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Averting Nuclear Terrorism: Building a Global Regime of Cooperative Threat Reduction

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AVERTING NUCLEAR TERRORISM: BUILDING A GLOBAL REGIME OF COOPERATIVE THREAT REDUCTION

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Abstract: This article focuses on expanding the architecture of cooperative threat reduction for effective multilateral nuclear nonproliferation. It assesses the risk of nuclear terrorism, the history and main features of existing cooperative threat reduction programs, and some of the more difficult challenges facing them. Most of the obstacles to an effective regime of global cooperative threat reduction are bureaucratic and inertial rather than stemming from fundamental strategic disagreement.

In order to build a more effective global regime of cooperative threat reduction, this article proposes five critical improvements: (1) Additional resources; (2) Increasing deterrence through fall-out forensics and "tagging" of radioactive isotopes and weapons-related materials; (3) Increasing the incentive structure that convince potential proliferators to abandon their projects; (4) Increasing high-level engagement among nations through designation of Presidential-level envoys; and, (5) Expanding the umbrella of cooperative threat reduction to include all nuclear weapons states and Pakistan in particular.

I. "THE ULTIMATE PREVENTABLE CATASTROPHE"

We are moving aggressively forward . . . but we would be fooling ourselves and endangering our citizens, to say we have done enough.

—Spencer Abraham
Former Secretary of Energy[1]

Speaking just days after 9/11, Mohamed El Baradei, the head of the International Atomic Energy Agency ("IAEA"), called the attacks a "wake-up call to us all. We cannot be complacent."[2] Even before the attacks, however, Howard Baker and Lloyd Cutler reported in a well-received, bipartisan study in January 2001 that "the most urgent, unmet national security threat to the United States today is the danger that weapons of mass-destruction or weapons-useable material . . . could be stolen and sold to terrorists or hostile nation states and used against American troops abroad or citizens at home."[3] The new reality of catastrophic domestic terrorism makes few doubtful of the importance of reducing the threat of a nuclear terrorist attack. The issue is compelling; in the United States it is politically bipartisan.[4] During the recent U.S. presidential election,

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1. Spencer Abraham, *How to Stop Nuclear Terror*, WASH. POST, July 17, 2004, at A19.

2. George Bunn & Fritz Steinhausler, *Guarding Nuclear Reactors and Material from Terrorists and Thieves*, ARMS CONTROL TODAY (Oct. 2001), *at* http://www.armscontrol.org/act/2001_10/bunnoct01.asp.

3. HOWARD BAKER & LLOYD CUTLER, THE SECRETARY OF ENERGY ADVISORY BOARD, U.S. DEP'T OF ENERGY, A REPORT CARD ON THE DEPARTMENT OF ENERGY'S NONPROLIFERATION PROGRAMS WITH RUSSIA 25 (2001) [hereinafter REPORT CARD], *available at* http://www.seab.energy.gov/publications/rusrpt.pdf (last visited Apr. 8, 2005).

4. *See* Matthew Bunn & Anthony Wier, Clarifying Statements on Securing Nuclear Materials in the Presidential Debate (Oct. 6, 2004) (unpublished paper, on file with Managing the Atom Project, Harvard University) (reviewing President Bush's and Senator Kerry's viewpoints on nuclear weapons during the 2004 presidential election), *available at* http://bcsia.ksg.harvard.edu/BCSIA_content/documents/debate_nuclear_points.pdf (last visited Apr. 8, 2005).

for example, both candidates agreed that the top threat facing the United States was the prospect of weapons of mass destruction ("WMD") falling into the hands of terrorists.[5]

But for all the apparent agreement on eliminating the threat of WMD, nations must do more if they are to avert a terrorist cataclysm in a major city. Graham Allison calls the problem of nuclear terrorism the "ultimate preventable catastrophe" because the major powers could cooperate to reduce and eliminate the threat.[6] Over the last decade, the United States and other countries have made significant progress in the area of cooperative threat reduction ("CTR").[7] Unfortunately, these efforts have been hobbled by a lack of capability, an absence of vision and political willpower, funding shortfalls and internecine bureaucratic in-fighting among the major powers.[8]

A. INTRODUCTORY ROADMAP

The United States' strategy to combat weapons of mass destruction has three pillars—counter-proliferation, consequence management and nonproliferation.[9] Counter-proliferation stresses

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5. *See* Bunn & Wier, *supra* note 4 (noting neither candidate disputed the fact that large amounts of nuclear material remain unsecured around the world and that it is vital that these stockpiles before terrorists can get them).

6. *See generally* GRAHAM ALLISON, NUCLEAR TERRORISM: THE ULTIMATE PREVENTABLE CATASTROPHE (2004) (noting that a nuclear attack by terrorists is avoidable if the United States takes action).

7. *See generally* U.S. DEP'T OF DEFENSE, COOPERATIVE THREAT REDUCTION (1998) [hereinafter CTR] (describing the United States' CTR program and the involvement of other countries), *available at* http://www.defenselink.mil/pubs/ctr/ (last visited Apr. 8, 2005).

8. *See* JAMES E. GOODBY ET AL., CENTER FOR TECHNOLOGY AND NATIONAL SECURITY POLICY, COOPERATIVE THREAT REDUCTION FOR A NEW ERA (2004) (discussing that the CTR program lacks the integration necessary to be most effective), *available at* http://www.ndu.edu/ctnsp/CTR.htm (last visited Apr. 8, 2005).

9. PRESIDENT GEORGE W. BUSH, THE NATIONAL SECURITY STRATEGY OF THE UNITED STATES OF AMERICA, NATIONAL STRATEGY TO COMBAT WEAPONS OF MASS DESTRUCTION 2 (2002) [hereinafter NATIONAL STRATEGY] (explaining that the three pillars make for a comprehensive approach in the fight against weapons of mass destruction), *available at* http://www.whitehouse.gov/news/releases/2002/12/WMDStrategy.pdf (last visited Apr. 8, 2005).

operational capabilities that encompass preemption, interdiction and traditional notions of military deterrence.[10] Consequence management includes post-incident response to minimize the effect of a WMD attack.[11] Nonproliferation, the focus of this article, embraces diplomacy, multilateral regimes, the control of nuclear material and cooperative threat reduction. The IAEA and the Nonproliferation Treaty ("NPT") regime traditionally have a focal point of multilateral nonproliferation and diplomacy.

Other important multilateral nonproliferation regimes include the Fissile Material Cut-Off Treaty and the Nuclear Suppliers Group.[12] Moreover, each component has contributed to nonproliferation and adds value to the purposes of preventing nuclear terrorism. Understandably, however, none has been entirely effective.[13] The 1968 NPT requires states to accept IAEA safeguards on all of their nuclear activities.[14] The aim of the treaty is to enforce accounting and monitoring measures designed to prevent non-nuclear weapon states from diverting nuclear material from peaceful reactors to weapons research programs. The safeguards were not intended to prevent theft of nuclear fuel by disgruntled or bribed insiders, or from a

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10. *See id.* at 2-3 (stating that counter-proliferation is essential because of the increased likelihood that both hostile states and terrorists may acquire weapons of mass destruction).

11. *See id.* at 5 (explaining that the Department of Homeland Security has enacted numerous programs to deal with the consequences of a possible attack).

12. *See e.g.*, David E. Sanger, *Bush Seeks to Curb Numbers Making Nuclear Fuel*, INT'L HERALD TRIB., Feb. 13, 2004, at 8 (reporting that President Bush appealed to the forty-nation Nuclear Suppliers Group to refuse to sell nuclear technology to any country that fully operated facilities to enrich uranium or reprocess spent fuel into plutonium); *see* NATIONAL STRATEGY, *supra* note 9, at 5 (reviewing and supporting the multilateral nuclear nonproliferation regimes currently in place).

13. *See* NATIONAL STRATEGY, *supra* note 9, at 5 (arguing that no single component is entirely effective and therefore the United States must employ a wide range of strategies).

14. *See* Treaty on the Non-Proliferation of Nuclear Weapons, *opened for signature at London, Moscow and Washington* July 1, 1968, 21 U.S.T. 483, 484, 729 U.N.T.S. 161, 169 (entered into force Mar. 5, 1970) [hereinafter Nonproliferation Treaty] (holding that proliferation of nuclear weapons would greatly increase the risk of nuclear war).

paramilitary assault by outsiders.[15] A survey from Gosatomnadzor, the Russian nuclear regulatory agency, revealed that every nuclear theft from 1990-95 involved an insider.[16] None of the breaches in security were detected by the safeguards in effect during that time frame.[17]

Without detracting from these existing regimes, it is important to explore additional areas of multilateral cooperation. Although cooperation between the United States and Russia unfolded over the last decade, it is only in the last few years that cooperative threat reduction has begun to attract widespread interest among other nations.[18] We should leverage the growing interest in cooperative threat reduction to expand the concept even further—encompassing the entire universe of nuclear threats.

In a major speech at the National Defense University on February 11, 2004, President Bush introduced seven new proposals for curtailing proliferation around the world.[19] Some of the proposals were new and some refashioned from existing initiatives.[20] The

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15. *See* Bunn & Steinhausler, *supra* note 2 (discussing that when the safeguards were drafted, nuclear terrorism was not a perceived threat).

16. *See id.* at n.1 (citing the survey and clarifying that outsiders were also often involved).

17. *See id.* (noting that the safeguards were more focused on preventing non-nuclear-weapon states from diverting nuclear material to weapons programs and not on preventing theft).

18. *See* Kenneth N. Luongo & William E. Hoehn III, *Reform and Expansion of Cooperative Threat Reduction*, ARMS CONTROL TODAY (June 2003) (holding that although threat reduction has faced significant challenges, in the last couple of years there has been a trend towards making the threat reduction effort a multilateral effort beyond the Soviet Union), *at* http://www.armscontrol.org/act/2003_06/luongohoehn_june03.asp.

19. *See* Wade Boese, *Bush Outlines Proposals to Stem Proliferation*, ARMS CONTROL TODAY (Mar. 2004) (stating that President Bush's broadest proposal called for possibly restricting states' rights to have the technology and equipment to process uranium or plutonium that may be used for nuclear purposes), *at* http://www.armscontrol.org/act/2004_03/Bush.asp (last visited Apr. 8, 2005).

20. *See id.* (discussing the proposals which included expanding the scope of the proliferation security initiative (PSI); seeking a U.N. Security Council resolution calling on all states to strengthen export controls; securing sensitive materials and criminalizing proliferation; encouraging states to renounce uranium enrichment by making available fuel for civilian reactors; making signature of the Additional Protocol of the NPT a prerequisite for any nuclear imports; creating a special

speech reiterates that there are a number of effective instruments in the toolkit for combating WMD proliferation, and they span a range of activities, from forceful counter-proliferation to cooperative diplomacy and multilateral assistance.[21]

Subparts B and C of Part I of this article glance at two of the force-oriented concepts embedded in counter-proliferation—preemption and interdiction.[22] Preemption and interdiction have received a vast amount of media and scholarly attention over the last few years. Although they may have a place in a comprehensive arsenal of counter-proliferation, they also carry significant risks.[23] Often they generate negative political externalities that run counter to American interests.[24] Consequently, they should be considered only as potential complimentary adjuncts to other initiatives such as effective cooperative threat reduction.[25] The relative prominence of preemption and interdiction in public discourse and academia belies their relative importance in actually controlling nuclear proliferation. The lack of attention that cooperative threat reduction attracts is meager compared to its importance.

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committee of the IAEA Board of Governors for safeguards and verification; and disqualifying any state currently under investigation from serving on the IAEA Board).

21. *See id.* (noting that states are prepared to tighten existing regulatory regimes that would better enable them to search ships and planes to seize illegal weapons and missiles).

22. *See* discussion *infra* Parts I.B-C (discussing that counter-proliferation is not as powerful a strategy as nonproliferation).

23. *See* Chaim Braun & Christopher F. Chyba, *Proliferation Rings: New Challenges to the Nuclear Nonproliferation Regime*, 29 INT'L SECURITY 2, 49 (2004) (concluding that while preventive tactics may be important they can be very costly), *available at* http://muse.jhu.edu/journals/international_security/v029/29.2braun.html (last visited Apr. 18, 2005).

24. *See id.* at 48 (stating that the United States may be deterred from engaging in "preventive wars" due to the high costs).

25. *See id.* at 49 (concluding that the "silver bullet fallacy" which rejects partial solutions to problems should be rejected because no one proposal for nonproliferation should be used; rather a combination of strategies should be employed).

Consequently, cooperative threat reduction deserves much more attention. The likely benefits from CTR promise to far exceed more tactical and operational approaches in controlling nuclear proliferation over the long term.[26] Cooperative threat reduction is among the most fertile and cost-effective areas for preventing a nuclear catastrophe, and dedicating resources and energy toward "globalizing" CTR is critically important.[27] Improving cooperative threat reduction with a sense of creativity and urgency is vital, and this article concludes with some proposals for doing so.[28]

Part II discusses the chilling dangers of nuclear terrorism.[29] Today, well-funded and well-organized terrorist groups are working to obtain nuclear materials and to construct a nuclear weapon in order to detonate it in a major city of a Western nation.[30] There are large amounts of unsecured highly-enriched uranium ("HEU") residing in nuclear reactors worldwide, and the integrity of security systems at many locations remains in question.[31] Pakistan's nuclear program is

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26. *See* Luongo & Hoehn, *supra* note 18 (discussing cooperative threat reduction programs and concluding that they are very important in the fight against weapons of mass destruction).

27. *See id.* (arguing for the expansion of cooperative threat reduction but cautioning against the difficulties the United States may face in leading several countries in a threat reduction effort).

28. *See* discussion *infra* Part V (discussing ways to achieve global cooperative threat reduction, including increasing high level engagement and committing additional resources to the promotion of cooperative threat reduction).

29. *See* discussion *infra* Part II (contending that unlike fusion materials, fission materials are quite easily constructed and thereby accessible to terrorists).

30. *See Nunn, Lugar: Programs to Secure Vulnerable Nuclear Weapons and Materials Must Be Accelerated, Reshaped to Meet Terrorist Threat*, U.S. NEWSWIRE, Mar. 12, 2003 (reporting that the terrorist group Al Qaeda had been trying to get nuclear weapons or materials for over a decade), *available at* http://www.cdi.org/russia/248-14.cfm (last visted Apr. 18, 2005).

31. *See* UNION OF CONCERNED SCIENTISTS, GLOBAL SECURITY FACTSHEET, RESEARCH REACTORS FUELED BY HIGHLY ENRICHED URANIUM (HEU) (2004) (stating that more than 100 reactors intended for research are fueled with HEU), *available at* http://www.ucsusa.org/global_security/nuclear_terrorism/page.cfm?pageID=1379 (last visited Apr. 18, 2005).

particularly concerning.[32] Pakistan also poses another troublesome possibility—that terrorists would obtain a functioning nuclear device from the inventory of nascent nuclear weapons states.[33]

Part III introduces the original CTR program—the Nunn-Lugar legislation.[34] Within the context of threat reduction and potentially active and purposeful proliferation, Iran and North Korea pose special problems related to their history, geography and foreign relations.[35] Those two states deservedly have received intense academic and media focus.[36] Senator Lugar includes them at the top of his list of daunting proliferation problems for the second Bush administration.[37] The United States and its friends and allies are

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32. *See* Braun & Chyba, *supra* note 23, at 9-20 (discussing the nuclear developments and capabilities of several countries, including Pakistan, Iran, North Korea).

33. *See* David Albright et al., *Securing Pakistan's Nuclear Arsenal: Principles for Assistance*, INSTITUTE FOR SCIENCE AND INTERNATIONAL SECURITY ISSUE BRIEF (2001) (explaining that Pakistan's instability makes it more likely that nuclear weapons will fall into the wrong hands), *available at* http://www.isis-online.org/publications/terrorism/pakassist.html (last visited Apr. 8, 2005).

34. *See* discussion *infra* Part III (introducing the four types of assistance associated with cooperative threat reduction).

35. *See, e.g.*, Braun & Chyba, *supra* note 23, at 9, 17 (discussing that North Korea started reprocessing plutonium in 1989 and Iran's attempt to develop plutonium and uranium was discovered in 1996).

36. *See id.* (reviewing the actions of several proliferating states, including Iran and North Korea and stating that in order to effectively respond to the threats of proliferation, it is necessary to understand the motivations of proliferating states and other actors); *see also* Charles Recknagel, *2004 and Beyond: Iran, North Korea Nuclear Crises Still Unresolved*, RADIO FREE EUROPE/RADIO LIBERTY, Dec. 16, 2004 (stating "[n]uclear proliferation was a hot issue in 2004 with world attention focused on suspicions that both Iran and North Korea were secretly pursuing atomic weapons programs"), *available at* http://www.rferl.org/featuresarticle/2004/12/03440b51-48ca-4bee-bce2-8dbe3ff451ff.html (last visited Apr. 8, 2005).

37. *See* Press Release, U.S. Dep't of State, Persistent Diplomacy Needed for Nonproliferation Advances—Senator Lugar lists 12 items to pursue for WMD security (Aug. 11, 2004) (describing the problems that Iran and North Korea pose for the nonproliferation efforts of the United States, and naming other issues in the war against proliferation such as Russian tactical nuclear weapons, containment of weapons-grade materials outside the former Soviet Union, and destroying Russia's chemical weapons arsenal), *available at*

fashioning approaches to nonproliferation specific to these two states of concern.[38] The ever-shifting positions of those strategies lie outside of the focus of this article. Instead, this article refers to those two states in specific sections only as they contribute to an understanding of the overall contours and context of globalizing cooperative threat reduction.[39]

Part IV introduces cooperative threat reduction as a global concept.[40] Rather than focusing on deliberate planning for one or two specific states, however, a global approach to CTR emphasizes a comprehensive and coordinated approach for locating, and securing or destroying at-risk nuclear weapons and materials worldwide.[41] The Group of Eight ("G8") nations recently have agreed on principles of cooperation for threat reduction.[42] To complement those efforts, G8 members successfully introduced a U.N. Security Council resolution on controlling proliferation passed under Chapter VII.[43] The G8 program is ripe for expansion and should be exploited in order to "globalize" the cooperative threat reduction effort.

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http://www.nti.org/e_research/official_docs/dos/dosAugust2004.pdf (last visited Apr. 18, 2005).

38. *See* Jennifer Loven, *Bush Seeks United Front Against Iran, North Korea*, CNEWS, Nov. 20, 2004 (noting that President Bush calls North Korea and Iran an "axis of evil" and describing President Bush's efforts to rally support against the two nuclear threats), *available at* http://cnews.canoe.ca/CNEWS/World/2004/11/18/720263-cp.html (last visited Apr. 8, 2005).

39. *See* discussion *infra* Parts II.A, II.B, III.B.2, IV.B, V.A, V.B.2 (the most urgent prerequisite for averting nuclear terrorism is effective control of fissile material).

40. *See* discussion *infra* Part IV (describing the G8 global partnership which has the aim of dealing with weapons of mass destruction in the former Soviet Union).

41. *See* discussion *infra* Part V (concluding that cooperative threat reduction should be global and giving recommendations on how to achieve this).

42. *See* GOODBY ET AL., *supra* note 8, at 53 (reporting that the G8, composed of Canada, France, Germany, Italy, Japan, United States, United Kingdom and Russia, formed the Global Partnership in 2003, which committed up to $20 billion to fund nonproliferation projects).

43. *See id.* (documenting that the G8 members affirmed their support for U.N. Security Council Resolution 1540 at the Sea Island Summit on June of 2004).

Part V contains concluding thoughts on how to accelerate global CTR, prioritizing the tasks which promise to build the greatest security in the shortest amount of time.[44] The key to all CTR efforts is securing international cooperation.[45] Working from a multilateral framework incurs the disadvantage inherent in multiplying the number of competing interests at the table, but those disadvantages are outweighed by the diplomatic power and resources the G8 and associated states bring to the effort.[46] The American military is vastly superior to its nearest competitor, so it is tempting to downplay allied military contributions.[47] In global diplomacy, there is no such dynamic. The American preponderance of military power can be a powerful force for influence that helps achieve U.S. national interests, but increasingly it is also resented and disdained, serving to detract from fulfilling those interests.[48] In such cases, the diplomatic contributions and "soft power" influence of friends and allies such as the European Union is manifold.[49]

Operating in tandem, the great powers wield influence and persuasion greater than the sum of their parts.[50] It is critical that this

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44. *See* discussion *infra* Part V (reiterating the urgency of the need for cooperative threat reduction).

45. *See* discussion *infra* Part V.A (concluding that diplomacy will be the most effective tool in achieving international cooperation).

46. *See* discussion *infra* Part V (analyzing international agreements and stating that agreements usually face three hurdles: access, funding, and liability).

47. *See* Joseph J. Collins, *The U.S. Military Still the Best?*, BOSTON GLOBE, Aug. 29, 2000 (discussing that the U.S. military is the strongest in the world), *available at* http://www.csis.org/burke/hd/reports/militarystillbest.html (last visited Apr. 8, 2005).

48. *See id.* (noting that the American military is also wearing thin under the pressure of more diverse missions, including peacekeeping and humanitarian operations).

