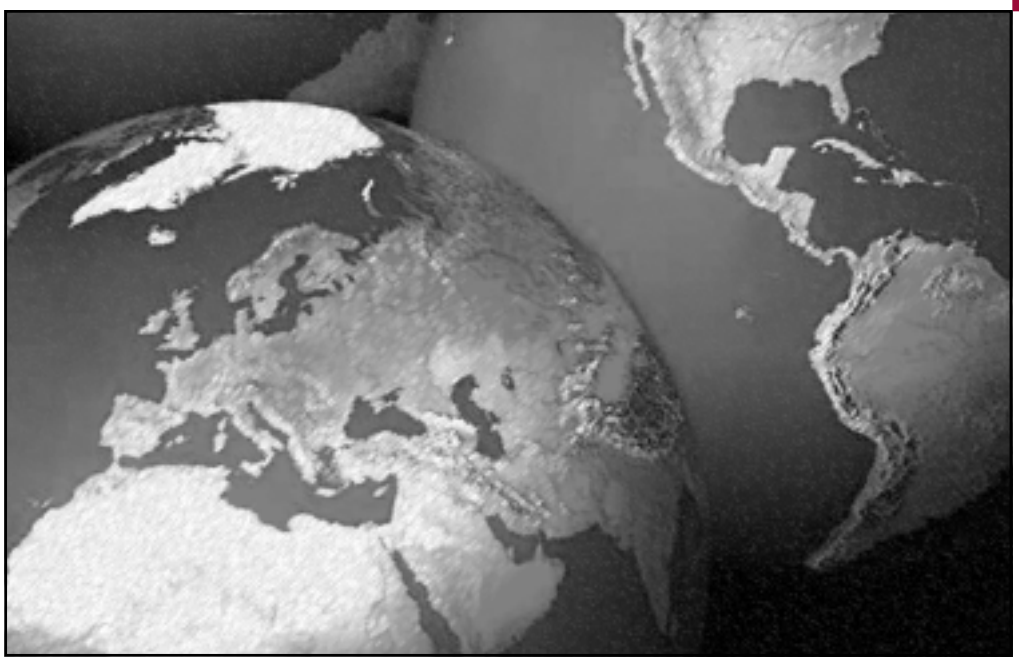
REINVENTING MULTILATERALISM



Rapporteurs:

- **Clifford Singer**
  Director, Program in Arms Control, Disarmament, and International Security
  University of Illinois at Urbana-Champaign
- **James Walsh**
  Executive Director, Managing the Atom Project
  Belfer Center for Science and International Affairs
  John F. Kennedy School of Government
  Harvard University
- **Dean Wilkening**
  Science Director, Center for International Security and Cooperation
  Stanford University

UNIVERSITY OF ILLINOIS
ACDIS
Program in Arms Control, Disarmament, and International Security

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Since wars begin in the minds of men,
it is in the minds of men that the defenses
of peace must be constructed.

— From the constitution of UNESCO,
inscribed at the U.S. Veterans of Foreign Wars
Memorial Building

PREFACE

This report presents the findings of a collaborative study, "Reinventing Multilateralism." They are intended to serve as a guiding principle in global security relations. The central question of interest here is what role will multilateral cooperation on international problems assume in the future. The study described in this volume focuses geographically on Asia and North Africa, Russia, and the member countries of the North Atlantic Treaty Organization (NATO), and it deals with a broad range of topics—nuclear weapons materials, energy security, and aerospace. In doing so, it concentrates specifically on the policy formulation process in the United States and elsewhere after the 2004 and 2008 U.S. elections, keeping in mind that quadrennial elections, whether or not they produce a change in the party affiliation of the presidency, often precipitate some changeover of security personnel and opportunities to rethink the role of multilateral cooperation.

This report is the product of collaborative work by multiple U.S. academic organizations and individuals affiliated with those organizations. The Program in Arms Control, Disarmament, and International Security (ACDIS) at the University of Illinois at Urbana-Champaign initiated the project by organizing a three-day workshop, "Reinventing Multilateralism," in May 2004 at the Allerton Conference Center in Monticello, Illinois. The three rapporteurs furnished early draft versions of this report as the basis for discussions among workshop participants (see the Appendix for a list of workshop participants). These participants included a mix of senior and junior scholars in both the technical and social sciences. Also present were one or more representatives from eight of the U.S. university institutions that have received funding from the John D. and Catherine T. MacArthur Foundation as part of its initiative on Strengthening Scientific and Technical Advice on International Peace and Security Policy. After the workshop, the Institute of Government and Public Affairs (IGPA) at the University of Illinois worked with ACDIS to organize and host on the Urbana campus a one-day conference on the same topic. At this conference, the three rapporteurs presented the consensus findings of the workshop participants. Their subsequent revisions of this report were informed by the feedback offered at both the workshop and conference.

This volume is the first in a series of four annual studies, all designed to support new U.S. administrations and the broader body politic in the process of "reinventing multilateralism." Future studies of global security will focus on biodefense and public health, homeland security and public safety, and foreign aid and security policy. Geographically, these studies will include Sub-Saharan Africa as a reservoir of infectious disease and Latin America as a reservoir of illicit drugs and both regions as recipients of foreign aid.

ACKNOWLEDGMENTS

The contributors to this report have received much valuable support through the John D. and Catherine T. MacArthur Foundation initiative on Strengthening Scientific and Technical Advice on International Peace and Security Policy. This support and critical contributions from recent U.S. university grantees under this initiative have facilitated the interweaving here of technical questions about issues such as nuclear weapons materials and aerospace with policy analysis.

The facilities and support provided by the University of Illinois and its Institute of Government and Public Affairs under Jack Knott were also very helpful. The Center for Global Studies, directed by Ed Kolodziej, provided additional funding support that was greatly appreciated. Also from the University of Illinois, Scott Koeneman, Becky Osgood, and Sheila Roberts provided the project with essential administrative and organizational support, and Ravi Bhavnani, Hadi Esfahani, and Rizwan Uddin offered useful commentary at the conference that followed the workshop where this report was developed. Matthew Rosenstein, associate director of the ACDIS program at the University of Illinois at Urbana-Champaign, helped to develop the report. Sabra Ledent did a fantastic job of editing the draft version. The specific views in this volume should be viewed as an attempt by the workshop rapporteurs to represent a general consensus rather than unanimity and should not be attributed to any organization or individual that provided a context for formulating, and in many cases challenging, its conclusions.

CONTENTS

EXECUTIVE SUMMARY

This report recommends policies for consideration by a new U.S. administration in dealing with security problems in three areas that have particularly strong technical components: securing nuclear materials, ensuring energy security, and using outer space to enhance security. Recommendations fall into two time frames: those for immediate action and those with goals to be accomplished by 2011.

Recommendations for immediate action are:

- Implement the recommendations of the Managing the Atom Project for securing nuclear materials.
- Restructure U.S. military operations and foreign assistance for more effectiveness in Afghani reconstruction and other peacekeeping operations.
- At the Geneva Conference on Disarmament, open discussions on preventing the creation of long-lived space debris through military action, begin negotiations on a cutoff of the production of fissile materials for nuclear weapons, and initiate discussions in a working group on nuclear disarmament. Combined with the policies listed in this rest of this summary, these steps should lead to a broader moratorium on the production of nuclear weapons materials no later than 2011.

The Managing the Atom Project recommendations call for a "global cleanout" to secure all nuclear weapons materials, appointment of both a U.S. and Russian official to lead efforts to secure nuclear materials, accelerated dismantlement of tactical nuclear weapons, and global cooperation on stolen nuclear materials. The key to conventional military restructuring is to assign support for reconstruction and peacekeeping operations no less importance and prestige than that given to large-scale battle. The Conference on Disarmament could help work out the details of an agreement that will lead, at a minimum, to a broader moratorium on the production of additional materials for nuclear weapons. Such a moratorium is related to the following longer-term targets for 2011:

- Continue dismantlement of Russian nuclear warheads at the rate of at least a thousand a year and of U.S. nuclear "overbuild" until both countries attain the common level of strategic warheads specified for 2012 by the Moscow Strategic Offensive Reductions Treaty, plus a smaller number of spares and "nonstrategic" assembled nuclear explosives. Consider parallel unilateral commitments to further annual percentage reductions, as long as such reductions remain in each country's security interests and those of other countries that eventually would have to decrease their stockpiles to stay below a universal common upper limit.
- Institute a set of energy security initiatives related to petroleum reserves, tax and depletion allowance readjustments, and incentives for developing energy-efficient technologies and alternatives to fluid fossil fuels as energy sources. By 2011 it should be a clearly formulated and stated policy of the United States that it will not unilaterally intervene with its military in any international or internal conflict solely or primarily for the purpose of influencing who has control over energy resources.
- Undertake missile defense deployments and technology transfer only to the extent that they are cost-effective compared with other security measures, and take into account the political costs with respect to China and other countries. Address security concerns about military use of space in international negotiations and avoid developing weapons in space and testing dedicated antisatellite weapons in the absence of a compelling and cost-effective net security advantage.

CHAPTER 1

Introduction

By 2004 it had become clear that multilateral cooperation still has a major role to play in international relations. In several arenas such as Afghanistan, Libya, Iraq, Iran, and the Korean Peninsula, international institutions had reemerged to play key roles in multilateral approaches to security problems. Among those institutions were the United Nations, North Atlantic Treaty Organization (NATO), International Atomic Energy Agency (IAEA), and a new "Six-Party" multilateral framework for dealing with the Democratic People's Republic of Korea (hereafter referred to as North Korea). Tension remained, however, over whether the United States should reform its foreign policy to put much more emphasis on multilateral cooperation.

This volume examines the circumstances under which multilateral approaches are likely to be fruitful and the policies that might be pursued if a new U.S. administration came in as committed to a multilateral approach to international security policy as key advisers in the preceding administration were to unilateralism. Whatever its approach, however, any U.S. administration has to recognize both international and domestic political constraints. No matter how dedicated and proactive, it will be constrained by the willingness of Congress to reorient spending priorities. It will find many of its NATO allies welcoming a more multilateral approach, but these and other allies may not be flexible enough for such an approach to be fully productive. Past U.S. administrations with a multilateral orientation have been constrained by their own internal dynamics as well. The recent unilateralist experiment has revealed what remarkable changes in policy can be wrought through a serious attempt to cut through these internal constraints, even if the outcome has not always been as favorable as hoped for.

Some of the reasons for multilateral approaches to international security are clear enough. For one thing, widespread international cooperation is clearly needed to halt the spread and secure the storage of nuclear weapons materials. For another, even with some international cooperation, U.S. conventional forces are spread too thin to secure the desired quiet transition to democracy in Afghanistan and Iraq. Moreover, the buildup of effective national defenses against existing Russian nuclear capabilities and potential Chinese ones appears to be infeasible, leaving cooperative approaches as the only alternative to benign neglect or chaos.

Multilateralism is not, however, a panacea. Multilateral approaches to security clearly work best if common interests, goals, or benefits are shared by all states involved in the process. "Spoilers"—states with opposing goals—can be successfully excluded from the process without undermining the utility of the multilateral regime or accord. "Free riders"—states that join a multilateral regime to gain the benefits but do not substantially contribute to its enforcement or maintenance—can be tolerated, because they add political legitimacy to the multilateral effort. At a minimum, participants in a multilateral process must be willing to consider compromise when they have conflicting interests to avoid being cast out as spoilers. Unilateral approaches, by contrast, appear to emerge when one state dominates the international system for a given capability. Under these circumstances, the temptation to dictate terms to other states in the system is difficult to avoid, regardless of whether it is desirable. The United States initially found itself in this position for high-accuracy cruise missiles; and a formal, globally inclusive treaty limiting deployment of these missiles was never developed. Such a possibility calls

for a clear and continuing policy commitment to multilateral cooperation, not just an ad hoc, case-by-case approach.

No matter how well thought out, not every international security policy promoted by a new administration will bear fruit. However, the best guarantee that a sensible policy will fail is not to promote it in the first place. It is not the purpose here to propose a set of policies, all of which would actually be adopted, but rather a set of possibilities that a new U.S. administration dedicated to useful multilateral approaches could review to determine which are the most feasible and useful.

> "Multilateralism is defined here as an approach to foreign policy that seeks durable solutions to major international security problems through cooperation based on mutual interests as prescribed by dialogue."

A final point before proceeding to the specific questions addressed here is that this analysis is not meant to be a retrospective critique of unilateralism and "coalitions of the willing" (to follow the U.S. lead) as a guiding force in U.S. foreign policy. Indeed, the unilateralist endeavor helped to transform the international scene in ways that make new approaches possible. The long-looming confrontation with Iraq has been brought to a head. This situation has revealed the need for a new look at international oil production and pricing and a reconfiguration of the conventional force structures of the United States and its NATO allies. The idea that every major international arms control challenge needs a treaty ratified by the U.S. Senate has been cast aside, opening up new opportunities for alternative multilateral approaches. Similarly, the notion that embarking on deployment of a U.S. national missile defense will either resolve or scramble relations with Russia and China has been debunked. This development opens the way for a more sober assessment of the role that emerging aerospace technology can play in national defense.

Multilateralism: What, Why, and Where

This study was undertaken to explore where a greater emphasis on multilateralism in U.S. foreign policy would be useful, using as examples issues particularly pertinent to the combined political and technical analysis background of the contributors. *Multilateralism* is defined here as an approach to foreign policy that seeks durable solutions to major international security problems through cooperation based on mutual interests as prescribed by dialogue. This approach stands in contrast with ad hoc cooperation based on coalitions willing to act according to the self-perceived interests of a major power as defined by its own *dictat*, which is one way of characterizing unilateralism.

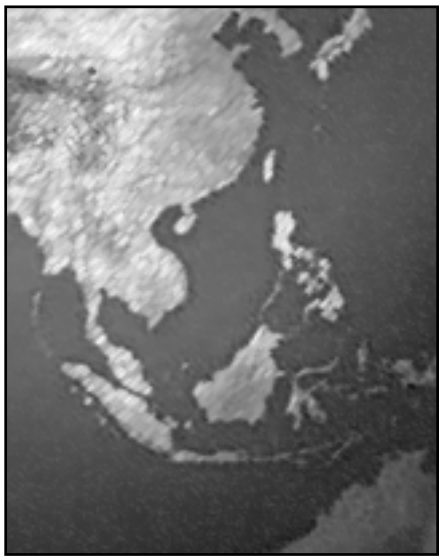
Three assumptions underlie this concept of multilateralism. First, it is difficult to convince other countries to act for long in ways that are incompatible with their own interests. Second, countries ultimately define their interests how their bodies politic perceive them—not how an outside power thinks they ought to. Third, some important problems are amenable to a durable solution only through the mechanism of international cooperation.

