necessary to meet a threat, but only when that threat is clear and imminent. But what the Bush administration describes as preemptive action in its national security strategy is more properly "preventive war"—a willingness to strike first to forestall a vague, largely theoretical, security threat. The problem with preventive war is that it risks making the United States an unnecessary aggressor in certain cases, such as Iraq, and it also has some highly undesirable side effects.[32]

For example, in the wake of the Bush administration's decision to engage in preventive regime change in Iraq, it is not surprising that North Korea and Iran would believe that they might be next on Washington's hit list unless they could effectively deter such an attack—especially since both countries were named members of the "axis of evil" in President Bush's 2002 State of the Union address. Yet neither country could hope to match the conventional military capabilities of the United States. Therefore, a logical conclusion for both countries is that the most reliable deterrent—maybe the only deterrent—is to have nuclear weapons. In other words, U.S. behavior may have inadvertently created a powerful incentive for the proliferation of nuclear weapons—exactly the opposite of the desired effect.

The Bush administration's decision to invade Iraq is just one example. The larger problem is the U.S.'s proclivity for military intervention, which pre-dates the Bush administration. Consider that since the end of the Cold War marked by the opening of the Berlin Wall in 1989, the United States has engaged in nine major military operations: Panama in 1989, the Persian Gulf War in 1991, Somalia in 1992, Haiti in 1994, Bosnia in 1995, Iraq (Operation Desert Fox) in 1998, Kosovo in 1999, Afghanistan in 2001, and Iraq in 2003.[33] And it is important to realize that President Clinton's war in the Balkans was essentially no different from the Bush administration's invasion of Iraq to depose Saddam Hussein. Both were unnecessary military actions against sovereign states conducted without the formal approval of the UN Security Council, and neither represented an imminent threat to U.S. security. And both were rationalized on humanitarian grounds—punishment for Slobodan Milosevic's atrocities in Serbia and Saddam Hussein's brutal rule in Iraq, respectively.

U.S. leaders need to face the reality that U.S. foreign policy may cause unintended (and sometimes harmful) consequences

on the nuclear proliferation front. Those who encouraged and supported America's post-Cold War military interventions—Democrats and Republicans, conservatives and liberals—need to ask themselves whether increasing the incentives for nuclear proliferation was worth the price of intervention when U.S. national security was not at stake.

Missile Defense Compounds the Problem of Preventive War

Advocates of missile defense paint a doom-and-gloom picture that America is defenseless against attacks by ballistic missiles. In other words, the purpose of missile defense is supposed to be to protect the American people. But the stated mission of the Missile Defense Agency (MDA), the Department of Defense organization responsible for developing a missile defense system, is to "develop and field an integrated BMDS [ballistic missile defense system] capable of providing a layered defense for the homeland, deployed forces, friends, and allies against ballistic missiles of all ranges in all phases of flight."[34] Thus, the purpose of missile defense is extended well beyond protecting America and Americans. Perhaps the clearest indication that defending the United States is not necessarily the primary objective of a future missile defense system is this statement by the MDA about the threat: "The proliferation of weapons of mass destruction and the ballistic and cruise missiles that could deliver them pose a direct and immediate threat to the security of the United States and its deployed military forces, allies and friends."[35]

This is also the reason for wanting to develop a space-based, boost-phase intercept capability (boost-phase is the portion of a missile's flight when it is launched and thrusting to gain the needed velocity to break free of the earth's gravitational forces). Certainly, there are many operational advantages of being able to intercept a missile in its boost phase (for example, a single effective shot could kill a missile carrying multiple warheads and before any decoys or countermeasures could be deployed). But the other reason for boost-phase intercept is because a space-based capability would inherently provide global coverage well beyond defending against only those ballistic missiles that directly threaten the United States. According to the Heritage Foundation's Commission on Missile Defense, "a missile defense system should be global in nature," and "the fastest and least expensive way to build a global missile defense system would be to begin by building sea-based defenses and then to follow them as soon as possible with space-based defenses."[36]

So the push for a missile defense is not really driven by the need to defend America against long-range intercontinental ballistic missiles that rogue states currently do not have and are not likely develop or deploy for perhaps a decade or more. Rather, the real rationale for a missile defense is to protect U.S. forces so they can engage in military intervention throughout the world:

> Without it [ballistic missile defense], weak states operating small arsenals of crude ballistic missiles, armed with basic nuclear warheads or other weapons of mass destruction, will be in a

> strong position to deter the United States from using conventional force, no matter the technological or other advantages we may enjoy. Even if such enemies are merely able to threaten American allies rather than the United States homeland itself, America's ability to project power will be deeply compromised.[37]

Therefore, missile defense facilitates and reinforces a policy of intervention—including preventive war—which is a powerful incentive for countries to acquire nuclear weapon capability, making it more difficult to contain nuclear proliferation.

Problems with the NPT

Beyond the difficulties posed by a U.S. interventionist policy's giving rise to incentives for countries to acquire nuclear-weapons capability, the Nuclear Nonproliferation Treaty itself is problematic. As such, it may no longer be a useful instrument for encouraging nonproliferation.

Article II of the NPT states that "each non-nuclear-weapon State Party to the Treaty undertakes…not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices."[38] Article VI of the NPT states that "each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament."[39] In other words, nonnuclear countries agree never to acquire nuclear weapons in exchange for the promise that the nuclear powers will disarm. But this is essentially a grand false promise. Why should nonnuclear countries—especially those that feel threatened by the possibility of U.S. military intervention, now including preventive attacks to forestall threats that have not yet materialized—forgo pursuing a capability they do not have (which might be the only way to prevent U.S. preemptive action) in exchange for the nuclear-armed powers' promise to give up a capability they already have? In many respects, these two articles reduce the NPT to wishful thinking.

Moreover, the notion of nuclear disarmament is largely a utopian vision. Although some very prominent elder statesmen—such as former secretaries of state Henry Kissinger and George Shultz,[40] as well as former Soviet President Mikhail Gorbachev[41]—have argued for disarmament, the reality is that, for better or for worse, nuclear weapons cannot be uninvented. And trying to rid the world of them is a quixotic quest. Assuming disarmament could be achieved, how would it be enforced? If no country has nuclear weapons, what ability would any country have to force another country that acquired nuclear weapons to give them up? Indeed, there would be tremendous incentives to cheat in a disarmed world, because a nuclear-armed power would possess a significant strategic advantage over its unarmed adversaries. And the current nuclear powers have every reason to remain so for national security reasons—besides geography, one of the compelling reasons why the United States does not have to worry so much about a foreign invasion or direct military attack is because the U.S. strategic arsenal is a powerful deterrent.[42] Nevertheless,

the United States could unilaterally reduce its excessive nuclear arsenal substantially.

Article IV of the NPT states that "nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes."[43] However, the treaty does not explicitly prohibit uranium enrichment as part of a peaceful nuclear energy program. The problem is that the same technology used to produce low-enriched uranium for nuclear power plants can also produce highly enriched uranium for nuclear weapons. This is a loophole that Iran appears to be exploiting in its quest to become a nuclear power.

Article X of the NPT states that "each Party shall in exercising its national sovereignty have the right to withdraw from the Treaty if it decides that extraordinary events, related to the subject matter of this Treaty, have jeopardized the supreme interests of its country."[44] So a country can be a party to the NPT but decide that abiding by the treaty is no longer in its best interests and withdraw, which is exactly what North Korea did in January 2003, claiming: "A dangerous situation where our nation's sovereignty and our state's security are being seriously violated is prevailing on the Korean Peninsula due to the U.S. vicious hostile policy towards the DPRK."[45] Having been named a member of the axis of evil a year earlier, the regime in Pyongyang could undoubtedly see the writing on the wall that the United States was about to invade Iraq and decided it was in the DPRK's "supreme interests" to no longer formally agree to be a nonnuclear power.