49. *See* Joseph Nye, *Europe's Soft Power*, THE GLOBALIST, May 3, 2004 (stating that the United States has great "soft power" capability, but European soft powers can be of great use to the United States), *available at* http://www.theglobalist.com/DBWeb/StoryId.aspx?StoryId=3886 (last visited Apr. 8, 2005). Specifically, the author states that European diplomacy can be effective in countering Islamic extremism. *Id.*

50. *See id.* (discussing that Al Qaeda is fighting Western not just American powers, and that the United States and Europe can benefit from common efforts).

magnifying effect be brought to bear in global cooperative threat reduction. This article offers five proposals that can serve as a catalyst for expanding cooperative threat reduction globally.[51]

First, additional resources must be poured into global CTR—not just by the United States, which is outspending any other country, but by nations from around the world.[52] Second, deterrence structures must be reexamined and better focused toward the nuclear terror threat.[53] Third, incentive structures must be strengthened to offer compelling reasons for rogue states to abandon nuclear weapons development programs and to comply with strict nuclear materials controls.[54]

Fourth, the G8 states each should create a high-level official responsible for fashioning the disparate nonproliferation programs into a coherent package.[55] The official should be able to represent and have easy access to the Prime Minister or President in each nation in order to apply national-level authority to rapidly achieve breakthrough in CTR negotiations.[56] In the United States, there should be a White House envoy.[57] Finally, the umbrella of cooperative threat reduction should be expanded to include the entire universe of threats.[58] In short, this means that we should leverage the success experienced at the end of the Cold War with Russia under

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51. *See* discussion *infra* Part V.B (concluding that cooperative threat reduction be achieved by committing additional resources, rethinking deterrence, rethinking incentives, increasing high-level engagement, and expanding cooperation).

52. *See* discussion *infra* Part V.B.1 (recommending that the G8 commit financial support to nonproliferation).

53. *See* discussion *infra* Part V.B.2 (advocating deterrence despite the erosion of the deterrence structure in the world).

54. *See* discussion *infra* Part V.B.3 (promoting the voluntary abandonment of nuclear development).

55. *See* discussion *infra* Part V.B.4 (discussing the great impact that one person can have in world politics).

56. *See* discussion *infra* Part V.B.3 (dismissing the notion that adding officials will just add another level of bureaucracy).

57. *See* discussion *infra* Part V.B.4 (stating that despite all the concerns the White House has, adding high level engagement is very important in maintaining national security).

58. *See* discussion *infra* Part V.B.5 (discussing the expansion of cooperative threat reduction to countries outside of Russia and Europe).

the Nunn-Lugar program into analogous programs for the variety of other states with nuclear weapons or weapons programs. Like the original Nunn-Lugar program at its inception, new thinking on this subject may be considered radical.[59] Critics will denounce it as extending recognition and assistance to pariah states. But the justification for assisting the Soviet Union in nuclear materials and weapons security, accountability and control is as valid for other states such as Pakistan, who possess at-risk weapons and nuclear material. Obtaining the cooperation of these additional states will require a unified vision from the G8 and its CTR partners, and the reinforcing application of the proposals in my conclusion.

Nonproliferation seeks to interrupt nuclear plans and programs throughout the world before they develop or evolve into a proliferation threat.[60] Prior to examining the threat of proliferation and the specter of nuclear terrorism in Part II, it is useful to look briefly at counter-proliferation in order to distinguish it from nonproliferation activities.[61]

Preemption and interdiction are among the most prominent counter-proliferation concepts.[62] Both capture the value—and the

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59. *See* Senator Dick Lugar, NUNN-LUGAR: The Past as a Guide to the Future, Address at the Monterey Institute of International Studies Center for Nonproliferation Studies in Monterey, California (Dec. 13, 1999) (stating that originally the U.S. reaction to the Nunn-Lugar project was negative, and Americans questioned why American dollars should be committed to a program that seemed to benefit Russia), *available at* http://www.fas.org/nuke/control/ctr/news/treaty-ctr-991213.htm (last visited Apr. 8, 2005).

60. *See* NATIONAL STRATEGY, *supra* note 9, at 2 (explaining that counter-proliferation is necessary despite nonproliferation efforts because it is not always possible to prevent nuclear development).

61. *See* Angus McColl, *Is Counterproliferation Compatible with Nonproliferation? Rethinking the Defense Counterproliferation Initiative*, AEROSPACE POWER J. (Spring 1997) (stating that some critics contend that nonproliferation and counter-proliferation are incompatible and that the United States should not pursue both initiatives at the same time), *available at* http://www.airpower.maxwell.af.mil/airchronicles/apj/spr97/mccoll.html (last visited Apr. 8, 2005).

62. *See* NATIONAL STRATEGY, *supra* note 9, at 2-3 (listing the means to achieve counter-proliferation as interdiction, deterrence, and defense and mitigation).

limitation—of counter-proliferation, even when pursued in a multilateral framework.[63] In many situations, including a few identified in the subsection below, counter-proliferation is essential to avoiding the spread of dangerous weapons or materials.[64] In Parts III-V, however, it will become evident that effective multilateral nonproliferation can have an even greater impact on security and stability.[65]

B. PREEMPTION

The United States went to war with Iraq in 2003, basing its justification in part on Iraq's failure to comply with U.N. WMD inspections.[66] The lingering debate over *jus ad bellum,* the ensuing Iraqi insurgency, and the subsequent maelstrom over the dearth of Iraqi WMD, hang like a cloud over the U.S. doctrine of preemption.[67] The preemption doctrine stretches the 19th century notions of "imminent threat" and argues for an update on what constitutes the basis for the lawful use of force.[68] Detractors view it as patently

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63. *See id.* at 2 (holding that all of the strategies used to achieve counter-proliferation are necessary since prevention and containing proliferation is not always successful).

64. *See* discussion *infra* Part I.C (discussing the interdiction of the So San).

65. *See* discussion *infra* Parts III-IV (analyzing cooperative threat reduction and the G8 global partnership).

66. *See President George W. Bush's Speech on Iraq*, N.Y. TIMES, Mar. 18, 2003 (stating that twelve years of diplomacy with Iraq had failed in disarming Iraq), *available at* http://www.globalpolicy.org/security/issues/iraq/attack/2003/0318bushstatement.htm (last visited Apr. 8, 2005).

67. *See, e.g.*, Abraham D. Sofaer, *War With Iraq: On the Legality of Preemption*, HOOVER DIG., Spring 2003 (arguing that although the war was not explicitly approved by the U.N. Security Council, it was legal under international law), *available at* http://www-hoover.stanford.edu/publications/digest/032/sofaer.html (last visited Apr. 8, 2005); *see* Paul W. Schroeder, *Iraq: The Case Against Preemptive War,* THE AM. CONSERVATIVE, Sept. 15, 2004 (holding that preemptive wars are usually difficult to justify and such is the case with the war in Iraq), *available at* http://www.amconmag.com/10_21/iraq.html (last visited Apr. 8, 2005).

68. *See* YES! ONLINE, MORE ON WHAT IS THE BUSH DOCTRINE (2004) (stating that scholars usually conditioned the legitimacy of preemption on whether or not there was an imminent threat), *available at* http://www.futurenet.org/article.asp?id=1055 (last visited Apr. 8, 2005).

unlawful.[69] In fact, in practical application preemption appears to mean nothing more than the doctrine of anticipatory self-defense. Still, the controversy surrounding it is unlikely to dissipate soon, and legal rationales are the subject of intense debate.[70] Debates are unlikely to resolve much, and few disagree that in exigent circumstances any American president would exercise preemption to eliminate what he or she calculates to be a grave and gathering danger.[71]

Resort to preemption, however, should be a tool of last resort. Preemption is not ideal—it comes with a high political cost, and the action may not purchase the intended security. Consider Iran, for example. Fareed Zakaria comments that a preemptive strike against Tehran's nuclear facilities likely would do limited physical damage.[72] It could also isolate the United States and rally the Iranian population around the mullahs.[73] Such realities caution against a broad application of the doctrine, and counsel to apply it sparingly. The heated public discussion of preemption tends to overshadow these realities, producing the perception that there is a far lower threshold for launching preemptive attack than is actually the case. Preemption

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69. *See id.* (discussing the Bush policy of preemption and explaining that some scholars and other critics argue that the war on Iraq was pursued without an imminent threat and as such it was not justified by preemption).

70. *See* Ben Fritz, *Sorting Out the 'Imminent Threat' Debate*, SPINSANITY, Nov. 3, 2003 (examining the debate between conservatives and liberals on the question of whether or not the Iraq situation posed an imminent threat to the United States before the war started), *available at* http://www.spinsanity.org/columns/20031103.html (last visited Apr. 8, 2005).

71. *See* IVO DAALDER, PREEMPTIVE ATTACK—OLD CONSTRAINTS, NEW CHALLENGES, para. 2 (U.N. Global Security Initiative, short policy briefs regarding the crisis in international security, 2004) (stating that "the promulgation of the new doctrine leaves unaddressed profound questions of policy that its advocates have so far ignored"), *available at* http://www.un-globalsecurity.org/pdf/Daalder_paper_preemption.pdf (last visited Apr. 8, 2005).

72. Fareed Zakaria, *Tag-Teaming the Mullahs*, NEWSWEEK, Dec. 6, 2004 (stating that there are two approaches to deal with Iran's nuclear ambitions, coercion by military strikes or engagement), *available at* http://www.msnbc.msn.com/id/6596808/site/newsweek/ (last visited Apr. 8, 2005).

73. *See id.* (discussing that a military strike against Iran may also lead to retaliation).

has captured the popular imagination because it promises a drama containing the spectacular use of armed force against gathering threats colored by legal uncertainty, but greater security is more often generated by patient, coordinated resolve.

C. INTERDICTION

Like preemption, there is something almost prurient in the public's anticipation of a non-permissive interdiction of a vessel or aircraft trafficking in nuclear materials. In December 2002, for example, the world watched as a combined U.S.-Spanish effort resulted in the noncompliant insertion of special operations forces onto the So San, a 3,500 ton stateless vessel floating 600 miles off the coast of Yemen.[74] Components for SCUD missiles from North Korea were uncovered.[75] The So San boarding by commandoes pre-dates the unveiling of the Proliferation Security Initiative ("PSI"), but it has become a symbol of the shape of proliferation security.

Many incorrectly associate The White House's PSI effort solely with interdiction.[76] The So San image has contributed to the expectation that maritime forces will play a major role. In actuality, maritime operations are only a small portion of interdiction, and interdiction is only a small part of PSI.[77]

The idea for PSI stemmed from the U.S. National Strategy to Combat Weapons of Mass Destruction, which was published in

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74. *See* Tony Karon, *SCUD Seizure Raises Tricky Questions*, TIME, Dec. 11, 2002 (stating that "maritime irregularities" such as a false manifest, the vessel's refusal to submit itself to inspection, and papers in disorder allowed the Spanish authorities to seize the vessel), *available at* http://www.time.com/time/world/article/0,8599,398592,00.html (last visited Apr. 8, 2005).

75. *See id.* (reporting that the interdicted missiles were given to Yemen).

76. *See* Press Release, The White House, Proliferation Security Initiative, Statement of Interdiction Principles (Sept. 4, 2003) [hereinafter Interdiction Principles] (explaining that the White House's PSI follows a set of interdiction principles), *available at* http://www.whitehouse.gov/news/releases/2003/09/20030904-11.html (last visited Apr. 8, 2005).

77. *See id.* (describing the interdiction principles followed by the White House's PSI, which include maritime interdiction principles as well as principles on aircraft interdiction and other modes of transport).

December 2002.[78] The initiative was launched by President Bush during a speech in Krakow, Poland on May 31, 2003.[79] Initially bringing together eleven nations that agreed to take practical steps to interdict shipments of WMD, the group now consists of fifteen core participants including Russia.[80]

Beyond the core group, a variety of other nations have agreed to cooperate with PSI states to stop the transfer of weapons or material.[81] Altogether, more than sixty countries are involved.[82] The PSI states are bound by a common Statement of Interdiction Principles to pursue a more creative, dynamic and effective approach to interdiction.[83] The initiative is a process and set of activities, and not a formal treaty organization.[84] Consequently, the effort is not

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78. *See* NATIONAL STRATEGY, *supra* note 9, at 2 (discussing interdiction as one of the steps of counter-proliferation).

79. *See* President George W. Bush, Remarks to the People of Krakow, Poland (May 31, 2003) (stating "the United States and a number of our close allies, including Poland, have begun working on new agreements to search planes and ships carrying suspect cargo and to seize illegal weapons or missile technologies. Over time, we will extend this partnership as broadly as possible to keep the world's most destructive weapons away from our shores and out of the hands of our common enemies."), *available at* http://www.usinfo.pl/bushvisit2003/wawel.htm (last visited Apr. 8, 2005).

80. *See* ARMS CONTROL ASS'N, FACT SHEET: THE PROLIFERATION SECURITY INITIATIVE (PSI) AT A GLANCE, June 2004 [hereinafter PSI AT A GLANCE] (reporting that the original PSI countries are Australia, France, Germany, Italy, Japan, the Netherlands, Poland, Portugal, Spain, the United Kingdom and the United States, and the newest members are Canada, Norway, Russia, and Singapore), *available at* http://www.armscontrol.org/factsheets/PSI.asp (last visited Apr. 8, 2005).

81. *See* Press Release, U.S. Dep't of State, Bolton Outlines Bush Administration's Nonproliferation Efforts – Says Strategy Extends Beyond Rogue States to Trade Routes, Companies (Oct. 19, 2004) [hereinafter Bolton Outlines] (explaining that a number of countries have agreed to cooperate to stop the transfer of weapons), *available at* http://usinfo.state.gov/eap/Archive/2004/Oct/20-535618.html (last visited Apr. 18, 2005).

82. *See id.* (discussing President Bush's goal to continue the expansion of the initiative by creating numerous partnerships).

83. *See* Interdiction Principles, *supra* note 76 (discussing four interdiction principles).

84. *See* PSI AT A GLANCE, *supra* note 80 (explaining that the PSI initiative is an informal agreement between countries that does not vest any additional

distracted by budgets, agendas, meetings, or candidacies for organizational office, and the like. The PSI states pledge to take steps to prevent and interdict the transfer or transport of WMD by states and non-state actors.[85]

Participants have conducted numerous exercises, met multiple times to discuss operational and legal aspects of interdiction, and to consider new partner nations.[86]

Working to integrate and streamline command and control, share intelligence and develop operational responses, PSI partners seek to enhance their tactical, programmatic and legislative approaches to proliferation.[87] The states also plan to take specific steps to interdict WMD when they have been alerted or receive a valid request from a PSI partner.[88] The process is aimed at generating a dense and effective network of laws, regulations and rehearsed responses to ensnare WMD smuggling.[89]

About eighty states have expressed interest in PSI, but in order to be part of the process, states must have the willingness and the capability to uphold the Statement of Interdiction Principles.[90] This caveat retains the integrity of PSI, and provides important lessons for the major powers in thinking about how to expand cooperative threat reduction. New states should be welcomed into the process, but they should not be permitted to dilute fundamental principles of cooperative threat reduction.

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authority on the countries that joined and does not entitle the countries to do anything they could not previously do).

85. *See id.* (asking countries to act together to stop shipments of WMD, delivery systems and related materials).

86. *See id.* (giving mock ship boarding as an example of an exercise the PSI has conducted).

87. *See* Interdiction Principles, *supra* note 76 (calling for streamlined procedures for information exchange, strengthening of international law to accomplish interdiction objectives, and other specific action supporting interdiction).

88. *See id.* (committing to act on the request of another state where good cause is shown by the other state).

89. *See id.* (explaining that the PSI builds on previous efforts made by the international community).

90. *See* PSI AT A GLANCE, *supra* note 80 (stating that the original participations set forth eleven principles that members must abide by).

The interdiction of WMD in transit is a critical piece of the comprehensive approach to nonproliferation, and PSI has received a tremendous amount of media coverage since its inception.[91] One notable success, for example, was the interception of the BBC China, which was transporting nuclear components to Libya.[92] Like preemption, one of the public's attractions to PSI is that it seems to offer exciting, operational "take-downs," particularly through noncompliant boarding on the high seas. Of course, the bulk of PSI's work is quiet and methodic—separated from the world of high-paced, real-time operations.

Even more important than preemption and operational interdiction, however, are U.S. and international cooperative threat reduction programs. These programs can reduce and even eliminate the chance that WMD weapons and related material enter the transit stream.[93] Unlike preemption and interdiction, CTR lacks thrill and animation, but it is potentially a far more important mechanism for preventing nuclear terrorism.

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91. *See id.* (discussing the PSI interdiction in October 2003 of a vessel that was headed towards Libya).

92. *See* Bolton Outlines, *supra* note 81 (noting that the interdiction was a great success given the infancy of the PSI).

93. *See* GOODBY ET AL., *supra* note 8, at Introduction (explaining that the original CTR program, the Nunn-Lugar CTR, was the first to work towards securing and eliminating nuclear weapons).

II. NUCLEAR TERRORISM

We cannot fully rule out the possibility that fissile material . . . may fall into the hands of international terrorists.

—Alexander Rumyantsev
Minister, Russian Federation for Atomic Energy[94]

Most of the world's terrorist groups have specific and typically local political demands.[95] Often their primary goal is to rearrange the regional political map.[96] The Basque Fatherland and Liberty ("ETA") group, which has spread terrorist violence in Northern Spain and Southwestern France since its founding in 1959, is one such conventional terrorist organization.[97] Groups like the ETA likely would not employ a nuclear weapon, even if it had one.[98] In fact,

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94. DEP'T OF HOMELAND SECURITY, DAILY OPEN SOURCE INFRASTRUCTURE REP. FOR 21 SEPTEMBER 2004 12, *available at* http://www.cargosecurity.com/ncsc/ncsc_dotnet/uploads/DHS_IAIP_Daily_2004-09-21.pdf (last visited Apr. 18, 2005).

95. *See* BOAZ GANOR, TERROR AS A STRATEGY OF PSYCHOLOGICAL WARFARE, (International Policy Institute for Counter-Terrorism, policy paper, Jul. 15, 2002) (studying terrorism and concluding that terrorists differ from common criminals in that terrorists are motivated by political goals), *available at* http://www.ict.org.il/articles/articledet.cfm?articleid=443 (last visited Apr. 8, 2005).

96. *See e.g.* FED'N OF AM. SCIENTISTS, INTELLIGENCE RESOURCE PROGRAM, BASQUE FATHERLAND AND LIBERTY (ETA) (describing ETA as a terrorist organization founded in 1959 with the aim of bringing independence to several northern Spanish provinces), *available at* http://www.fas.org/irp/world/para/eta.htm (last visited Apr. 8, 2005); *see* GANOR, *supra* note 95 (stating that terrorists attempt to change the political agenda of a population through indiscriminate attacks).

97. *See Seven Bombs Across Spain Injure Five in Reminder of Basque Separatists*, AGENCE FRANCE-PRESSE, Dec. 6, 2004 (describing the terrorist attack led by ETA that injured five people in Spain); *see also* Todd Richissin, *Millions in Spain Protest Attacks*, BALT. SUN, Mar. 13, 2004, at A1 (stating that ETA denied involvement of the group in the catastrophic March 11, 2004 attack on a Madrid train system).

98. *See* RICHARD A. FALKENRATH ET AL., AMERICA'S ACHILLES' HEEL NUCLEAR, BIOLOGICAL, AND CHEMICAL TERRORISM AND COVERT ATTACK 30-31 (1998) (stating the reasons why most non-state actors are not interested in weapons of mass destruction).

there are very few instances of terrorist groups attempting to use a functional nuclear, chemical or biological weapon.[99]

The most prominent example of a terrorist WMD attack occurred in 1995 in Tokyo. During one morning in early March, the Aum Shinrikyo cult used sarin gas on at least four trains.[100] Commuters packed on trains traveling on the Hibiya Line and two other lines of the Tokyo subway system were exposed.[101] Although only a handful of people were killed, there is mounting concern that the attacks presage an even more devastating terror attack in the future.[102] Psychologically, the rather ineffective chemical attack in Japan has to be understood against the backdrop of 9/11 and the terrorist attack against the Madrid train system. Al Qaeda or some other related global extremist group could be capable of launching a catastrophic attack; the most haunting scenario is a nuclear attack.[103] One Al Qaeda spokesman, Suleiman Abu Gheith, argues that the group has a right to kill up to 4 million Americans in retaliation for deaths it claims Israel has inflicted on Muslims.[104] Osama bin Laden also has expressed interest in acquiring nuclear weapons.[105]

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99. *See id.* at 31 (asserting that Aum Shinrikyo is the only non-state actor that has ever used biological or chemical weapons, and no non-state actor has ever used nuclear weapons).

100. *See* Paul Blustein, *Gas Attack Kills Tokyo Commuters; 6 Die, Hundreds Hurt As Subway Passengers Flee Trains, Stations*, WASH. POST, Mar. 20, 1995, at A1 (holding that terrorism attacks like the sarin gas attack were virtually unheard of in Japan before that episode).

101. *See id.* (reporting that over 1,500 people were injured during the attack).

102. *See* Linda Sieg, *Japan's 1995 Sarin Attack May Foreshadow Future*, REUTERS, Sept. 18, 2001 (discussing that the Tokyo attacks may be only the beginning of an era of biological and chemical weapons terrorism), *available at* http://www.cesnur.org/2001/aum_sept01.htm (last visited Apr. 18, 2005).

103. *See* I-wei J. Chang, *Nuclear Terrorism Realities; Report Urges Security, Ending Production to Prevent Atomic 9/11*, WASH. TIMES, June 28, 2004, at A13 (describing a report done by the Carnegie Foundation for International Peace that studied the threat of nuclear terrorism and the catastrophe that could result if terrorists got nuclear weapons).

104. *See* Suleiman Abu Gheith, *'Why We Fight America': Al Qa'ida Spokesman Explains September 11 and Declares Intentions to Kill 4 Million Americans with Weapons of Mass Destruction*, MIDDLE EAST MEDIA RES. INST. SPECIAL DISPATCH NO. 388, June 12, 2002 (giving an Anti-American speech and justifying the attacks of September 11 because of America's policy of suppression), *available at*

This commitment reflects what a Rand Corporation study called the "inexorable escalation" of terrorist goals over the last decade.[106] Those goals now include the acquisition of nuclear weapons.[107] This raises the specter of a blind-side nuclear terrorist attack—an attack against a major city that cannot be attributed to any state or terrorist group. There is no nation or group that accepts responsibility. This scenario is in many ways worse than the "bolt out of the blue" first strike scenarios that worried strategic thinkers during the Cold War. In the case of a Soviet attack, the USSR was subject to retaliation, and therefore, deterrence.[108]

Today, the key to preventing a nuclear catastrophe is preventing terrorists from obtaining a pre-constructed nuclear device, or obtaining fissile material in order to construct a home-made weapon. To complicate the challenge, no one is certain how terrorist groups and states interface, and concern over their cooperation extends not just to states on the terrorist-sponsor list, such as Iran, but to other nations seeking to become a nuclear weapons power.[109] There is a long list of countries rumored to be seeking an organic nuclear capability, and they range from the usual suspects, to more

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http://memri.org/bin/articles.cgi?Page=archives&Area=sd&ID=SP38802 (last visited Apr. 8, 2005).