The first two assumptions are taken to be self-evident on reflection, even though politicians, strategists, and others often try to wish them away. It is potentially dangerous, for example, to assume that France and Germany are simply deluded about the importance of preemptive intervention in the Persian Gulf region and will ultimately come to their senses about this, rather than taking seriously how they define their self-interest in their own terms.

The idea that some international security challenges are amenable to durable solution only through multilateral cooperation is not self-evident; it requires a detailed examination of each challenge. The rest of this chapter therefore examines a limited but important set of challenges and explains why it seems that multilateral cooperation is essential in meeting each. These challenges are:

- Securing nuclear materials
- Ensuring energy security
- Using outer space to enhance security.

Corresponding to each of these topics is a specific region in which the topic is particularly salient. Securing nuclear materials is important in South Asia and Russia. Southwest Asia is particularly important with respect to ensuring energy security. China is moving toward use of outer space and has concerns about the possibility of the United States placing weapons there and about North Korea's ballistic missile production and proliferation. Thus East Asia is an obvious focal point for a discussion of weapons placed in or moving through outer space.



This list contains important security problems, but it is hardly exhaustive. Other issues such as biodefense and international cooperation against nonstate sources of violence will be taken up in future reports.[1] Despite these limitations, there is ample scope in the present report for examining the role of international cooperation in dealing with major international security challenges.

Stark Choices

Taken to the extreme, a determined focus on unilateral approaches to major security challenges could lead to a bleak future for the United States and the rest of the world. An ineffective approach based primarily on the unilateral threat of force by the United States to deny nuclear technology to uncooperative countries could actually provoke those countries to seek nuclear deterrence, foment a repeat of the Iraq situation in which military force is used to deal with suspected weapons of mass destruction, or even lead to a military confrontation with a country possessing a small but deadly nuclear arsenal. If the United States decided to persist in trying to define the form of governance used in Southwest Asia, it would have to substantially increase its ability not only to win conventional battles but also to defeat insurgency. Such a development could leave the United States overstretched militarily and isolated politically both in the region and in the world at large. By relying primarily on unproven missile defense technology and military dominance of outer space as unilateral approaches to dealing with North Korea and China, the United States could at a minimum pass up opportunities for more effective approaches based on mutual security interests. At the worst, an initially asymmetric arms race between the United States and China could be very economically disadvantageous to both and leave each less secure. All of these outcomes are undesirable, and some are potentially catastrophic.

Yet there are alternatives to the bleak future just described that rely on a determined pursuit of multilateral cooperation based on mutual interests, while reserving the option of acting bilaterally or unilaterally where it would be more effective. For example, a determined cooperative pursuit of a wider moratorium on the production of fissile materials for nuclear weapons programs could both make South Asia more secure and reduce the likelihood of future clandestine or overt transfers of nuclear weapons technologies. The quid pro quo needed to convince India to cooperate with such a moratorium could also help to precipitate a considerably safer situation in Russia when it comes to strategic and "nonstrategic" nuclear weapons deployments and nuclear materials protection, control, and accounting (MPC&A). A determined cooperative approach to enhancing stability in fluid fossil fuels markets could reduce the probability both of war and of international economic disruption from price shocks associated with conflict. Cooperation based on mutual economic and security interests could at best effectively induce North Korea to pursue orderly integration into a predictable regional and global economic and security system. At the very least, such cooperation should help to minimize the leakage of illicit exports from North Korea through neighboring countries. Moreover, a determined effort by space-faring nations to avoid the mutually disadvantageous placement or use of weapons in space could avert major financial and political costs. It could also reduce the likelihood of despoiling valuable orbits in space with long-lived debris from the placement or use of such weapons.

As noted earlier, multilateralism is no panacea. In each of the areas examined here, there are risks that the United States will lack the sophistication and persistence to carry through effectively with multilateral initiatives. It is also likely that unforeseen events in or affecting other countries will make cooperation with them less productive than initially expected. For some issues—such as nuclear materials in Russia, tension across the Taiwan Strait, or imminent threats to democracy of particular concern to the United States but of little concern to others able to cooperate in an intervention—it may be more efficacious to emphasize bilateral or even unilateral approaches.

Overall, however, an emphasis on multilateral cooperation offers the United States a promising alternative to a bleak future of repeating major conflicts and increasing alienation from allies and developing countries alike. To illustrate the potential benefits of such cooperation, we examine in more detail the three challenges of interest here: securing nuclear materials, ensuring energy security, and using outer space to enhance security.

> "A high level of U.S. conventional preparedness is needed to maintain the capability for a completely unilateral preemptive intervention, whereas various levels are needed to prepare for multilateral action to reverse or dissuade regional military actions that challenge the status quo."

Securing Nuclear Materials

Although securing nuclear materials is only part of the overall problem of managing their enormous impact on security and international relations, it has received particular attention since the end of the cold war. The collapse of the Soviet Union revealed a very disturbing situation for nuclear materials protection, control, and accounting in the former Soviet republics. Then, in 2004 it was revealed that the leader of the Pakistani nuclear program had engaged in the clandestine transfer of fissile materials production technology for personal profit to Iran, Libya, and North Korea. These situations raised grave concerns about the possibility that nonstate actors or nonweapons state signatories to the Nuclear Non-proliferation Treaty (NPT) might obtain access to functional nuclear explosives. What was apparently needed was more rapid progress toward a system of comprehensive global nuclear management. These developments raise two specific questions:

- What inducements are needed to convince countries to halt the production of fissile materials for nuclear weapons programs as soon as possible?
- What needs to be done to more rapidly approach comprehensive global protection, control, and accounting of nuclear weapons materials in the safest possible forms?

From a regional perspective, several questions about this topic relate to the role Pakistan plays in Asian security affairs. Pakistan's intermittently effective security presence in its Northwest Frontier Province complicates operations against the Taliban; Pakistan's inability to provide fully functional broad-based public and private education has left open the alternative of indoctrination in some of the more narrowly focused of its *madrassas*; Pakistan's approach to the unrest in Kashmir and its own nuclear program have helped to encourage further Indian nuclear weaponization; and Pakistan appears to be the original source of the transfer of initially clandestine uranium enrichment technology to Iran, Libya, and North Korea. Improved Indo-Pakistani relations are needed for the construction of a natural gas pipeline from central Asia through Afghanistan to northern India, which could eventually provide Afghanistan with a major alternative to opium cultivation for foreign exchange earnings. Traditionally, however, the United States has been reluctant to challenge the status quo in Pakistan. The result is that the substantial influence the United States has on the terms of the extremely burdensome service on the Pakistani debt[2] has not significantly disturbed the mix of populism and the influence of the military and intelligence services that help to maintain the status quo in Pakistan.

Ensuring Energy Security

The military preparedness of the United States increasingly focused on Iraq after the end of the cold war, to the point that the use of military force to influence who has control over oil production became a central bone of contention in the lead-up to the recent U.S. invasion and occupation. This situation raises the question of what role, if any, the threat or use of U.S. military force will play in influencing the regional and global oil production levels and the price of oil after the occupation of Iraq ends.

A high level of U.S. conventional preparedness is needed to maintain the capability for a completely unilateral preemptive intervention, whereas various levels are needed to prepare for multilateral action to reverse or dissuade regional military actions that challenge the status quo. The recent experience in Iraq suggests that conventional military planning is unlikely to be significantly affected even if new nuclear weapons systems were developed specifically for preemptive strikes against targets defined by policy as critical and by intelligence sources as only amenable to destruction using nuclear explosions.[3] From this observation, two additional questions emerge:

- What mix of market competition, collective bargaining, political pressure, covert action, and military force will influence Middle East and global oil production levels and pricing?
- What assumptions will underlie U.S. planning for possible future military intervention where there are significant energy resources?

Using Outer Space to Enhance Security

The tenor of the relationship between the United States and China was transformed after September 11, 2001, from emerging threat to tentative cooperation. The remaining security-related questions are how well these countries can cooperate on North Korea, avoid conflict over Taiwan, and avoid painting each other as a looming threat to leverage domestic politics. The answers have major implications for U.S. aerospace planning. The fate of missile programs in North Korea and its customers may hang in the balance as well. Also, as long as Russia's foreign policy remains closely aligned with that of various NATO countries, China's military capabilities remain the primary justification in some minds for developing more ambitious U.S. missile defense and antisatellite programs and for possible future use of space for weapons programs. These considerations raise the final two questions:

- What missile defense deployments make sense, and what multilateral approaches are required to minimize the need for them and manage the consequences of any deployments?
- Should weapons in space be controlled, and, if so, what multilateral approaches might be effective?

A Nonpartisan Approach

What is reported here differs in several ways from other recent interesting studies of American security policy.[4] First, this study is nonpartisan. It is not designed to argue for a particular type of U.S. administration but rather to provide input to U.S. and other governments about where multilateral approaches to security are the most useful. Second, like the early post–cold war analyses that sparked the recent U.S. unilateral approach, this study takes a broader view of both the relevant issues and the minimum time frame that may be necessary for the ideas it will discuss to sink in. This broader view encompasses the six specific questions posed earlier. These questions are posed to illustrate how answers flow naturally from a coherent concept of the desirability and necessity of interpreting national security policy primarily in the context of a quest for a more comprehensive and global concert of parallel security interests.[5]

The question of future mechanisms for determining oil prices and production levels is centrally important here. An optimal solution would be formal negotiations between the member countries of the Organisation for Economic Co-operation and Development (OECD) and other significant oil importers and the Organization of Petroleum Exporting Countries (OPEC) to influence production levels. The OECD and its collaborators would be most effective if they back up their position with coordinated national energy policies on issues such as strategic petroleum reserves, fossil fuel taxes, research and development of alternate fuel sources, and energy efficiency measures. In a less formally coordinated approach, major importers could individually adopt such measures to insulate their economies from international spot market price fluctuations, thereby reducing the incentive for U.S. participation in military interventions aimed at influencing overall oil production levels. The solutions adopted in the long run should have a major impact on the distribution of U.S. and NATO security-related expenditures, policies toward the Middle East more generally, and the extent to which the United States and its closest allies remain lightning rods for violent attacks by nonstate actors.

The questions posed earlier about nuclear materials in Central and South Asia and space and missile defense in relation to East Asia are not just coincidentally related to the triad of issues that have blocked progress in the Geneva Conference on Disarmament. In 1998 participants in the conference began negotiations on a global cutoff in the production of fissile materials for nuclear weapons programs. They also agreed to the concept of discussions on the future of nuclear weapons. However, progress was soon blocked by disagreement over the context for discussions on the Prevention of an Arms Race in Outer Space (PAROS). China and Russia later dropped their insistence on negotiations and on a position that would have precluded U.S. national missile defense deployment. However, the United States then reversed its former position that the point of discussions on PAROS would be eventual negotiations. Recently, the United States has expressed renewed interest in the Conference on Disarmament. However, this interest was not accompanied by a clear signal that the United States is now willing to allow that discussions on PAROS might eventually lead to negotiations on military uses of outer space. More vigorous multilaterally oriented approaches might lead at least to a universal moratorium on fissile materials production for weapons programs within the decade or so that at best would be required for such ideas to take hold. The correlates of this outcome would constitute a significant reorientation of U.S. and global nuclear security policies, as elaborated in the next chapter of this report.

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1 See also David Cortright, Alistair Millar, and George A. Lopez, in "Secure America: Grounding U.S. Policies in Global Realities," http://www.secureamerica.us/html/read_report.html, who advocate an emphasis on multilateral cooperation with particular attention to "counterterrorism."

2 For the past ten years in Pakistan, foreign debt service has averaged 54 percent of government revenues, seriously affecting Pakistan's ability to finance government services beyond military and intelligence spending; see Faisal Cheema, "Macroeconomic Stability of Pakistan: The Role of the IMF and World Bank (1997–2003)," *ACDIS CHE* 1(2004). Although Pakistan's leaders have repeatedly said that they will have a nuclear capability at any cost, the timing of possible accession to the international accords that cap this capability is subject to economic influences, as indicated by the following excerpt from a report on a meeting between former senior government officials and analysts in Islamabad: "Most of the interlocutors indicated that Pakistan can and should de-link from India on the issue of the CTBT [Comprehensive Test Ban Treaty]. They argued that the move would have immediate *economic benefits*, in that the Japanese would release the hold that they had placed on assistance to Pakistan after the May 1998 nuclear test." Quoted in Clifford Singer and Amy Sands, "The New Nuclear Arms Control Environment: Trip Report and Project Conclusions (revised)," *ACDIS SIN* 3 (2002), emphasis added. Both of these reports are available from http://www.acdis.uiuc.edu/Research/OPs_A-F.shtml.

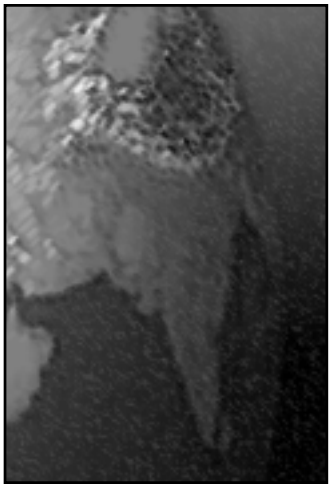
3 For an accessible description of the limitations of low-yield nuclear weapons designed to destroy hardened targets, see Robert W. Nelson, "Nuclear Bunker Busters, Mini-nukes, and the U.S. Nuclear Stockpile," *Physics Today*, November 2003, 32, http://www.physicstoday.org/vol-56/iss-11/p32.html.

4 See National Security Group, William J. Perry, Chair, "An American Security Policy: Challenge, Opportunity, Commitment," July 2003, http://daschle.senate.gov/pdf/NSAG-7.23.03.pdf ; and Samuel Berger, "Foreign Policy for a Democratic President," *Foreign Policy* (May/June 2004).