Finally, the NPT is not a universal treaty—there are 193 countries in the world but not all of them are signatories to the NPT. The result is the so-called "D-3 problem" or the de facto nuclear states—India, Pakistan, and Israel. These countries were never part of the NPT regime and were thus able to develop nuclear weapons, because they are under no obligation to abide by the NPT. According to Rebecca Johnson of the ACRONYM Institute for disarmament diplomacy:

> Egypt, Iran and others also made use of the fact that Israel is the only state in the Middle East not to have renounced its nuclear weapon programme and joined the NPT. In a wider context, Israel is one third of what is euphemistically called "the three-state problem", *i.e.* the regime challenges arising from the D-3. Having never been party to the NPT, these states cannot be accused of violating it. Yet they are free-riders on the regime, deriving security benefits from the fact that rivals and neighbours are kept in check by the NPT and its associated instruments. Pressure on the non-proliferation regime has been intensified by recent moves to normalise the nuclear programme of India and require the D-3 to behave "as if" they were responsible nuclear weapon states.[46]

Not All Proliferation Is Equal

The conventional wisdom is that nonproliferation per se creates greater security. Indeed,

that is the underlying logic of the Nuclear Nonproliferation Treaty, which is the centerpiece of the existing nonproliferation system. Members of the nonproliferation community have over the decades devoted at least as much time and energy in wringing their hands over the possibility that stable, democratic, status quo powers such as Germany, Japan, Sweden, and South Korea might decide to abandon the NPT and develop nuclear deterrents as they have spent over the prospect that unstable or aggressive states might do so.

This concern is not confined to the nonproliferation community, often considered more liberal leaning. For example, neoconservative stalwarts Robert Kagan and William Kristol regarded with a note of fear the possibility that America's democratic allies in East Asia might respond to North Korean proliferation by building their own nuclear deterrents: "The possibility that Japan, and perhaps even Taiwan, might respond to North Korea's actions by producing their own nuclear weapons, thus spurring an East Asian nuclear arms race … is something that should send chills up the spine of any sensible American strategist"[47] (a fear more likely motivated by the fact that breaking the American nuclear guarantee on the Korean peninsula would mean destroying America's empire-like hold on South Korea and Japan).

Such fear, however, is unwarranted. A threat to the peace may exist if an aggressive and erratic regime acquires nuclear weapons and then uses them to intimidate or blackmail its non-nuclear neighbors. But nuclear arsenals in the hands of stable, democratic, status quo powers are not an inherent threat to peace and stability—especially if they exist in response to an unfriendly neighbor's nuclear weaponry. Kagan and Kristol—and others who share their hostility toward such countries having nuclear weapons—are guilty of embracing a moral equivalence between a potential aggressor and its potential victims.

This does not mean that countries should be encouraged to develop nuclear arsenals. But there may be certain circumstances in which it makes more sense not to discourage a country from pursuing a nuclear-weapons capability to offset another country's capability—rather than having just one country in a region with a nuclear monopoly—which puts the United States in the position of having to extend its nuclear umbrella, thereby placing America at risk to guarantee the security of another country even if U.S. security itself is not at risk. Admittedly, such a changed attitude on the part of the United States might well lead to greater proliferation in some regions. But that does not automatically translate to the nightmare vision of a spiraling arms race and endless proliferation—as is generally portrayed by the nonproliferation community, such as in this Weapons of Mass Destruction Commission report:

> Alarmist statements from key Japanese politicians might indicate that a Japanese nuclear-weapons program cannot be excluded any more, should North Korea become effectively and permanently a nuclear power. In this case, the South Korean nuclear-weapons program that was finally halted in the eighties could also be revived. In the Middle East, the possibility cannot be ignored even

> today that Egyptian tactics in New York foreshadowed a movement away from the non-nuclear commitment by the most important Arab country. If the Israeli nuclear status was already difficult to accept for Egypt, an Iranian nuclear-weapon option is seen as an acute threat. The same threat could induce Saudi Arabia to attempt obtaining bombs for money. If Egypt approaches a nuclear option, Arab rivals such a Syria or Algeria might also not keep quiet. A nuclearizing Middle East may then even induce Turkey to reconsider its non-nuclear stance.
>
> At this point, the status-minded middle powers would be challenged: Brazil, South Africa, Nigeria, Indonesia, Argentina might feel compelled to put their long buried nuclear option back on the agenda for consideration.[48]

The reality is that nations will make their decisions about whether to become nuclear-weapons powers based on a host of factors (including security considerations), and it is not a cost- or risk-free decision—financially, politically, or diplomatically—to cross the nuclear threshold. Moreover, nuclear stability and a balance of power between nuclear-armed countries are also realistic possibilities. For example, there is some evidence that nuclear weapons have had a stabilizing effect on Indian-Pakistani relations, which runs counter to traditional nonproliferation thinking. A case can be made that the fact that both India and Pakistan possess nuclear weapons prevents violence related to the Kashmir dispute from erupting into all-out war between the two countries—in other words, much the same effect that nuclear weapons had on U.S.-Soviet relations during the Cold War.

Instead of a one-size-fits-all nonproliferation policy, the focus of Washington's nonproliferation policy should be on substituting selectivity for uniformity of treatment. However undesirable proliferation might be, U.S. policymakers must rid themselves of the notion that all forms of proliferation are equally bad. Instead of thinking only in absolute terms to prevent proliferation, the United States should be more concerned about making it difficult for aggressive or unstable regimes to acquire the technology and fissile material needed to develop nuclear weapons and be less concerned—but not completely unconcerned—about stable, friendly democracies that might show a similar interest. Furthermore, policymakers must also be willing to adopt a more realistic attitude toward the limitations of even that more tightly focused nonproliferation policy. The United States may have to accept the reality that the best result of nonproliferation efforts may only delay, not prevent, determined states from joining the nuclear-weapons club (especially if other U.S. policies create incentives and pressure for countries to acquire nuclear weapons).

Nonetheless, delay can provide important benefits. A delay of only a few years may significantly reduce the likelihood that an aggressive power with a new nuclear-weapons capability will be in a position to claim a regional nuclear monopoly and thus be able to blackmail non-nuclear neighbors. In some

cases, the knowledge that achieving a regional nuclear monopoly is impossible may discourage a would-be expansionist power from even making the effort to begin with. And the inability to achieve such a monopoly might provide incentives for a power to configure its new arsenal more overtly for purposes of deterrence rather than aggression.

Although in the general sense it might be true that fewer nuclear weapons in the world (and fewer countries with nuclear weapons) would be a good thing, such logic is not necessarily absolute. Instead of assuming that all proliferation of nuclear weapons is an inherent danger that must be prevented, policymakers should analyze proliferation and assess its consequences on a case-by-case basis rather than apply the same standards and constraints to all countries.

"Failure" Is an Option

Such an approach must pragmatically recognize the potential failure of nonproliferation efforts and, instead of vainly trying to reverse proliferation, develop policies to limit some of its harmful effects. One worrisome prospect is that new nuclear states may lack the financial resources or the technical expertise to establish reliable command-and-control systems or to guard their arsenals from theft or accidental or unauthorized launch. (Although the latter two dangers are an acute concern with new nuclear-weapons powers, they are also a problem with Russia's nuclear arsenal.) An equally serious danger is that some of those nuclear powers may fail to develop coherent strategic doctrines that communicate to adversaries the circumstances under which the aggrieved party might resort to using nuclear weapons.

In some cases, Washington can help minimize such problems by disseminating command-and-control technology and assisting in the creation of crisis management hotlines (similar to what the United States and the Soviet Union had during the Cold War) and other confidence-building measures among emerging nuclear-weapons states. That would reduce the danger that a country might adopt a "launch on warning" strategy, that is, launching its weapons on the basis of an indication that the other side has launched an attack without waiting for confirmation that an attack is actually under way. The United States can also encourage potential adversaries to engage in strategic dialogues to delineate the kinds of provocations that might cause them to contemplate using nuclear weapons and outline the doctrines that would govern their use. At the very least, such a dialogue would reduce the chances of a nuclear conflict erupting because of miscalculation or misunderstanding. Finally, Washington can strongly encourage new nuclear powers to configure and posture their arsenals for defensive, second-strike roles rather than provocative, first-strike capabilities, for example, single-warhead missiles that are less tempting targets than multiple-warhead launchers.

Such measures are not a panacea, but they do limit some of the worst potential effects of nuclear proliferation. There is one other area in which the United States must have a proactive policy: making it clear to new nuclear powers that transferring nuclear technology or weapons to nonstate actors is utterly unacceptable.

Proliferation and Terrorism

The imperatives of the post-9/11 threat environment dictate that the most important U.S. security concern related to nuclear weapons is the potential transfer of such weapons (or materials and technology) to terrorist groups that are, by definition, undeterrable. Therefore, the single most important criterion to use in assessing the potential dangers of proliferation must be the possibility of nuclear terrorism.