105. *See* Chang, *supra* note 103 (discussing that while terrorists may not have nuclear capabilities, they may be able to get them from other countries).

106. BRIAN MICHAEL JENKINS, COUNTERING AL QAEDA 14 (2002) (stating that there is no inexorable escalation from truck bombs to weapons of mass destruction).

107. *See id.* (discussing that Al Qaeda is looking to acquire weapons of mass destruction and that if Al Qaeda acquired these, they would likely use them).

108. *See* CONG. BUDGET OFF., MODERNIZING U.S. STRATEGIC FORCES: THE ADMINISTRATION'S PROGRAM AND ALTERNATIVES xvi (1983) (explaining the Reagan Administration's comprehensive review of strategic triad in October 1981 which intended to overcome a "bolt out of the blue" attack by Soviet Union); *see also* NIKOLAI SOKOV, THE AGENDA FOR ARMS CONTROL NEGOTIATIONS AFTER THE MOSCOW TREATY (Monterey Institute of International Studies, policy paper, Oct. 2002) (discussing that before the end of the Cold War the notion of mutual assured destruction that existed between the United States and Russia was replaced with deterrence and the fear of unacceptable damage), *available at* http://www.csis.org/ruseura/ponars/policymemos/pm_0278.pdf (last visited Apr. 8, 2005).

109. *See* Braun & Chyba, *supra* note 23, at 9-20 (reviewing the countries that are interested in developing weapons of mass destruction).

amorphous seekers like Egypt and Saudi Arabia.[110] It is unclear how much secondary aspirants could assist terrorist organizations in constructing a bomb.[111]

A. FISSILE MATERIAL AND NON-STATE ACTORS

Fortunately, a fusion weapon—a hydrogen bomb—is quite difficult to construct. The obstacles for designing a successful fusion bomb are likely insurmountable for a terrorist group.[112] A fission weapon, on the other hand, is relatively simple. With access to the appropriate material, assembling a nuclear explosive device in the downtown section of any major city and then detonating it could render horrifying consequences.[113]

The primary obstacle to constructing a fission device is obtaining fissile material, such as HEU, an enriched form of uranium.[114] Naturally-occurring uranium consists of U-238, while the material needed to sustain a chain reaction in a nuclear bomb is the fissile

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110. *See* Ewen MacAskill & Ian Traynor, *Saudis Consider Nuclear Bomb*, THE GUARDIAN, Sept. 18, 2003 (explaining that Saudi Arabia was contemplating one of three options: acquiring a nuclear capability, maintaining an alliance with a nuclear power, or reaching a regional agreement for a nuclear-free Middle East), *available at* http://www.guardian.co.uk/saudi/story/0,11599,1044402,00.html (last visited Apr. 8, 2005); *see also* NAT'L RES. COUNCIL OF THE NAT'L ACAD., MAKING THE NATION SAFER: THE ROLE OF SCIENCE AND TECHNOLOGY IN COUNTERING TERRORISM 39 (National Academy of Sciences ed., The National Academy Press 2002) [hereinafter NATION SAFER] (listing several countries that could potentially turn over nuclear weapons to terrorists), *available at* http://www.nap.edu/html/stct (last visited Apr. 8, 2005).

111. *See* NATION SAFER, *supra* note 110, at 40 (discussing the ways nuclear weapons can get into the hands of terrorists, such as theft or diversion).

112. *See generally* THE NUCLEAR WEAPON ARCHIVE, ENGINEERING AND DESIGN OF NUCLEAR WEAPONS, FREQUENTLY ASKED QUESTIONS (stating that in addition to the cost and difficultly of designing nuclear bombs, the inability to test these weapons make some options, like fusion boosting, "infeasible"), *available at* http://nuclearweaponarchive.org/Nwfaq/Nfaq4.html (last visited Apr. 8, 2005).

113. *See* Jeffrey Boutwell et al., *Nuclear Terrorism: The Danger of Highly Enriched Uranum (HEU)*, 2 PUGWASH ISSUE BRIEF 1, 2 (2002) (citing opinions by numerous nuclear weapons experts on the large-scale damage that a nuclear bomb could do).

114. *See* NATION SAFER, *supra* note 110, at 39 (indicating that stolen plutonium and enriched HEU are threats to security due to the nuclear devices that can be fashioned by these materials).

isotope U-235.[115] HEU is uranium enriched to over 20%, but weapons-grade uranium starts at 80% enrichment for the U-235 isotope.[116] Plutonium is more difficult to initiate a chain reaction, so HEU poses the greatest danger because it is the easiest material in the world from which to construct a bomb.[117]

Forty-six nations around the globe possess weapons-usable uranium.[118] Approximately twenty metric tons of HEU serves as fuel for more than 130 civilian research reactors around the world, located in over 40 nations.[119] Among these reactors, dozens possess enough fuel for a nuclear weapon.[120] In addition to the United States, a number of other countries, including Pakistan, India, Israel, France, South Africa, the United Kingdom and China, possess quantities of

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115. *See* Boutwell, *supra* note 113, at 3-4 (explaining that in order to produce weapons-grade HEU, the percentage of U-235 needs to be about 90% or higher, but any enrichment above 20% is considered weapons-usable).

116. *See id.* (noting that while both are expensive and technically challenging, the enrichment process separates the required quantity of U-238 so that the proportion of U-235 increases accordingly).

117. *See id.* (quoting Nobel-prize winning physicist Luis W. Alvarez, "Most people seem unaware that if separated U-235 is at hand, it's a trivial job to set off a nuclear explosion, whereas if only plutonium is available, making it explode is the most difficult technical job I know").

118. See GEORGE PERKOVICH ET AL., UNIVERSAL COMPLIANCE: A STRATEGY FOR NUCLEAR SECURITY 45-46 (2004) (Carnegie Endowment for International Peace ed., draft report, June 2004) (advocating that countries possessing nuclear weapons should bow to requirements for nuclear security standards), *available at* http://wmd.ceip.matrixgroup.net/UniversalCompliance.pdf (last visited Apr. 8, 2005).

119. *See id.* at 51 (commenting on U.S. opposition to use of HEU in research reactors but noting that their efforts to combat such use is moving too slowly). Perkovich calls for increased investment in development of new fuel sources, mandatory conversions and shut-downs of HEU research reactor sites, and repatriation of al U.S.-origin HEU to the U.S. for disposal as examples of a more "aggressive and comprehensive" approach to ending HEU use. *Id.*

120. *See* MATTHEW BUNN & ANTHONY WIER, SECURING THE BOMB: AN AGENDA FOR ACTION (Project on Managing the Atom, Belfer Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University, May 2004) (noting that research-reactor fuel elements are small enough to put into a backpack and can be processed to extract HEU relatively easily), *available at* http://www.nti.org/e_research/analysis_cnwmupdate_052404.pdf (last visited Apr. 8, 2005).

HEU.[121] Japan and Germany possess several metric tons of plutonium as a by-product of civilian reactors, and it is likely that North Korea possesses weapons-useable amounts of plutonium.[122]

Countries possessing fissile material must take precautions to avoid theft. The most effective strategy is total elimination through down-blending the material to low-enriched uranium, or to cabin it in highly fortified facilities located in stable countries.[123] It is enough to de-enrich HEU to less than 20%, or U-235, so that it cannot be used to initiate a chain reaction. The process of de-enrichment is easily accomplished by a nuclear-weapons state, but impossible for a terrorist group to reverse.[124] Because HEU is strewn throughout the world, standardizing protection and accounting processes are challenging.

Given a sufficient amount of HEU, it is not only fairly simple to construct a nuclear device, but possible to do so in a very short amount of time.[125] Indeed, thirty years ago the Office of Technology Assessment concluded:

> [A] small group of people, none of whom have ever had access to the classified literature, could possibly design and build a crude nuclear explosive device. They would not necessarily require a great deal of

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121. *See* PERKOVICH, *supra* note 118, at 46 (urging development of an international nuclear rapid response force among those nations).

122. *See id.* at 7 (providing a chart detailing information on various countries' total nuclear weapons, amount of HEU and amount of plutonium).

123. *See id.* at 5 (discussing that because HEU is susceptible to theft due to difficulties with precise accounting, elimination is an effective strategy).

124. *See id.* (noting that because Russia and the United States possess more HEU than they could use for nuclear weapons, elimination has been an option that is politically possible).

125. OFFICE OF SECURITY AFF., U.S. DEP'T OF ENERGY, SECURITY MANUAL FOR PROTECTION AND CONTROL OF SAFEGUARDS AND SECURITY INTERESTS ch. 1, ¶ 3.a.1 (1994) (stating that detonating a nuclear explosion using HEU plausibly can be done in such a short amount of time that DOE internal security regulations are targeted at keeping terrorists out of U.S. nuclear sites completely rather than trying to catch them as they leave the site, for fear the terrorists would have an "unauthorized opportunity . . . to use available nuclear materials for onsite assembly of an improvised nuclear device"), *available at* http://www.fas.org/nuke/guide/usa/doctrine/doe/o5632_1c.htm (last visited Apr. 8, 2005).

> technological equipment or have to undertake any experiments. Only modest machine-shop facilities that could be contracted for without arousing suspicion would be required. The financial resources for acquisition of necessary equipment on open markets need not exceed a fraction of a million dollars.[126]

The prevalence of nuclear weapons programs, combined with state sponsorship of terrorism or terrorist activity, increases the risk that weapons-usable material could fall into the hands of terrorists.

B. JUXTAPOSING STATE SPONSORS AND NUCLEAR SECURITY

There is no longer doubt that Tehran pursued a clandestine nuclear program, contrary to its obligations under the NPT.[127] Moreover, the U.S. Department of State labeled Iran among the most active state sponsors of terrorism in the world.[128] Iran could possess the ability to construct nuclear weapons if it is successful in its pursuit of an indigenous HEU fuel cycle.[129] Similarly, North Korea is a danger and likely already has an atomic bomb.[130] Although there are no known North Korean-sponsored terrorist acts since the bombing of a Korean

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126. OFF. OF TECH. ASSESSMENT, U.S. CONG., NUCLEAR PROLIFERATION AND SAFEGUARDS 140 (1977), *available at* http://www.wws.princeton.edu/cgi-bin/byterserv.prl/~ota/disk3/1977/7705_n.html (last visited Apr. 8, 2005).

127. *See* Letter from Stanley K. Moskowitz, Director of Cong. Aff., Central Intelligence Agency, to the Honorable Bob Graham, Chairman of the Select Comm. on Intelligence ("CIA Answers to Questions for the Record: Worldwide Threat Briefing 2002"), ¶ 2 (Apr. 8, 2002) [hereinafter "CIA Threat Briefing 2002"] (stating that Iranian leaders view ballistic missiles as paramount to their security as a regime), *available at* http://www.fas.org/irp/congress/2002_hr/020602cia.html (last visited Apr. 8, 2005).

128. *See* OFF. OF THE COORDINATOR OF COUNTERTERRORISM, U.S. DEP'T OF STATE, PATTERNS OF GLOBAL TERRORISM 2003: OVERVIEW OF STATE-SPONSORED TERRORISM (2004) [hereinafter PATTERNS OF GLOBAL TERRORISM] (reporting that Iran's Islamic Revolutionary Guard Corps and Ministry of Intelligence and Security supported, trained and funded various terrorist groups and their actions, including high-profile support and calls for anti-Israel actions), *available at* http://www.state.gov/s/ct/rls/pgtrpt/2003/31644.htm (last visited Apr. 8, 2005).

129. *See* Boutwell, *supra* note 113, at 4 (relaying that with HEU constructing a fission bomb may prove a feasible task).

130. *See* James Brooke & David E. Sanger, *North Koreans Say They Hold Nuclear Arms*, N.Y. TIMES, Feb. 11, 2005 (reporting that for the first time, North Korea publicly declared that it possessed nuclear weapons).

airlines flight in 1987, Kim Jong Il publicly acknowledged in 2002 that DPRK special forces kidnapped Japanese citizens.[131] Like Iran, the prospect of a nuclear North Korea is disturbing because of the potential for the smuggling of weapons and HEU.

The next greatest threat to proliferation does not appear to be a designated state sponsor, but nuclear-armed Pakistan, a state with a high level of terrorist activity on its soil.[132] India and Israel also have nuclear weapons and high levels of terrorism within their territory, but there exists a higher degree of confidence in their ability to safeguard their nuclear arsenals. Other countries such as South Africa, with fairly low levels of terrorist activity, are targets nevertheless due to their possession of HEU.[133] IAEA safeguards protect the HEU in Pretoria, South Africa, but many regard those standards as insufficient.

These states provide an entry point for potential terrorists. In many instances, nuclear facilities are remote and well-protected, as is the case with Israel and North Korea. However, opportunities exist for passing nuclear material and equipment in each of these states. Russia, for example, experienced lapses in safeguarding, which resulted in a documented sixteen seizures of weapons-usable material since 1992.[134] These seizures raised concern about black market

131. *See* PATTERNS OF GLOBAL TERRORISM, *supra* note 128 (noting that after September 11, North Korea took a new approach towards terrorism, including working with Japan to correct the hostage situation).

132. *See* PAUL LEVENTHAL & BRAHMA CHELLANEY, NUCLEAR CONTROL INSTITUTE, NUCLEAR TERRORISM: THREAT, PERCEPTION AND RESPONSE IN SOUTH ASIA (1988) (summarizing terrorist activities in Pakistan and reporting that in 1987, 17% of the 832 international terrorist incidents occurred in Pakistan), *available at* http://www.nci.org/p/pl-bc.htm (last visited Apr. 8, 2005).

133. *See* SHARON SQUASSONI, CRS REPORT FOR CONGRESS, GLOBALIZING COOPERATIVE THREAT REDUCTION: A SURVEY OF OPTIONS CRS-11 (2004) (asserting that security can mitigate this concern), *available at* http://fpc.state.gov/documents/organization/32006.pdf (last visited Apr. 8, 2005).

134. *See Russia Reportedly Admits to Reactor*, WASH. POST, Feb. 11, 1996, at A27 (conveying that plutonium seized in Germany originated from a Moscow nuclear reactor in 1994).

activity and transfer to terrorists, but the CIA found these cases involved only opportunistic thieves with no prearranged buyers.[135]

	NUCLEAR WEAPONS PROGRAM	NPT ADHERENCE	TERRORIST THREAT
INDIA	Known	No	Medium Activity
IRAN	Seeking	No (?)	State Sponsor
IRAQ	Ended	Yes	High Activity
ISRAEL	Known	No	High Activity
LIBYA	Ended[136]	Yes	State Sponsor
NORTH KOREA	Known?	No	State Sponsor
PAKISTAN	Known	No	High Activity
SOUTH AFRICA	Ended	Yes	Minimal
SOUTH KOREA	Ended	Yes	Minimal
TAIWAN	Ended	No	Minimal

TABLE 1: NUCLEAR CAPABILITIES AND TERRORISM

Terrorists may also try to steal a completed atomic bomb. There are approximately 20,000 nuclear warheads in the arsenals of the

135. *See* "CIA Threat Briefing 2002," *supra* note 127, ¶ 29 (stating that Russia views weapon sales as a major source of income, and their government's ability and commitment to curb proliferation in such dealings remains a concern).

136. *See* DIRECTOR OF CENT. INTELLIGENCE, UNCLASSIFIED REPORT TO CONGRESS ON THE ACQUISITION OF TECHNOLOGY RELATING TO WEAPONS OF MASS DESTRUCTION AND ADVANCED CONVENTIONAL MUNITIONS, 1 July Through 31 December 2003, 4 (relaying that Libya renounced its WMD program on December 19, 2003, and now provides open access to its WMD facilities to inspectors, including ten sites connected to Libyan nuclear activities), *available at* http://www.cia.gov/cia/reports/721_reports/pdfs/721report_july_dec2003.pdf (last visited Apr. 8, 2005).

major nuclear powers, most of which belong to the United States and Russia.[137] As mentioned, the likelihood of nuclear weapons theft in Israel and India is also rather low. The superpower weapons are relatively well-protected against theft and diversion.[138] Many, however, believe some weapons in Russia are not beyond the capacity of a terrorist group to obtain.[139]

Russia and Pakistan appear particularly vulnerable to nuclear weapons theft. Russia experienced several incidents of theft regarding weapons-usable material, and while these seizures did not involve terrorists, there have been several highly-coordinated attacks by terrorist groups in recent history in Russia. In 1996, Chechen rebels held 2,000 people hostage at a hospital in Dagestan and ignited a gun battle.[140] Six years later, fifty heavily-armed insurgents operating 1,000 miles from their base held 700 people hostage at a Moscow theater.[141] Dozens of Muslim guerillas seized more than 1,000 hostages in a two-day battle at a school in Beslan, Russia in

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137. *See* Robert S. Norris & Hans M. Kristensen, *Global Nuclear Stockpiles, 1945-2002*, BULLETIN OF THE ATOMIC SCIENTISTS, Nov./Dec. 2002, at 58-6 (commenting that since the end of the Cold War, most of the U.S. and Russia's nuclear weapons have been made non-operational), *available at* http://www.thebulletin.org/article_nn.php?art_ofn=nd02norris (last visited Apr. 8, 2005).

138. *See* DEP'T. OF DEFENSE, SECURITY POLICY FOR PROTECTING NUCLEAR WEAPONS, DIRECTIVE 5210.14 4.3 (1988) (detailing the factors to be taken into account when assessing the protection of nuclear weapons in the U.S. including: "their location, the configuration in which they are maintained, the nature and capabilities of potentially hostile forces, and the reliability and capabilities of personnel responsible for working with or protecting them"), *available at* http://www.fas.org/nuke/guide/usa/doctrine/dod/dodd-5210_41.htm (last visited Apr. 8, 2005).

139. *See* "CIA Threat Briefing 2002," *supra* note 127, ¶ 29 (noting that as of 2002, Russian safeguards for its nuclear stockpile remained uneven despite of improvements made with the United States' assistance).

140. *See* Peter Baker & Susan B. Glasser, *Chechen Rebels Issue Threat*, WASH. POST, Oct. 25, 2002, at A1 (describing one of the conflicts between Russia and Chechnya which make some uneasy about the security of Russia's nuclear weapons).

141. *See id.* (reporting on the tense hostage situation caused by terrorists demanding Russian troops withdraw from Chechnya).

September, 2004.[142] In each instance, a number of the terrorist insurgents escaped. Although Pakistan has yet to suffer a single, dramatic mega-attack on the scale of the ones in Russia, the risk in that country is even greater.

Unlike Russia, Pakistan has a deep well of jihad sympathy, and many in the region incorporated Pakistan's nuclear status into their faith and ideology.[143] Extremists are everywhere in Pakistan—in the *madrasses* (Islamic schools), the military, the Inter-Services Intelligence ("ISI") agency and the general public. Repeated assassination attempts against President Musharraf, A.Q. Khan's forthright nuclear assistance to North Korea, Iran and Libya,[144] as well as an on-going terrorist insurgency with connections to Al Qaeda all raise questions about the integrity of Pakistan's nuclear weapon security.[145]

The instability surrounding nuclear weapons and materials, and the strength of potential terror-thieves made it imperative to reduce the threat. The first prescient effort was the U.S.-Russian venture funded by the Nunn-Lugar Act and managed by the Department of

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142. *See* Peter Baker & Susan B. Glasser, *Hundreds Left Dead in Russian School Siege*, WASH. POST, Sept. 5, 2004, at A1 (relaying that hundreds of people died in this attack, which involved hostages, the majority of whom were children).

143. *See* Mohammad Kamran, *MMA Vows to Wage Jihad for Kashmir and N-Defence*, DAILY TIMES (PAKISTAN), June 2, 2004, at 7-8 (stating that the MMA's leader, Qazi Hussain Ahmad, accused the U.S. of trying to disarm Muslim states and criticized Pakistan's government for complying), *available at* http://www.dailytimes.com.pk/default.asp?page=story_6-2-2004_pg7_8 (last visited Apr. 8, 2005).

144. *See* SQUASSONI, *supra* note 133, at CRS-13 (relaying that such dealings raise the question of whether or not the international community should control certain materials or completely ban them).

145. *See* M.V. Ramana & A.H. Nayyar, *India, Pakistan and the Bomb*, SCI. AM., Dec. 2001, at 72 (noting that Musharraf cited "safety of nuclear missiles" as a priority), *available at* http://www.sciam.com/article.cfm?colID=1&articleID=00087D79-AA4B-1C6E-84A9809EC588EF21 (last visited Apr. 8, 2005); *see generally* Jessica Stern, *Pakistan's Jihad Culture*, 79 FOREIGN AFF. 115 (2000) (indicating that President Musharraf continues in the government's attempts to "rein in terrorist groups," with such programs as "deweaponization"). Stern also discusses the role of madrasses in spreading extremist ideologies. *Id.*

Defense.[146] Part III discusses this Act, as well as the Department of Energy's new counterpart program, the Global Threat Reduction Initiative ("GTRI").

III. THE INCEPTION OF COOPERATIVE THREAT REDUCTION

Against a great evil, a small remedy does not produce a small result, it produces no result at all.

—John Stuart Mill

Cooperative threat reduction involves four types of assistance—weapons security, site security, material security and personnel security.[147] Weapons security focuses on improving the chain of command and enhancing custody and control features for the storage and transportation of nuclear weapons.[148] States other than Russia are unlikely to have large numbers of weapons, and assistance to those nations outside of the NPT is likely to be controversial.[149] Also there may be difficulty in getting the cooperation of peripheral nuclear weapon states. Site security includes enforcing perimeter measures, such as gates, barbed wire barriers, personnel identification systems and sensors to detect unauthorized tampering or movement of weapons or materials.