5 The somewhat broader focus of the present study also complements the draft version of George Perkovich, Joseph Cirincione, Rose Gottemoeller, Jon B. Wolfsthal, and Jessica T. Matthews, "Universal Compliance: A Strategy for Nuclear Security," Carnegie Endowment for International Peace, http://www.ceip.org/strategy, which comes to broadly compatible conclusions about issues related to nuclear proliferation.

CHAPTER 2

Securing Nuclear Materials



This chapter addresses two questions: What steps might be taken to halt the production of fissile material for nuclear weapons programs, especially by Pakistan and India?[1] What should be done to more rapidly approach the comprehensive global protection, control, and accounting of nuclear weapons materials in the safest possible forms? This question is explored here with an emphasis on Russia and other former Soviet republics. In answering these questions, this chapter identifies useful multilateral strategies, including incentives or inducements that would encourage governments to end production and to secure remaining stockpiles of fissile material. Financial incentives are emphasized for Pakistan, political incentives are emphasized for India, and a comparable emphasis is placed on both for Russia. Conclusions about the appropriate approach for South Asia are based on a comparison of U.S., Pakistani, and Indian policy priorities. Conclusions about an appropriate approach for states of the former Soviet Union require understanding the interplay between nuclear strategy, the political and financial stresses in those countries, and the cooperation necessary from Russia and the United States to extend their moratorium on the production of plutonium and enriched uranium for nuclear weapons to include Pakistan and India.

South Asia and the Production of Fissile Material

What inducements will convince the countries of South Asia, especially Pakistan and India, to halt the production of fissile materials for nuclear weapons programs as soon as possible? Answering this question requires, first, defining the range of possible inducements and, second, understanding the policy context in India and Pakistan.

The policy context is especially important, because even the most potent policy instrument can fail if used in the wrong policy setting. This section weighs the policy context for both Pakistan and India by looking closely at the general security and political situation of each country and then the policy priorities for each government. It then compares this list of policy priorities with the set of U.S. policy objectives for each country. With this background, one can then determine where control of fissile material might figure in the list of South Asian priorities and which inducements might be relevant to the Pakistani and Indian context.

Reinventing Multilateralism: The Concept of "Inducements"

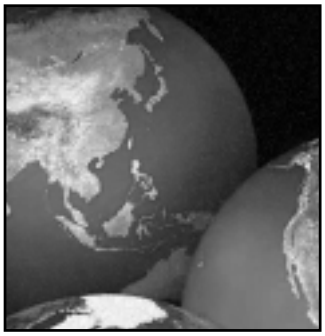
U.S. nonproliferation policy has recently shifted toward coercion—the use of threats and punishments to compel states to comply with that policy. Indeed, coercion is at the heart of a variety of policy instruments, from the Proliferation Security Initiative (PSI) to sanctions to preemption to regime change. Inducements have been eclipsed by coercion.

To be clear, coercion can be a useful policy tool. However, as the literature on compellence demonstrates, it is a difficult tool to use and its effects are usually limited. Moreover, coercion alone will not result in strong compliance over the long term. A nonproliferation regime will remain robust only as long as the affected countries have an interest in the regime's success—that is, they recognize the benefits they reap from their participation.

The notion that nonproliferation depends, in part, on interests and benefits is reflected in the NPT's grand bargain, which offers states that foreswear nuclear weapons access to the fruits of civilian nuclear technology. It is also a concept that fits well with

multilateralism, which emphasizes the importance of collaborative action based on mutual interests.

Too often, however, the concept of inducements is viewed in purely material terms such as foreign aid or trade concessions. This view is problematic for several reasons. First, by themselves economic incentives can be likened to raindrops on an ocean. Even medium-size countries can have sufficiently large economies, for which modest amounts of aid have little impact unless they are well targeted. More important, policy makers with a narrow view of inducements may overlook other kinds of benefits that may be far more effective than offering cash.



Inducements can take many forms and have different kinds of payoffs. They can be political—something that enhances the political standing of a government (e.g., a visit by a U.S. president or political cover for difficult domestic choices). They can be social—something that provides a country with symbols of status or prestige (e.g., hosting the Olympics or obtaining a permanent seat on the UN Security Council). Or they can be personal—something that appeals to a particular leader or leaders.

Rarely do inducements by themselves alter state behavior. This is particularly true when the policy in question involves national security or political survival. Yet, even though inducements are seldom sufficient, they are often necessary. They can exert a powerful effect if they are integrated into an overall strategy in which financial advantage is only one in a set of benefits, and where the beneficiaries are targeted according to the internal politics of the country's decision-making process. Inducements can help to create the conditions under which countries feel they have a stake or an interest in complying with international regimes and practices.

What kinds of inducements can contribute to a reduction in and ultimately the cessation of fissile material production for weapons in Pakistan and India? That will depend on the policy context in both countries. In particular, it is important to identify the interests each country considers important and the motivations underlying these countries' nuclear programs.

The Policy Context in Pakistan

The Setting. Pakistan is a poor country, and its president, Pervez Musharraf, faces serious problems. These include recent assassination attempts, a small but growing Islamist opposition, frontier provinces beyond the control of the central government, and the presence of relatively large numbers of al Qaeda operatives. In the months after the September 11, 2001, attacks on the United States, President Musharraf's accommodation of U.S. demands made him an increasingly unpopular figure at home, but it also made his political survival a high priority in Washington. There is arguably no place in the world today where U.S. interests are so complex and so conflicted as they are in Pakistan.

Pakistan's Interests. Although any list of the policy priorities of the Pakistani government would be subject to debate, it is possible to identify many of the government's priorities, and in particular, the most important or top-tier ones (Table 2.1).[2]

In Pakistan, the government's most immediate challenge is to maintain power. Maintaining power means avoiding assassination and navigating a path to at least cosmetically democratic or quasi-authoritarian rule.

In general, Pakistan's leadership wants to reduce its political problems at home. To do so, it must marginalize or co-opt potential opponents, avoid the creation of new enemies, and improve the lot of the average Pakistani. Some of these objectives, particularly those in the economic field, require the help of the United States and therefore positive U.S.-Pakistani relations.

The importance of Kashmir is complex and variable. At times, the dispute with India over this region (like Pakistan's possession of nuclear weapons) serves the domestic political interests of Pakistani leaders, but this is only true when Pakistan is perceived as winning or drawing even in the rivalry. A loss or an embarrassment at the hands of the Indians would create new problems for the Pakistani leadership. In the current political climate, Indo-Pakistani rapprochement and progress in Kashmir are probably more useful to the Pakistani leadership, if

Table 2.1 Pakistan's Interests

	Interest
Top priorities	Maintaining the Musharraf government Economic development Relief from economic and other sanctions Positive relations with the United States Stable Indo-Pakistani relations Reducing the influence of Islamic extremism
Secondary priorities	Advantageous resolution of the Kashmir dispute Reducing sectarian violence Eliminating al Qaeda Stability of Afghanistan Avoiding all-out war with India Securing storage of nuclear weapons and materials Reducing corruption Reducing drug trafficking Eliminating the A. Q. Khan network[a] Recognizing human rights Implementing democracy

[a] Khan is the longtime head of Pakistan's nuclear program, who in early 2004 was accused of privately selling nuclear technology to other governments.

only because they reduce the number of fronts on which Musharraf must defend his regime.

Pakistanis view some of the secondary priorities as important but not urgent. Avoiding the use of nuclear weapons in an all-out war with India and securing nuclear materials probably fall into this category. Pakistan's government would not say that these issues are unimportant, but rather that the risks of nuclear war or terrorist acquisition of nuclear materials is extremely low and thus not as urgent as other problems. (Many analysts, particularly in the West, might not share this assessment, but it is Pakistan's perception that defines the policy context.) Still other issues are considered a lower priority, because they are not likely to be resolved anytime soon. Examples are sectarian violence, Kashmir, and corruption. Other interests in the second-tier of priorities, such as dealing with A. Q. Khan or promoting democracy, are little more than paper commitments intended to pacify Western governments or domestic opponents.

U.S. Interests in Pakistan. U.S. interests in Pakistan are numerous and contradictory (Table 2.2). Evidence suggests that America's most important priorities vis-à-vis Pakistan have been capturing al Qaeda leader Osama bin Laden and maintaining the current government in power. U.S. officials have yet to identify anyone likely to be more accommodating to their policy preferences than Musharraf. In fact, hostility toward the United States is becoming more prevalent in the junior officer ranks—a worrisome development.

Despite concerns about Musharraf's future, the administration of George W. Bush pressed forward with its top priority—getting bin Laden. Washington insisted that the Pakistani president do what most local observers believed would be political if not literal suicide—pressing the Pakistani army into the hostile frontier provinces in an attempt to flush out bin Laden.

For the United States, the issue of secure nuclear facilities and materials is a higher priority today than before the September 11 attacks for several reasons. These include the terrorist threat in Pakistan, meetings between bin Laden and Pakistani nuclear scientists, and the uncertainties of nuclear policy in a post–Musharraf Pakistan. Similarly, post–September 11 events may have made American officials more sensitive to the possibility of nuclear war between the two South Asian rivals. The Jihadist attack on India's

Table 2.2 U.S. and Pakistani Interests Compared

	United States	Pakistan
Top priorities	Capturing bin Laden Eliminating al Qaeda Maintaining Musharraf government Securing nuclear weapons/materials Stable Indo-Pakistani relations; avoiding war	Maintaining Musharraf government Development; relief from sanctions Positive relations with the United States Stable Indo-Pakistani relations Reducing the influence of Islamic extremism
Secondary priorities	Monitoring the Pakistani-North Korean relationship Eliminating the A. Q. Khan network Avoiding nuclear proliferation more generally Stability of Afghanistan Ending the Kashmir dispute Economic development Reducing the influence of Islamic extremism Securing Pakistani support of U.S.: regional issues Securing Pakistani support of U.S.: international issues Reducing drug trafficking Implementing democracy Recognizing human rights Freezing Pakistan's nuclear program Reducing sectarian violence	Advantageous resolution of the Kashmir dispute Reducing sectarian violence Eliminating al Qaeda Stability of Afghanistan Avoiding all-out war with India Securing storage of nuclear materials Reducing corruption Reducing drug trafficking Eliminating the A. Q. Khan network Recognizing human rights Implementing democracy

parliament in the fall of 2001 led to military mobilizations by both countries and renewed concerns about inadvertent nuclear war.

Policy Priorities and Nuclear Proliferation. Freezing Pakistan's production of fissile material has not been a priority for either Washington or Islamabad. Prior to the attack on India's parliament, the George W. Bush administration had decided to put the nuclear issue on the back burner. It insisted that India and Pakistan be treated as responsible nuclear states, and it asserted that an overemphasis on nonproliferation would interfere with the need to build more positive relations with both countries. As for Pakistan's nuclear program, the primary U.S. objective in recent years has been for Pakistan to better police its materials, facilities, and personnel—not end production of additional fissile material.

The United States does have an interest in halting Pakistani transfers of nuclear technology, particularly to countries such as North Korea, but it has not viewed such a step as important a priority as capturing bin Laden. Exhibit A for this proposition is the case of A. Q. Khan, the longtime head of Pakistan's nuclear program. His network is arguably the biggest story in illicit proliferation in two decades. Nevertheless, even after revelations about Pakistan's nuclear black market, the United States did not demand that Pakistan take action against Khan. The Proliferation Security Initiative, discussed later in this chapter, does give priority to preventing the global spread of nuclear technology through intermediaries like those used by Khan and his colleagues, but the United States has not given high priority to forcing vigorous action against the Pakistanis involved in the Khan network. Instead, the United States has given its full attention to its top priority—convincing Musharraf's forces to enter the frontier provinces in the hunt for bin Laden.

Summary: The Pakistani Political Context. Pakistan is a country with an abundance of problems, many of which have a direct bearing on U.S. interests. Neither the United States nor Pakistan has given priority to an agreement on fissile material production, although

Table 2.3 India's Interests	
	Interest
Top priorities	Economic development and social welfare Stable Indo-Pakistani relations Positive relations with the United States Educational and religious policy Recognition of India as a great power
Secondary priorities	Technological trade Counterterrorism Advantageous but peaceful resolution of the Kashmir dispute Reducing sectarian violence Containment versus engagement vis-à-vis China Missile defense Global disarmament

the United States has taken an interest in facility and material security since the September 11 attacks. The fact is that nuclear security must compete for attention with several issues perceived as more important. Both governments have a strong interest in President Musharraf's continued tenure, but the United States has nevertheless been pressing Musharraf to take major risks for the sake of capturing bin Laden.

The development of any strategy on nuclear materials in Pakistan is so difficult because the United States is pursuing too many interests, all at the same time. Washington likely used all the carrots and sticks it thought it could muster in pursuit of those objectives. A new U.S. administration might be able to adjust its priorities, but that would entail making some very difficult and politically unpalatable choices.[3]

The Policy Context in India

The Setting. Compared with Pakistan, India is a sanctuary of security, stability, and prosperity. Despite Indian rhetoric about a Chinese threat, no regional power is likely to attack India absent aggression by Delhi. Pakistan's nuclear weapons and the Kashmiri militancy do pose threats, but India has a larger military, a bigger population, a larger economy, and more nuclear capability than Pakistan. More important, Indians want peace, and, to the surprise of many, it was the recently defeated Hindu nationalist Bharatiya Janata Party (BJP) that had taken the lead in pursuing dialogue with Pakistan.

Internal security threats do exist, but the groups involved represent minority views that have no hope of taking power. Islamic and Hindu extremists and others could carry out attacks or even assassinate a national leader (which has happened in the past), but the democratic tradition in India is strong and unlikely to yield to episodic violence.

India's vulnerability, as the BJP discovered, is not security but the economy. Despite being more prosperous and educated than other countries in the region, and despite annual economic growth rates of near 8 percent, India is a very poor country. For all the talk about high technology, 300 million Indians—more than the population of the United States—earn less than a dollar a day. The recent election outcome was the product of many factors (such as caste, personality, religion), but economic issues appear to have played a role in the BJP's defeat.

India's Interests. Given the results of the recent election in India, economic development and social welfare will figure prominently in the agenda of the new Congress Party government (Table 2.3). Stable and peaceful relations with Pakistan, educational and religious policy, and a strong relationship with the United States are likely to rank among India's top priorities. Less concrete but nevertheless real is India's desire to be recognized as a great power. Successive Indian governments have argued that India has not been treated with the respect it deserves—a belief that has real policy consequences but is often considered a secondary issue by Western analysts.