The conventional wisdom is that preventing proliferation of nuclear weapons to countries de facto prevents the transfer of weapons to terrorists. That was the rationale that the Bush administration used to disarm Iraq—including employing preventive military force unilaterally. The president argued that Hussein could give his WMD to terrorists who would then attack the United States, for example: "Iraq could decide on any given day to provide a biological or chemical weapon to a terrorist group or individual terrorists. Alliance with terrorists could allow the Iraqi regime to attack America without leaving any fingerprints."[49] Therefore, the only way to prevent the possibility of WMD terrorism was to rid Iraq of its WMD or its ruler, who was seeking to acquire WMD, including nuclear weapons.

Such an argument was certainly plausible, but the question was whether it was likely. The Bush administration was never able to make a convincing case. The president himself has admitted that Saddam Hussein was not involved in the 9/11 attacks, despite making that implication on several occasions in the run-up to the Iraq war.[50] And the 9/11 Commission concluded: "To date we have seen no evidence that these or the earlier contacts [between al Qaeda and Iraq] ever developed into a collaborative operational relationship. Nor have we seen evidence indicating that Iraq cooperated with al Qaeda in developing or carrying out any attacks against the United States."[51] To be sure, Saddam Hussein was known to support anti-Israeli Palestinian terrorist groups (including Hamas) for years, but he never gave chemical or biological weapons to those groups to use against Israel, a country he hated as much as he hated the United States.

Regardless of the Bush administration's weak case that Iraq would transfer WMD to terrorists, the logic of its argument creates a conundrum for those who believe that preventing proliferation of nuclear weapons to countries also prevents the transfer of such weapons (or materials or technology) to terrorists. The only way out of the conundrum is a willingness to explore failed nation-state nonproliferation efforts as an acceptable (albeit undesirable) outcome while still developing successful ways to prevent nuclear weapons from falling into the hands of terrorists. There are three cases of specific concern.

Pakistan

As a nuclear power outside of the NPT, Pakistan is—by definition—a nonproliferation failure. Pakistan is of particular concern, because so many nuclear efforts in other countries (for example, North Korea, Iran, and Libya) were tied to a nuclear bazaar created by Pakistani scientist A.Q. Kahn, who has

been hailed as a national hero by Pakistan's President Parviz Musharraf. Unfortunately, neither the traditional nonproliferation approach nor preventive war is a real solution to this problem—and it is unrealistic to expect that Pakistan will give up its nuclear weapons. Therefore, U.S. efforts would be better spent on making sure that leakage of weapons and materials does not occur. In that vein, there may be lessons learned from the Nunn-Lugar Cooperative Threat Reduction program to safely secure Russian "loose nukes" that could be transferred to the Pakistani nuclear arsenal. For example, although the political situation in Pakistan might not allow for U.S. personnel in the country, it might be possible for the United States to train Pakistani personnel to better safeguard and secure nuclear weapons and materials. The United States might also be able to provide Pakistan with better technology for nuclear weapons and materials security.

Although the Musharraf regime is considered an ally in the war on terrorism and has helped capture some important al Qaeda operatives, the prospect of that country's nuclear weapons falling into the hands of radical Islamists must be planned for. The reality is that Pakistan has no short supply of extremist groups, including Harakat-ul-Mujahideen, Jaish-e-Mohammed, Lashkar e-Tayyiba-Lashkar-i-Jhnagvi—all designated as foreign terrorist organizations by the State Department—and other groups of concern such as Al-Badhr Mujahedin, Harakat ul-Jihad-I-Islami, Hizbul-Mujahedin, Jamiat ul-Mujahedin, and Sipah-I-Sahaba/Pakistan.[52] At a minimum, the United States should train Pakistani personnel and provide the requisite technology to be able to render safe[53] Pakistan's nuclear arsenal in the event of a hostile takeover of the government. At the other extreme, the U.S. military must be prepared preemptively to destroy Pakistan's nuclear weapons—which might require an extraordinary and unprecedented cooperative effort with the Musharaff regime to know the location of every warhead to be targeted.

Iran

Iran's nuclear program (claimed to be a peaceful nuclear energy program but believed by many to be the first step in a nuclear weapons program) is a concern because of that country's ties to terrorist groups. According to the State Department, "Iran remained the most active state sponsor of terrorism" and "presents a particular concern, given its active sponsorship of terrorism and its continued development of a nuclear program."[54] It is no secret that Iran provides funding, safe haven, training, and weapons to anti-Israeli groups such as Hezbollah and Hamas. But, like Saddam's Iraq, Iran has not supplied terrorist groups with chemical or biological weapons to use against Israel. So it is not clear what incentive Iran would have to give nuclear weapons to terrorists. Indeed, Israel's nuclear arsenal (believed to be as many as two hundred warheads) serves as a powerful deterrent against Iran's taking such action.

The conventional wisdom is that if Iran acquired a nuclear weapon, it would give that weapon to a terrorist group it supports (such as Hezbollah) and that the group would automatically use the weapon against a common foe of the group and the regime (presumably

the United States). This is the logic of "the enemy of my friend is my enemy" (indeed, this was the argument President Bush made about Saddam Hussein). But it is also important to understand that terrorist groups aided by hostile regimes are not completely controlled by those regimes. However, a nuclear weapon would also give the terrorist group the ability to topple the regime, and the regime would have no way to prevent that from happening once a nuclear weapon is out of its control. Moreover, it would be logistically easier to attack the regime rather than trying illicitly to transfer a nuclear weapon to a foreign target.

Two other factors would affect a regime's decision to transfer a nuclear weapon to terrorists. First, the cost to develop a nuclear weapon is significant—several billions of dollars. One has to question whether any regime would make that kind of investment simply to give a weapon away. Second, once a weapon is in the hands of terrorists they could use it against any target of their choosing. If that target is not the intended target of the regime, nuclear forensics could be used to trace the weapon back to its source[55] (even without nuclear forensics, the list of suspects will be relatively short). As a result, the regime would have to worry that a terrorist group would commit an act that would endanger the survival of the regime—especially if U.S. policy is to reserve the right to retaliate against the suspect regime, using its nuclear arsenal. So while the logic of the enemy of my friend is my enemy has popular appeal, there are clear and significant disincentives for any regime simply to give away a nuclear weapon to a terrorist group it does not control.

Iran's terrorist ties were also cited by the 9/11 Commission, which implicated Iran in the 1996 Khobar Towers bombing and cited "strong evidence" that Iran facilitated the transit of several al Qaeda members before 9/11 (including perhaps eight or more of the airplane hijackers).[56] The commission did not claim, however, that Iran was involved with the September 11, 2001 attacks. The potential Iran–al Qaeda connection is a serious one that deserves further investigation. But without clear evidence that the regime in Tehran was involved in 9/11 or is otherwise supporting or harboring al Qaeda, the United States cannot afford to wage another unnecessary war and military occupation as it is doing against Iraq.

The problem, however, is that the Bush administration has put Iran squarely in its sights. Although Iran's nuclear program is the public reason for U.S. concerns, the new *National Security Strategy*, issued on March 16, 2006, reveals deeper U.S. motives:

> As important as are these nuclear issues, the United States has broader concerns regarding Iran. The Iranian regime sponsors terrorism; threatens Israel; seeks to thwart Middle East peace; disrupts democracy in Iraq; and denies the aspirations of its people for freedom. The nuclear issue and our other concerns can ultimately be resolved only if the Iranian regime makes the strategic decision to change these policies, open up its political system, and afford freedom to its people. This is the ultimate goal of U.S. policy.[57]

In other words, it is not just about nuclear weapons—so Iran's giving up its nuclear aspirations would only be a necessary, but not sufficient, condition. Rather, it is about regime change—which is exactly what the Iranians are trying to prevent by seeking to acquire a nuclear weapons capability. So the Iranians have no incentive to give up their quest for nuclear weapons, because doing so will not result in a guarantee that the regime will remain in power.

Rather than continuing to box in the Iranians, U.S. policy may have to adjust to Iran's nuclear ambitions. If Iran eventually does acquire nuclear weapons, one thing should be made clear to Tehran: transfer of such weapons, material, or technology to terrorist groups will be justification for regime change. That is a bright line that must be drawn and strictly (and swiftly) enforced, not just with Iran but also with any other country that aspires to nuclear status.