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146. *See* Soviet Nuclear Threat Reduction Act of 1991 § 211(a), 22 U.S.C. § 2551 (1991), Pub. L. No. 102-228, 105 Stat. 1691, codified as amended by the Former Soviet Union Demilitarization Act of 1992, 22 U.S.C. § 5901 (1996) (setting forth the purpose of this Act as Russia's request for U.S. aid in dismantling their nuclear weapons for the sake of security, international stability and nonproliferation).

147. *See* SQUASSONI, *supra* note 133, at CRS-13 n.44 (illustrating that CTR passed as an amendment of the Conventional Armed Forces in Europe Treaty, P.L. 102-228, and is called the "Soviet Nuclear Threat Reduction Act of 1991").

148. *See id.* at 15 (noting that scenarios like the U.S. and Russia's disarmament will not likely occur again, as few countries are as heavily armed as Russia).

149. *See id.* (listing the differences that CTR faces from the Russian disarmament model as "(1) not all of the countries of concern here have actual weapons; (2) some that do have weapons programs belong to treaties that they may be currently violating; and (3) others that have weapons programs have no international restrictions on them and may not have any interest in giving up their weapons").

Material security, a primary mission of the Department of Energy ("DOE"), involves removing material such as HEU from at-risk countries like Georgia, down-blending HEU to low-enriched uranium ("LEU") so it cannot be used to construct a weapon, and identifying permanent storage locations, especially for plutonium. Material security also involves segregating and tracking legitimate nuclear materials. Overall, there should be robust and standardized nuclear material protection, control and accounting ("MPCA") procedures.[150] Nuclear safeguards rely on state systems of accounting and control ("SSACs") to measure physical inventories of sensitive material.[151] Finally, personnel security involves the recognition that scientists and other specialists in Russia, Iraq and other states sometimes live in unstable environments of poverty and chaos. Providing them with alternative, well-paying and meaningful technical work is critical to fencing their expertise and keeping them from dealing in the black market.[152]

A. NUNN-LUGAR: FROM INCEPTION TO EXPANSION

The original Nunn-Lugar legislation passed in 1991, less than one month before the break-up of the USSR.[153] During this period, countries feared the unraveling of the Soviet Union's nuclear, chemical and biological weapons infrastructure.[154] Originally funded at $400 million, the law aimed to help Russia meet its START

150. *See id.* at 17 (quoting President Bush's proposal that nations "establish sound national oversight mechanisms for the security and genetic engineering of pathogenic organisms").

151. *See id.* at 16 n.46 (indicating that states are required to establish such a system under CWC and be subject to inspections).

152. *See id.* at 17 (commenting on U.S. programs which provide funding for grants to these scientists).

153. *See* Soviet Nuclear Threat Reduction Act of 1991 § 211(a), 22 U.S.C. § 2551 (1991), Pub. L. No. 102-228, 105 Stat. 1691, codified as amended by the Former Soviet Union Demilitarization Act of 1992, 22 U.S.C. § 5901 (1996) (indicating the importance of the bill for the United States in order to prevent proliferation).

154. *See id.* (listing the three types of danger posed by events in the U.S. as: possession of WMD by successor entities not conducive to international safety, seizure, theft, sale or use of such weapons, and contribution to proliferation).

obligations by reducing its inventory of strategic nuclear weapons.[155] By late 2004, this amounted to a cumulative reduction of more than 6,300 nuclear warheads, hundreds of bomber aircraft and nearly thirty submarines.[156]

Nunn-Lugar addressed three principle threats—substandard materials protection and accounting, smuggling of nuclear weapons and components, and the transfer of actual weapons, components and weapons-related knowledge.[157] To address these threats, the legislation facilitated, on a prioritized basis, the transportation, storage, safeguarding, and destruction of nuclear weapons in the states of the former Soviet Union. Additionally, the legislation operated through a series of complex bilateral agreements between the United States and the states of the Former Soviet Union.

In October 1992, the Safe and Secure Dismantlement ("SSD") talks, a component of the Former Soviet Union Demilitarization Act ("FSUDA"), proposed an additional $400 million.[158] Allocation of funds, however, were contingent upon U.S. presidential certification that recipient states adhere to the elements of a six-part checklist:

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155. Amy Woolf, CRS REPORT FOR CONGRESS, NONPROLIFERATION AND THREAT REDUCTION ASSISTANCE: U.S. PROGRAMS IN THE FORMER SOVIET UNION CRS-3 (updated 2005) (noting that the legislation was intended to assist the Soviet Union and its "successor entities " to "'1) destroy nuclear weapons, chemical weapons, and other weapons, 2) transport, store, disable, and safeguard weapons in connection with their destruction; and 3) establish verifiable safeguards against the proliferation of such weapons'").

156. *See* Richard G. Lugar, *Committed to Containing Nukes*, WASH. POST, Oct. 23, 2004, at A23 (indicating that this program also contributed to employment of "weapons scientists in peaceful pursuits" and additional security).

157. *See* Soviet Nuclear Threat Reduction Act of 1991 § 212(b) (stating "[s]uch cooperation may involve assistance in planning and in resolving technical problems associated with weapons destruction and proliferation. Such cooperation may also involve the funding of critical short-term requirements related to weapons destruction and should, to the extent feasible, draw upon United States technology and United States technicians").

158. *See* James Clay Moltz, *Introduction: Assessing United States Nonproliferation Assistance to the Newly-Independent States*, 7 NONPROLIFERATION REV. 55, 56 (2000) (noting that Congress continues supporting programs created by this bill for approximately $400 million per year), *available at* http://cns.miis.edu/pubs/npr/vol07/71/intro71.htm (last visited Apr. 8, 2005).

> Making a substantial investment of its resources for dismantling or destroying such weapons;
>
> Forgoing any military modernization program that exceeds legitimate defense requirements, and forgoing the replacement of destroyed weapons of mass destruction;
>
> Forgoing any use of fissionable and other components of destroyed nuclear weapons in new nuclear weapons;
>
> Facilitating the United States' verification of weapons destruction;
>
> Complying with all relevant arms control agreements; and,
>
> Observing internationally recognized human rights standards, including the protection of minorities.[159]

This checklist raised the bar on achieving the "cooperative" aspect of the program, and made certification difficult. A recent amendment to the law, however, provides the President with authority to waive these provisions for national security interests of the United States.[160] Success depends on the collaboration of foreign governments; the support of their military and nuclear officials; and partner nation openness and access to sensitive facilities. The participation of officials in the transportation of significant amounts of nuclear materials and related components is also essential.

The Department of Defense's ("DOD") Defense Threat Reduction Agency, created in 1998, manages and implements CTR programs.[161]

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159. Soviet Nuclear Threat Reduction Act of 1991 § 211(b)(1)-(6).

160. *See, e.g.*, Memorandum from President George W. Bush, for the Secretary of State, Presidential Determination No. 2004-08: Memorandum on Waiver of Restrictions on Assistance to Russia Under the Cooperative Threat Reduction Act of 1993, 39 WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS 1560, Nov. 10, 2003 (waiving, officially, those restrictions placed on the President), *available at* http://www.vote-smart.org/speech_detail.php?speech_id=24502 (last visited Apr. 18, 2005); *see* National Defense Authorization Act FY 2003, P.L. 107-314 (2002) § 1306(a)-(b) (stating the President may waive restrictions of the Act); *see also* Cooperative Threat Reduction Act of 1993, 22 U.S.C. §§ 5951-5958 (2002) (setting forth the process by which the President submits a waiver to Congress).

161. *See* DEFENSE THREAT REDUCTION AGENCY, ABOUT DTRA (stating DTRA's four major functions: combat support, technology development, threat

The objectives of CTR are broader than initially envisioned under Nunn-Lugar. They include destruction or dismantlement of nuclear, chemical and biological weapons, delivery systems and related infrastructure, consolidation of WMD-related technology and materials, and establishing safeguards against proliferation.[162]

Russia receives the most Nunn-Lugar funding thus far, which has resulted in significant progress in the elimination of large numbers of nuclear weapons, successful training of nuclear custodians in technology-based systems of material protection, control and accounting, and the destruction of toxic fuels and nuclear delivery vehicles.[163] The Nunn-Lugar statute removed more nuclear weapons from service in the Former Soviet Union than are in the current stockpiles of China, France and the United Kingdom combined.[164]

The program expanded from its original focus to sponsor a variety of projects with the governments of Belarus, Kazakhstan, Latvia, Lithuania, the Ukraine and Uzbekistan. One of the primary accomplishments of U.S. nonproliferation and dismantlement assistance is funding the removal of weapons, silos and delivery vehicles and the conversion of facilities into peaceful purposes in Belarus, Kazakhstan and Ukraine.[165] In 1996, the last nuclear warheads from the former Soviet republics returned to Russia. These three former nuclear states are now nuclear-free, and agreed to accede to the NPT as non-nuclear weapon states. Such a transition could not succeed without Nunn-Lugar.

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control and threat reduction), *at* http://www.dtra.mil/about/index.cfm (last visited Apr. 8, 2005).

162. *See* 22 U.S.C. § 5952(b) (listing the authorized programs that the President may use in assisting the former Soviet Union dismantle its nuclear arsenal).

163. *See* Moltz, *supra* note 158, at 56 (relaying that these programs also greatly assisted in the nuclear disarmament of Belarus, Kazakhastan and Ukraine).

164. *See id.* (conveying that as of December of 1999, this program deactivated 4, 854 nuclear warheads, in addition to destruction of hundreds of other nuclear related weapons and launchers).

165. *See* Luongo & Hoen, *supra* note 18 (mentioning that programs in these countries also included alternative employment for those individuals whose careers relied on nuclear weapons).

Nunn-Lugar—expanded in the National Defense Authorization Act for Fiscal Year 2004—was signed into law in 2003 to "assist the United States in resolution of critical emerging proliferation threats" and to permit the United States to take advantage of opportunities to achieve long-standing nonproliferation goals.[166] The law permits the President to spend $50 million of the program's funds outside the Former Soviet Union to safeguard proliferation threats in any country.[167] In doing so, the President must determine that the projects requiring money help the United States resolve critical emerging proliferation threats, or to achieve long-standing nonproliferation goals. The President must notify Congress ten days after obligating such funds.[168] Recently the program guarded and then destroyed a chemical weapons stockpile in Albania, after Tirana appealed for assistance in dealing with the hazard.[169] Potential proposals now include retraining weapons scientists in Iraq and Libya.

B. GLOBAL THREAT REDUCTION INITIATIVE

The DOE established a complementary program entitled the Global Threat Reduction Initiative ("GTRI").[170] Secretary of Energy Abraham launched the GTRI before the delegates of the IAEA on May 26, 2004, with a primary mission to remove and secure as expeditiously as possible all high-risk nuclear materials and

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166. National Defense Authorization Act FY 2004, P.L. 108-36 (2003), 117 Stat. 1392, § 1308 (a)–(c) (stating that the President may obligate no more than $50 million per year for CTR activities outside the Former Soviet Union).

167. *See id.* § 1308(b)-(c) (establishing that the President may use funds to provide equipment and services but not cash directly).

168. *See id.* § 1308(d)(2) (declaring that this notification must accompany a justification and description of scope and duration of the project).

169. *See* Lugar, *supra* note 156 (praising the work President Bush's administration achieved in dismantling via the Nunn-Lugar Act thus far, and stating that they recruited more than sixty countries for their Proliferation Security Initiative and thus betting the U.S.' "ability to interdict shipment related to WMD").

170. *See* U.S. DEP'T OF ENERGY, GLOBAL THREAT REDUCTION INITIATIVE HIGHLIGHTS [hereinafter INITIATIVE HIGHLIGHTS] (discussing the program's goals, approach to nuclear arms reductions, and affiliation with other ongoing arms reduction programs), *available at* http://www.energy.gov/engine/doe/files/dynamic/264200491138_Vienna_GTR_Fact%20Sheet_FINAL1_052604%20.pdf (last visited Apr. 8, 2005).

equipment from around the world. Conducted in close cooperation with the IAEA and other international partners, the initiative focuses on four primary tasks: (1) to repatriate Russian-origin fresh HEU by the end of 2005 and complete repatriation of all Russian-origin spent fuel by 2010; (2) to accelerate repatriation of U.S.-origin research reactor spent fuel throughout the world within a decade; (3) to convert civilian research reactor cores that use HEU to LEU; and, (4) to expand the program to cover other nuclear and radiological materials that remain outside existing cooperative threat reduction regimes.[171] To accomplish this final end, officials plan to conduct vulnerability assessments of research reactors and associated nuclear facilities worldwide in order to prevent sabotage, theft, or terrorist attack. GTRI has already gained immense international attention. Nearly 600 representatives from over ninety countries attended the GTRI International Partners Conference in September 2004.[172] Secretary Abraham and GTRI officials can leverage momentum from this high-level of interest in GTRI to push even harder to achieve concrete global cooperative threat reduction.

1. United States Fuel Repatriation

During the 1950s and 1960s, the United States and the Soviet Union exported twenty tons of HEU as part of the Atoms for Peace program for the peaceful use of nuclear energy.[173] Now the two powers are devising a strategy to get it back. In the United States, the

171. *See Secretary Addresses IAEA, Launches New Global Threat Reduction Initiative*, DOE THIS MONTH, June 2004, at 3-4 (highlighting the need to continue repatriation efforts of unsecured nuclear and radiological materials despite significant progress in the last eight months), *available at* http://www.energy.gov/engine/doe/files/dynamic/262004102930_DOETM_JUN04.pdf (last visited Apr. 8, 2005) .

172. *See* Spencer Abraham, Remarks at the GTRI Partner's Conference Closing Address (Sept. 20, 2004) (reiterating activities for participants to undertake in the ensuing months and highlighting upcoming conferences and meetings where nations can participate), *available at* http://www.energy.gov/engine/content.do?PUBLIC_ID=16681&BT_CODE=PR_SPEECHES&TT_CODE=PRESSRELEASE (last visited Apr. 8, 2005).

173. *See U.S. Expert Sketches Nightmare Nuclear Terrorist Attack on Major City*, AGENCE FRANCE-PRESSE, Sept. 22, 2004 (noting that the United States and Russia developed over 1,000 additional tons of HEU for their weapons programs which remains unaccounted for).

Foreign Research Spent Nuclear Fuel ("FRRSNF") Acceptance Program focuses on recovering U.S.-origin spent nuclear fuel from foreign nuclear reactors and repatriating the material back to the United States. The United States is currently working to recover forty metric tons of fuel from forty locations throughout the world as part of the program. Each country poses diplomatic and legal challenges, but DOE intends to repatriate all of the fuel by 2008 or 2009.[174] To assist this effort, GTRI established a new Global Materials Recovery Team to pre-position equipment and personnel for nuclear materials recovery operations.[175]

2. Russian Fuel Repatriation

Four metric tons of Russian-origin fuel remains spread among twenty reactors in seventeen countries.[176] The Russian Research Reactor Fuel Return ("RRR-FR") Program works to repatriate those stockpiles back to Russia.[177] The DOE intends to repatriate all fresh HEU fuel of Russian origin back to Russia by the end of 2005, and all spent fuel by 2010.[178] The DOE will conduct repatriation efforts under new simplified and standardized agreements, with a goal to convert all twenty reactors to accept LEU fuel if possible. The DOE signed a framework agreement with Romania under the RRR-FR program, and it seeks to conclude a similar agreement with all other countries using Russian-origin fuel.[179]

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174. *See* Abraham, *supra* note 1 (noting that the targeted locations worldwide comprise high-enriched uranium spent fuel from research reactors).

175. *See* INITIATIVE HIGHLIGHTS, *supra* note 170 (indicating that the Global Materials Recovery Team will help maximize synergies among programs).

176. *See* Abraham, *supra* note 1 (noting that the majority of nuclear and radiological material is concentrated in the former Soviet Union).

177. *See New Agreement on HEU Return*, NUCLEAR ENG'G INT'L, July 31, 2004, at 4 (stating that the U.S. Reduced Enrichment for Research And Test Reactors ("RERTR") program entered an agreement with the RRR-FR to accomplish the repatriation program).

178. *See* Claire Applegarth, *Russia, U.S. Bolster Regional Nuclear Security Following Terrorist Attacks*, ARMS CONTROL TODAY (Oct. 2004) (noting that twenty sites in seventeen countries posses Russian or Soviet-origin fuel that needs to be retrieved), *at* http://www.armscontrol.org/act/2004_10/GTRI.asp (last visited Apr. 18, 2005).

179. *See* Daniel Horner, *U.S. Romania Sign Agreement on Spent Research Reactor Fuel*, NUCLEAR FUELS, Aug. 2, 2004, at 11 (commenting that the

International nuclear specialists, including U.S. Department of Energy officials, Russian specialists, and IAEA representatives, have so far removed Russian HEU fuel from Bulgaria, Libya, Romania, Serbia, and Uzbekistan, and successfully repatriated it to secure locations in Russia.[180] Specialists are presently discussing transfers from the Ukraine and the Czech Republic.[181] In one typical operation on September 9, 2004, nuclear experts removed approximately eleven kilograms of fresh reactor fuel from Uzbekistan, including one kilogram of HEU—enough to make one Hiroshima-sized bomb.[182] Removal specialists took the fuel to a Russian facility in Dimitrovgrad for downgrading and placement in secure storage.[183] Matthew Bunn, a Clinton administration nonproliferation official now at Harvard University, criticized the airlift out of Tashkent because it left behind fuel perhaps even more attractive to

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agreement provides legal protection to undertake fuel repatriation projects, and calls for additional measures apart from return of spent fuel, including security and safety upgrades to nuclear facilities). The author quotes U.S. Department of Energy spokesman Bryan Wilkes, who classifies the agreement as a "framework" for joint nonproliferation activities to serve as a model for agreements with other countries. *Id.*

180. *See, e.g.*, Peter Baker, *U.S.-Russian Team Seizes Uranium at Bulgarian Plant; Material Was Potent Enough for a Bomb*, WASH. POST, Dec. 24, 2003, at A10 (discussing a recent removal procedure from an aging research facility in the Romania, one among twenty-four reactors targeted by the GTRI program and Russian officials); *see Uzbekistan Uranium Returned to Russia*, 24 NUCLEAR WASTE NEWS 175, 175 (2004) [hereinafter *Uranium Returned*] (commenting that the reactor represents one of the largest in Central Asia).

181. *See* Ann MacLachlan & Daniel Horner, *HEU and LEU Research Reactor Fuel Moved From Uzbekistan to Russia*, NUCLEAR FUELS, Sept. 27, 2004, at 13 (citing comments by Alexander Rumyantsev, head of Russia's Federal Atomic Energy Agency ("FAEA")).

182. *See Uranium Returned*, *supra* note 180 (explaining that Soviet-era Russia supplied the HEU uranium in Uzbekistan to a ten megawatt multipurpose research reactor at the Institute of Nuclear Physics of the Academy of Sciences of Uzbekistan).

183. *See* MacLachlan & Horner, *supra* note 181 (commenting that officials failed to remove spent fuel from the site due to new Russian environmental regulations that prevent importation of spent fuel).

terrorists.[184] While seizure of the stockpile of ninety-percent HEU fuel serves a useful purpose, failure to remove seventy to eighty percent HEU fuel leaves open the potentially dangerous possibility that terrorists could steal this remaining spent fuel to make an effective atomic bomb.[185] As an example of another completed GTRI project, a U.S. Department of Energy delegation recently toured a two-year program to improve radiological security at the nuclear waste repository in Tajikistan.[186]

Before meeting in May 2004, the United States and Russia repatriated fifteen kilograms of Russian-origin HEU from Libya.[187] Less than a week later, Energy Secretary Abraham signed a comprehensive agreement in Moscow concerning repatriation of HEU from other states.[188] Under that agreement, more than a dozen countries became eligible to receive financial and technical aid to ship fresh and spent fuel to Russia for safe and secure storage. For its part, Russia began work with sixteen countries to accept repatriation

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184. *See id.* (citing private officials from the Nuclear Threat Initiative ("NTI") who consider the remaining spent HEU fuel as a more serious proliferation hazard than the small amount of HEU fuel actually removed).

185. *See id.* (referencing Clinton-administration nonproliferation official Matthew Bunn, who explains that spent HEU fuel stored outside a reactor for at least five years is "very far from self-protecting" and should be considered a security threat).

186. *See U.S. Team Visits Tajikistan Over "Radiological Security"*, INTERFAX NEWS SERVICE, Nov. 19, 2004 (noting that the U.S. Department of Energy has signed contracts to begin two additional security projects).

187. *See DOE Helps Secure Libyan Nuclear Materials*, DOE THIS MONTH, Mar. 2004, at 3 (commenting that the combined 55,000 pounds of recovered nuclear materials and equipment constituted, by weight, the largest recovery up to that date), *available at* http://www.energy.gov/engine/doe/files/dynamic/252200416822_DOETM_MAR04.pdf (last visited Apr. 8, 2005).

188. *See U.S., Russia Sign Agreement on Recovery of Russian-Origin HEU From Research Reactors*, NUCLEAR THREAT INITIATIVE, May 27, 2004 (reporting that the United States plans to fund the effort while Russia will contribute experts and equipment to recover material from twenty reactors in seventeen countries for repatriation to Russia), *available at* http://www.nti.org/d_newswire/issues/2004_5_27.html#4760F637 (last visited Apr. 8, 2005).

of Russian fuel.[189] Current plans call for Russia to remove all the fuel from these targeted reactors by 2013.[190] Some have expressed concern about such a distant target completion date since many HEU research reactors have little more security than a chain link fence and a night watchman.[191] Moreover, not all countries that have possession of U.S. or Russian-origin HEU have indicated a willingness to return it, notably Pakistan and Iran. [192]

3. HEU Conversion Program

The third component of GTRI is the Reduced Enrichment in Research and Test Reactor ("RERTR") program at Argonne National Laboratory. RERTR was originally established in 1978 in order to promote technologies and provide assistance in converting HEU reactors to use LEU fuel.[193] In the intervening years, a number of factors constrained the program, including budget problems, the highly technical nature of conversion work, and resistance by some governments to switch to LEU fuel. The rejuvenated program integrates technical and diplomatic strategies to overcome this legacy, and is managed from the Argonnne-West operations in Idaho.[194]

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189. *See Russian Nuclear Agency Urges IAEA States to Join Nonproliferation Drive*, BBC MONITORING INT'L REP., Sept. 16, 2004 (adding that the United States will recover fuel from over one hundred reactors throughout Latin America, Europe, and Southeast Asia).