Table 2.4 U.S. and Indian Interests Compared		
	United States	**India**
Top priorities	Stable Indo-Pakistani relations Trade and economic development Outsourcing Avoiding nuclear war	Development and social welfare Stable Indo-Pakistani relations Positive relations with United States Domestic education and religious issues Recognition of India as a great power
Secondary priorities	Counterterrorism Containment of China Peaceful resolution of the Kashmir dispute Missile defense Nuclear security U.S.-Indo regional cooperation U.S.-Indo international cooperation Nonproliferation Less sectarian violence Human rights	Technological trade Counterterrorism Favorable resolution of the Kashmir dispute Reducing sectarian violence Containment versus engagement vis-à-vis China Missile defense Global disarmament

In the second tier are increased high-tech exports to the United States, U.S.-Indo cooperation in rocket technology, and U.S.-Indo cooperation in civilian nuclear technology. The year 2004 saw substantial progress on these issues. For example, U.S. officials recently met in Bangalore to discuss new proposals for cooperation on space.[4]

By contrast, concerns about global disarmament rank comparatively low. Few voters in India cast ballots based on global versus pocketbook or regional issues. Moreover, talk about disarmament would invite unwanted questions about the future of India's own nuclear arsenal. When the nuclear issue has been raised in the recent past for domestic political advantage, the emphasis has been on the value of nuclear weapons (e.g., appeals to national pride and India's sense of disenfranchisement or in the context of the Indo-Pakistani rivalry), not their abolition.

U.S. Interests. In a context in which terrorism trumps every issue but Iraq, the chief U.S. interest vis-à-vis India is actually Pakistan (Table 2.4). Pakistan is the one country in the region where the United States has the most at stake, and thus Washington's primary objective for India has been an Indo-Pakistani relationship that does not add to President Musharraf's (and President Bush's) long list of problems.

Pakistan aside, most of America's priorities about India tend to be economic. Since the end of the cold war, the United States has sought to promote trade with India, which it sees as an up and coming economic powerhouse and potential counterweight to China. The problem for the Bush administration, however, has been that the dark side of trade for U.S. labor—outsourcing—became an issue in the 2004 presidential campaign. Also making the U.S. top-tier priorities is the avoidance of nuclear war. The risk of a regional atomic Armageddon has receded as rapprochement has taken root, but the potential consequences are so large that avoiding a major war may still be a top-tier issue.[5]

Indian Nuclear Decision Making. Capping or reducing India's nuclear program has been a low priority for the United States and a nonpriority for India. That said, does a freeze on India's program, intended as a step in a process that yields an end to fissile material production in Pakistan, make sense? The answer is clearly yes. For reasons of national security as well as domestic politics, Pakistan cannot freeze its program without an Indian initiative.

The question then turns on what might induce India to make the first move. A reduction in the U.S. nuclear arsenal might encourage Indian policy makers. What about economic inducements? An

answer to this and other questions depends on first understanding the factors that have influenced India's nuclear development.

The conventional wisdom about nuclear proliferation is that a country's decision to pursue nuclear weapons is a function of threats and capabilities: the more a state is threatened and the greater its scientific wherewithal, the higher the probability it will acquire nuclear weapons. However, this view does not stand up very well empirically. Many countries are threatened, and scientific capabilities have spread, yet the rate of proliferation has actually decreased over time.

"India's 1998 nuclear tests are one example of why it is difficult to make the case that security threats necessitated the development of a nuclear arsenal in India."

The problems with the conventional wisdom are especially evident when it comes to India, because it is difficult to make the case that security threats necessitated development of a nuclear arsenal there. Although some Indians maintain that New Delhi's bomb is needed to protect the country from an attack by China (and adhere to the Orwellian logic that wider proliferation is needed to induce global disarmament), most scholars point to factors other than security—such as domestic politics and a desire for prestige—as accounting for India's nuclear behavior. Another factor cited is the influence of the science bureaucracy and, in particular, the first chairman of the Indian Atomic Energy Commission, Homi J. Bhabha.

India's 1998 nuclear tests are one example of why it is difficult to make the case that security threats necessitated the development of a nuclear arsenal in India. At the time, relations between India and China were warming, and Russia and the United States were cutting their strategic arsenals. In short, neither the Chinese threat nor the superpowers' refusal to reduce nuclear stockpiles appears to have been relevant. Indeed, the timing and context of the Indian tests strongly suggest that the BJP government's decision had more to do with politics and prestige than immediate security problems or a desire for disarmament.

Reducing the Nuclear Threat in South Asia: Choosing the Right Strategy

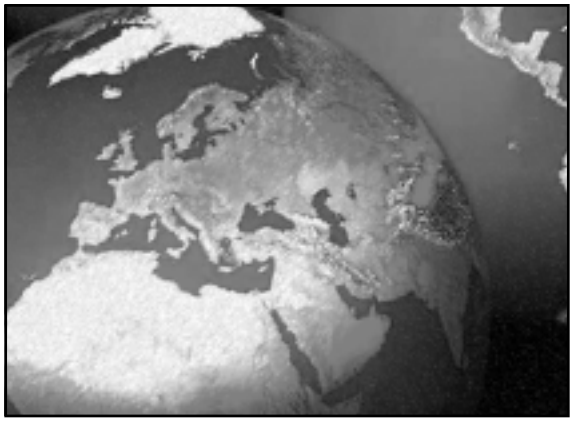
The analysis so far has stressed two points: first, inducements can take many forms, of which economic inducements are but one, and, second, the success of such inducements depends on the policy context in the countries one is trying to influence. As applied to South Asia, this analysis points to both obstacles and opportunities. Pakistan's top priorities—long-term power for the ruling party, economic development, and constructive relations with India and with the United States—do not include ending the production of fissile material. Similarly, India's chief policy goals—economic development, constructive relations with Pakistan and with the United States, and recognition of India as a great power—do not include capping its fissile material or nuclear weapons holdings.

Given this context, it is unlikely that financial incentives alone will induce Pakistan to stop the production of fissile material or encourage India to cap its nuclear program. Economic levers tend to be weak policy tools, particularly in the area of national security, where the stakes are high and the bureaucratic players are strong.

Certainly this was the case for Pakistan's 1998 nuclear tests. After India's test, the Pakistani government had much to gain economically from not conducting its own test, and it had much to lose (e.g., from sanctions) by going forward. In addition, the decision to test occurred in a context in which all the relevant countries already believed Pakistan had a nuclear device and in which testing would not materially alter the strategic balance. Nevertheless, Pakistan gave up the potential rewards and paid the economic penalties to demonstrate to the world something that it already knew.

So if the traditional economic incentives are unlikely to work in the South Asian context, what can be done? Analysis of the policy context reveals that Indo-Pakistani rapprochement is currently a priority

for both countries. Indeed, this may be a real window of opportunity. A prudent strategy for progress on fissile material could take an indirect form: multilateral support for the peace process, which, in turn, would create the conditions for action on fissile material. Such an indirect strategy recognizes the asymmetric security situation in South Asia—one in which India enjoys substantial advantages over Pakistan. Given those advantages, Pakistan is unlikely to move without India moving first, regardless of the economic benefits being offered. From a Pakistani perspective, it would be "better to eat grass" than to capitulate. The peace process, by contrast, is a process of mutual and shared benefits.



How could a multilateral strategy support the peace process and thereby contribute to future progress on fissile material issues? First, though, it is important to be clear about what a multilateral strategy would *not* include. It would not mean that a multilateral group of countries, such as the G8 group of developed nations, or an international organization, such as the United Nations, would intervene directly in the peace negotiations. Pakistan has long wanted to internationalize the Kashmir dispute, hoping that bringing in the international community would increase its bargaining leverage, but such a step would be a mistake.

Instead, multilateral actors can communicate to the parties that it is up to them how they settle their differences, but that the international community wants the process to work and is prepared to back up any mutual agreement with substantial economic and political resources. The inducements, which would include economic, political, and social benefits, would enable the leadership in both countries to weather the inevitable political opposition that a peace deal will encounter. Multilateral action will thus enable Islamabad and Delhi to turn to their constituencies, be they electoral or bureaucratic, and point to the benefits of the peace process. In the past, the United States has been willing to make that kind of commitment in support of the Arab-Israeli peace process, and it now needs to recognize that the South Asian dispute is every bit as important and dangerous as the conflict in the Middle East.

The advantages of a multilateral over a unilateral approach in this situation are numerous. Among other things, a multilateral rather than a U.S. face on approaches to lowering tension in South Asia reduces the ability of domestic opponents in either country to accuse the governments of being lapdogs of the United States. This kind of rhetoric has appeal in both countries—in India, where there is sensitivity about the hegemony of Western powers, and in Pakistan, where government critics already mock the president by calling him "Busharraf." Moreover, given the already heavy expenditure of U.S. political capital in Pakistan in support of capturing bin Laden and of other U.S. objectives, multilateralizing the process would allow additional political and economic resources to be brought to the table. If the international community acted quickly to take advantage of the current desire for peace in both countries, it could contribute to a transformation of the Indo-Pakistani security relationship. Such a transformation would create the world's best chance for reducing the threats posed by South Asia's nuclear technology.

Complementary Multilateral Strategies

Nurturing and consolidating the peace process in South Asia are probably the most important steps the United States and the international community could take toward the realization of peace in that region. Such steps would reduce the risk of nuclear war and the pressure to increase defense expenditures, would give Pakistan less motivation for trading its nuclear assets for missile or other defense-related technologies, and would create an environment in which both Pakistan and India could consider halting the production of fissile material.

To complement this use of regional multilateral strategies, the United States might consider additional international initiatives that would support progress

in this area. One possibility is to revisit the proposal for an international treaty banning the production of fissile material. The Fissile Material Cutoff Treaty (FMCT) has languished in the Conference on Disarmament for over six years after a fitful start in 1998. But some countries that once voiced objections to the treaty have since changed their positions. As a result, the United States has a historic opportunity to achieve a crucial step in the construction of a robust nonproliferation regime. A durable halt to the production of fissile materials for weapons programs would not only represent a major victory for nonproliferation, but also accomplish a long sought objective: the incorporation of de facto nuclear weapons states such as India and Pakistan into the nonproliferation regime.

"But the nuclear clock continues to tick in South Asia. Because the current cooperative mood in Delhi and Islamabad will not last forever, action is needed soon while there is an opportunity for progress."

The United States can increase the likelihood that India will join a fissile production cutoff by taking the opportunity at the Conference on Disarmament to commit to more reductions in the U.S. nuclear arsenal.[6] By cutting the overbuild left over from the cold war, the United States would enable India to tell its domestic audience that it has been true to its policy of joining the nonproliferation regime, but only on the condition that the "superpowers" take concrete steps toward disarmament. Use of the Conference on Disarmament as the international forum for this initiative also would provide India with the kind of platform appropriate to an important international player and thus would go some way toward meeting traditional Indian concerns that it has not been accorded the treatment it deserves. If a fissile material production cutoff for nuclear weapons that encompasses South Asia could be achieved, then it should become much easier for the rest of the world to assure India of long-term access to the global uranium market in order to produce electricity. In addition to saving India a considerable amount of money in the long term, this turn of events would reduce or even eliminate the long-term economic incentive for India to pursue nuclear fuel reprocessing or breeding activities that carry their own risks of proliferating potentially weapons-useful technologies.

Another multilateral strategy intended to prevent the transfer of fissile material is President George W. Bush's Proliferation Security Initiative. Under the PSI, several nations are collaborating in an effort to deny countries the ability to ship technologies and materials related to weapons of mass destruction. The PSI, while innovative, carries certain risks inherent in the forcible boarding of ships at sea. Its basis in international law is also unclear. For example, no international laws prohibit the transfer of missile parts; only voluntary commitments among the members of the Missile Technology Control Regime (MTCR) apply to such a transfer.[7] If the United States decides to continue to pursue the PSI, it should consider strengthening the multilateral character of the effort and thus the legitimacy of the PSI. For example, it could expand and diversify its membership even further, seek UN authorization for its activities, and pursue broader agreement on the legal basis for intervention.

Other proposals related to fissile material and the fuel cycle also lend themselves to multilateral action, such as extending cooperative threat reduction to countries outside the former Soviet Union and internationalizing the front- and back-end nuclear fuel cycle. These proposals are potentially complementary to other initiatives against proliferation and the continued production of nuclear weapons materials.

But the nuclear clock continues to tick in South Asia. Because the current cooperative mood in Delhi and Islamabad will not last forever, action is needed soon while there is an opportunity for progress. Despite the events of the last three years, the peace process in South Asia has not commanded the attention that the peace process in the Middle East has traditionally enjoyed. A cold calculation of dangers and interests would suggest, however, that South Asia should be treated with the same priority.

A window of opportunity is open in Russia as well. In Russia, however, the window is a window of vulnerability—the continued presence of tons of unsecured weapons-usable nuclear material.

Nuclear Materials Security in Russia and Other States of the Former Soviet Union

Halting all fissile materials production for nuclear weapons programs would be a great step toward limiting the quantity of nuclear weapons abroad and the potential for clandestine transfers of nuclear technology. However, a pressing need remains: better materials protection, control, and accounting, or MPC&A, for the weapons-usable fissile materials already produced. Part of what is needed to improve this situation is more funding for the cooperative threat reduction programs already under way in Russia. Technology and policy analysts Matthew Bunn, John P. Holdren, and Anthony Wier—participants in the Managing the Atom Project at the Belfer Center for Science and International Affairs at Harvard University's John F. Kennedy School of Government—recently made several recommendations on securing nuclear weapons and materials.[8] These recommendations, the most central of which follow, fit well into the broader context developed in this chapter. The authors urge a "security first agenda" and offer recommendations for a variety of actors, including the U.S. president, the Russian president, the G8 countries, and the U.S. Congress:

- The U.S. president should designate as a top national security priority the accounting for and securing of all the world's stockpiles of nuclear weapons and weapons-usable materials.
- The U.S. government should set a target date of four years for achieving high security for every nuclear warhead and every kilogram of weapons-usable nuclear material in the former Soviet Union; the target date worldwide should be within six years. The target date for removing all nuclear material from the world's most vulnerable sites should be within four years.
- The presidents of the United States and Russia should each appoint a senior official with full-time responsibility for leading each country's efforts to keep nuclear weapons out of the hands of terrorists. Each official should prepare an integrated, prioritized plan, including measurable milestones for assessing progress, and identify the most important obstacles to accelerated progress and the immediate steps needed to overcome them.
- The international community should launch a "global cleanout" effort to remove weapons-usable nuclear material from the world's most vulnerable sites as rapidly as possible. An international task force could consolidate all the necessary resources, authority, and expertise to accomplish that mission.
- The United States should pursue a new reciprocal initiative with Russia to secure, monitor, and dismantle thousands of the most dangerous warheads in both countries (including many tactical warheads and all warheads not equipped with modern electronic locks or comparably reliable means to prevent unauthorized use).
- The United States should initiate a comprehensive effort to maximize the chances of recovering stolen nuclear material and stopping nuclear smuggling, including, among other elements, a plan to make capabilities like those of the U.S. Nuclear Emergency Search Team (NEST) available worldwide on short notice.