North Korea

North Korea is a case of good news, bad news when it comes to nuclear nonproliferation. The bad news is that North Korea has clearly become a nuclear power. Even before the Democratic People's Republic of Korea announced its withdrawal from the NPT in January 2003, most analysts believed that the North Koreans had produced enough plutonium to build a few nuclear weapons. According to the Monterey Institute's Center for Nonproliferation Studies, "North Korean officials reportedly admitted having a nuclear weapons program during an October 2002 meeting with U.S. Assistant Secretary of State James Kelly, although they subsequently denied making such an admission."[58] Moreover, North Korea had already (in December 2002) removed the monitoring seals and cameras from a nuclear reactor and reactivated facilities associated with plutonium production that could be used for nuclear weapons.[59] And in October 2006, the DPRK claimed to have conducted a nuclear test,[60] confirming its status as a nuclear-weapons state.

The good news is that North Korea has recently indicated a willingness to roll back its nuclear program. In February 2007, Pyongyang pledged to close its Yongbyon reactor within sixty days in exchange for fifty thousand metric tons of fuel aid. Another one million tons of fuel oil would be forthcoming if North Korea permanently disables its nuclear operations. An important part of the deal is that the United States would remove the DPRK from its list of state sponsors of terrorism (although the reality is that North Korea is no longer an active state sponsor of terrorism, and its only terrorist links are to the Japanese Communist League-Red Army Faction, thought to have six hardcore members—hardly a terrorist threat) and establish diplomatic relations.[61]

It is too soon to know if the DPRK will fulfill its end of the bargain. And it may not be possible to put the North Korean nuclear genie back into the bottle.[62] If that proves to be the case, the United States may have to live with a nuclear-armed North Korea. But the danger of proliferation activities by Pyongyang must still be addressed. For example, the United States might be able to accept North Korea's continued possession of

its existing small nuclear arsenal if future production of nuclear weapons can be halted (the precedent would be the deal struck between the United States and India in March 2006 that would give India access to long-denied U.S. nuclear fuel and technology in exchange for India's separating its civilian and military nuclear programs and submitting its civilian nuclear facilities to international inspection but not giving up its nuclear weapons stockpile).[63] Also, both the United States and the DPRK may have a shared interest in securing and safeguarding nuclear weapons and materials that might allow for some sort of cooperative effort.

Ultimately, the ability of the United States to tolerate a nuclear-armed North Korea will hinge on the DPRK's not becoming the global supermarket of nuclear technology—particularly to nonstate actors. The DPRK's record on missile proliferation does not offer much encouragement that it will be restrained when it comes to commerce in nuclear materials. Perhaps most troubling of all, Pyongyang has shown a willingness to sell anything that will raise revenue for the financially hard-pressed regime (which is hardly surprising, given U.S. sanctions that are strangling the country—so one important way to reduce North Korea's incentives to be an arms bazaar is to lift the sanctions). In the spring of 2003, for example, evidence emerged of extensive North Korean involvement in the heroin trade. So it is hardly unwarranted speculation that the DPRK might be a willing seller of nuclear weapons or materials to terrorist groups flush with cash.

If North Korea does not halt its nuclear activities, Washington should communicate to the DPRK that selling nuclear material—not to speak of an assembled nuclear weapon—to terrorist organizations or hostile governments will be regarded as a threat to America's vital security interests. Indeed, U.S. leaders should treat such a transaction as the equivalent of a threatened attack on America by North Korea. Such a threat would warrant military action to remove the North Korean regime and should include the option to use nuclear weapons in retaliation for any terrorist nuclear attack. Pyongyang must be told in no uncertain terms that trafficking in nuclear materials is a bright red line that it dare not cross if the regime wishes to survive.

Conclusion

The international nonproliferation system and the disparate parts of the vast U.S. government bureaucracy involved in nonproliferation efforts are only as good as the policy upon which they rest. In that vein, the post-9/11 world demands that U.S. policymakers think beyond traditional nonproliferation policy—which may have served us reasonably well in the past, but a rapidly changing global security environment is rendering it obsolete and potentially counterproductive. We cannot afford to cling to the NPT and all it symbolizes as the be-all answer to the varied problems of nuclear proliferation. Instead, we need to be willing to think outside the proverbial box. As the foundation of nonproliferation policy, the superior U.S. strategic nuclear arsenal can continue to act as a powerful deterrent against attacks on the American homeland by nuclear-weapons powers—

thereby precluding the absolute necessity to engage in counterproliferation (particularly the use of preventive military force) as the primary or only response to proliferation. At the same time, we must recognize the increasing likelihood that the number of nuclear powers in the international system will grow over the next decade and that many of those new members of the global nuclear club will be unfriendly regimes. In some cases, we may have to accept that stable, democratic countries may choose to acquire their own deterrents to prevent aggressive states from achieving a regional nuclear monopoly.

While not giving up completely on the goal of preventing nuclear proliferation, U.S. nonproliferation efforts should also have as a goal delaying rogue states in their quest for nuclear weapons and not beating up on peaceful states that want to become nuclear powers. The other key objective of a new U.S. proliferation policy should be to prevent unfriendly nuclear states from transferring their weapons or nuclear know-how to terrorist adversaries of the United States. Those objectives are daunting enough without continuing the vain effort to prevent all forms of proliferation.

Instead of working harder to continue doing the same thing and expecting different results, the paradigm shift that the nonproliferation community must make is accepting the reality that failure is an option. Acknowledging the possibility of failure, the task of nonproliferation efforts should then be to reduce the risks and mitigate the consequences of such failure—especially ensuring that nuclear weapons, materials, or technology are not passed on to terrorists by newly minted nuclear states.

Toward that end, perhaps the single most important U.S. nonproliferation effort is the Nunn-Lugar Cooperative Threat Reduction program, which seeks to stop proliferation at its source by assisting Russia and the former Soviet countries to destroy or secure nuclear weapons and materials. The United States should consider conducting similar efforts with so-called D-3 countries that are outside the NPT regime (Pakistan, India, and Israel), as well as with potential future nuclear powers (North Korea and Iran)—all of which likely share a common concern over nuclear safety and security but may not have the requisite experience, expertise, or technical capabilities. It may not be possible to lock up nuclear weapons and materials to a Fort Knox "gold standard," as Harvard University Professor Graham Allison[64] has proposed, but every effort should be made to minimize the possibility that existing nuclear stockpiles can be easily accessed or compromised—especially since only relatively small quantities of weapons-grade plutonium or highly enriched uranium are needed to build a nuclear device. In the grand scheme of things, the several hundred billion dollars[65] spent on CTR is cheap insurance.

The other important action is to encourage the United States to establish normalized relations with countries that acquire nuclear weapons. The experience with Libya's giving up its nuclear aspirations (such as they were) and the potential promise of the North Koreans doing the same point to the importance of establishing relations with regimes rather than continuing to isolate them, which is an unhealthy and dangerous situation (in

that context, it is especially troubling that the United States does not have direct ties with Iran). It is worth remembering that throughout the nearly fifty years of the Cold War, when the United States and Soviet Union had thousands of nuclear warheads aimed at each other, and a nuclear conflict would have resulted in certain destruction of both societies, the two adversaries did not cut off relations. Despite a hostile relationship, the United States maintained an embassy in Moscow, and vice versa. Eventually, the two powers developed a crisis hotline and adopted other confidence-building measures.

By creating normalized relationships with nations with nuclear aspirations, Washington would reduce the danger of miscalculation and tragedy. Moreover, the United States would be creating the conditions and environment—regular communications and formal dialogue and discussion—that might increase the prospects for the success of nonproliferation efforts, especially if those efforts included positive incentives (such as providing fuel to meet North Korea's energy needs in exchange for North Korea's giving up its nuclear aspirations) instead of just threats. A less hostile posture by the United States—including the policy and rhetoric of preventive regime change—would at least reduce one of the most powerful incentives that some would-be nuclear powers have for pursuing that status.