190. *See Spent Fuel to Be Removed from Tehran Research Reactor*, INTERFAX NEWS SERVICE, Sept. 19, 2004.

191. *See* Matthew Bunn & Anthony Wier, *Global Lockdown of Nuclear Stockpiles is Vital*, DESERET MORNING NEWS (Salt Lake City, Utah), Sept. 19, 2004, at A03 (highlighting testimony by the chief of Russia's nuclear agency that nuclear security was under-funded by millions of dollars), *available at* http://deseretnews.com/dn/view/0,1249,595092080,00.html (last visited Apr. 18, 2005).

192. *See, e.g.*, Wade Boese, *Abraham Announces Nuclear Initiative*, ARMS CONTROL TODAY (July 2004), *at* http://www.armscontrol.org/act/2004_07-08/Abraham.asp (last visited Apr. 18, 2005).

193. *See id.* (stating that LEU is safer because it is not suitable for making weapons).

194. *See* Daniel Horner, *DOE Overhauls RERTR Fuel Development Program*, NUCLEAR FUELS, Oct. 25, 2004, at 1 (citing comments from U.S. Department of Energy official Andrew Bieniawski that under the lab integration, the RERTR

Approximately 130 research reactors in dozens of countries around the world still use weapons-grade HEU.[195] Of those, the United States has slated 105 reactors for conversion.[196] While researchers have developed alternate LEU that is suitable for others, considerable technical challenges remain in designing substitute fuels and progress will take time. The GTRI initiative has already converted a total of thirty-eight U.S.-designed research reactors, including twenty-seven of them abroad, from HEU to LEU fuels.[197] The program plans to convert another one-third in the next three to five years. The final one-third could prove more difficult.[198] No Russian-designed reactors abroad have been converted, although officials classify seven as capable of conversion.[199]

4. National Nuclear Security Administration

As part of GTRI, the National Nuclear Security Administration ("NNSA") is in charge of streamlining the organization and enlarging the scope of the current panoply of DOE programs related to nuclear material removal and radioactive source security.[200] By

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program will not be responsible both for developing technology to enable conversions, and actually achieving the conversions).

195. *See Uranium Returned*, *supra* note 180 (stating that conversion of reactors to LEU is a key component to nonproliferation).

196. *See* Abraham, *supra* note 1 (noting that the United States is in the process of converting one-third of the reactors with another third targeted over the next three to five years); *see also* Boese, *supra* note 192, at 32 (stating U.S. Department of Energy Secretary Spencer Abraham's opinion that work is being completed as quickly as possible).

197. *See* Ann MacLachlan, *HEU Here to Stay if Fast Reactors Prevail, Russian Expert Says*, NUCLEAR FUELS, Oct. 11, 2004, at 8 (noting that another thirty-one U.S.-designed reactors do not qualify for conversion, including six in the United States, fourteen in Russia, and another four abroad, and seven Russian-designed reactors worldwide).

198. *See* Boese, *supra* note 192 (discussing that the complexity of conversions limits the rate of progress).

199. *See* MacLachlan, *supra* note 197 (stating that another twenty-nine U.S.-designed reactors qualify for conversion).

200. *See* INITIATIVE HIGHLIGHTS, *supra* note 170 (listing programs falling under the National Nuclear Security Administration ("NNSA") oversight, including the RRR-FR Program, RERTR Program, Foreign Research Reactor Spent Nuclear Fuel ("FRRSNF") Acceptance Program, and Radiological Threat Reduction ("RTR") Program).

designating a Deputy Administrator for Defense Nuclear Nonproliferation, the Act takes a step in the right direction toward refining the threat and prioritizing threat reduction responses. The problem needs to be elevated even higher. The efforts of the NNSA at the DOE should have a subordinate reporting relationship through to the National Security Council ("NSC") and a national-level threat reduction official, as proposed in Part V.B.4.[201]

The various GTRI programs continue to evolve, and not all forms of assistance necessarily involve specialized skills or equipment.[202] Sometimes, approaches that are more practical can pay large dividends immediately. For instance, one national defense specialist noted anecdotally that DOE officials provided blankets to security guards at a sensitive site who were leaving their posts unattended while they foraged for firewood.[203]

IV. THE G8 GLOBAL PARTNERSHIP

> *And so we find ourselves at the dawn of a new century in a new arms race. Terrorists are racing to get weapons of mass destruction. We ought to be racing to stop them.*
>
> —Senator Sam Nunn[204]

Working quietly behind the acrimony surrounding the U.S.-led war in Iraq, in 2003, the G8 nations achieved a monumental

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201. *See* discussion *infra* Part V.B.4 (proposing improvements for the NNSA organization and reporting structure within the NSC).

202. *See* SQUASSONI, *supra* note 133, at CRS-14 (highlighting instances of evolution, such as adjusting to Russian priorities and changing perceptions about what poses greater risks, and addressing practical considerations).

203. *See id.* (noting additional practical accommodations, such as installing bars on windows and blast-proof doors, or providing alternative employment and income for jobless WMD scientists).

204. Peter Grier, *Loose Nukes*, CHRISTIAN SCI. MONITOR, Dec. 5, 2001, at 11 (quoting Senator Sam Nunn), *available at* http://csmonitor.com/2001/1205/p1s3-wogi.html (last visited Apr. 8, 2005).

nonproliferation agreement.[205] The goal is to safeguard and dismantle weapons of mass destruction and related materials in the Former Soviet Union.[206] This development should have materialized a decade earlier, or at the very least, the schedule of work to be done should have been compressed over the course of a few years.[207] Instead, it will take at least a decade.[208] Nonetheless, the nonproliferation agreement represents a milestone in cooperative threat reduction among the major powers. The G8's Global Partnership framework for nonproliferation has four primary objectives—destruction of chemical weapons; destruction of nuclear weapons; nuclear and radiological security; and peaceful employment of former weapons scientists. While the Partnership will initially focus on Russia, provisions allow consideration to extend funding to other countries.[209] The milestones for G8 cooperative threat reduction evolved during G8 meetings in Canada and France, and culminated at the 2004 meeting in the United States.[210]

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205. *See* Boutwell, *supra* note 113, at 5 (discussing G8 countries' proposal in 2002 of the "10+10 over 10" program where the United States would contribute $10 billion and the remaining G7 countries would match that amount over a ten-year period). This agreement came into existence during the G8 Summit in June, 2002. *Id.* at n.8.

206. *See id.* at n.8 (noting the program's aim as "disposing of fissile material, destroying chemical weapons, dismantling decommissioned nuclear submarines, and securing employment for former weapons scientists").

207. *See id.* at 5 (arguing that the "10+10 over 10" program would better address the scale and urgency of the problem if the $20 billion were allocated through a three-year "crash" program).

208. *See id.* (expressing concern that U.S. domestic political and commercial factors could delay actual allocation of "10+10 over 10" program funds). The authors also worry that the European Union decision-making process and bureaucracy could stymie fund allocation. *Id.*

209. *See* GOV'T OF CAN.: CANADA'S G8 WEBSITE, STATEMENT BY G8 LEADERS: THE G8 GLOBAL PARTNERSHIP AGAINST THE SPREAD OF WEAPONS AND MATERIALS OF MASS DESTRUCTION (highlighting that the Partnership would consider needs of Former Soviet Union countries who are prepared to adopt the guidelines), *at* http://www.g8.gc.ca/2002Kananaskis/globpart-en.asp (last visited Apr. 8, 2005).

210. *See generally* GOV'T OF CAN.: CANADA'S G8 WEBSITE, SUMMIT DOCUMENTS (outlining Summit decisions regarding the G8 Global Partnership formation and objectives), *at* http://www.g8.gc.ca/menu-en.asp (last visited Apr. 8, 2005).

A. KANANASKIS, ALBERTA, CANADA—2002

During the G8 Summit held from June 26-27, 2002, in Kananaskis, Alberta, Canada, the G8 countries agreed to spend $20 billion over the next decade to secure and eliminate vast quantities of fissile material and chemical weapons from Russia and other countries.[211] In the agreement, which is a scarcely-mentioned U.S. diplomatic success, the United States pledged to spend $10 billion over the next decade on specific nonproliferation programs.[212] Other G-8 states will match those funds dollar-for-dollar for a $20 billion combined total.

The amounts pledged range from Germany's goal of spending $1.8 billion to Japan's promise to spend $200 million.[213] Italy pledged $1.2 billion and the United Kingdom, France, and Canada each pledged about $750 million.[214] Russia agreed to spend $2 billion[215] and the Czech Republic, not a G8 nation, offered to

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211. *See* U.S. DEP'T OF STATE, THE G8 GLOBAL PARTNERSHIP AGAINST THE SPREAD OF WEAPONS AND MATERIALS OF MASS DESTRUCTION: STATEMENT BY THE GROUP OF EIGHT LEADERS (2002) [hereinafter STATEMENT BY THE G8] (enumerating principles to prevent terrorists from acquiring access to weapons or materials of mass destruction and proposing guidelines for new projects), *at* http://www.state.gov/e/eb/rls/othr/11514.htm (last visited Apr. 8, 2005).

212. *See* Andrew Mollison, *G-8 Summit at Sea Island, June 8-10: Nunn Urges Haste in Arms Reduction*, ATLANTA J. & CONST., May 27, 2004, at A6 (detailing how much each G8 country pledged to contribute to the Global Partnership Project).

213. *See id.* (implying that Tokyo could have afforded to spend more on the program).

214. *See* GOV'T OF CAN.:CANADA'S G8 WEBSITE, G8 CONSOLIDATED REPORT OF GLOBAL PARTNERSHIP PROJECTS 1 (2004) [hereinafter G8 CONSOLIDATED REPORT] (listing detailed funding commitments of all countries involved in the global partnership), *available at* http://www.g8.gc.ca/pdf/g8_report.pdf (last visited Apr. 8, 2005); *see also* STRENGTHENING THE GLOBAL PARTNERSHIP, DONOR FACTSHEET: CANADA (breaking down Canada's total pledge into the amounts to be spent on specific projects), *at* http://www.sgpproject.org/Donor%20Factsheets/Canada.html (last visited Apr. 8, 2005).

215. *See* STRENGTHENING THE GLOBAL PARTNERSHIP, DONOR FACTSHEET: RUSSIAN FEDERATION [hereinafter DONOR FACTSHEET: RUSSIA] (demonstrating Russia's planned contributions to the global partnership), *at* http://www.sgpproject.org/Donor%20Factsheets/Russia.html (last visited Apr. 8,

contribute $75,000 to the global partnership.[216] Since the United States would have spent the $10 billion under its threat reduction programs anyway, the G8 agreement leverages the resources of other states and effectively doubles the funds committed to securing dangerous weapons and material.[217] The "G8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction," the so-called "10 plus 10 over 10" initiative, was signed by the leaders of the G8 and announces a set of six nonproliferation principles.[218]

First, the states agreed to promote the strengthening and full implementation of multilateral treaties and other international instruments directed at preventing the proliferation of WMD. Second, they agreed to maintain and further develop domestic measures to account for and secure WMD and related materials, and to assist other states that lack sufficient resources to account for and secure them. Third, the G8 pledged to implement robust and effective physical protection measures at facilities that house WMD, including defense in depth, and to assist other states that lack appropriate resources for maintaining physical custody of their facilities. Fourth, they committed to maintain and tighten border controls, expand law enforcement efforts, and increase international cooperation to detect, deter and interdict illicit trafficking. Fifth, the states agreed to review and strengthen national export and transshipment controls over items on multilateral export control lists and to be particularly wary of dual-use items and the identity of the

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2005); *see also Russia to Allocate $205m for Global Partnership Projects in 2004*, ROSBUSINESSCONSULTING, Sept. 19, 2004 (summarizing Russia's commitments to the global partnership through 2010).

216. *See* Mollison, *supra* note 212 (reporting the amounts pledged by the United States, Germany, Italy, Japan, and the Czech Republic).

217. *See* Lugar, *supra* note 156 (opining that, through the global partnership, contributions made to Russia for the safeguarding and dismantling of WMD doubled without the United States having to increase its commitment further than the Nunn-Lugar Act calls for).

218. *See* STATEMENT BY THE G8, *supra* note 211 (outlining the Global Partnership Project's goals); *see also* GOV'T OF CAN.: CANADA'S G8 WEBSITE, G8 MEMBERS (listing the G8 members as Canada, the United States, the United Kingdom, France, Italy, Germany, Japan, Russia, and the European Union), *at* http://www.g8.gc.ca/members-en.asp (last visited Apr. 18, 2005).

end-user.[219] Finally, the G8 countries will strengthen their efforts to manage and dispose of stocks of fissile materials no longer required for defense.[220]

B. EVIAN-LES-BAINS, FRANCE—2003

France chaired the next G8 Summit, which took place in Evian-les-Bains, in the French Alps, from June 1-3, 2003.[221] The Evian conference was the springboard for deeper planning, extending the general principles to a series of policy documents. First, the summit released a declaration that identified the avenues the G8 would pursue in nonproliferation, including international treaty inspection regimes under the IAEA, national and international coordination of export controls, diplomatic efforts, and, "if necessary other measures in accordance with international law."[222] The declaration also strongly urged North Korea to comply with its obligations under the NPT, and warned Iran that the G8 "would not ignore the proliferation implications of Iran's advanced nuclear program."[223]

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219. *See* STATEMENT BY THE G8 (specifying that it is necessary to maintain effective controls over items that are not on the lists but which nevertheless contribute to the development, production, or use of nuclear, chemical, and biological weapons).

220. *See id.* (resolving to eliminate all chemical weapons and minimize holdings of biological weapons in addition to disposing of stocks of nuclear weapons).

221. *See* SOMMET D'EVIAN (Evian G8 Summit Website), CHAIR'S SUMMARY (2003) (outlining the decisions of the 2003 G8 Summit), *at* http://www.g8.fr./evian/english/navigation/2003_g8_summit/summit_documents/chair_s_summary.html (last visited Apr. 8, 2005).

222. *See* THE MINISTRY OF FOREIGN AFF. OF JAPAN, NONPROLIFERATION OF WEAPONS OF MASS DESTRUCTION—A G8 DECLARATION (2003) (reaffirming the G8's commitment to the NPT, the Chemical Weapons Convention, and the Biological and Toxin Weapons Convention, and urging all states that have not done so to join these treaties), *at* http://www.mofa.go.jp/policy/economy/summit/2003/dec-3.pdf (last visited Apr. 8, 2005).

223. *See id.* (finding that North Korea's uranium enrichment and plutonium production programs are a clear breach of its international obligations and implying that Iran has breached its obligation under the NPT).

In 2003, Canada committed CDN 1 billion (about $750 million) over ten years.[224] Efforts from Ottawa include a CDN 65 million contribution toward Russia's Plutonium Disposition Program, which will help Russia dispose of thirty-four tons of plutonium.[225] Canada also has worked with Russia to fund the dismantlement of Russian Northern Fleet nuclear submarines.[226] Russian workers are currently removing fuel from the first of twelve nuclear submarines, a painstaking $100 million bilateral operation monitored by the Canadians. Japan has allocated money to dismantle twenty nuclear submarines, with a target for completing the work by 2010.[227] This is only a fraction of the money that will be necessary, however, since Russia intends to dismantle one-hundred more nuclear submarines.[228]

In related work, Canada is engaged in the destruction of Russian chemical stockpiles.[229] At the Shchuch'ye chemical weapons destruction facility ("CWDF"), Canada's effort is focused on

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224. *See* G8 CONSOLIDATED REPORT, *supra* note 214, at 1 (detailing the project areas to which Canada's pledge will apply).

225. *See id.* (demonstrating that Canada's money will go towards other nuclear and chemical projects as well as toward employment of former weapons scientists).

226. *See* Tom Blackwell, *Canadians Dismantle Nuclear Sub: $100 Million Project: 'It's Symbolic, Really, of the End of the Cold War'*, NAT'L POST, Oct. 19, 2004, at A4 (noting that paying for the submarine dismantling is but one part of Canada's larger commitment of approximately $1 billion over ten years to the global partnership).

227. *See Japan to Bankroll Utilization of Russian Nuclear Submarines*, RIA NOVOSTI, Apr. 23, 2004 (quoting the Japanese ambassador to Russia as saying that Japan believes that full utilization of Russian submarines is necessary, especially considering the threat of terrorism).

228. *See Russia Plans to Scrap Another 100 Nuclear Submarines*, BBC MONITORING INT'L REP., Apr. 23, 2004 (reporting how Russia seeks cooperative agreements with Japan, Canada and Norway to dismantle 100 more submarines than are funded in existing agreements with France, Britain and the EU).

229. *See* GOV'T OF CAN.: FOREIGN AFFAIRS, UK AND CANADA COOPERATE TO ASSIST RUSSIA IN DESTROYING CHEMICAL WEAPONS (2003) [hereinafter UK AND CANADA COOPERATE] (reporting that the UK will manage Canada's donation on its behalf to carry out the work in Russia), *at* http://www.dfait-maeci.gc.ca/foreign_policy/global_partnership/uk_canada-en.asp (last visited Apr. 8, 2005).

destroying the most lethal and human portable CW.[230] Prior to the Global Partnership, Canada had contributed more than CDN 5 million to construct the Shchuch'ye facility in the Urals.[231] Under a Canadian-United Kingdom Memorandum of Understanding signed in Moscow on November 19, 2003, Canada will spend CDN 33 million to construct an 18km railway connecting the chemical weapons storage depot near Planovy to the destruction facility at Shchuch'ye.[232] There are nearly 4 million artillery shells containing nerve agents such as sarin, soman, and V-X stored in the area.[233] The rail spur is required to safely and securely transport the mass of approximately 1.9 million chemical munitions located at Shchuch'ye from storage to destruction, as well as an additional 2 million nerve agent-filled artillery shells from the nearby Kizner chemical weapons depot.[234]

Because Canada and Russia did not have a legal agreement in place, Canada made its contribution through the United Kingdom's bilateral agreement with Moscow.[235] The United Kingdom is responsible for implementing the Canadian project in consultation with Ottawa.[236]

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230. *See* GLOBALSECURITY.ORG, SHCHUCH'YE, KURGAN REGION CHEMICAL WEAPONS DESTRUCTION FACILITY [hereinafter DESTRUCTION FACILITY] (describing the Shchuch'ye Facility, its contents, and the history surrounding it), *at* http://www.globalsecurity.org/wmd/world/russia/shchuchye.htm (last visited Apr. 8, 2005).

231. *See* UK AND CANADA COOPERATE, *supra* note 229 (specifying that Canada's contribution included the construction of an access road to the site and natural gas and electric power lines to service the facility).

232. *See id.* (signifying that Canada and the UK have a shared commitment to ensuring the earliest possible destruction of chemical weapons in Russia).

233. *See* DESTRUCTION FACILITY, *supra* note 230 (providing that Kizner and Shchuch'ye stockpiles contain primarily nerve agent rocket and tube artillery warheads and projectiles).

234. *See id.* (clarifying that chemical weapons stored at both the Kizner and Shchuch'ye depots will be destroyed at the Shchuch'ye facility).

235. *See* UK AND CANADA COOPERATE, *supra* note 229 (providing that the project will be managed under both the Memorandum of Understanding between the UK and Canada and the UK-Russia bilateral treaty).

236. *See id.* (naming the contractor in charge of the project as the UK's Bechtel Ltd.).

The commitment of the G8 leaders includes an open invitation to like-minded countries that are prepared to adopt the partnership's principles and guidelines to enter into discussions on participating in the initiative.[237] Norway was the first non-G8 country to join the partnership, and other countries have followed.[238] The Netherlands, Poland, Switzerland, Sweden, and Finland officially joined the partnership in 2003.[239] That same year, Helsinki committed EUR 8 million to modernize nuclear power plants at Leningrad and Kola, and EUR 2 million toward dismantling nuclear submarines of the Northern Fleet.[240]

C. SEA ISLAND, GEORGIA, THE UNITED STATES—2004

At the Sea Island Summit in 2004, seven countries joined the Global Partnership to increase the total membership to twenty-one nations, plus the EU.[241] As a new entrant, Ireland immediately agreed

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237. *See* STATEMENT BY THE G8, *supra* note 211 (calling on all G8 countries as well as other states that share in the global partnership's goal of enhancing international security and safety to adopt six principles to prevent terrorists from gaining access to weapons of mass destruction).

238. *See* Press Release, U.N. Information Service, Adapting to World's Changing Reality, While Not Renegotiating Basic Principles, Greatest Challenge for Current Session (Oct. 5, 2004) (quoting Kim Taravik of Norway as saying that the G8 Global Partnership is making the world safer).

239. *See Russia Hopes That Other Global Partnership Program Signatories will Translate Promises into Action*, RIA NOVOSTI, June 9, 2004 (reporting that a Moscow diplomatic source believed that some global partnership countries avoid engaging in new projects, but Norway and Switzerland are exceptions), *available at* http://www.ransac.org/Projects%20and%20Publications/News/Nuclear%20News/2004/610200424818PM.html#6B (last visited Apr. 18, 2005).