Nuclear Explosives Holdings

The recommendations listed in the previous section require some financial incentives to improve cooperation between Russia and the United States on the security of nuclear materials, including those from Russia's very large stock of "nonstrategic" nuclear explosives. However, as noted earlier, financial incentives alone do not address the important political dimensions of impediments to faster progress. So far, little progress has been made on agreeing to reductions and improved MPC&A on Russia's nonstrategic nuclear stocks. This lack of progress stems, at least implicitly, from the fact that the United States has been less forthcoming than Russia would like about its strategic nuclear deployments and reserves. There is thus a need for the United States to provide a political incentive for more transparency on overall Russian nuclear stocks. In particular, an understanding between the United

States and Russia that would permanently balance their operational strategic stockpiles should open the way to a full MPC&A and drastic reduction of Russia's nonstrategic nuclear stocks.

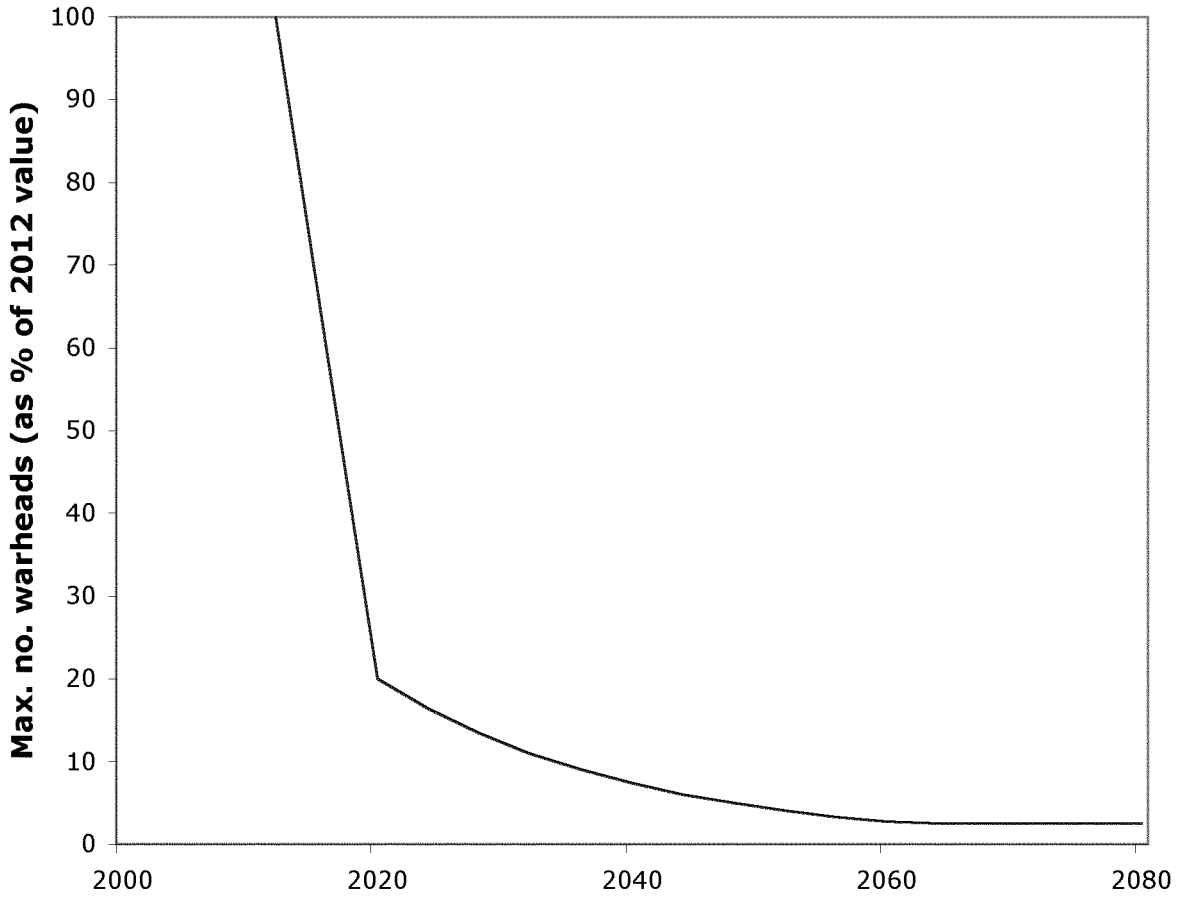
In theory, Russia might decide that, irrespective of U.S. nuclear weapons holdings, its new relationship with NATO requires no more operational nuclear warheads than, say, the less than two hundred maintained by the United Kingdom. In practice, however, Russia has the technology and labor base to revitalize its strategic delivery capabilities and is gradually reorganizing its economy in a way that will eventually facilitate this revitalization. As of 2001, according to analyst Anthony H. Cordesman,[9] Russia at least nominally maintained 733 intercontinental ballistic missile (ICBM) launchers, sixty-eight long-range nuclear bombers plus additional aircraft in storage, and fewer than fifty submarines able to deliver nuclear weapons. Thus, with up to 2,200 operational strategic weapons, the United States, at least theoretically, had the capability to deliver two such warheads to each operational Russian launch system, with hundreds more U.S. warheads available to attack command and control.

"According to Cordesman, Russia, in continuing a program begun in 1992, eliminated over 11,000 warheads by December 2000. As of 2001, however, Russia still had an estimated 22,500 nuclear warheads. The first priority should be to continue to eliminate warheads at the historic rate of about a thousand a year."

The U.S. approach has been to maintain the assembled nuclear warhead base so that it can load enough delivery vehicles to maintain a two-to-one ratio of deliverable warheads to Russian strategic launch systems even if Russia should double their number. For the operational planner asked to limit the direct damage to the United States in the unlikely event that a major breakdown in Russian command and control is detected and countered just before it leads to Russian strategic strike, this may seem like a prudent approach. However, from a broader political perspective it suffers from three difficulties. First, if, after expiration of the Moscow Treaty in 2012 Russia gradually reconstitutes its originally inherited level of operational strategic forces, both the United States and Russia will find themselves heading back down the road to higher levels of mutual assured destruction, constrained, if at all, by the very high limits of the START I treaty. Second, such an approach passes up the opportunity offered by Russia's stated willingness to join the United States in further building down strategic forces, which could substantially reduce the probability of a breakdown in Russian command and control in the first place. Third, such an approach complicates the process of building the level of cooperation needed to bring Russia's massive nonstrategic nuclear explosives holdings into a comprehensive program of disassembly and solid MPC&A, as recommended earlier.

There are many ways to overcome these difficulties; the one given here is only an illustrative example. In this example, a maximum limit on the number of assembled nuclear explosives held by any country continues to decline unless and until a security environment evolves that makes further reductions imprudent. Initially, the decline is linear and consistent with the continuation of post–cold war dismantlement rates. According to Cordesman, Russia, in continuing a program begun in 1992, eliminated over 11,000 warheads by December 2000. As of 2001, however, Russia still had an estimated 22,500 nuclear warheads. The first priority should be to continue to eliminate warheads at the historic rate of about a thousand a year. Yet by 2012 the number of warheads on the Russian side would still be far in excess of the transient maximum level of 2,200 deliverable strategic warheads allowed by the Moscow Treaty. The same would also be true on the U.S. side in the absence of a change in recent policy on maintaining rapid rebound capability. Thus in light of the post-2012 perils just outlined, it would be useful to reach an agreement well before the 2012 expiration of the Moscow Treaty that this rate of disassembly would continue as needed on both sides. Disassembly would proceed until consistent with an enduring limit at the Moscow Treaty level or lower, and would occur *without* allowing for rapid reconstitution. U.S.

Figure 2.1 Maximum number of assembled nuclear explosives held by any country from 2020 to 2080, as a percentage of number held by Russia in 2012.

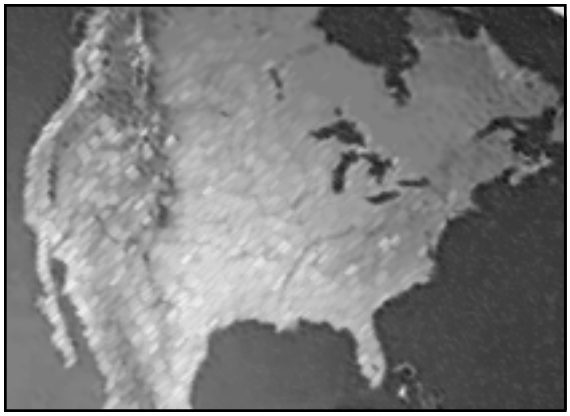


operational planners would naturally prefer that under such circumstances the United States would retain rapid reconstitution potential and Russia would not. In the long run, however, it is not likely such an approach would be politically feasible, and in the short run this approach would still likely get in the way of dealing successfully with Russian nonstrategic nuclear explosives.

As noted earlier about establishing a broader moratorium on fissile materials production, it may also be desirable to look beyond a program of nearly linear build-down to what comes later. For this purpose, a tentative commitment to a further annual percentage reduction in the then-current maximum number of assembled nuclear explosives held by *any* country could be useful. If this percentage rate is at least 5.6 percent a year (the tritium decay rate), then such a reduction could have the additional political and operational advantages of avoiding the need for further weapons tritium production as long as the reductions continue. Yet any commitment to further reductions of this type would have to be tentative, because it is not possible to anticipate the security environment in a more distant future when such a declining limit could start to restrict the size of Chinese, European, Indian, and other nuclear arsenals. As this situation approached, and in principle beyond, it would be necessary to deal with the distribution of explosive power among weapons stocks and some other complicated issues that could well limit the build-down process at some point. An example of this situation is shown in Figure 2.1.

In Figure 2.1, an initially linear build-down is followed by a more gradual exponential decay that leads to the build-down process eventually getting stuck at a level (particularly for China) consistent with India's view of what constitutes "minimum deterrence." In the figure, the universal upper limit on any country's assembled nuclear explosive holdings is deliberately expressed as a percentage of the

maximum holding in the year 2012 singled out by the Moscow Treaty rather than an absolute number. It is the principle of the approach rather than the precise details that matters at this level of analysis. However, to put this approach in perspective, the maximum number of assembled nuclear explosives held by any country in 2012 is still likely to exceed ten thousand. Thus the numbers on the vertical axis in Figure 2.1 might have to be multiplied by as much as one hundred or more to arrive at absolute values for an upper limit on assembled nuclear explosives holdings.



The approach just described is consistent with China's policy of building down its nuclear weapons stocks if and when the United States and Russia make very substantial reductions in theirs. In addition, it is consistent with the principle of India's demand for a time-bound framework for the elimination of nuclear weapons in a "nondiscriminatory" manner, provided that the reduction process allows for no specific lower bound on future nuclear weapons holdings. It is also consistent with British, French, Israeli, and Pakistani concepts of minimum nuclear deterrence within the current and foreseeable international security contexts they are facing. These countries have the option of freezing the process of reducing limits on assembled nuclear explosives holdings should the mid-twenty-first century security environment not allow for further reductions of this limit. Finally, this approach is consistent with Russia's desire for further strategic arms reductions.

In practice, the type of approach just outlined roughly describes what has been happening to stocks of operational nuclear weapons since the twilight of the cold war. It is also potentially consistent with a recent U.S. administration decision to reduce operational nuclear arsenals held at the end of the cold war by nearly one-half, depending on just what is done with the retired warheads. The longer-term outlook is also consistent with a survey of U.S. public opinion on nuclear weapons holdings,[10] and is thus potentially within the reach of future U.S. administrations if they can successfully connect the policy process to this underlying public sentiment.

In principle, limits on nuclear explosive holdings could be embodied in a treaty ratified by some or all of the countries that have not otherwise already abjured nuclear weapons by another treaty commitment. In practice, it may be impossible for the U.S. Senate to ratify such a treaty before the expiration of the START I treaty in 2009 or even of the Moscow Treaty in 2012. Nevertheless, it is reasonably likely that both the United States and Russia will continue to reduce nuclear overbuild left from the cold war. If their governments take the same view as in the U.S. public opinion survey just noted, then this process will lead to very substantial reductions. If a treaty outlining this process proves infeasible, then it will have to proceed by a somewhat less formal process. One approach would be coordinated policy declarations that might be accompanied by additional agreements on transparency measures. Another would just be revision of the relevant national security strategy documents, with consistent follow-up in operational practice. From the point of view of the global dialogue on the future of nuclear weapons production and stockpiling, it is true that the greater the number of formal commitments to nuclear weapons build-down the better. It may only be necessary, however, for nuclear weapons states signatories to take reduction of overbuild seriously and express an willingness to discuss it in an international forum with countries such as India—countries that look at the interactions of Chinese and other nuclear weapons' states deployment plans when making their own decisions about fissile materials production and what constitutes "minimum deterrence."

Not needed is a prediction of the distribution of nuclear explosives holdings in the distant future. A broader moratorium on the production of fissile materials for nuclear weapons requires primarily dealing in a creative way with the more immediate problem of giving India and thus Pakistan a place at the table to address their stated concerns about the

rationality of other countries' nuclear armament policies. The idea is to make it politically feasible for countries to get on board with a fissile materials production moratorium sooner rather than later. If this moratorium leads to a safer and less costly approach to nuclear arsenal maintenance and MPC&A on the part of other countries, then so much the better.

1 The primary focus here is on plutonium and uranium enriched in the isotope uranium-235, either of which can support a nuclear explosion. India also is conducting a research program on making the weapons-usable isotope uranium-233 from thorium for possible future extension of fuel supplies for electricity production. The need for production of the hydrogen isotope tritium for enhancing the yield of nuclear weapons is discussed at the end of this section.