Appendix 1: Nuclear Nonproliferation Regimes

Within the nuclear nonproliferation regimes, the International Atomic Energy Agency (IAEA) and its related Safeguards Agreement and Additional Protocol exist to encourage and assist countries in promoting nuclear research and development (R&D) for peaceful purposes while also working to prevent this R&D from furthering the development of a military weapons of mass destruction (WMD) program or serving other military purposes. The IAEA and its subsequent agreements act as the enforcement regime for many other key nonproliferation regimes, agreements, treaties, and protocols. The IAEA enforces these standards by way of IAEA documentation, inventory, and sealing of nuclear and radiological materials sources; inspection teams, both for investigation and quality assurance; and camera monitors and other sensors deployed for tracking the nuclear R&D activities of countries of concern.

A few regimes—such as the Wassenaar Arrangement (WA), the Zangger Committee (ZC), and the Nuclear Suppliers Group (NSG)—provide a forum for nations by which "trigger lists" of source or fissionable materials, export guidelines for dual-use items and technology, and guidelines concerning the trade of nuclear materials and related knowledge are created for states to incorporate into their related legal policies. These regimes are designed to stem the flow of illicit—and sometimes unintentional—proliferation while allowing for the peaceful trade of nuclear materials between nations. Additionally, these regimes often share the mission of increasing security between member nations through the sharing of information and other confidence-building measures.

The Wassenaar Arrangement, for example, seeks to contribute to regional and international security through prevention of destabilizing accumulations of dual-use goods and technologies. To achieve this, the WA makes provisions for members to exercise greater transparency and responsibility in their transfer of dual-use commodities and technologies while also encouraging greater cooperation among members to prevent the acquisition of dual-use items and armaments for military end-uses if a state or region becomes a serious cause of concern for member states. While no formal mechanisms exist to enforce compliance with WA measures, member states have agreed to "non-binding best practices" regarding effective enforcement for national export controls, disposal for surplus military equipment, and control of sensitive export items. Providing export controls that are 100 percent effective and instituting standardized international best practices and norms are tasks that no single nonproliferation regime has as yet successfully executed.

The work of the Zangger Committee has had a great impact on the creation of export controls and guidelines for many regimes and agreements in the nonproliferation arena. The Zangger Committee—also known as the NPT Exporters Committee—arose from a series of informal meetings between a group of fifteen Nuclear Nonproliferation Treaty (NPT) states held from 1971 through 1974. Their objective was to reach a common understanding of what constituted materials or equipment designed or prepared for processing, using, or producing special fissionable material, as well as the procedures and conditions governing exports of such equipment and material. The result of these initial meetings and the subsequent dialogue was the creation of a "trigger list" of source or other special fissionable materials, and equipment or materials designed/prepared for processing, using, or producing special fissionable materials. This list was first published in 1974, and the items on the list are designed to "trigger" a safeguards or guidelines requirement that would govern the export of these things to NNWS who are not party to the NPT. Though the ZC is a regime with no legal enforceability of its own, each member puts the decisions of the committee into legal effect via unilateral declarations to other members, which are published by the director-general of the IAEA. Additionally, the ZC has voluntary measures in place to exchange information about actual export or export licenses to non-NPT NNWS through the system of "Annual Returns," which are confidential reports circulated among members each April.

The Nuclear Suppliers Group works to ensure that nuclear trade for peaceful purposes does not lead to the proliferation of nuclear weapons and explosive devices. The goal is also to make certain that while ensuring the nonproliferation of these weapons and explosive devices, there is no hindrance of international cooperation and trade in the nuclear field. Additional work done by the NSG in 1992 created guidelines related to the transfer of nuclear dual-use equipment, materials, and technologies (which may have both nuclear and non-nuclear applications). While a voluntary association, the NSG has guidelines in place that apply to member and nonmember parties to the NSG. The NSG

TABLE 1—NUCLEAR NONPROLIFERATION TREATIES, AGREEMENTS, AND REGIMES

	IAEA	IAEA Safeguards Agreement	NPT	Zangger Committee	Wassenaar Arrangement	Nuclear Suppliers Group	Nuclear Safety Convention	Joint Spent Fuel Management Convention	Convention on the Physical Protection of Nuclear Material	Conference on Disarmament	Cooperative Threat Reduction	Proliferation Security Initiative	SORT	Suppression of Acts of Nuclear Terrorism
Total Number of Member States	138	170	188	36	40	45	65	42	115	65	10	15	2	
Afghanistan	x	x	x						x					Under Negotiations
Albania	x	x	x						x					
Algeria	x	x	x				x		x	x				
Andorra		x	x											
Angola	x		x											
Antigua and Barbuda		x	x						x					
Argentina	x	x	x	x	x	x	x	x	x	x				
Armenia	x	x	x				x		x					
Australia	x	x	x	x	x	x	x	x	x	x				
Austria	x	x	x	x	x	x	x	x	x	x		x		
Azerbaijan	x	x	x						x					
Bahamas		x	x											
Bahrain			x											
Bangladesh	x	x	x				x		x	x				
Barbados		x	x											
Belarus	x	x	x			x	x	x	x	x	x			
Belgium	x	x	x	x	x	x	x	x	x	x				
Belize		x	x											
Benin	x	x	x											
Bhutan		x	x											
Bolivia	x	x	x						x					
Bosnia and Herzegovina	x	x	x						x					
Botswana	x	x	x						x					
Brazil	x	x	x			x	x	x	x	x				
Brunei Darussalam		x	x											
Bulgaria	x	x	x	x	x	x	x	x	x	x				
Burkina Faso	x	x	x						x					
Burundi			x											
Cambodia	x	x	x											
Cameroon	x	x	x						x	x				
Canada	x	x	x	x	x	x	x	x	x	x		x		
Cape Verde		x	x											
Central African Republic	x		x											
Chad	x		x											
Chile	x	x	x				x		x	x				
China	x	x	x	x		x	x		x	x				

	IAEA	IAEA Safeguards Agreement	NPT	Zangger Committee	Wassenaar Arrangement	Nuclear Suppliers Group	Nuclear Safety Convention	Joint Spent Fuel Management Convention	Convention on the Physical Protection of Nuclear Material	Conference on Disarmament	Cooperative Threat Reduction	Proliferation Security Initiative	SORT	Suppression of Acts of Nuclear Terrorism
Colombia	x	x	x						x	x				Under Negotiations
Comoros		x	x											
Congo (Republic of)			x											
Congo (Democratic Republic of)	x	x	x						x	x				
Cook Islands														
Costa Rica	x	x	x						x					
Cote d'Ivoire	x	x	x											
Croatia	x	x	x	x	x	x	x	x	x					
Cuba	x	x	x				x		x	x				
Cyprus	x	x	x			x	x		x					
Czech Republic	x	x	x	x	x	x	x	x	x					
Denmark	x	x	x	x	x	x	x	x	x					
Djibouti			x						x					
Dominica		x	x						x					
Dominican Republic	x	x	x						x					
Ecuador	x	x	x						x	x				
Egypt	x	x	x				x			x				
El Salvador	x	x	x											
Equatorial Guinea		x	x						x					
Eritrea	x		x											
Estonia	x	x	x		x	x	x	x	x					
Ethiopia	x	x	x							x				
Fiji		x	x											
Finland	x	x	x	x	x	x	x	x	x	x				
France	x	x	x	x	x	x	x	x	x	x		x		
Gabon	x	x	x											
Gambia		x	x											
Georgia	x	x	x								x			
Germany	x	x	x	x	x	x	x	x	x	x		x		
Ghana	x	x	x				x		x					
Greece	x	x	x	x	x	x	x	x	x					
Grenada		x	x						x					
Guatemala	x	x	x						x					
Guinea			x						x					
Guinea-Bissau			x											
Guyana		x	x											
Haiti	x	x	x						x					
Holy See	x	x	x											