240. *See* Leonid Laakso, *Finland to Contribute to Upping Nuclear Safety in North-Western Russia*, RIA NOVOSTI, Aug. 28, 2003 (specifying that Finland's donation will be a part of an ecological partnership fund intended to provide support to sixteen nuclear safety and twelve other ecological projects), *available at* http://www.ransac.org/Projects%20and%20Publications/News/Nuclear%20News/2003/828200330011PM.html#1D (last visited Apr. 8, 2005). The Netherlands, Norway, Sweden, Denmark, and Russia will allocate EUR 10 million each, and the EU commission is going to contribute EUR 50 million. *Id.*

241. *See Diplomacy in the Age of Terrorism: What is the State Department's Strategy?: Hearing Before the House Comm. on International Relations*, 108th Cong. 108-152 (Aug. 19, 2004) (remarks of Ambassador Cofer Black, Coordinator of Counterterrorism, U.S. Dept. of State) (commenting that the global partnership,

to retrain and employ nuclear weapons scientists in Iraq and Libya.[242] Other new entrants include Australia, New Zealand, South Korea, Belgium, Denmark and the Czech Republic.

The Sea Island Summit produced a detailed and public consolidated report of Global Partnership projects, and the scope is impressive.[243] For example, the United Kingdom is cooperating with Russia to build a new spent nuclear fuel storage facility at Murmansk in 2006.[244] The United Kingdom and Australia allocated money for dismantling the Russian Pacific Fleet nuclear submarines.[245] The European Commission is funding an array of programs, making a EUR 1 billion commitment, with most of that amount dedicated to upgrading nuclear safety at nuclear installations in Russia, the Ukraine, Kazakhstan, and Armenia.[246] EC projects also include submarine dismantlement and nuclear security in Northwest Russia, fissile material disposition and safeguards, employment of former weapons scientists, and export controls and border management improvements in Russia, Ukraine, Moldova, Georgia, and Central Asia.[247]

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with its new members, are working together to ensure that weapons and materials of mass destruction are not accessible to terrorists or those who harbor them).

242. *See* Carl O'Brien, *Ireland to Join Fight against Nuclear Traffickers*, IRISH TIMES, June 10, 2004, at 14 (reporting that Irish assistance in the global partnership will focus on cleaning up of nuclear facilities in Russia and investing in a chemical weapons destruction program).

243. *See generally* G8 CONSOLIDATED REPORT, *supra* note 214 (covering with detail the contributions of each global partnership member country and the projects to which each contribution will go).

244. *See Russia to Build New Nuclear Waste Storage Facility*, INTERFAX NEWS SERVICE, Oct. 16, 2004 (explaining that the £15 million facility will safely store fuel discharged from Russia's nuclear icebreakers).

245. *See* G8 CONSOLIDATED REPORT, *supra* note 214, at 4 (demonstrating the UK's commitment of at least £10 million per year toward submarine dismantlement); *see also Russia Welcomes Australia's Contribution to Scrapping Russian Nuclear Submarines*, ROSBUSINESSCONSULTING, June 29, 2004 (reporting Australia's decision to allocate approximately $7 million towards the dismantling of Russian nuclear submarines).

246. *See* G8 CONSOLIDATED REPORT, *supra* note 214, at 1-2 (specifying that the EC will contribute EUR 334 million towards the nuclear safety of nuclear installations between 2004 and 2006).

247. *Id.*

France is spending EUR 750 million on the disposal of 34 metric tons of plutonium, submarine dismantlement in Northwest Russia, and other nuclear, chemical, and biological security and disposition work.[248] Germany signed an agreement with Russia in the fall of 2003 to execute its funds toward submarine dismantlement, enhancement of physical protection systems at fissile material storage sites, and other WMD-related threat reduction measures.[249] Italy dedicated its EUR 1 billion to nuclear and chemical threat reduction inside Russia pursuant to an agreement between Moscow and Rome signed on November 5, 2003.[250] Dividing its programs between DOD and DOE, the United States is spending $10 billion—$1 billion per year.[251] Fiscal year 2004 programs include the elimination of strategic offensive delivery vehicles; fissile materials disposition; Material Protection, Controls, and Accounting; nuclear weapons storage; security, and transportation; and HEU transparency.[252]

The 2005 G8 Summit will be held in Scotland in July. The group will revisit CTR, focusing especially on controlling bioterrorism and on methods to control rogue state development of indigenous nuclear enrichment and reprocessing capabilities. Russia will assume the Presidency and host the G8 summit in 2006, and will spend $2 billion on a variety of nuclear and chemical threat reduction activities.[253] Both the United States and Russia have asserted that Russia's contribution toward the program should not count toward

248. *Id.* at 2-3.

249. *Id.* at 3.

250. *Id.* at 3-4.

251. *Id.* at 5-6.

252. *See id.* at 5-6 (breaking down contribution amounts by agency).

253. *See id.* at 6 (specifying that Russia's contribution will be divided largely between submarine dismantlement and chemical weapons destruction); *see also* Stephen Dalziel, *Analysis: Russia's Place in the G8*, BBC NEWS, June 27, 2002 (opining that although the G8 decided to hold the next summit in Moscow, Russia is not even close to being one of the world's top 8 developed economies), *at* http://news.bbc.co.uk/1/hi/business/2069587.stm (last visited Apr. 8, 2005).

the $20 billion target in order to encourage other participants to broaden their support.[254]

D. UNGA AND UNSC SUPPORT TO THE GLOBAL PARTNERSHIP

Both the U.N. General Assembly ("UNGA") and the Security Council ratified the work of the G8, which lays the groundwork for its further expansion.[255] In October 2002, the UNGA welcomed and endorsed the principles of the Global Partnership in Resolution 57/68, "Bilateral Strategic Nuclear Arms Reductions and the New Strategic Framework."[256] The Resolution celebrates the implementation of the Moscow Treaty as an expression of the great powers' commitment to the NPT and refers to the G8 as an important player in bolstering international security through the June 2002 initiation of the Global Partnership.[257]

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254. *See* DONOR FACTSHEET: RUSSIA, *supra* note 215 (citing the disagreement over whether Russia's pledge should count toward the overall goal and the U.S. and Russian opinions that it should not); *see also* Major General Nikolay Bezborodov, Remarks at the Interparliamentary Conference of the European Commission Nonproliferation & Disarmament Cooperation Initiative (November 20-21, 2003) (declaring that Russia will spend $204 million eliminating chemical weapons and dismantling submarines), *available at* http://cns.miis.edu/research/globpart/funding.htm (last visited Apr. 8, 2005).

255. *See Bilateral Nuclear Strategic Arms Reductions and the New Strategic Framework*, G.A. Res. 68, U.N. GAOR, 57th Sess., Agenda Item 66, U.N. Doc. A/RES/57/68 (2002) (recognizing that the global partnership will further the goal of achieving international security and safety), *available at* http://www.un.org/Depts/dhl/resguide/r57.htm (last visited Apr. 8, 2005); *see also* S.C. Res. 1540, U.N. SCOR, U.N. Doc. S/RES/1540 (2004) (affirming that the proliferation of weapons and materials of mass destruction constitutes a threat to international safety and security), *available at* http://www.un.org/Docs/sc/unsc_resolutions04.html (last visited Apr. 8, 2005).

256. *See Bilateral Nuclear Strategic Arms Reductions and the New Strategic Framework*, *supra* note 255 (recognizing the Global Partnership program for enhancing international security and safety by supporting specific cooperation projects, and calling upon all countries to join the G8 in its nonproliferation efforts). The United States introduced the resolution and Russia was the co-sponsor. *Id.*

257. *See id.* (providing that the resolution was passed by consensus in the First Committee and in the General Assembly).

The authority of Security Council Resolution 1540 of April 28, 2004 strengthens the UNGA's endorsement.[258] Acting under Chapter VII of the U.N. Charter, the Security Council declared that all states shall refrain from providing any support to non-state actors attempting to develop nuclear, chemical, or biological weapons and related material.[259] Importantly, the Security Council also decided that all states shall adopt appropriate and effective laws to prevent non-state actors from acquiring, developing, transporting, or transferring WMD materials.[260] Because some states may require assistance in implementing the resolution, the Security Council invited states in a position to do so to offer assistance, experience and resources.[261] This Resolution establishes a firm foundation for dialogue and genuine cooperation for broadening the work of the G8 Partnership and its affiliates, and it provides international legal authority for developing and implementing the suggestions contained in Section V of this piece.

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258. *See* S.C. Res. 1540, *supra* note 255 (validating the importance of the work of the global partnership).

259. *See id.* (listing many initiatives that U.N. member states should adopt in order to provide an effective response to global threats of nuclear proliferation); *see also* Wade Boese, *Security Council Unanimously Adopts Resolution on Denying Terrorists WMD*, ARMS CONTROL TODAY (May 2004) (asserting that the Security Council called on member countries to prevent and punish terrorists who seek weapons of mass destruction), *at* http://www.armscontrol.org/act/2004_05/UN.asp (last visited Apr. 18, 2005).

260. *See* S.C. Res. 1540, *supra* note 255 (finding that members states should also enact laws to establish domestic controls to prevent the proliferation of WMD).

261. *See id.* (notifying member states that the Security Council will closely monitor the implementation of the resolution).

V. ACHIEVING GLOBAL COOPERATIVE THREAT REDUCTION

In theory, there is no difference between theory and practice. In practice, there is.

—Yogi Berra

More than a decade of effort under Nunn-Lugar has produced tangible disarmament results in Russia and the former Soviet Union. Statistics as of late 2004 indicate that 6,472 nuclear warheads have been separated from their missiles; 559 intercontinental ballistic missiles ("ICBMs") have been destroyed and 470 ICBM silos have been eliminated; 13 mobile ICBM launchers and 137 strategic bombers have been destroyed; 408 Sea-launched ballistic missile ("SLBMs") launchers and 541 SLBMs have been eliminated; 733 nuclear air-to-surface missiles and 27 nuclear-powered strategic missile submarines have been destroyed, and 194 nuclear test tunnels and holes have been sealed.[262] Table 2, *infra*, sets forth milestones for addressing the destruction of excess Russian nuclear systems.

262. *See* Peter Eisler, *Renewal of Deal to Help Secure Russian Arms in Doubt*, USA TODAY, Dec. 13, 2004, at 2A (listing some of the weaponry that the United States has helped to destroy in Russia), *available at* http://www.usatoday.com/news/world/2004-12-13-inside-nuke-russia_x.htm (last visited Apr. 8, 2005); *see also* Press Release, Senator Richard Lugar, Lugar Introduces New Nunn-Lugar Legislation (Nov. 16, 2004) (documenting the progress the Nunn-Lugar program has made in deactivating or destroying WMD), *available at* http://sgpproject.org/Personal%20Use%20Only/NunnLugar.html (last visited Apr. 8, 2005).

WEAPON	NUMBER DESTROYED	% OF GOAL
Strategic nuclear warheads	6,472	49%
ICBMs	559	58%
ICBM silos	470	66%
SLBMs	541	75%
SLBM launchers	408	65%
Nuclear-powered ballistic missile submarines	27	65%
Strategic bombers	137	86%

TABLE 2: EXCESS RUSSIAN NUCLEAR SYSTEMS

Most of the work on securing and destroying dangerous materials in Russia is still in front of us, and other countries have not completed a thorough accounting. It is difficult to obtain accurate reports on the amount of nuclear material that remains unaccounted for or unsecured. Energy Secretary Abraham stated that the United States has helped eliminate 216 metric tons of HEU, and has secured 43% of unspecified weapons-useable material in Russia.[263] Russia has a total of 600 metric tons of nuclear material dispersed throughout 115 sites.[264] Almost half of the material has received initial stop-gap security upgrades, but only 26% is stored in conditions protected by advanced, comprehensive security.[265] The National Nuclear Security Administration of the DOE has accelerated the program to secure Russian nuclear material, and

263. *See* Applegarth, *supra* note 178 (reporting that Secretary Abraham believed that the U.S. and Russia would secure all Russian navy nuclear-warhead sites by 2006).

264. *See* Eisler, *supra* note 262 (discussing the U.S. Energy Department's urging to upgrade security at the Russian sites hold the nuclear weapons material).

265. *See id.* (noting progress achieved by the United States helping former Soviet states eliminate weapons of mass destruction for over ten years).

intends to complete all comprehensive security upgrades for facilities housing the 600 tons by 2008.[266]

A. REALIZING BROADER STATE COOPERATION

The great political obstacles to further reducing the proliferation of nuclear material and the terrorist threat from unsecured nuclear material eclipses accomplishments so far.[267] Other countries' preparedness to provide adequate cooperation is the underlying issue controlling future success.[268] Diplomacy is the key to that success.

A state's willingness to cooperate in securing civilian and military nuclear materials may hinge on a cost-benefit calculation.[269] A weapons-capable state such as Pakistan has a complex calculation to make, factoring in present geo-political considerations as well as nationalism that augurs against cooperation.[270] Pakistan must balance these motivations against the danger of immolation in Islamabad

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266. *See Full Comm. Hearing on U.S. Cooperative Threat Reduction and Non-Proliferation Programs Before the House Armed Services Comm.*, 108th Cong. 108-2 (Mar. 4, 2003) (remarks of Acting Under-Secretary of Energy Linton F. Brooks) (stipulating that the National Nuclear Security Administration believes it can complete security improvements for nuclear weapons-usable material and warhead in Russia); *see also* Abraham, *supra* note 1 (relating that the DOE's accelerated efforts to secure the 600 tons by 2008 puts the agency two years ahead of the schedule inherited from the Clinton administration).

267. *See* discussion *infra* part V (describing the success of the Nunn-Lugar CTR programs).

268. *See* discussion *infra* part V.A-B (discussing the problems the United States and Russia face in the continuing implementation of CTR programs and the steps necessary to spread CTR around the world).

269. *See* SQUASSONI, *supra* note 133, at CRS-2 (asserting that countries considering partnering with the United States in a Cooperative Threat Reduction agreement depend on factors such as the country's WMD program's importance to its security and other geopolitical considerations). Pakistan insists that it is capable of protecting its own nuclear program and insists on a "hands-off" attitude by the United States. *Id.*

270. *See id.* at CRS 23-24 (noting that Pakistan has a first use policy for nuclear weapons and has traditionally been reluctant to enter into any kind of agreement concerning its nuclear weapons, even with close allies like the United States and the United Kingdom).

from a terrorist bomb "leaked" out of its own system.[271] What could Pakistan's government expect from the United States if a Pakistani bomb struck an American city? Each state must also grapple with the psychological and political aspects of cooperation. Critics in Pakistan and other nations might allege that CTR is just another term for arms control; that cooperation merely reinforces U.S. power; that it only rewards and encourages U.S. unilateralism; that cooperation constitutes succumbing to bribery; or that cooperation is a slight against national honor and scientific achievement.

One of the greatest hurdles to CTR is effective implementation. Provisions for one state providing a specific category of support to another state generally require an implementing agreement setting forth the terms of cooperation.[272] Sometimes, there is accord in reaching a strategic agreement, but contention arises over the fine details involved in putting the plan into effect.[273]

The Multilateral Nuclear Environmental Program for the Russian Federation ("MNEPR") of May 2003 sets out an essential framework for much of the nuclear cleanup in Russia.[274] It serves as the basis for nuclear rehabilitation measures arising from the European Union's environmental partnership with Russia and the G8 Global Partnership ("Global Partnership").[275] However, the parties must

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271. *See id.* (observing Pakistan's past relationships with nations that support terrorism, such as Iran and Libya and the significant terrorist presence that country).

272. *See* discussion *infra* part V.A (discussing CTR agreements between Russia and the United States in the post-Soviet era).

273. *See id.* (examining common points of contention between Russia and CTR partners, particularly the United States, around issues such as access and liability limitation).

274. *See* N. DIMENSION ENVTL. PROJECT, FRAMEWORK AGREEMENT ON A MULTILATERAL NUCLEAR ENVIRONMENTAL PROGRAM IN THE RUSSIAN FEDERATION (2003) (explaining that activities under this agreement should be complimentary to other agreements and parties should avoid duplication of efforts), *at* http://www.ndep.org/files/uploaded/MNEPRAgreementENGLISH.pdf (last visited Apr. 8, 2005).

275. *See* Ann MacLachlan, *Final Agreement on Pact for Nuclear Cleanup in Russia*, NUCLEONICS WEEK, May 19, 2004 (reporting that a year after the initial signing of the MNEPR, the parties resolved issues such as tax exemption for countries involved in cleanup work and translation problems).

come to terms with issues such as liability and taxation that may overlap institutional and jurisdictional lines of demarcation.[276]

Reaching any CTR agreement generally involves three difficult issue areas—access, funding, and liability. Russia has been reluctant to grant American access to some particularly sensitive sites, even when the security of those sites is in grave doubt.[277] Whereas the Americans insist on actually visiting locations where United States' tax dollars are spent, the Russians argue that technical means and verification are sufficient.[278] Russians contend the United States simply wants access for intelligence purposes.[279]

Access problems slowed the installation of "quick fix" and comprehensive security upgrades at Russian facilities storing 600 tons of nuclear material, for example.[280] The Annual Report of the G8 Senior Officials Group of the Partnership reached an agreement

276. *See id.* (indicating that the United States refused to sign the liability protocol of the MNEPR because it prefers more stringent liability protection).

277. *See* 149 Cong. Rec. S3239 (daily ed. March 6th, 2003) (documenting Senator Conrad Burns' comment on the uncooperativeness of Russia in refusing to grant access to sensitive national security sites).

278. *See* Representatives Curt Weldon and Chet Edwards, *The Post-Hussein Era: America, Russia, Terrorism, and Weapons of Mass Destruction*, ARMS CONTROL TODAY (June 2003), *at* http://www.armscontrol.org/act/2003_06/weldonedwards_june03.asp (last visited Apr. 8, 2005).

279. NAT'L ACAD. OF SCI., OVERCOMING IMPEDIMENTS TO U.S-RUSSIAN COOPERATION ON NUCLEAR NONPROLIFERATION: REPORT OF A JOINT WORKSHOP 26 (2004) (noting that Russian officials perceive American program staff as making unacceptable requests for confidential material on the "vulnerability and effectiveness of physical protections systems of specific facilities"), *available at* http://books.nap.edu/books/0309091772/html/index.html (last visited Apr. 8, 2005).

280. *See* Press Release, National Nuclear Security Admin., U.S. Dep't of Energy, "NNSA Security Upgrades Are Ahead of Schedule, U.S. has Secured More Nuclear Material in Russia Than Ever Before" (Oct. 2004) (indicating that the United States accelerated the plan to secure Russian nuclear material by 2008 through efforts to negotiate contracts, eliminate bureaucratic obstacles, and install new security systems more rapidly), *at* http://www.nnsa.doe.gov/docs/NA-04-FS02.pdf (last visited Apr. 8, 2005).

on access to sites by reducing prior notification delays from forty-five to thirty days through a procedure of annual lists.[281]

Funding difficulties arise for a variety of reasons. Prior to the enactment of a Presidential waiver, the United States could not spend money under the various CTR agreements unless the United States "certified" that the recipient nation was in compliance with the stipulations of the obligated funds.[282]

One of the most vexing issues concerns legal liability. The United States insists on protection from legal liability for its agencies and employees participating in the conversion and clean-up of highly dangerous materials such as plutonium.[283] The original Nunn-Lugar program of 1992[284] relieved the United States of legal responsibility for possible nuclear damage resulting from nuclear weapons disposal.[285] During the last few years, however, Russia offered what they regard as a "more progressive formula" of joint responsibility, a

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281. *See* G8 SENIOR OFFICIALS GROUP, G8 GLOBAL PARTNERSHIP AGAINST THE SPREAD OF WEAPONS OF MATERIALS OF MASS DESTRUCTION, ANNUAL REPORT (2003) (discussing the various barriers to the implementation of the G8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction, such as tax exemption and liability), *at* http://www.g8.fr/evian/english/navigation/2003_g8_summit/summit_documents/global_partnership_against_the_spread_of_weapons_and_materials_of_mass_destruction_-_g8_senior_officials_group_-_annual_report.html (last visited Apr. 8, 2005).

282. DAVID SMIGIELSKI, RUSSIAN-AMERICAN NUCLEAR SECURITY ADVISORY COUNCIL: AN OVERVIEW OF THE 2002 CTR CERTIFICATION CRISIS (2003) (explaining that the original CTR programs required the president to certify that a country receiving CTR monies meets certain criteria), *at* http://www.ransac.org/Publications/Reports%20and%20Publications/Other%20RANSAC%20Papers/624200331947PM.html (last visited Apr. 8, 2005).

283. *See* Jack M. Beard, *A New Legal Regime For Bilateral Assistance Programs: International Agreements Governing The "Nunn-Lugar" Demilitarization Program In The Former Soviet Union*, 35 VA. J. INT'L L. 895, 916 (1995) (explaining the necessity of liability provisions in CTRs because of the limited liability that the U.S. Department of Defense could assume for CTR programs overseas and because the U.S. government could not control implementation activities in foreign countries).

284. *See* discussion *infra* part III.A (describing the Soviet Nuclear Threat Reduction Act of 1991 and subsequent changes and appropriations).

285. *See* MacLachlan, *supra* note 275 (explaining that the United States was seeking more stringent liability protection).

concept ratified by the Duma.[286] The resulting impasse delays effective action.

During a Senate Foreign Relations Committee Hearing, Senator Pete Domenici (R-NM) and Senator Richard Lugar (R-IN) questioned Undersecretary of State for Arms Control and International Security John Bolton on the liability issue in relation to the delayed implementation of a U.S.-Russian agreement to dispose of thirty-four metric tons of plutonium.[287] Senator Domenici argued that if Secretary Bolton could not implement the agreement, then the President should replace him.[288] Secretary Bolton explained that "[t]he issue that divides Russia and the United States at this point is whether we're going to get liability protection equivalent to that which we've operated under for the past twelve years or whether we're prepared to accept a lesser liability protection."[289] Senator Lugar, who suggested that the committee members needed to discuss

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286. *See U.S. Official, Duma Deputy Discuss Nunn-Lugar Program*, INTERFAX NEWS SERVICE, Jan. 29, 2004 (reporting that Konstantin Kosachyov, chairman of the State Duma International Affairs Committee, acknowledged that in the past, the Russian government accepted the extensive liability provisions laid out in CTR agreements with the United States, but in light of agreements such as the MNEPR, with lesser liability for Russia, the prior provisions were no longer acceptable).