2 A more detailed analysis than is possible here would seek to define the policy context by answering the following questions: Who are the likely decision makers for issue X? Can the number of players be increased or reduced in ways that are to the advantage of the policy outcome being sought? What does each of the players value most? Who are their bureaucratic opponents, and what are their weaknesses? Any strategy for Pakistan, for example, would first have to gain clarity on the politics of the military, including interservice rivalries and other divisions within the institution (e.g., senior officers versus junior officers).

3 Chief among these might be the decision to settle for the harassment, containment, and slow dismantlement of al Qaeda rather than a high-profile capture of bin Laden. Given the cost of recent policy (e.g., risking Musharraf's overthrow and the possibility of chaos in a nuclear-armed country), such a change probably makes sense from a policy perspective, because it would free the United States to use its leverage for other goals such as nuclear security and nonproliferation. Politically, however, it is risky. If and when bin Laden strikes again, there could be political consequences if it became known that the capture of bin Laden had been downgraded as a priority.

4 In a major break with recent policy, U.S. Under Secretary of Commerce Kenneth Juster even went so far as to suggest that export licensing rules do not prohibit the United States from increasing "dual-use" exports to India.

5 Avoiding nuclear war and nuclear rollback are two different things, however. Washington currently expects the South Asian nuclear states to act as responsible nuclear powers. That means each country keeps its weapons but avoids engaging in risky behavior.

6 There is some disagreement about whether cuts in superpower stockpiles would affect Indian behavior. There is little question, however, that decisions to expand the U.S. arsenal would likely encourage an expansion of India's stockpile. Such behavior by the United States would affect both Indian prestige and bureaucratic politics in ways that benefit pro–nuclear weapons constituencies.

7 The MTCR is a multilateral agreement between twenty-seven industrial states to coordinate export controls on ballistic missile and cruise missile systems and technologies covering missiles capable of delivering a payload greater than 500 kilograms to a range greater than 300 kilometers.

8 See Matthew Bunn, John P. Holdren, and Anthony Wier, *Securing the Bomb: Agenda for Action* (Cambridge, MA: Harvard University Press, 2004, http://bcsia.ksg.harvard.edupublication.cfm?ctype=book&item_id=388. The proposals made in this report complement the analysis here. But care should be taken to avoid unproductive pressure on India, Israel, or Pakistan vis-à-vis nuclear MPC&A that would complicate and thus delay a parallel initiative to establish as soon as possible a broader moratorium on the production of fissile materials for weapons programs. India, in particular, has apparently not been a significant source of military nuclear technology diffusion and is likely to be especially insistent on setting its own military nuclear MPC&A standards. In the absence of a compelling need, pressure on India to adhere to such standards generated externally could undermine its cooperation on accelerating a lasting moratorium on fissile materials production for nuclear weapons programs, without any compensating benefit. This example illustrates why improving nuclear MPC&A is an inherently multilateral exercise, particularly for states that have already developed nuclear weapons programs.

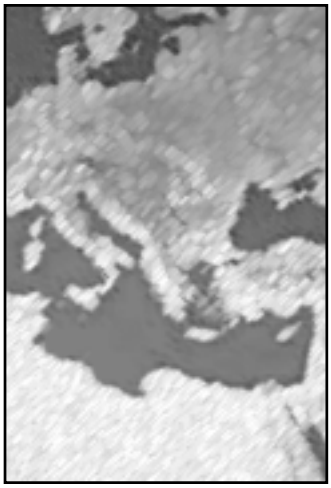
9 See Anthony H. Cordesman, *The Global Nuclear Balance* (Washington, D.C.: Center for Strategic and International Studies, revised February 2, 2002).

10 Steven Kull, Clay Ramsay, Stefan Subias, and Evan Lewis, "Americans on WMD Proliferation," Program on International Policy Attitudes, April 15, 2004, http://www.cissm.umd.edu.

CHAPTER 3

Ensuring Energy Security

This chapter compares the effectiveness of unilateral decisions to undertake military intervention with that of other approaches for enhancing energy security. It concludes that the United States should dispel international doubts about its intentions and catalyze domestic changes needed for improved energy security by making a clear statement of its policy toward military interventions in regions well endowed with energy resources.



The history of Anglo-American interventions in the energy-rich Persian Gulf region dates back to World War I. During the middle half of the twentieth century, outside interventions in the region evolved from supporting colonial rule or foreign control of energy assets to influencing who has control over oil revenues.

In 1953 the U.S. Central Intelligence Agency (CIA) intervened in Iran and thwarted an attempt at oil industry nationalization. During Iranian counterattacks against Iraq's 1980 invasion, U.S. naval support guaranteed oil shipments that provided money to Iraq to help fend off an Iranian takeover of border oil facilities. After Iraq's 1990 takeover of Kuwait, the United States led the effort to restore control to Kuwait's royal family. In 2002 oil revenues to the Iraqi government had been rapidly increasing, and eventual escape from sanctions would have left the Iraqi Ba'ath government in charge of the world's second largest influx of oil revenues.

The underlying motivation for the 2003 U.S.-British–led invasion of Iraq has been the subject of debate. Nevertheless, there is little doubt that concerns about who had control of Iraq's particularly large oil revenue potential brought more attention to that country than to others that had intervened in neighbors' affairs, built weapons of mass destruction, served as a source of nuclear proliferation, endured human rights abuses, or opposed U.S. hegemony (such as Syria, North Korea, Pakistan, Sudan and other African countries, and Cuba). The recommendations made here derive not from the details of the decision to invade Iraq but from the broader historical trend of Anglo-American involvement in the Persian Gulf region and its implications for the future, particularly should less than desirable governments there gain control of substantial portions of the region's oil production capability. The problems encountered in the occupation of Iraq serve primarily to highlight the difficulties that may be encountered in the future if the United States intervenes essentially unilaterally and encounters stiff and prolonged resistance.

Concerned about the rising proportion of U.S. oil consumption from imports and the inefficacy of military action as a solution, many observers have proposed alternative policies that include:
(1) removing impediments to domestic oil production;
(2) subsidizing alternative energy sources;
(3) imposing stricter fuel efficiency standards;
(4) raising gasoline taxes; and
(5) imposing a substantial oil import fee. Taken alone, each of these approaches has serious limitations. Removing impediments to production in ecologically fragile areas is controversial and would have only a modest and temporary impact on the fraction of oil coming from imports. Subsidizing nuclear, wind, solar, or other means of electricity production would likely have the primary effect of increasing electricity consumption, which, in any case, is rarely fired by oil. With current corn-based technology, nearly four-fifths as much energy is required to produce ethanol as ethanol itself yields as a transportation fuel. Therefore, subsidizing ethanol production using current technology is also likely to have minimal impact. As for fuel efficiency standards, experience

has shown that it is difficult to make these standards airtight enough to reduce gasoline consumption. Higher gasoline taxes should also moderate gasoline consumption. However, merely reducing gasoline consumption may primarily free up refining capacity for production of other petroleum products.

Imposing a substantial oil import fee comes closer to the crux of the matter, but it, too, would have a limited long-term effect if it primarily simulates more rapid depletion of domestic petroleum resources. Moreover, like higher gasoline taxes, oil import fees are a politically unattractive alternative unless a case can be effectively made that such fees would result in security benefits commensurate with the political pain of dealing with the people whose "oxen will be gored" in the process. Given the limited effectiveness of any of these approaches individually, it is no wonder that skeptics question whether the overall benefits of adopting one of them is worth the cost to the most directly affected parties.

What Is the Problem?

In view of this dilemma, it is worth asking to what extent energy security really is a problem for the United States in the first place. After all, after the cold war the United States decided to rely on global markets and even sell off its stockpiles of mined metals and most other mineral resources that used to be considered strategic. For electricity production, the United States has a variety of options that include nuclear, coal, natural gas, and renewables. In any case, oil has not been used in the United States on a significant scale for electricity production for decades and is unlikely to be in the future for any plausible range of oil prices. Similarly, the remaining use of oil for production of bulk heat could largely be substituted by increased energy efficiency and alternative sources should the need arise. Crude oil is indeed an essential petrochemical feedstock, but this use accounts for only a modest fraction of its use. As for other industrial and consumer products, the United States now has access to a global market for petrochemical products and an enormous capacity for product substitution and increased efficiency of use should such products become more expensive because of restrictions on the global oil supply. It is primarily in transportation that oil plays a dominant and critical role, making oil unique among fossil fuels. However, the development and mass production of hybrid engines have positioned the United States to reduce its consumption of oil to the point where imports from the Middle East would not even be necessary should the need arise.

Historically, the notion that oil is an essential strategic material derives largely from the experience of the Axis powers in World War II. Their lack of control over oil resources played a major role in bringing to a halt and then reversing their initial military successes. Indeed, during the cold war U.S. legislation covering strategic mineral stockpiling specified that the U.S. military should be able to sustain a major conventional war for three years even in the face of lack of access to foreign sources of essential minerals. In practice, in the nuclear age there was never the slightest chance that the United States would face such a situation, for either nonfossil minerals or petroleum. Today, the United States is fully capable of restructuring its refining and transport capacity so that its military could carry out all plausible combat operations even under the threat of greatly reduced Persian Gulf oil production, albeit perhaps with some inconvenience to the rest of the economy in the unlikely event that strategic petroleum reserves are exhausted as a result.

A New Approach to Energy Security

The net result is that the United States is now in a position to change its approach toward the use of military action in countries that come under the influence of forces whose actions are thought likely to disrupt oil production substantially. Instead of adopting a piecemeal approach that has little public appeal, the United States should revise oil and security policy at the outset. This revision should begin by clearly recognizing that *the United States should not undertake a unilateral military intervention in international or internal conflict solely or primarily for the purpose of influencing who has control over energy resources.*

Such an approach amounts to a renunciation of what is called here the Carter-Clinton Doctrine on unilateral military intervention.[1] The Carter Doctrine can be summarized by a sentence from the president's 1980 State of the Union address: "An attempt by an outside force to gain control of the Persian Gulf region will be regarded as an assault on the vital interests of

the United States of America, and such an assault will be repelled by any means necessary, including military force."

Although this quote refers to an "outside force" (i.e., the Soviet Union), the Carter and Reagan administrations were clearly if perhaps simplistically concerned that the ideas behind the Iranian revolution might lead to hostile forces from *inside* the region gaining dominance over Persian Gulf oil. When Ba'ath-controlled Iraq emerged defiant from the Iran-Iraq War, this concern shifted to the point where the 1996 National Security Strategy included the following declaration that forces *internal* to the Persian Gulf region representing a threat to U.S. vital national interests would be countered by force:

> There are three basic categories of national interests that can merit use of our armed forces. The first involves America's vital interests, that is, interests that are of broad, overriding importance to the survival and vitality of our national identity—the defense of U.S. territory, citizens, and allies and our economic well-being. We will do whatever it takes to defend these interests, including—when necessary—the *unilateral* and decisive use of military power. This was demonstrated clearly in the Persian Gulf through Desert Storm and, more recently, Vigilant Warrior, when Iraq threatened aggression against Kuwait in October 1994. (Emphasis added)

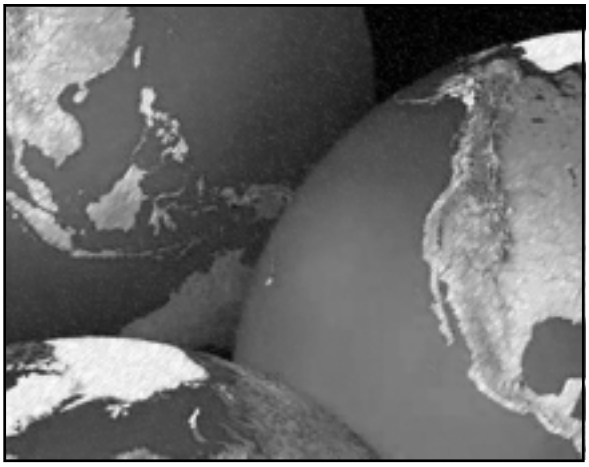
The United States did not have a formal alliance with Kuwait before Iraq attacked it in 1990, and the defense of U.S. territory and citizens was not an issue. Thus the justification cited in this quote for Operation Desert Storm is evidently related to economic well-being as a vital national interest (i.e., oil).

Rescission of the Carter-Clinton Doctrine on unilateral military intervention would not preclude U.S. military intervention for other purposes, such as preventing major abuses of human rights. Indeed, it could free the United States to more effectively assign priorities to its military intervention and assistance along human rights lines. Nor would rescinding the doctrine preclude U.S. military intervention to prevent a hostile country from supporting or harboring nonstate actors dedicated to attacking assets of the United States or its allies for political purposes (herein called "terrorism"), whether or not the target of U.S. intervention had major energy resources. However, if marginal or failed states, such as Afghanistan, are more likely to persist at harboring terrorists and risking intervention than states that aspire to better integration into the global economy, such as Libya, then the level of military preparedness needed for such interventions may be lower than that required under the Carter-Clinton Doctrine. Moreover, because many U.S. allies are just as concerned about terrorism, mobilizing collective action to prevent it is likely to be easier than intervening militarily to determine who has control over energy resources.

"For the incremental cost of a single year of the Iraq occupation, the United States could have set aside funds to purchase over two years' worth of oil imports for its petroleum reserves gradually, even at the relatively high prewar prices."

For the incremental cost of a single year of the Iraq occupation, the United States could have set aside funds to purchase over two years' worth of oil imports for its petroleum reserves gradually, even at the relatively high prewar prices. Enough funds would have remained to greatly enhance efforts to maintain surge capacity for domestic production, purchase insured delivery contracts from its North American Free Trade Agreement (NAFTA) partners and others, and provide substantial incentives for establishing a transportation fleet and industrial infrastructure with a substantially greater short- to medium-term elasticity of demand. In other words, it is transparently not in the direct vital interest of the United States to prepare for and execute this kind of military intervention again if the primary purpose of the intervention is to maintain access to oil supplies—even if such an intervention were in fact capable of doing so. A military approach to guaranteeing adequate continuity in U.S. oil supplies is simply not cost-effective compared with the nonmilitary alternative, which could be developed and implemented over a decade or less.