	IAEA	IAEA Safeguards Agreement	NPT	Zangger Committee	Wassenaar Arrangement	Nuclear Suppliers Group	Nuclear Safety Convention	Joint Spent Fuel Management Convention	Convention on the Physical Protection of Nuclear Material	Conference on Disarmament	Cooperative Threat Reduction	Proliferation Security Initiative	SORT	Suppression of Acts of Nuclear Terrorism
Honduras	x	x	x						x					Under Negotiations
Hungary	x	x	x	x	x	x	x	x	x	x				
Iceland	x	x	x				x		x					
India	x	x					x		x	x				
Indonesia	x	x	x				x	x	x	x				
Iran (Islamic Republic of)	x	x	x							x				
Iraq	x	x	x							x				
Ireland	x	x	x	x	x	x	x	x	x	x				
Israel	x	x					x		x	x				
Italy	x	x	x	x	x	x	x	x	x	x		x		
Jamaica	x	x	x						x					
Japan	x	x	x	x	x	x	x	x	x	x		x		
Jordan	x	x	x				x							
Kazakhstan	x	x	x			x	x	x	x	x	x			
Kenya	x		x						x	x				
Kiribati		x	x											
Korea (Democratic People's Repub. of)	x	x	x							x				
Korea (Republic of)	x	x	x	x	x	x	x	x	x	x				
Kuwait	x	x	x						x					
Kyrgyzstan	x	x	x								x			
Lao (People's Democratic Republic)	x	x	x											
Latvia	x	x	x		x	x	x	x	x					
Lebanon	x	x	x				x	x	x					
Lesotho		x	x											
Liberia	x		x											
Libyan Arab Jamahiriya	x	x	x						x					
Liechtenstein	x	x	x						x					
Lithuania	x	x	x		x	x	x	x	x					
Luxembourg	x	x	x	x	x	x	x	x	x					
Macedonia (Former Yugoslav Repub. of)	x	x	x				x		x					
Madagascar	x	x	x						x					
Malawi		x	x											
Malaysia	x	x	x							x				
Maldives		x	x											
Mali	x	x	x				x		x					
Malta	x	x	x		x	x			x					
Marshall Islands	x	x	x						x					
Mauritania	x	x	x											

	IAEA	IAEA Safeguards Agreement	NPT	Zangger Committee	Wassenaar Arrangement	Nuclear Suppliers Group	Nuclear Safety Convention	Joint Spent Fuel Management Convention	Convention on the Physical Protection of Nuclear Material	Conference on Disarmament	Cooperative Threat Reduction	Proliferation Security Initiative	SORT	Suppression of Acts of Nuclear Terrorism
Mauritius	x	x	x											Under Negotiations
Mexico	x	x	x				x		x	x				
Micronesia (Federated States of)			x											
Moldova	x	x	x				x		x		x			
Monaco	x	x	x				x		x					
Mongolia	x	x	x						x	x				
Morocco	x	x	x				x	x	x	x				
Mozambique			x						x					
Myanmar	x	x	x							x				
Namibia	x	x	x						x					
Nauru		x	x						x					
Nepal		x	x											
Netherlands	x	x	x	x	x	x	x	x	x	x		x		
New Zealand	x	x	x		x	x			x	x				
Nicaragua	x	x	x				x		x					
Niger	x	x	x						x					
Nigeria	x	x	x				x			x				
Norway	x	x	x	x	x	x	x	x	x	x		x		
Oman		x	x						x					
Pakistan	x	x					x		x	x				
Palau	x		x											
Panama	x	x	x						x					
Papua New Guinea		x	x											
Paraguay	x	x	x						x					
Peru	x	x	x				x	x	x	x				
Philippines	x	x	x				x	x	x					
Poland	x	x	x	x	x	x	x	x	x	x		x		
Portugal	x	x	x	x	x	x	x		x			x		
Qatar	x		x						x					
Romania	x	x	x	x	x	x	x	x	x	x				
Russian Federation	x	x	x	x	x	x	x	x	x	x	x	x	x	
Rwanda			x											
Saint Kitts and Nevis		x	x											
Saint Lucia		x	x											
Saint Vincent and the Grenadines		x	x											
Samoa		x	x											
San Marino		x	x											
Sao Tome and Principe			x											

	IAEA	IAEA Safeguards Agreement	NPT	Zangger Committee	Wassenaar Arrangement	Nuclear Suppliers Group	Nuclear Safety Convention	Joint Spent Fuel Management Convention	Convention on the Physical Protection of Nuclear Material	Conference on Disarmament	Cooperative Threat Reduction	Proliferation Security Initiative	SORT	Suppression of Acts of Nuclear Terrorism
Saudi Arabia	x		x											Under Negotiations
Senegal	x	x	x						x	x				
Serbia and Montenegro	x	x	x						x					
Seychelles	x	x	x						x					
Sierra Leone	x	x	x											
Singapore	x	x	x				x					x		
Slovakia	x	x	x	x	x	x	x	x	x	x				
Slovenia	x	x	x	x	x	x	x	x	x					
Solomon Islands		x	x											
Somalia			x											
South Africa	x	x	x	x	x	x	x		x	x				
Spain	x	x	x	x	x	x	x	x	x	x		x		
Sri Lanka	x	x	x				x			x				
Sudan	x	x	x				x		x					
Suriname		x	x											
Swaziland		x	x						x					
Sweden	x	x	x	x	x	x		x	x	x				
Switzerland	x	x	x	x	x	x		x	x	x				
Syrian Arab Republic	x	x	x							x				
Tajikistan	x	x	x						x					
Tanzania	x	pending												
Thailand	x	x	x											
Timor-Leste			x											
Togo		x	x											
Tonga	x	x	x						x					
Trinidad and Tobago		x	x						x					
Tunisia	x	x	x				x		x	x				
Turkey	x	x	x	x	x	x	x		x	x				
Turkmenistan			x						x		x			
Tuvalu		x	x											
Uganda	x		x						x					
Ukraine	x	x	x	x	x	x	x	x	x	x	x			
United Arab Emirates	x	x	x						x					
United Kingdom	x	x	x	x	x	x	x	x	x	x		x		
United Republic of Tanzania	x	x	x											
United States	x	x	x	x	x	x	x	x	x	x	x	x	x	
Uruguay	x	x	x				x		x					
Uzbekistan	x	x	x						x		x			

	IAEA	IAEA Safeguards Agreement	NPT	Zangger Committee	Wassenaar Arrangement	Nuclear Suppliers Group	Nuclear Safety Convention	Joint Spent Fuel Management Convention	Convention on the Physical Protection of Nuclear Material	Conference on Disarmament	Cooperative Threat Reduction	Proliferation Security Initiative	SORT	Suppression of Acts of Nuclear Terrorism
Vanuatu			x											Under Negotiations
Venezuela	x	x	x							x				
Viet Nam	x	x	x							x				
Yemen	x	x	x											
Zambia	x	x	x											
Zimbabwe	x	x	x							x				

requires compliance with full-scope IAEA safeguards as the norm in the nuclear materials supply chain, national control laws and procedures, and physical protection from theft for sensitive components of a nuclear fuel cycle. Additionally, the NSG has produced a common control list; urges restraint of nuclear materials export to areas of unrest, conflict, and instability; encourages information-sharing among different members; and recommends restraint of assistance (for nuclear enrichment and reprocessing plants) to states of proliferation concern.

Other regimes—such as the Nuclear Safety Convention (NSC), the Joint Spent Fuel Management Convention (JSFMC), the Convention on the Physical Protection of Nuclear Material, and the Conference on Disarmament—offer a series of enforceable compliance measures or built-in incentive structures designed to ensure the security of existing fissile materials used in military and peaceful civilian applications. The Nuclear Safety Convention, for example, specifically uses an incentive-based system by which participating states legally commit to operate land-based nuclear power plants under a high level of safety (prescribed by internationally set benchmarks). The NSC is designed to make sure that there are adequate provisions (fiscal, physical, legislative, etc.) to support the safety of each installation over its lifetime and that its safety principles are drawn predominantly from IAEA Safety Fundamentals documents. Perhaps the most unique facet of the NSC is an incentive-based instrument that obliges parties to submit reports on the implementation of their obligations for "peer review" (and clarification, if necessary) by other parties.

The Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management (also called the Joint Spent Fuel Management Convention) outlines three specific goals, one of which aligns most directly with the overall realm of nonproliferation policy: achieving and maintaining a high level of safety worldwide in spent fuel and nuclear waste management through enhanced national measures and international cooperation. While many of the mechanisms contained in the JSFMC support its largely environmental and health safety focus, the JSFMC does provide for a binding reporting system to address measures taken to implement members' obligations.

Included in these obligations is reporting on national inventories of spent fuel and radioactive waste. By reporting on these national inventories, international authorities or nation-state allies with access to the information may be able to assist the reporting nation in procuring the secure storage of these materials, thereby stemming their immediate proliferation risk.