287. *See generally Sea Island and Beyond: Status Report on the Global Partnership Against Weapons of Mass Destruction: Hearing Before the Senate Comm. On Foreign Relations*, 108th Cong. 2-3 (2004) (colloquy between Senators Pete Domenici and Richard Lugar and Undersecretary of State for Arms Control and International Security John Bolton) (discussing the 2004 G8 summit at Sea Island, Georgia and the progress of the Global Partnership Against Weapons of Mass Destruction), *available at* http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_senate_hearings&docid=f:96631.wais (last visited Apr. 8, 2005).

288. *See id.* at 3-4 (testimony and prepared statement of Sen. Pete Domenici) (accusing Mr. Bolton of being unable or unwilling to resolve the liability issue in order to allow the CTR agreement with Russia to proceed).

289. *See id.* at 48 (testimony of Mr. John Bolton, Undersecretary of State for Arms Control and International Security) (assuring the committee that State Department applied pressure to Russian officials to pass the CTR with extensive liability protection as failure to do so would endanger past agreements).

the issue with the President, said, "You've certainly illuminated the problems . . . but not really the solution."[290]

At times, Russia appears recalcitrant. Although Moscow opened many facilities to inspection, others remain closed.[291] Senator Lugar declared in August of 2004 that increased funding does not ensure the safeguarding or deactivation of Russia's immense WMD arsenal, stating that "[D]iplomatic breakthroughs . . . are almost a prerequisite to putting major funding increases to work."[292] For example, Senator Lugar noted that more funding could increase ICBM dismantlement capacity at Surovatikha, but the program would only work if Russia would commit to delivering more than the four missiles per month they currently turn over for destruction.[293]

For its part, Russia claims there is a growing gap between what partners promised in the Kananaskis summit and resulting G8 action.[294] Disagreement over prioritizing the effort created difficulty

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290. *See id.* at 49-50 (statement of Sen. Richard Lugar, Chairman) (pressing Mr. Bolton for information on what kind of pressure the G8 and the State Department planned on applying to Russia to ensure the security of thus far unsecured plutonium).

291. *See* Press Release, U.S. Dep't of State, Persistent Diplomacy Needed for Nonproliferation Advances—Senator Lugar lists 12 items to pursue for WMD security (Aug. 11, 2004) (reporting that Senator Richard Lugar believes that aggressive diplomacy, not additional funding, is the key to expanding CTRs).

292. *See id.* (noting that the liability provisions of the CTRs are the major stumbling block to implementation).

293. *See id.* (stating that one of Senator Lugar's goals is to bring short-range, more portable, tactical nuclear weapons under the agreement); *see also* NUCLEAR THREAT INITIATIVE, RUSSIA: ICBM DISMANTLEMENT FACILITIES (2003) (noting that after the United States and Russia signed an agreement on August 26, 1993 to eliminate strategic offensive arms, Russia converted the Surovatikha base, a former Strategic Rocket Forces ("SRF") missile storage and assembly facility, into a ballistic missile elimination facility), *available at* http://www.nti.org/db/nisprofs/russia/delivry/icbmdism.htm (last visited Apr. 8, 2005).

294. *See Russia Hopes That Other Global Partnership Program Signatories will Translate Promises into Action*, RIA NOVOSTI, June 9, 2004 [hereinafter *Promises into Action*] (stressing that Russia's priorities are the scrapping of chemical weapons and the disposal of decommissioned nuclear-powered submarines), *available at* http://www.ransac.org/Projects%20and%20Publications/News/Nuclear%20News/2004/610200424818PM.html#6B (last visited Apr. 18, 2005).

in translating political agreements into practical cooperation.[295] France, for example, seeks to divert Russia into programs that Moscow does not regard as a priority, and that were not included in the umbrella agreement set forth in the Global Partnership.[296]

The Russians also complain of difficulty in actually receiving disbursement of pledged money from France and other countries, and that the money comes with many conditions.[297] Other states, such as Norway and Switzerland, better aligned their work with Russian priorities, which include scrapping chemical weapons and disposing of decommissioned nuclear submarines.[298] Switzerland's contribution of 17 million Swiss francs for chemical disarmament is fairly modest, but it pledged the money without lengthy debates or preconditions, and promptly disbursed it.[299]

B. CREATIVITY AND URGENCY

Complacency and political obstacles hindered past efforts, and the scope of those efforts does not match the scale of the threat.[300] Most

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295. *See id.* (noting that Moscow calls for a legal framework for cooperation with partners).

296. *See id.* (quoting a Russian diplomat as saying that "[s]ome partners try to avoid engaging in new projects").

297. *See Press Conference with Vladimir Orlov, PIR Center Director, and Laura S.H. Holgate, Nuclear Treat Initiative Fund Vice President, on Nonproliferation Issues (Part 1)*, FED. NEWS SERV. (RUSSIA), Apr. 21, 2004 [hereinafter *Press Conference Part 1*] (highlighting that Japan, on the other hand, pledged $200 million and actually disbursed several million).

298. *See Promises into Action*, *supra* note 294 (indicating that Russia's priorities, namely chemical weapons and destroying nuclear submarines, differ from those of other partners).

299. *See Press Conference with Vladimir Orlov, PRI Center Director, and Laura S.H. Holgate, Nuclear Threat Initiative Fund Vice President, on Nonproliferation Issues (Part 2-Final)*, FED. NEWS SERV. (RUSSIA), Apr. 21, 2004 [hereinafter *Press Conference Part 2*] (indicating that it is possible that the program could be disrupted because of a lack of funds received from countries holding back funds due to legal issues).

300. *See* discussion *infra* part V.A (discussing the success and failure of the original CTR agreements with Russia).

of the work lies in the future.[301] It is impossible to overstate the urgency of the required tasks. The danger is palpable, spilling over into the political arena. In the United States, some critics charge the Bush administration with irresponsibility,[302] while others defend the administration's record.[303] Regardless of assessments about the past, there is a clear conviction that the United States should accelerate efforts to globalize CTR.[304] Diplomacy is needed to bring others on board.

The lack of progress exasperates Graham Allison, perhaps the leading American authority on proliferation:

> If the material for the terrorist bomb that blows up in Paris or Moscow or New York in 2005 is scheduled to be secured in 2008, voters will look back at the elegant language of multiple G-8 summit meetings and wonder why it was so hard to translate those words into action.[305]

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301. *See Nunn, Lugar: Program to Secure Vulnerable Nuclear Weapons and Materials Must be Accelerated, Reshaped to meet Terrorist Threat*, U.S. NEWSWIRE, Mar. 12, 2003 (asserting that current efforts to reduce nuclear threats are too slow to effectively keep nuclear materials out of the hands of terrorists).

302. *See* Joshua Glenn, *Slouching to Armageddon*, THE BOSTON GLOBE, Mar. 16, 2003, at D2 (reporting that Steven Weinberg, a member of the Council on Foreign Relations' independent task force on Homeland Security, ridiculed the administration's missile defense program, calling a missile strike the "least likely way" that terrorists might attack the United States). Mr. Weinberg advocates for the reinvestment of the money in the under-capitalized Nunn-Lugar programs. *Id. See also* PERKOVICH, *supra* note 118 (giving a mildly critical assessment of the Bush Administration's approach).

303. *See* Lugar, *supra* note 156 (asserting that "[t]he Bush administration's record on securing weapons of mass destruction has been one of innovation and activism. Its record on securing dangerous weapons and materials is a rare case in U.S. politics where the performance of a candidate far exceeds his rhetoric on the issue").

304. *See* Cent. for Def. Info., *Nunn, Lugar: Programs to Secure Vulnerable Nuclear Weapons and Materials Must be Accelerated, Reshaped to Meet Terrorist Threat*, Russia Weekly, Mar. 12, 2003 (claiming that the scope of current CTR effort "does not match the scale of the threat at a time when these programs are more essential than ever"), *available at* http://www.cdi.org/russia/248-14.cfm (last visited Apr. 8, 2005).

305. Graham Allison, *The Eight Spoke Loudly, and Did Little to Loose Nukes*, INT'L HERALD TRIB., June 12, 2004, at 6, *available at* http://www.ksg.harvard.edu/news/opeds/2004/allison_loose_nukes_iht_061204.htm (last visited Apr. 18, 2005). Allison also argued that at its current rate of

What can be done? There are a number of proposals that the Global Partnership could sponsor to speed action. Table three is a proposed plan of action that prioritizes the urgency of global threats to proliferation. The table identifies the areas of most urgency—providing a schematic on prioritized targets—those threats in greatest need of global attention and invigorated multilateral engagement.

	WEAPONS SECURITY	SITE SECURITY	MATERIAL SECURITY	PERSONNEL SECURITY
NORTH KOREA	Less Urgent	Less Urgent	Most Urgent	?
IRAN	?	Urgent	Most Urgent	?
LIBYA	No	Urgent	Less Urgent	Yes
PAKISTAN	Most Urgent	Most Urgent	Most Urgent	Most Urgent
RUSSIA	Urgent	Urgent	Urgent	Less Urgent
INDIA	Less Urgent	Less Urgent	Less Urgent	Less Urgent
ISRAEL	Less Urgent	Less Urgent	Less Urgent	Less Urgent

TABLE 3: PRIORITIZING NUCLEAR THREAT REDUCTION ASSISTANCE

Although there is grave danger, there is plenty of reason to avoid despondency and encourage optimism about the future. In the 1960s, twenty-one countries either had nuclear weapons or considered pursuing nuclear programs.[306] In the 1980s, there were sixteen such

movement, the G8 Global Partnership Against the Spread of Weapons of Mass Destruction will not secure loose nuclear weapons and materials in Russia until 2017. *Id.*

306. *See* PERKOVICH, *supra* note 118, at 11 (noting that Argentina, Australia, Brazil, China, Egypt, France, Germany, India, Israel, Italy, Japan, Norway, South Africa, the Soviet Union, Spain, Sweden, Switzerland, Taiwan, the United

states; by 2004, there were only ten, including Iran and North Korea.[307]

1. Additional Resources

In their report, the 9/11 Commission clearly stated that the global terrorist threat requires a multi-faceted and global response, including strong global CRT.[308] It is a critical priority to urge members of the Global Partnership to meet their financial pledges for actual nonproliferation projects.[309] Even if the members meet these goals, these nations must spend even more money. Although the $20 billion pledged by Global Partnership members is a step in the right direction, that amount is paltry in comparison to the problem.[310] It amounts to $2 billion per year from countries that produce 70% of the world's gross domestic product.[311] At that rate, the international community will not secure Russia's nuclear inventory until 2017.

The Global Partnership must address Russian concerns about disbursement of funds from particular states. Some Russian experts

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Kingdom, the United States, and Yugoslavia all either had weapons or considered weapons programs in the 1960s).

307. *See id.* (indicating that in the 1980s, the states with nuclear capability or pursuing nuclear capability were Argentina, Brazil, China, France, Iran, India, Iraq, Israel, Libya, North Korea, Pakistan, South Africa, the Soviet Union, Taiwan, the United Kingdom and the United States). In 2004, the nuclear states and those aspiring to nuclear status are China, France, India, Israel, Pakistan, Russia, the United Kingdom, and the United States. Iran and North Korea are suspected of pursuing nuclear weapons. *Id.*

308. *See* NATIONAL COMM'N ON TERRORIST ATTACKS UPON THE U.S., THE FINAL 9/11 COMMISSION REPORT 381 (2004) (expressing the concern of experts that the U.S. government is not fully committed to securing nuclear weapons throughout the former Soviet republics), *available at* http://a257.g.akamaitech.net/7/257/2422/05aug20041050/www.gpoaccess.gov/911/pdf/fullreport.pdf (last visited Apr. 8, 2005).

309. *See Press Conference Part 1*, *supra* note 297 (quoting Russian official Vladimir Orlov as saying that the first priority of the Global Partnership is receiving the assets, "[b]ecause there is a difference between declared money and money received, between what has been pledged or committed and what has been received").

310. *See* Allison, *supra* note 305 (asserting that although the members of the G8 Global Partnership pledged $20 billion, it spent less than half a billion).

311. *See id.* (comparing the promised $20 billion from the Global Partnership to the $100 billion spent by the United States in Iraq during 2003-2004).

view the disbursement problem, and the ensuing bureaucratic difficulties, as an incentive to edge out foreign cooperation.[312] This would be disastrous to American and other nations' interests, slowing the process of accounting for and protecting materials and weapons in Russia, and eroding contributing states' ability to monitor Moscow's progress in threat reduction.[313] This is especially important since some constituencies in Russia may want to divert funds for dismantling and securing weapons and materials into programs to reconstitute and revive those capabilities.[314] Delaying allocation and disbursement is penny wise and pound foolish. Instead of focusing on concerns about the proper obligation of the funds from the 10 + 10 over 10 formula, the Global Partnership should focus on expanding the program.[315] The 10 + 10 over 10 is insufficient, amounting to too little money over too many years.[316]

One of the best studies suggests that it will take $30 billion just to secure the nuclear legacy of Russia, and that there are other stockpiles of WMD and related materials, including weapons-grade plutonium and HEU, inadequately secured around the world.[317]

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312. *See Press Conference Part 1*, *supra* note 297 (asserting that Russia's dependence on foreign aid should end through a gradual increase in Russian financing of nonproliferation programs).

313. *See* Fred Weir, *Russian Critic Says Millions from Canada for Nuclear Cleanup Going Astray*, CANADIAN PRESS, Sept. 25, 2003 (asserting that the members of the Global Partnership must keep a close eye on how Russia spends the funds allocated for nonproliferation activities), *available at* http://www.vivelecanada.ca/article.php/20030925223423453 (last visited Apr. 18, 2005). *But see Press Conference Part 1*, *supra* note 297 (contending that Russia should handle its own responsibilities in the war on terrorism and that more business contracts should go to Russian companies, as nearly 90% now go to companies outside of Russia).

314. *See* Weir, *supra* note 313 (reporting that a former Soviet nuclear submarine captain alleges that Russia funnels Global Partnership funds into its Atomic Power Ministry to revive nuclear weapons production and build power stations).

315. *See* discussion *infra* part IV.A (describing the funding match program between the United States and other member states of the G8).

316. *See* Allison, *supra* note 305 (asserting that the money given so far by the Global Partnership will not secure Russia's loose nuclear material until 2017).

317. *See* REPORT CARD, *supra* note 3, at iv & Appendix A-1 (advocating that the return in national security of such an investment would be the highest on any current U.S. national security and defense program); *see also* Madeline Albright &

Another expert puts the figure at $40 billion for Russia alone.[318] Although there are three pillars to effective control of nuclear proliferation (counter-proliferation, consequence management, and nonproliferation), thus far counter-proliferation and consequence management received by far the greatest share of expenditures.[319] One prominent nonproliferation expert suggests that the United States should triple spending on nonproliferation.[320]

Competing priorities always impose an inescapable, "zero-sum" logic on the allocation of scarce defense resources. Choices must be made. Intelligence suggests the most likely avenue for a nuclear attack against the United States is a terrorist bomb smuggled into an American city.[321] A November 2004 report by the Defense Science Board concluded that addressing the nuclear terrorist threat "requires attention that is at least as serious as that devoted to missile defense."[322] The United States devoted $35 billion toward missile

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Robin Cook, *We Need a Global Attack on Nuclear Proliferation* (Editorial), L.A. TIMES, June 7, 2004, at B9 (arguing that not enough action follows the assertions by international leaders on the importance of nuclear nonproliferation).

318. *See Press Conference Part 2*, *supra* note 299 (stating that nonproliferation efforts in Russia require additional funds beyond the $20 billion thus far promised by the Global Partnership).

319. *See, e.g.*, Joseph Cirincione, *President Bush Moves to Stop Spread of Nuclear Weapons*, JAKARTA POST, Feb. 17, 2004, at 6 (showing that including the war in Iraq and missile defense, counter-proliferation accounted for $81 billion in 2004; homeland defense accounted for $41 billion and nonproliferation merely $2 billion). Although it is debatable whether to include the Iraqi war in the "counter-proliferation" column, it is still clear that there is an imbalance in funding to the detriment of nonproliferation efforts. *Id.*

320. *See id.* (noting that "for the price of three weeks of operations in Iraq, [the U.S.] could make tremendous progress on removing exactly the weapons and materials lying in often poorly-guarded facilities that terrorists are most likely to seek").

321. *See* OFF. OF THE UNDER SECRETARY OF DEF. FOR ACQUISITION, TECH. & LOGISTICS, REPORT OF THE DEFENSE SCIENCE BOARD TASK FORCE ON PREVENTING AND DEFENDING AGAINST CLANDESTINE NUCLEAR ATTACK 1 (2004) (asserting that such an attack would not only kill a great many people, but also impact the United States politically, economically, and culturally), *available at* http://www.acq.osd.mil/dsb/reports/2004-06-Clandestine_Nuclear_Attack.pdf (last visited Apr. 8, 2005).

322. *See id.* (stating that the risk of clandestine nuclear attack is such a dangerous aspect of the war against terrorism that it warrants this treatment).

defense over the last four years.[323] This spending eclipsed Department of Defense and Department of Energy CTR spending.[324] The Defense Science Board reported that "nuclear weapons are oozing out of control."[325] Analysts concluded that a clandestine terrorist attack is more likely than a missile strike because such methods are "less costly, easier to acquire and more reliable and accurate."[326] In addition to shifting costs onto an even wider group of participants, the United States should rebalance budgets to better reflect potential threats.[327]

2. Rethinking Deterrence

Michael Ignatieff has written that "[e]vil has escaped the prison house of deterrence devised by the Westphalian order."[328] States today face the possibility of a nuclear attack occurring within a severely degraded deterrence structure. While deterrence will still play a potentially important role in preventing nuclear terrorism, fallout analysis will become a growing area for action.[329]

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323. *See generally* Wade Boese, *Panel: Secret Nuclear Attacks Possible*, ARMS CONTROL TODAY (Nov. 2004) (asserting that nonproliferation efforts are as important as missile defense), *at* http://www.armscontrol.org/act/2004_11/Nuclear_Attacks.asp (last visited Apr. 18, 2005).

324. *See* Cirincione, *supra* note 319 (asserting that the monies allocated to missile defense and counter proliferation eclipse nonproliferation budgets).

325. *Id.*

326. Boese, *supra* note 323 (noting that some missile defense critics use this conclusion to condemn the Bush administration's long-range missile defense system).

327. *See* Cirincione, *supra* note 319 (noting that although the President talked about the importance of nonproliferation, no additional funding followed).

328. Anthony Lewis, *Bush and the Lesser Evil*, 51 N.Y. REVIEW OF BOOKS 9 (2004) (reviewing MICHAEL IGNATIEFF, THE LESSER EVIL: POLITICS ETHICS IN AN AGE OF TERROR (2004)), *available at* http://www.nybooks.com/articles/17111 (last visited Apr. 8, 2005).

329. *See* William J. Broad, *Addressing the Unthinkable: U.S. Revives Study of Fallout*, N.Y. TIMES, Mar. 19, 2004, at A1 (discussing the U.S. government's recent revival of the scientific art of fallout analysis, which was lost after the Cold War), *available at* http://www.commondreams.org/headlines04/0319-04.htm (last visited Apr. 18, 2005).

Much of the radiochemistry work had to be resurrected from the Cold War by calling in retired scientists and dusting off decades old analysis. The program now involves manned aircraft and ground robots that can enter areas of fallout in order to take critical measures of fallout signature.[330]

The goal of fallout analysis is to quickly discover the source of nuclear material used to make an atomic bomb.[331] The United States restarted the Cold War-era fallout analysis program in 1999 hoping that if weapons experts could trace bombs back to terrorists and their state sponsors, terrorists would be less likely to use them.[332] Although this assumption may be invalid, accurately identifying the source reactor of the HEU certainly complicates proliferation thinking in places like North Korea and Iran.[333]

The United States should explore opportunities for sharing and exchanging dust samples and forensic techniques with other countries participating in the G8 program.[334] While one Princeton physicist worries that current levels of cooperation are lagging, expanding cooperation is eminently sensible because it would enhance deterrence by publicizing and promoting U.S. science.[335]

Cooperation could also lead to a more assertive effort to gain cooperation from nuclear states in tagging and registering their fissile

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330. *See* NATION SAFER, *supra* note 110 (detailing the role of robotic technologies in all phases of counterterrorism, including detection, prevention, and protection). Robots' high mobility, sensitivity, and precision make them superior to humans and ideal tools in counterterrorism missions. *Id.*

331. *See* Broad, *supra* note 329 (describing the government's secretive effort whose plans are only recently becoming public).

332. *See id.* (outlining the goal of the revived fallout analysis program and stating that discovering where nuclear material came from would "clarify the options for striking back").

333. *See* SQUASSONI, *supra* note 133 at CRS-7-10 (discussing the unique issues North Korea and Iran present and the need for the United States to tailor its assistance to each differently).

334. *See* Broad, *supra* note 329 (suggesting that experts could identify a bomb's origin by matching debris signatures with collections of classified data about nuclear arms around the world).

335. *See id.* (noting physicist William Happer's concern that the program may not be cooperating enough with nuclear allies and belief that it is to everyone's advantage to share).

material.[336] Explosions reveal tags, which are unique physical parameters of each fissionable piece of a nuclear weapon.[337] If terrorists used the nuclear material in a nuclear attack, experts could determine the reactor or laboratory of origin, exposing the mediating state to responsibility. The prospect of being held accountable for providing material to nuclear terrorists provides incentive for countries to participate in a comprehensive tagging program and leads to greater deterrence.[338]

3. Rethinking Incentives

While we must approach deterrence with a fresh perspective, we also need to rethink incentives that reward good behavior. Some have made the argument that the war in Iraq provides a compelling warning for states pursuing nuclear weapons programs.[339] Although the war has certainly heightened awareness of the danger of WMD proliferation, critics counter that preemptive war might only spur a state to accelerate their nuclear weapons research in order to develop a deterrent to American power.[340] Libya may provide the foremost

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336. *See* Anders Corr, Nuclear Terror and the Blind-Side Attack: Deterrence through Nuclear Tagging, 7-8 (Mar. 16, 2004) (unpublished draft paper) (recognizing that each state has an incentive to tag and register its fissile material so as to avoid suspicion from other states in the case of a blind-side attack), *available at* http://www.people.fas.harvard.edu/~corr/NuclearTerrorAndTheBlindSideAttackDeterrenceThroughNuclearTagging.pdf (last visited Apr. 8, 2005).