Although the United States has the capability to insulate itself from declines in oil imports stemming from serious oil production shortfalls in politically unstable regions, there remain the possible indirect effects of a global economic disruption in the extreme case of a sustained loss of Saudi oil production. The loss of Saudi oil production over the next couple of decades is used as an example here because such a loss seems to be the single event likely to have the most dramatic effect on global production. The cost to the United States of maintaining for decades a unilateral capacity to intervene militarily in Saudi Arabia *and to install there a stable government durably committed to restored fossil fuel production* would be extraordinarily high. This cost includes the military buildup needed to develop this capability and the opportunity cost of foregoing reductions in military expenditures. Such an approach would also set the United States up to remain for decades the prime global target for resentment over such a quasi-imperial role.



Even though the United States can develop the capacity to insulate itself from any major internal economic disruption arising from reductions in Persian Gulf oil production, a drastic and prolonged reduction of this kind could seriously disrupt the economy of the European Union and other regions. Indeed, in the decades immediately after World War II Western Europe was far more dependent on oil imports than the United States. It was in part to avoid a repeat of the post–World War II economic chaos in Europe that the United States became involved in the Persian Gulf in the first place. Western Europe initially welcomed U.S. forward military deployments in NATO countries and later made no major objection to the further forward positioning of U.S. military capabilities in the Persian Gulf pursuant to the Carter Doctrine. Now, however, the bodies politic in influential continental European Union countries are not necessarily content simply to follow the U.S. lead when it comes to military intervention in the Persian Gulf.

It is one thing for the United States to emphasize a multilateral approach to possible military intervention in the Persian Gulf, even in the face of U.S. capabilities for insulating itself from the direct effects of interruptions of oil production in that region. However, it is quite another for the United States to shoulder most of the burden of preparing for such military action if its NATO allies are not willing to share in the effort in rough proportion to their own economic production. In particular, a direct military intervention in Saudi Arabia to stabilize oil production in the face of a revolution there could be an enormous undertaking. Recent experience in Iraq has indicated the United States probably would not be up to this task on an essentially unilateral basis. If the United States tried to expand its military capabilities further to prepare for a possible attack and subsequent prolonged occupation of Saudi Arabia, U.S. allies would have little incentive to embrace both the economic and military preparations needed on their part to ensure the best probability of success. The conclusion here is that the United States should not, and perhaps even cannot, serve alone as judge, jury, sheriff, and banker of any possible military interventions in the Persian Gulf aimed primarily at avoiding major disruptions to other countries' economies. The costs and risks of this responsibility would be so great that either the preparations for this type of intervention would have to be negotiated on a truly multilateral basis, or all countries would have to realize that there are situations involving major disruptions of oil production in which the United States would not lead a military intervention.

In this context, the multilateral component of a major military intervention in the Persian Gulf aimed at avoiding unacceptable global economic disruption would require burden sharing in some proportion to the overall economic strength and benefit of the powers affected, and thus would be contingent on a shared decision to proceed. Such an arrangement sets the bar high for an action on the scale of the

occupation and political reconstruction of Saudi Arabia, but such a multilateral policy is in both the U.S. and global interest. The cost and risk of failure of such an occupation are so high that it should be undertaken, if at all, only as a broadly shared, multilateral responsibility.

Rescission of the Carter-Clinton Doctrine on unilateral military intervention would constitute a major change in U.S. foreign policy, something not to be taken lightly or done precipitously. If carried out, it could preclude a U.S. occupation of Saudi Arabia, even if that country experienced a revolution that threatened its ongoing major contribution to world oil supplies. Careful and concrete preparations would have to be undertaken over the course of at least one or two U.S. administrations to reduce the likelihood and impact of major disruptions of oil supplies. The most effective approach to this end would be one of international cooperation, although, as outlined in the rest of this section, the United States could also do much on its own to help regularize global oil production and pricing.

"Petroleum reserves are a mechanism for mitigating the impact of short-term changes in supplies from petroleum exporters. Historically, U.S. policy has called for holding back strategic mineral reserves to support military operations in the event of an extreme emergency."

Petroleum Reserves

Petroleum reserves are a mechanism for mitigating the impact of short-term changes in supplies from petroleum exporters. Historically, U.S. policy has called for holding back strategic mineral reserves to support military operations in the event of an extreme emergency. However, it is proposed here that strategic petroleum reserves be used as a *substitute* for military action. The idea would be to mitigate extreme price spikes from supply drops that are long enough to have a substantial economic impact but short enough to be dealt with by releasing reserves. The reserves would then be refilled when prices are projected to be at their lowest. Buying low and selling high would help to offset the substantial cost of maintaining adequate reserve facilities.

Although this approach could help to offset costs, if it really were a profitable undertaking on a microeconomic basis, presumably private companies would already be doing it on a larger scale. It is thus only for the benefit of overall energy security and macroeconomic stability that governments should expand their petroleum reserves. They must back up this approach with other measures to ensure greater short- and medium-term elasticity of demand, so that any determined and deliberate effort by an export cartel to hold off production until the reserve is exhausted would be for naught. It is also for this reason that international cooperation on stocking and use of petroleum reserves is desirable.

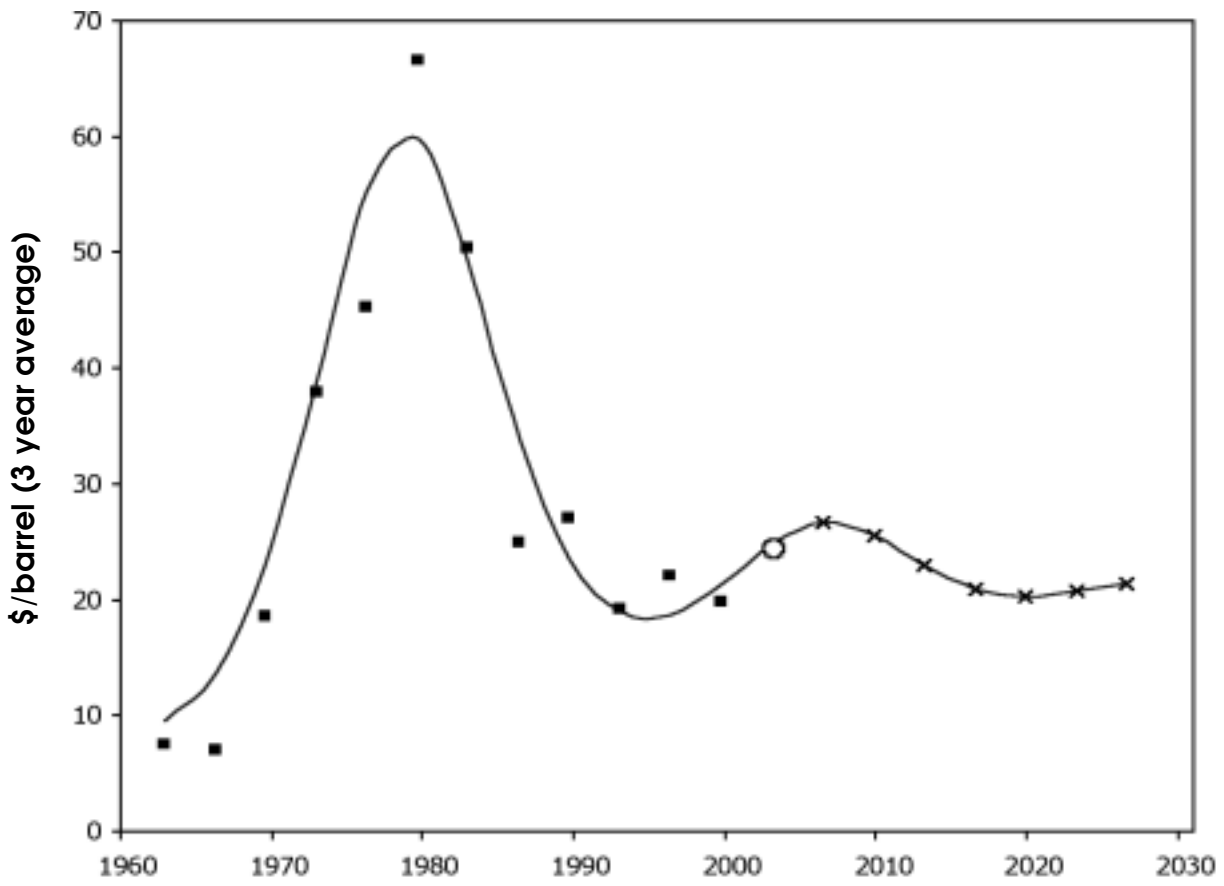
Petroleum reserve policies are a particularly attractive area for international cooperation for two other reasons as well. First, the appropriate geological formations and engineered structures for reserve storage are widely distributed geographically, making it more economical for major oil importers to spread reserve storage among them. Second, the International Energy Agency (IEA) already provides a mechanism for allocating petroleum among importers in times of severe market stress. The IEA process does need to be adjusted, however, to account for the importance of rapidly growing petroleum-importing economies such as China and India.

Some of the other coping mechanisms listed earlier also have a major role to play. These mechanisms include oil import fees and measures aimed more directly at the high petroleum consumption of transportation.

Oil Import Fees

Oil import fees can help to condition domestic markets to higher oil prices, thereby avoiding economic shocks and the temptation to resort to hasty military action when international market prices increase rapidly. From an economic perspective, the next few years seem to be a particularly opportune time to implement oil import fees. One of the reasons is evident from Figure 3.1. The data points in Figure 3.1

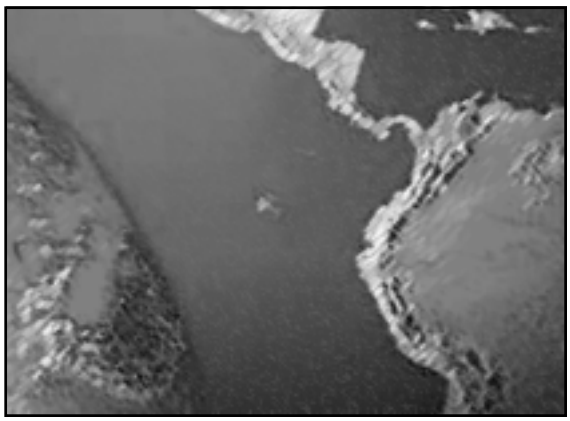
Figure 3.1 Three-year averages of inflation-adjusted oil prices, projected forward with a damped oscillation superimposed on a gradually rising trend (curve and crosses) compared with three-year averages used to calibrate the curve (solid points) and the average for 2002–2004 (open circle).



are three-year averages of historical oil prices. The curve used to interpolate and extrapolate this data combines a gradual increase in inflation-adjusted prices with an oscillating correction of decreasing magnitude.[2] This curve projects the earlier data to the average for 2002–2004 reasonably accurately and gives the projections for subsequent three-year periods shown as crosses. Quantitatively, many such curves give nearly as good a match to the data, but all reasonably likely ones should share one qualitatively important feature of the result shown in Figure 3.1: the intermediate-term adjustments by consumers and noncartel producers to recent high oil prices should eventually put downward pressure on prices, albeit with a timing that is as yet uncertain. Thus it should be possible to gradually phase in oil import fees that fix the total cost of imported oil to consumers at roughly its recent level.

Depending on the evolution of production efficiency in the oil industry and other economic sectors, another likely outcome illustrated in Figure 3.1 is that oil prices may again rise in the decades to come. Such an increase followed a period of low prices in the 1990s, as incentives for higher energy production and investment in high-cost oil production were flushed out of the economy. It is not inevitable but certainly plausible that this pattern will repeat itself, albeit with a lower amplitude of price fluctuation if political and market systems have absorbed useful lessons from historical experience about the impact of large price fluctuations. Oil import fees should moderate both the amplitude and economic impact of such fluctuations. However, they must be used with care and preferably with international cooperation to moderate the undesirable effect of reducing elasticity of demand.

As for the relationship of oil import fees to energy and security policy, it is neither necessary nor desirable to maintain further incentives to domestic production, such as depletion allowances, for a long time. Rather, domestic resources should be conserved at least as much as unperturbed market forces allow to provide more long-term resilience to the effects of global depletion of the most readily extractable resources. It may, however, be useful to clarify the circumstances—both economic and environmental—under which oil extraction from ecologically sensitive areas would be allowed. If so, such reserves could in extremis provide a modest cushion between short-term response measures to perturbations in global production and longer-term economic readjustments to durably higher oil prices.



Use of oil import fees to adjust gradually the prices of imported oil paid by consumers should provide market incentives for investments in energy efficiency and alternative energy sources. The judicious application of taxes on sales of petroleum products could augment such incentives, provided that tax relief and employment assistance for those most severely affected make such taxes politically feasible. Like in many sectors of the economy, a modest amount of judicious public investment in research and development could also pay sizable overall dividends where the private sector has not internalized incentives to do so itself. The use of biotechnology to produce alternative fuels may eventually complement more conventional engineering approaches to increasing fuel efficiency. However, it also would be desirable to provide additional structural incentives for a smooth, flexible response should falloffs in global production drive prices beyond the point manageable by oil import fees and petroleum reserve releases.

Leverage in Dealing with OPEC

Providing incentives to convert a significant portion of transportation fleets to less gasoline-dependent equipment is one way to mitigate the impact of unusual oil supply and price fluctuations. It would be helpful if both families and public and private transport fleets have part of their vehicle stock in the form of very efficient engines (such as small cars and gasoline-electric hybrids) and more oil-independent vehicles (using natural gas, biofuels, or hydrogen). Then, when needed, they can switch over to these vehicles with less economic disruption. However, it is not necessary and may not even be desirable to go to the extreme of converting almost all of the transport fleet to much less oil-intensive vehicles. The primary goal in oil price stability is to increase the flexibility for shifting to less oil-hungry vehicles when the available oil supply decreases rapidly. This flexibility should reduce the political pressure to maintain military forces capable of trying to ensure that governments prone to price moderation and stability remain in power in oil-exporting countries. The benefits of avoiding the perceived need for this level of military preparedness will not be internalized by the market system on its own, even in the presence of the higher steady prices resulting from oil import fees. Development of a comprehensive policy on these questions would require careful study of the overall impact of the various relevant tax incentives and regulatory approaches.