The Convention on the Physical Protection of Nuclear Material (CPPNM) was set up to obligate member parties to meet very specific criteria and objectives to safeguard nuclear material. First, parties are compelled to make specific arrangements and meet defined standards for physical protection of international shipments of nuclear material for peaceful purposes. Second, members are not allowed to export, import, or allow transit of nuclear materials through member party territory unless assurances have been received that these materials will be protected during international transport in accordance with protection levels required by the CPPNM. Third, parties are obligated to cooperate in the protection and recovery of stolen nuclear materials by sharing information on missing materials with other member parties. Finally, parties must criminalize acts such as misusing or threatening to misuse nuclear materials to harm the public and then prosecute or extradite those accused of committing these acts. In order to facilitate even greater security measures, parties are required to make known to each other directly or through specified official points of contact in the event of any unauthorized removal, use, or alteration of nuclear material or in the event of a credible threat of such a thing happening.

The Conference on Disarmament (CD) seeks the overall cessation of the nuclear arms race, promotes nuclear disarmament, works for the prevention of nuclear war, and provides assurances to NNWS to negate the threat of the use of nuclear weapons. It also has created a comprehensive disarmament program, urges transparency in armaments among members, and prohibits fissile material production for nuclear weapons and explosives. Although there is no explicit mention of the rules of verification or mechanisms of enforcement, the CD reports directly to the UN General Assembly on an annual basis and therefore ostensibly vests its enforcement mechanisms in the UN General Assembly and its various institutions.

Appendix 2: The Department of Defense's Nuclear Nonproliferation Programs and Efforts

The Department of Defense (DoD) has many organizations, agencies, and offices devoted to covering the three aspects of the U.S.'s policy for combating WMD (that is, nonproliferation, counterproliferation, and consequence management). Currently, the assistant secretary of defense for International Security Policy serves as the principal advisor to the secretary of defense on issues that relate to nonproliferation and counterproliferation of nuclear, chemical, and biological weapons. Specific organizations within DoD involved with nuclear nonproliferation activities are the Defense Technology Security Administration (DTSA), the Air Force Technical Applications

Center (AFTAC), the Nonproliferation Arms Control Technology Working Group (NPAC TWG), and the Defense Threat Reduction Agency (DTRA).

The role of the Defense Technology Security Administration within the nonproliferation work that DoD does is to develop and implement DoD's technology security policies on international transfers of defense-related goods, and services and technologies. DTSA ensures that crucial U.S. military technological advantages are preserved; that transfers proving detrimental to U.S. security interests are controlled and limited; that proliferation of WMD and their means of delivery is prevented; that diversion of defense-related goods to terrorist organizations is prevented; that military interoperability with foreign allies and friends is supported; and that the health of the U.S. defense industrial base is protected. In particular, the DTSA Licensing Directorate, Dual-Use Division, receives dual-use license applications from the Department of Commerce and evaluates them for technical, policy, and intelligence concerns. As such, DTSA's Dual-Use Division is the primary office responsible for weighing national security concerns against legitimate trade in items and materials that might pose a dual-use concern with respect to existing export control regimes.

The Air Force Technical Applications Center's (AFTAC) activities primarily concern monitoring compliance of countries with the Limited Test Ban Treaty (1963), the Threshold Test Ban Treaty (1974), and the Peaceful Nuclear Explosion Treaty (1976). AFTAC's mission is to collect and exploit global technical measurements and deliver timely, accurate information to national authorities and war fighters while teaming to monitor treaties, counter proliferation of WMD, and achieve informational superiority. In this role, AFTAC is considered to be on the leading edge of the technological research and verification technology evaluation for current and future treaties involving WMD programs threatening national security. AFTAC is a critical resource to policymakers for technical intelligence on the proliferation activities of countries of concern and the current status of treaty compliance.

The Nonproliferation and Arms Control Technology Working Group was created by presidential directive to act as the mechanism to coordinate the U.S.'s R&D response to arms control and nonproliferation challenges. The Department of State, the Department of Energy, and the Department of Defense act as the co-chairing agencies for the NPAC TWG. The following departments and agencies are represented in the NPAC TWG: the Central Intelligence Agency, the Department of Commerce, the Department of Defense, the Department of Energy, the Department of the Interior, the Department of Justice, the Department of State, the Federal Bureau of Investigation, the Joint Chiefs of Staff, the National Reconnaissance Office, the National Security Agency, and the U.S. Customs Service.

The purpose of the NPAC TWG is to ensure effective coordination of research and development in the areas of arms control and nonproliferation and to guard against redundant arms control and nonprolifera-

tion-related research and development and technology programs within and among departments and agencies. The overall goal for these organizations and the NPAC TWG is to optimize the U.S.'s return on investment in R&D efforts while also ensuring effective use of technologies in the following arenas: nuclear, biological, chemical, and missile nonproliferation; the Strategic Arms Reduction Treaty (START I); the Nonproliferation Treaty; the Chemical Weapons Convention (CWC); the Biological Weapons Convention (BWC); and ongoing negotiations in such areas as nuclear materials cutoff, nuclear disarmament, and regional security. The NPAC TWG addresses the use of technology and the focus of R&D in light of existing and future nonproliferation issues in order to coordinate the overall work of the federal government and member agencies. NPAC TWG focus groups directly relevant to nuclear nonproliferation are the Fieldable Nuclear Detectors Focus Group, the Spectral Sensing Focus Group, the Underground Facilities Focus Group, the Unattended Remote Sensors Focus Group, and the Nuclear Detection Focus Group.

In many respects, the Defense Threat Reduction Agency is the focal point for nonproliferation within the Department of Defense. Per DoD Directive 5105.62 that charters the Defense Threat Reduction Agency, the mission of DRTA is to

- safeguard the United States and its allies from weapons of mass destruction (chemical, biological, radiological, nuclear, and high-yield explosives) by providing capabilities to reduce, eliminate, and counter the threat and mitigate its effects;
- provide support to DoD nonproliferation tasks and activities;
- implement the Cooperative Threat Reduction (CTR) program;
- serve as the DoD focal point for implementation of inspection, escort, and monitoring provisions of arms control treaties and other agreements; and
- support and/or represent the Department of Defense at U.S. arms control treaty and/or agreement delegations, counterproliferation and nonproliferation activities, and bilateral and multinational processes.

Cooperative Threat Reduction

The DTRA Cooperative Threat Reduction Directorate is responsible for implementing the Department of Defense's Cooperative Threat Reduction program to prevent the proliferation of weapons of mass destruction and related materials, technologies, and expertise from former Soviet Union (FSU) states—including the safe destruction of Soviet era WMD, associated delivery systems, and related infrastructure. Recently, through presidential direction authorized by Congress, the CTR program has also begun its first efforts outside of the FSU, specifically in Albania.

To accomplish this mission, the CT Directorate operates a number of nuclear nonproliferation-related programs.

- The Strategic Offensive Arms Elimination program oversees destruction of strate-

gic weapons and their infrastructure in Russia in order to reduce the opportunities for their proliferation or use.

- The Weapons of Mass Destruction Infrastructure Elimination program—Ukraine destroys infrastructure for WMD in Ukraine and prevents proliferation of associated materials, equipment, and technologies.
- The Nuclear Weapons Storage Security program supports U.S. nonproliferation objectives by increasing the security of nuclear weapons while stored in Russia.
- The Nuclear Weapons Transportation Security program supports U.S. nonproliferation objectives in Russia by enhancing the security of nuclear weapons during shipment.
- The Fissile Material Storage Facility program will provide a centralized, safe, secure, and ecologically sound storage area for fissile material removed from nuclear weapons in Russia.
- The Weapons of Mass Destruction Infrastructure Elimination program—Kazakhstan assists Kazakhstan with preventing the proliferation of materials, equipment, and technologies related to WMD.
- The Weapons of Mass Destruction Proliferation Prevention Initiative program will provide equipment and support to bolster non-Russian FSU states' abilities to prevent proliferation of WMD across their borders.

Onsite Inspections

The DTRA Onsite Inspections Directorate (OS) is the focal point for implementing U.S. arms control inspection, escort, and monitoring activities. OS Directorate personnel conduct onsite inspections and aerial monitoring abroad, gathering information on the accuracy of treaty-related declarations and weapons system reductions as well as building confidence among treaty members. When foreign personnel inspect and monitor U.S. facilities, OS Directorate personnel escort them continuously during the inspection process. OS Directorate personnel coordinate with their foreign counterparts and/or international implementing bodies to accomplish treaty objectives, including providing personnel and logistics resources to intra-alliance and international operations, such as the United Nations Monitoring, Verification, and Inspection Commission (UNMOVIC).