337. *See id.* at 2 (analogizing tagging to stamping each manufactured bullet with an irremovable serial number and maintaining ammunition registration documents).

338. *See id.* (acknowledging that the United States and the international community would need to take action against states that failed to take proper precautions and allowed terrorists to steal and explode fissile materials).

339. *See* PERKOVICH, *supra* note 118, at 11 (noting that while Iraq no longer has weapons of mass destruction, the United States' use of force has demonstrated the dangers of proliferation).

340. *See id.* at 10-18 (finding that the majority of countries feel that the five original nuclear-weapon states—China, France, Russia, the United Kingdom, and the United States—do not intend to fulfill their own commitments to eliminate nuclear weapons). With regional conflicts building, these countries must use their diplomatic powers to defuse tensions that may trigger potential use of nuclear weapons. *Id.*

example of how states pursuing nuclear weapons can be redeemed.[341] It is not certain what brought Tripoli to forgo developing its WMD programs—perhaps both the "carrot" and the "stick" were influential.[342] Other states are watching, however, and it is important that we promote the voluntary abandonment of nuclear programs since it is easily the most preferred model.[343]

Whether an example was made in Iraq we may never know, but it is absolutely essential to make an example in Libya. To the extent that Libya is making a full and complete accounting of their programs, as it appears they are, the G8 should handsomely and publicly reward Tripoli. Incentives can help states conclude that they are better off without nuclear weapons. By providing positive benefits of cooperation, states should design incentives to tilt the decision calculus against weapons.[344] Inducements could take the form of economic, political, and security contributions, assistance in developing alternate forms of energy besides nuclear energy, and even formal and informal security guarantees.[345]

While security guarantees appear troubling for many, this inducement was essentially the bargain struck during the Helsinki

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341. *See* SQUASSONI, *supra* note 133, at CRS-39 (discussing Libya's decision to give up support of international terrorism and proliferation in exchange for lifting economic sanctions).

342. *See id.* at CRS-26 (noting that many observers believe that Libya chose to eliminate its WMD program because it would help lift U.S. sanctions). Others believe that Libya gave it up because it was no longer a successful program. *Id.*

343. *See* PERKOVICH, *supra* note 118, at 31 (suggesting that the United States encourage voluntary measures against the proliferation of nuclear, biological, and chemical weapons). States and non-state actors have placed greater emphasis on voluntary codes of conduct to alleviate serious problems caused by socially harmful state or private actions. *Id.*

344. *See* Paula B. McCarron & Cynthia A. Holt, *A Faustain Bargain? Nuclear Weapons, Negative Security Assurances, and Belligerent Reprisal*, 25 FLETCHER F. WORLD AFF. 203, 216 (2001) (discussing the formation of the NPT, which provided incentives to non-nuclear weapon states in exchange for their legal right to develop or acquire nuclear weapons).

345. *See, e.g., id.* at 215 (noting that the non-nuclear powers agreed to never acquire nuclear weapons with the promise that nuclear weapon states would assist them if they were attacked or threatened by nuclear weapons).

process.[346] At the Copenhagen Meeting on the Human Dimension, Western Europe, Canada, and the United States agreed not to use force to change the borders in Central Europe in exchange for a broad and deep agreement on political development and human rights.[347] The Copenhagen Document was a comprehensive and extremely detailed manifesto for liberal society, electoral democracy, government by the rule of law, and advancement of human rights.[348] The Western powers exchanged a promise not to invade Eastern Europe—something they were already bound by international law not to do—for the promise of specific and detailed political changes behind the Iron Curtain that ushered in a peaceful political and social revolution in the communist bloc.[349] Copenhagen was nothing short of profound, becoming the most dramatic and far-reaching document on human rights and democracy and explicitly setting forth essential rights and freedoms for the first time.[350]

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346. *See* Thomas Buergenthal, *Copenhagen: A Democratic Manifesto*, 153 WORLD AFF. 5, 5 (1990) (discussing the Helsinki Final Act of the Conference on Security Cooperation in Europe, which provided the ground rules for maintaining peace and ideological competitiveness in Europe).

347. *See id.* (stating how Western governments agreed not to upset de facto or de jure international borders in Eastern Europe—something they were already obligated to observe under international law—in exchange for political liberalization behind the Iron Curtain).

348. *See* Gregory Flynn & Henry Farrell, *Piecing Together the Democratic Peace: The CSCE, Norms and the Construction of Security in Post-Cold War Europe*, 53 INT'L ORG. 505, 515-16 (1999).

349. *See id.* at 516 (highlighting the international community's duty to resolve disputes in a democratic political framework based on the rule of law and before an independent judiciary).

350. *See* Conference on Security and Cooperation in Europe, *Document of the Copenhagen Meeting of the Conference on the Human Dimension*, June 29, 1990, 29 I.L.M. 1305, 1307-09 (noting that these principles were, generally: free elections scheduled at reasonable intervals by secret ballot; genuinely representative government; the duty of the government and public authorities to comply with the constitution; the guarantee of human rights and fundamental freedoms by law and in accordance with international law; legislation adopted at the end of a public procedure and published regulations; accountability of military authorities civil authorities; effective means of redress against the administrative action of the state; an independent judiciary and independent legal practitioners; and extensive and neutrally-applied criminal procedures).

According to Thomas Buergenthal, a public member of the U.S. delegation to the Copenhagen Conference, the Copenhagen Document proclaimed a new public order based on democratic pluralism that was as important in its way as the Peace of Westphalia.[351] The resultant liberalization of regimes throughout Eastern Europe, encouraged in no small part by Copenhagen, produced genuine and irreversible strategic security for the United States, Canada, and Western Europe that was far more durable than what would have been achieved through threats.[352] In like manner, properly-constructed security guarantees for even the most obstinate adversaries can produce genuine security, with the primary security benefits going to the United States, the G8, and its friends and allies.[353]

Commenting on European and American strategies for dealing with the Iranian nuclear ambitions, Robert Einhorn of the Center for Strategic and International Studies has suggested that up until now the Americans have played the "bad cops" and Europeans have played the "good cops."[354] "What's needed now is for the United States and the Europeans to switch roles."[355]

4. Increasing High-Level Engagement

Sometimes, the process of diplomacy works slowly, and in those cases, the United States and others should be patient. After all, it took eight months to craft U.N. Security Council resolution 1540, but

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351. *See* Buergenthal, *supra* note 346, at 5-8 (arguing that this document allowed Europe to declare its belief that only societies that believe in democratic pluralism and a commitment to the rule of law can fully respect and preserve human rights).

352. *See id.* at 7 (noting that the United States, Canada, and Western Europe can invoke the Copenhagen document's democratic values to justify withholding economic assistance to non-complying states in order to bring about political change).

353. *See* PERKOVICH, *supra* note 118, at 13 (citing the need for sustained cooperation from diverse nations to broaden and enforce nonproliferation rules to sustain security).

354. *See* Chang, *supra* note 103 (noting that European countries decided not to take Iran's case to the U.N. Security Council, while the United States is pursuing such action).

355. *Id.*

the Security Council unanimously adopted it.[356] Eight months is a positively breakneck pace when considering how long it takes to actually implement some cooperative threat reduction programs.

In the mid-1990s, U.S. and Russian experts agreed that storage sites containing Russian nuclear warheads were in drastic and immediate need of extensive security improvements.[357] The facilities lacked personnel stability and even basic security.[358] Some research reactors only have a night watchman and a chain-link fence providing security.[359] Russian and American officials agreed on a two-phased plan beginning with a "quick fix" layered security and fence system with intrusion detectors and followed by a more comprehensive security umbrella tailored to each facility.[360]

The force that guards Russia's nuclear weapons, the 12th Main Directorate of Russia's Ministry of Defense, initially ordered fifty pre-fabricated sets of the one square kilometer fencing, which arrived in the first quarter of 1998, just as the ruble was crashing.[361] The 12th Main Directorate then ordered seventy-three more, which were

356. *See* Bolton Outlines, *supra* note 81 (demonstrating the clear international recognition that active cooperation among countries is useful and essential).

357. *See, e.g.*, Michael Jasinski, *Russia: Nuclear Weapon Security and Safety Issue*, NUCLEAR THREAT INITIATIVE, Apr. 2001 (recognizing that while there have not been any incidents or accidents involving nuclear weapons, such an event is possible in the future), *available at* http://www.nti.org/db/nisprofs/russia/weapons/security/secovr.htm (last visited Apr. 8, 2005).

358. *See, e.g., id.* (observing that nuclear weapons maintenance personnel reportedly lacked the special footwear required for working with nuclear munitions). There have also been reports of deteriorating conditions causing significant personnel outflow and endangering training programs. *Id.*

359. *See* Bunn & Wier, *supra* note 191 (stating that while this lack of security is a global problem, each country can help prevent nuclear terrorism by locking down its stockpiles and keeping them out of terrorists' hands).

360. *See* BUNN & WIER, *supra* note 120, at 52 (noting that the first stage would provide enough time for more time-consuming security upgrades).

361. *See id.* at 52 (noting that the U.S. Department of Defense purchased and delivered the fencing units).

delivered in the third quarter of 2000.[362] The 12th Main Directorate lacked the funds to install the systems, so it approached the United States about funding the installation.[363] The United States agreed, but U.S. officials insisted on monitoring the work to ensure that the installations were actually completed and that the quality of work was within standards.[364]

The Russians balked at providing access to their sensitive nuclear storage sites, and the haggling continued until 2001, when the 12th Main Directorate permitted the Americans access to a single site.[365] In early 2002, the Russian Ministry of Defense obtained permission from the Prime Minister to permit the Americans broad access to monitor the installations, but there was a delay of about a year as the Bush Administration temporarily declined to certify Russia's compliance with statutory requirements for threat reduction assistance.[366] In the summer of 2003, U.S. experts visited nine sites in preparation for installation of the quick fix upgrades as well as the more comprehensive upgrades.[367] By the summer of 2004, officials had only installed about half of the equipment delivered.[368]

Other problems have emerged. The DOD Inspector General has cited several projects as wasteful, including a project that cost the

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362. *See id.* (resulting in a total of 123 fences, which correspond to approximately 123 warhead storage bunkers under the 12th Main Directorate's control).

363. *See id.* at 52-53 (acknowledging that originally, the 12th Main Directorate would install these fences themselves to avoid any need for U.S. experts to visit these secret sites).

364. *See id.* at 52 (recognizing that under U.S. procurement laws, U.S. officials had to actually visit the sites and ensure that Russians properly installed the fences if U.S. taxpayers were paying for the project).

365. *See id.* at 52-53 (noting that this "pilot project" was not the only instance when Russia permitted foreigners to visit these secret storage facilities). For example, Russia had allowed Gen. Eugene Habiger to visit a warhead storage facility in 1997 as the then-commander of U.S. Strategic Command. *Id.*

366. *See id.* at 53 (recalling that officials signed modified agreements in early 2003).

367. *See id.* (finding that Russia's reliance on U.S. funding has brought Russia's own installation efforts to a virtual standstill).

368. *See id.* (arguing that the "quick fix has been anything but quick" since roughly half of the equipment remains in warehouses).

United States $100 million to build a Russian processing facility to destroy fuel from nuclear missiles.[369] After it was built, Russia diverted the fuel for use in commercial rockets, leaving the plant idle.[370] In yet another case, the United States funded a $400 million high-security nuclear materials storage facility in Russia.[371] The two countries, however, now face disagreement over what materials the facility will hold, and whether the United States will be able to verify that it does not store fuel for nuclear weapons.[372]

It is vital to the national interest of all of the G8 and its affiliates to speed up the clock on cooperative threat reduction.[373] One appealing mechanism to help accomplish this is institutional reform. Former Senator Sam Nunn and others have recommended creation of a full-time senior U.S. official who would answer directly to the President and lead the myriad efforts among the different agencies that are working nonproliferation.[374] All of the G8 countries should consider designating a high-level global CTR official with access to the President or Prime Minister who can cut through red tape and make CTR a top national security priority.

Contrary to the critics' argument that the creation of a new Director of National Intelligence ("DNI") merely creates a new layer of bureaucracy, a single official in charge of nonproliferation could add real value. Such an official would have a marginal impact inside the United States, but may be able to effectively leverage the

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369. *See* Eisler, *supra* note 262 (recognizing that this dispute is one of several slowing U.S. efforts to help Russia protect and destroy nuclear, chemical, and biological weapons).

370. *See id.* (describing Russia's wasteful application of U.S.-funded projects).

371. *See id.* (noting that Russia has yet to use this particular facility).

372. *See id.* (stating that the Pentagon wants to create a binding agreement with Russia regarding U.S. assistance).

373. *See* Sam Nunn & Michele Flournoy, *G-8's Unfinished Business: Handling Global Terrorism*, THE RECORD (Bergen Co., New Jersey), June 15, 2004 (recognizing the concerted efforts of terrorists groups to acquire nuclear, biological, and chemical weapons as an immediate threat).

374. *See id.* (proposing that this official should have the power to quickly eliminate all obstacles to cooperation); *see also* Bunn & Wier, *supra* note 191 (arguing that this official must make this issue a priority and keep the White House informed on a daily basis).

influence of the President during negotiations over access and cooperation. This is because the principle obstacle now for effective CTR is a lack of cooperation in working out program details.[375] In the United States, a senior official should be able to gain the attention of the Vice President and President to intervene regularly in international bureaucratic squabbles in order to negotiate breakthroughs with their counterparts. Although the White House already has a legion of myriad concerns and scarcely room for one more, there is little else that is more pressing to U.S. national security.

There is a tendency to fail to appreciate the dispositive role that one individual can have in international relations. Most political scientists contend that individuals often matter very little in shaping international politics and argue that impersonal domestic or global political forces,[376] or systemic[377] or cultural forces,[378] cause international events and largely erase the impact that one person can have in world politics.[379] In fact, individuals are an important component of a state's diplomatic influence.[380] A senior official in

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375. *See, e.g.*, Bolton Outlines, *supra* note 81 (citing the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction as reliant on the commitments of sovereign states, acting together and independently to eliminate and secure sensitive materials).

376. *See generally* HANS J. MORGENTHAU, POLITICS AMONG NATIONS: THE STRUGGLE FOR POWER AND PEACE (Kenneth W. Thompson, ed., Alfred A. Knopf 6th ed. 1985) (1948) (citing a number of factors that influence national power, such as resources, industrial capacity, and technology, which subsequently influence the balance of power internationally).

377. *See generally* GEORGE MODELSKI, LONG CYCLES IN WORLD POLITICS (1987) (linking waves of major innovations to the start of wars and the rise of great world powers); WORLD SYSTEM HISTORY: THE SOCIAL SCIENCE OF LONG-TERM CHANGE (Robert Allen Denemark et al. eds., 2000) (providing a unified study of world system history as a vital tool in understanding contemporary issues).

378. *See generally* SAMUEL P. HUNTINGTON, THE CLASH OF CIVILIZATIONS AND THE REMAKING OF WORLD ORDER (1996) (arguing that the primary source of conflict in the new world will not be ideological or economic, but cultural).

379. *See generally* KENNETH N. WALTZ, MAN, THE STATE AND WAR (1959) (outlining three images or levels of analysis—the individual, state, and international system—but rejecting the individual level in favor of the systemic or global image).

380. *See* Daniel L. Byman & Kenneth M. Pollack, *Let Us Now Praise Great Men: Bringing the Statesmen Back In*, 25(4) INT'L SECURITY 107, 134-36 (2001)

each nation, working solely on cooperative threat reduction, could have a dispositive influence on G8 efforts to obtain greater cooperative threat reduction among friends and allies, and even among rivals. As Henry Kissinger remarked after his first Middle East shuttle in 1974, "As a professor, I tended to think of history as run by impersonal forces. But when you see it in practice, you see the difference personalities make."[381]

5. Expanding Cooperation

The final recommendation is an expansion of the G8's focus to include problems outside of Russia, and an integration and support of disparate nonproliferation programs outside of Europe. Cooperative threat reduction should include nations "beyond the problem cases" in order to "widen the international understanding of the benefits" of cooperation.[382] There are dozens of potentially eligible nations around the world. A model of such cooperation is the program between the Kazakh Institute of Nuclear Physics in Almaty and the International Science and Technology Centre, a nonproliferation organization established by the European Community, the United States, Japan, and Russia, located in Moscow.[383] These two institutions recently embarked on a ten-year program to strengthen control over nuclear materials in order to make them inaccessible to terrorists.[384]

In some states, perhaps even North Korea or Iran, it is possible that no level of pressure will prove successful in addressing proliferation. After the U.N. Security Council unanimously adopted a

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(arguing that personality differences may lead to variance in individuals' traits and explain differences in international relations).

381. WALTER ISAACSON, KISSINGER: A BIOGRAPHY 13 (1992).

382. *See* Rose Gottemoeller, *Cooperative Inducements: Crafting New Tools for Nonproliferation*, *in* ULTIMATE SECURITY: COMBATING WEAPONS OF MASS DESTRUCTION 151 (Janne E. Nolan, Bernard I. Finel & Brian D. Finlay, eds., 2003) (considering the most effective way to transmit the threat reduction experience to other parts of the world).

383. *See Global Technology Body to try to Prevent Nuclear Terrorism in Kazakhstan*, BBC MONITORING INT'L REP., May 27, 2004.

384. *See id.* (citing research as the key to strengthening control over the possession and transportation of nuclear materials).

resolution to compel governments to criminalize the transfer of nuclear, biological, and chemical weapon materials to terrorists, Pakistan's ambassador to the U.N. declared flatly, "Pakistan will not accept any demand for access, much less inspections, of our nuclear and strategic assets, material, and facilities."[385] Launching a policy of inclusion that expands the reach of the Global Partnership will not be easy, but the G8 should adopt it as a goal. While one proposal has suggested that member states pursue an NPT side agreement with India, Pakistan, and Israel, the G8 should be even more ambitious.[386] There is no choice but to work to include all nuclear states, not just Pakistan, India, and Israel, but North Korea, Iran, and others.[387] Such expansion carries risk and likely will attract a level of political opposition. It automatically raises the question of whether each of these states, North Korea, Pakistan, and China in particular, are more suitable as targets of threat reduction than partners.[388] Each of these higher risk states poses a risk of proliferation, although it is unknown whether such activities are conducted with the authority of the government or by freelancing officials within the government.[389]

Guaranteeing commitment from all of the nuclear states and including them in the G8 partnership is essential to capturing these states in a "closed system," building political momentum overseas,

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385. Colum Lynch, *Weapon Transfers Targeted*, WASH. POST Apr. 8, 2004, at A21.

386. *See* Avner Cohen & Thomas Graham, Jr., *An NPT for Non-Members*, BULLETIN OF THE ATOMIC SCIENTISTS, May/June 2004, at 40-4 (noting that this proposal recognizes the nuclear statuses of these countries while requiring that they commit to achieving nonproliferation), *available at* http://www.thebulletin.org/article.php?art_ofn=mj04cohen (last visited Apr. 8, 2005).

387. *See* Nunn & Flournoy, *supra* note 373 (highlighting the market for usable nuclear material and inadequately protected nuclear material, thus creating a threat of terrorist attacks on nuclear reactors all over the world).

388. *See* PERKOVICH, *supra* note 118, at 9 (noting that the NPT was imperfect, but made all the states involved safer individually and collectively).

389. *See, e.g.*, *id.* at 75 (raising questions about whether the United States can trust the Pakistani government, which does not have an effective system for identifying dangerous actors and inadequate policies).

and multiplying existing efforts.[390] Without such cooperation, proliferation leaks coming from outside the circle of states currently served will undermine the success of the entire project.[391] By bringing these states into the threat reduction process, the G8 and its affiliates can begin to establish a web of interrelated monitoring and cooperation that will make it more difficult for new entrants to divert nuclear weapons or materials.[392]

While each step of diplomacy naturally comes at a price, the G8 should be careful to ensure that expansion does not dilute the goals of nonproliferation. Although it is challenging to simultaneously bring in new parties and maintain coherence and direction, PSI is a successful example of ensuring core principles are not compromised by expansion.[393] PSI displays how gathering the momentum of new countries in a nonproliferation regime can strengthen and promote the effort.[394] The key to successfully expanding PSI was the existing partners' refusal to permit newcomers from deviating from the agreed Statement of Principles.[395] The G8 expansion should operate in the same manner—welcoming all nations on board that express the willingness and ability to pursue the principles set forth in the partnership.

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390. *See id.* at 10-11 (noting the increase in international cooperation and the corresponding decrease in the number of nuclear weapons and nations with nuclear weapon programs than there were twenty years ago).

391. *See id.* at 12 (recognizing the existence of a small number of outlaw states that disregard international norms and are intent on acquiring weapons of mass destruction).

392. *See* Gottemoeller, *supra* note 382, at 150 (suggesting that the United States engage other countries such as Ukraine and Kazakhstan that have been eager to share their experience with threat reduction and nonproliferation).

393. *See* Bolton Outlines, *supra* note 81 (discussing PSI's successful interception of the BBC China, which contained nuclear components bound for Libya).

394. *See id.* (emphasizing the global pledge to preventing dangerous weapons and materials from falling into the hands of terrorists).

395. *See id.* (highlighting the United States' recent assistance in Iraq and Libya and its encouragement of its partners to undertake their own projects in states worldwide).