The OS Directorate also manages the Defense Treaty Readiness Inspection program, which is designed to prepare the Department of Defense and its contractor facilities for foreign inspections to ensure that facilities are treaty compliant while simultaneously protecting against the loss of national security and other sensitive information. The OS Directorate also oversees the DoD International Counterproliferation program that provides a range of law enforcement and border security training and equipment to participating countries (including independent states of the former Soviet Union, the Baltic region, and Eastern Europe).

Appendix 3: Other U.S. Government Nuclear Nonproliferation Programs and Efforts

The Department of Commerce

The Department of Commerce (DoC) is the primary government organization responsible for overseeing compliance among the government and private business sectors with existing nonproliferation arms control and export regimes (the State Department also has a role in the export control and licensing process). To fulfill this responsibility, the DoC has concentrated the majority of its nonproliferation work within the Bureau of Industry and Security (BIS). Within the DoC, BIS grants, regulates, and monitors export licenses for commodities of nuclear explosive significance and commodities that the exporter has reason to believe will be used in a number of activities related to nuclear weapons and explosive purposes. BIS operates under the Nuclear Nonproliferation Act of 1978 and makes decisions about what countries are subject to which export controls based on their participation in internationally accepted export agreements like the Nuclear Suppliers' Group and others. The efforts of the BIS are carried out across three offices and one technical information center:

- The Office of International Programs (OIP) and Cooperation program
- The Office of Nonproliferation Controls and Treaty Compliance
- The Office of National Security and Technology Transfer Controls
- The Bureau of Industry and Security Nonproliferation and Export Control Cooperation Technical Information Center.

The Department of Energy

While the Department of Commerce maintains a range of programs designed to combat the proliferation of nuclear materials and dual-use commodities—while also ensuring compliance with export-control regimes with U.S. membership—the majority of government nuclear nonproliferation efforts are overseen by the Department of Energy (DoE). Under the DoE, a large number of programs and offices execute a wide range of nuclear nonproliferation-related programs that address everything from nuclear material safety and security to R&D efforts for detectors capable of sensing and monitoring proliferation as it occurs. The organization of the DoE is a complex tree of efforts that branch out from many offices to focus on different facets of nuclear nonproliferation.

Chief among the organizations doing nuclear nonproliferation for the DoE is the National Nuclear Security Administration (NNSA). The NNSA was established by Congress in 2000 as an agency within the U.S. Department of Energy responsible for enhancing national security through military application of nuclear energy. As such, NNSA enhances and maintains the safety, security, reliability, and performance of the U.S. nuclear weapons stockpile without having to conduct nuclear testing. It also works to reduce global danger from weapons of mass destruction, provides the U.S. Navy

with safe and effective nuclear propulsion, and responds to nuclear and radiological emergencies domestically and abroad. Most of the DoE's nuclear nonproliferation-relevant programs operate under the auspices of the NNSA.

Within the NNSA, the Office of Defense Nuclear Nonproliferation acts as the umbrella organization for a larger web of offices. These offices include the following:

- The Office of Global Threat Reduction
- The Office of Nonproliferation Research and Development
- The Office of Nuclear Risk Reduction
- The Office of Nonproliferation and International Security
- The Office of International Material Protection and Cooperation
- The Office of Fissile Materials Disposition

Additionally, two other efforts of the DoE are of interest for nuclear nonproliferation. First is the Nuclear Cities Initiative, which is designed to aid the Russian Federation in physically downsizing and reducing its nuclear weapons complex capacity. The other is the Initiatives for Proliferation Prevention program that engages former Soviet WMD scientists, engineers, and technicians to redirect their expertise to peaceful work through partnerships with U.S. commercial enterprises.

The Department of State

While the efforts of the Department of Energy are primarily focused on actual physical action—whether it be securing fissile or civilian nuclear materials or working to secure sites within the former Soviet Union that are prone to terrorist diversion of nuclear materials—the work done by the Department of State (DoS) with regard to nuclear nonproliferation centers on policy formulation, diplomatic cooperation initiatives, and program creation for execution by a variety of U.S. government organizations and partners. Two bureaus within the DoS have the primary responsibility for carrying on the department's nuclear nonproliferation work.

The Bureau of International Security and Nonproliferation (ISN) is responsible for managing a broad range of nonproliferation, counterproliferation, and arms control functions. ISN also has responsibility for leading U.S. efforts to prevent the spread of WMD and their delivery systems. Under the ISN, a number of offices and programs are administered:

- The Office of Cooperative Threat Reduction
- The Office of Export Controls Cooperation
- The Office of Multilateral Nuclear and Security Affairs
- The Office of Nonproliferation and Disarmament Fund
- The Office of Nuclear Energy, Safety, and Security
- The Office of Weapons of Mass Destruction Terrorism

The second bureau within the DoS involved in nuclear nonproliferation is the Bureau of Verification, Compliance, and Implementation (VCI). Within DoS, VCI

oversees both policy and resources of matters relating to verification of international arms control compliance, nonproliferation, and disarmament agreements and commitments. In order to make the best use of the data that exist on the subject, VCI's noncompliance assessments are strengthened by a full utilization of all source intelligence related to weapons of mass destruction and the proliferation behavior of other entities.

An important DoS program that significantly augments the work of other DoS nuclear nonproliferation efforts is the Nonproliferation of Weapons of Mass Destruction Expertise program. This program supports the engagement and permanent redeployment of former weapon scientists worldwide. Within it are three distinct subprograms: the Science Centers program, the Bio-Chem Redirection program, and the Bio Industry Initiative. These programs are the largest U.S. efforts to redirect and gain access to former WMD scientists. For biological weapons/chemical weapons scientists at certain foreign institutes, these are the only U.S. government initiatives engaging and redirecting them to peaceful civilian work while also providing the United States with access to and transparency of activities presently underway in those organizations. While using different approaches and mechanisms, these programs share a very common strategy: to engage and access high-risk former weapon institutes while helping these institutes and their scientists move away from dependency toward self-sustainability. Additionally, these programs provide cost-efficient and steadily effective platforms for other U.S. nonproliferation/threat reduction programs.

The Department of Homeland Security

The focus of the Department of Homeland Security (DHS) is largely on interdicting weapons and fissile materials (through such initiatives as the Proliferation Security Initiative). The Domestic Nuclear Detection Office (DNDO), an interagency office within DHS with DoD participation, is responsible for developing a global nuclear detection architecture and deploying a domestic detection system to uncover and report attempts to import or transport a nuclear device or fissile or radiological material. DNDO is also developing data fusion capabilities to provide an overall situational awareness to all WMD event responders and authorities responsible for interdiction of WMD and materials. The regional Joint Analysis Centers—staffed by subject matter experts from agencies and departments throughout the government—are intended to provide data fusion and a twenty-four-hour, seven-day-a-week situational awareness capability for interdicting illicit transfers of weapons or materials.

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About the Author

Charles V. Peña is Senior Fellow at the Independent Institute. He is also a Senior Fellow with the Coalition for a Realistic Foreign Policy, and George Washington University Homeland Security Policy Institute, as well as being an adviser on the Straus Military Reform Project.

He was previously the director of defense policy studies at the Cato Institute and has more than 20 years experience as a defense policy and program expert—including work for the Office of the Secretary of Defense, Program Analysis & Evaluation; Ballistic Missile Defense Organization, Joint Chiefs of Staff; Defense Advanced Research Projects Agency; Air Force; Army; Navy; Department of Homeland Security; and Federal Emergency Management Agency.

Mr. Peña is the author of the book *Winning the Un-War: A New Strategy for the War on Terrorism*, and the co-author of *The Search for WMD: Non-Proliferation, Intelligence and Pre-emption in the New Security Environment* and *Exiting Iraq: Why the U.S. Must End the Military Occupation and Renew the War against Al Qaeda*. He is a military analyst for MSNBC, CNBC and NBC television, and his opinions have appeared in the *New York Times*, *Washington Post*, and *Wall Street Journal*.

Mr. Peña graduated from Claremont Men's College with a B.A. in Political Science and received his M.A. in Security Policy Studies from the George Washington University.

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