Summary

A multilateral approach to oil import fees and public policy on research and development and transport fleet flexibility would be more effective than less coordinated unilateral initiatives. This cooperation might best be worked out in the context of an explicit collective bargaining arrangement between OPEC and major consumers such as the OECD members, China, and India. Consumer countries will carry more weight if they coordinate their policies on the issues just enumerated. An expanded role for the International Energy Agency on behalf of oil-consuming nations is one possible approach to such coordination. Alternatively, the

OECD and other major oil importers may wish to develop a separate mechanism specifically to bargain with OPEC, leaving the IEA to fulfill its traditional role of coordinating emergency response and increasing the transparency of the information flow.

> **Although effective collective bargaining could be the most powerful method for avoiding future major conflicts over oil, it may be that a less complex process of learning from historical experience will suffice.**

Although effective collective bargaining could be the most powerful method for avoiding future major conflicts over oil, it may be that a less complex process of learning from historical experience will suffice. If the amplitude of historical fluctuations in oil prices continues to dampen, it may become clear that any likely gains from temporarily suppressing oil prices are far outweighed by the costs of preparing for executing a large-scale military intervention. In either case, recent experience suggests that a major reexamination of conventional military force structures is needed in light of the outcome of the U.S.-led occupation of Iraq and intervention in Afghanistan.

Conventional Military Force Restructuring

U.S. and other NATO military forces have inherited two problems from the cold war. One is that parts of these forces are still geared toward fighting wars between major powers, but new relationships between these powers make such wars even more unlikely than they were before. The other is that these forces, particularly those of the United States, have been well configured to prevail in the initial stages of combat against medium-size states, but not in the aftermath of an initially successful occupation.

A policy of being prepared to intervene unilaterally in the large oil-producing states to influence who has control of production dictates that the United States maintain sufficient conventional military forces to attack, occupy, and then stabilize the succeeding government. Moreover, those military forces must conduct such operations in a country that had substantial oil revenues to build up its military and whose population may harbor violent opposition to outside forces bent on determining who controls the country's oil. An operation on this scale requires forward basing of air power and heavily armored ground force divisions, as well as the naval and air transport support and protection needed to supply these forces deep in enemy territory. It also requires substantial occupation forces trained in the local languages and customs and suitable intelligence and reconstruction support capable of succeeding while pursuing an intensive counterinsurgency campaign. According to the so-called Powell Doctrine (named for Gen. Colin L. Powell, chairman of the Joint Chiefs of Staff during the Persian Gulf War and secretary of state in the George W. Bush administration), such a military operation should be undertaken with overwhelmingly superior force, solid public support, and a clearly defined goal and exit point.

The recent occupation of Iraq illustrates the difficulties of applying the Powell Doctrine to include with the overall war the broader goal of establishing a stable successive government considered suitable by the United States and its allies. Whatever the ultimate outcome in Iraq, the marked differences between the pre-attack planning and the realities of the occupation make it clear that applying the Powell Doctrine to a future similar conflict would require considerable restructuring of U.S. military capabilities, all the more so if it turns out that no major NATO allies are willing to support such a campaign. Indeed, to maintain both the Carter-Clinton and Powell Doctrines, the United States would have to undertake a very substantial restructuring of its military and intelligence capabilities. It is far from clear that the country can, will, or even should master this challenge. Failing to follow the Powell Doctrine has clearly been problematic, so the only alternative may be to reexamine the Carter-Clinton Doctrine.

Scale and Type of Operations

Under the policy proposed here, the United States would not undertake a unilateral military intervention solely for the purpose of determining

who has control over oil resources and production. It would retain the ability to intervene for other purposes, such as helping to repel a detested invader, dealing with egregious human rights violations, or suppressing an unacceptable level of state support for international violence by intelligence units or nonstate actors. In these and similar situations requiring large-scale intervention forces, the United States could expect to operate with broad multilateral support. It is possible that smaller-scale peacekeeping challenges might arise where the United States feels it necessary to intervene but the international community is too overburdened with other challenges to provide any support. Still, appropriately configured U.S. forces should be able to handle such situations on their own.

The proposed policy reduces the scale of operations for which planning is needed. In particular, U.S. forces would not be expected to equip and train for a large-scale, unilateral battle against substantial conventional forces, followed by a prolonged counterinsurgency campaign. Large-scale conventional multilateral operations such as the 1990–1991 battle over Kuwait might still occur if the United States determined that the government of the attacked country was worth fighting for irrespective of its oil resources. However, U.S. forces would not be expected to make a rapid transition from this kind of conventional battle to the very different training and equipment needed to succeed in a prolonged follow-up reconstruction and counterinsurgency campaign. Because the Iraqi military was built up with outside support during the cold war, the war over Kuwait was a larger-scale conventional operation than is likely to be faced by NATO and any other coalition partners in the near future. Given the considerable technical improvements in firepower direction and application that have occurred since the first Persian Gulf War, it should be possible to remain prepared for such operations with NATO heavy forces somewhat smaller than those being maintained at the end of the cold war.

After the United States and its allies that remain in Iraq withdraw most or all of their occupying forces from the country, it is likely that NATO will continue to face the challenges of reconstruction and counterinsurgency in Afghanistan. There, large-scale conventional forces were not needed to occupy the capital. A successful outcome in Afghanistan is by no means guaranteed, but at least the United States has been engaged there from the start with the broad cooperation of domestic and external allied forces. If heavy NATO forces are sized for scale and the type of conflict along the lines just described, then there should be room within constant, inflation-adjusted U.S. security budgets to reconfigure the equipment and training of forces through the brigade and division level to deal more effectively with peacekeeping and reconstruction efforts.

Quadrennial Defense Reviews

A focal point for U.S. military planning has traditionally been the Quadrennial Defense Review (QDR). The 2001 QDR defines the following basic capabilities:

- Defend the United States.
- Deter aggression and coercion forward in critical regions.
- Swiftly defeat aggression in overlapping major conflicts, while preserving for the president the option to call for a decisive victory in one of those conflicts—including the possibility of regime change or occupation.
- Conduct a limited number of smaller-scale contingency operations.

The revisions to U.S. energy and security policy outlined earlier in this chapter do not necessarily affect these goals per se. However, they do substantially affect the definition of "critical region" and thus the likelihood and scale of possible overlapping major conflicts. After all, if the United States is not going to intervene unilaterally for the sole or primary purpose of affecting who has control over oil, then the chances of two simultaneous major conflicts without substantial alliance support become much smaller. Moreover, it would be imprudent for the United States to provoke a major war with North Korea solely over its continued development of nuclear weapons and impractical to do so over North Korea's export activities without the active cooperation of other regional powers. Nor is a major conventional war with China plausible, even if the United States retains the option to use displays of force in the Taiwan Strait as a political strategy. Thus within this revised policy the probability of two

overlapping major conflicts becomes so small that such a situation could be handled through contingency planning rather than maintaining at all times the full forces needed for simultaneous major conflicts. Moreover, if the United States avoids the occupation of other countries primarily to determine what kind of government there controls oil production, then the scale of unilateral U.S. commitment should be reduced.

What is likely to remain and perhaps even increase is the perceived need for the United States to successfully carry out military operations other than major conventional battles. The most obvious example is Afghanistan. Other examples are Haiti and Liberia and other major unresolved violent situations, primarily in Africa. The U.S. intervention in neither Afghanistan nor Haiti can by any means be defined as an unqualified success when it comes to establishing a durable order that deals with problems such as the export of violence or refugees. Thus a careful assessment is needed of what can and should be done to execute such operations, particularly if a redefinition of energy and security policy facilitates a reexamination of overall U.S. foreign policy and force structures. A central requirement of the needed conventional military restructuring is to assign support for reconstruction and peacekeeping operations at least the same importance and prestige as large-scale battle.

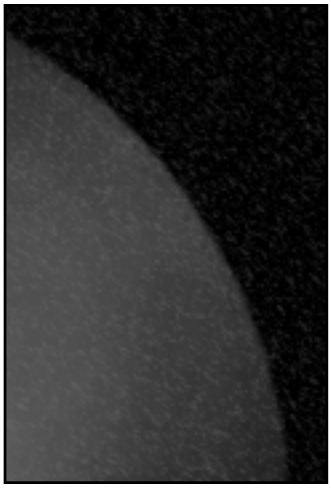
1 For convenience, the term *Carter-Clinton Doctrine* is used here, because policy statements such as the one that follows from the 1996 National Security Strategy were made in major documents during both the Jimmy Carter and Bill Clinton administrations—regardless of whether such statements owe more to the presidents or the security advisers or whether either former president approved of the 2003 occupation of Iraq that he presaged. This occupation went beyond the aims of the Carter-Clinton Doctrine, but it relied on military preparations made in support of that doctrine.

2 The method used to obtain the result in Figure 3.1 is described in "Appendix C: Energy Modeling" of the course reader *Energy and Security: From Babylon to Baghdad* (January 2004) by Clifford E. Singer. The reader is available from the Program in Arms Control, Disarmament, and International Security, University of Illinois at Urbana-Champaign.

CHAPTER 4

Using Outer Space to Enhance Security

This chapter outlines multilateral approaches to ballistic missile defense and space-based weapons. Because a detailed assessment of the efficacy and feasibility of each approach is outside the scope of this report, this chapter includes only the analysis needed to support broad policy recommendations about two types of more specific questions pertinent to ballistic missile defense and weapons in space. First, what missile defense deployments make sense, and what multilateral approaches are required to minimize the need for missile defenses and manage the consequences of any deployments? Second, should weapons in space be controlled, and, if so, what multilateral approaches might be effective?



Ballistic Missile Defense

The current U.S. ballistic missile defense (BMD) program is driven primarily by domestic politics and secondarily by emerging threats. For example, the deployment of an operational national missile defense (NMD) system in Alaska and California by the end of 2004 has more to do with promises made in the 2000 election campaign than with subsequent development of ICBM threats. In fact, no such threats have appeared despite the conclusion by the 1998 Rumsfeld Commission that ICBM threats could emerge within five years of a decision by a state, such as North Korea, to produce such weapons. Moreover, the fact that ballistic missile defense is more often championed by civilian than military leaders suggests that countering actual threats is not necessarily at the heart of the issue. Central to the analysis presented here is the belief that the BMD debate should be driven more by real emerging threats and technical capabilities and less by domestic politics. Moreover, ballistic missile defenses should be deployed only when their benefits clearly outweigh their costs, just as multilateral approaches to security should be considered only when their benefits outweigh the costs.

Ballistic missile defense is a response to the perceived failure to prevent the spread of ballistic missiles (and nuclear weapons) and to the lack of faith among U.S. leaders that hostile states can be dissuaded from using them against U.S. interests. If conventionally armed ballistic missiles were the only threat spreading, ballistic missile defense would not receive nearly as much attention. Today, however, chemical and biological warheads also are possible. However, chemical payloads would not cause much more damage than high explosives, and biological weapons are better delivered covertly. Knowing the time and place of impact of such warheads would allow the effective medical response needed to protect people from atmospherically released pathogens, making such attacks relatively ineffective. Deterrence is also quite credible, because in ballistic missile attacks the identity of the attacker is known, and the United States can threaten devastating retaliation, using conventional or possibly nuclear forces, against any country that attacks it. Still, there are scenarios in which deterrence might fail, and it is these scenarios that generate interest in ballistic missile defense. The range of scenarios in which missile defense becomes critical is quite narrow, however.

Nevertheless, ballistic missile defense can in principle have benefits for the United States. If effective, it can protect against threats from regional powers in instances in which deterrence is apt to fail (e.g., when regional adversaries have nothing left to lose—a situation in which some leaders might find themselves if their regime is about to topple under U.S. military pressure). In this situation, an effective ballistic missile defense could increase U.S. freedom of action to use military options for dealing with

hostile regimes. Theater missile defenses (TMD) deployed to regional allies might help to cement alliance relations, and they would help to integrate U.S. and allied military capabilities through joint exercises. In East Asia, though, Japan's decision to conduct joint research for a TMD system with the United States has become fodder for regional disputes, because South Korea is not participating in this joint research.

U.S. involvement in regional TMD in East Asia is therefore a two-edged sword, and it must be pursued with great tact, if at all. If it is pursued, the United States might even become the supplier of important ballistic missile early warning and tracking information with which to improve the performance of regional TMD capabilities. The interoperability of regional TMD systems implies a degree of military cooperation that furthers U.S. goals of cementing its ties with regional allies and friends, but it also raises the suspicions of other states such as China. Clearly, the United States needs to develop a coherent regional BMD strategy that allows for the possibility of limited BMD deployments to blunt emerging missile threats and to cement important alliances without provoking unwanted regional tensions and possible military reactions that could undermine regional security over the long run.

Over the past decade, ballistic missile defense has largely been a domain for unilateral U.S. actions. Examples include technical advances in kinetic-kill vehicles and ballistic missile detection and tracking sensors for missile defense applications; the unilateral U.S. withdrawal from the Antiballistic Missile (ABM) Treaty in December 2001; and attempts to foster regional cooperation on ballistic missile defense. Israel is the only other country to pursue BMD capability seriously over the past decade. In cooperation with the United States, it developed the Arrow BMD system, making it the first country in the world with a national missile defense capability.

Most of these activities have met with relatively muted protest from China, Russia, and the United Nations, suggesting that multilateral restraints on expanding BMD programs are not as politically salient as they were during the cold war. Whether this endures as the United States begins to deploy ballistic missile defenses remains to be seen. In any case, two important types of multilateral action remain: constraining the spread of offensive ballistic missiles through cooperation, and arranging multilateral forums to manage the possible negative consequences if BMD is actually deployed. The first action is intended to influence the scope and timetable for BMD deployments, and the second is intended to minimize the potential destabilizing effects of BMD deployment. Each of these efforts has its predecessor. The Missile Technology Control Regime continues to attempt, with limited success, to constrain the export of ballistic missile technologies from advanced industrial countries (aligned with the West) to regional states, and the ABM Treaty between the United States and Russia addressed the implications of ballistic missile defense for strategic stability.

Constraining the Spread of Ballistic Missiles

Although the Missile Technology Control Regime has not prevented the spread of offensive ballistic missiles, it has slowed its pace. The MTCR is therefore a useful model for multilateral cooperation to prevent further ballistic missile proliferation. It could also become a forum for placing pressure on indigenous ballistic missile proliferation programs and possibly for inhibiting their export via mechanisms such as the Proliferation Security Initiative. To the extent that ballistic missile proliferation can be prevented, slowed, or reversed, such developments will have a direct impact on the timetable for BMD deployment.

Some people view the MTCR as ineffective, in part because of the widespread proliferation of Scud missiles by the Soviet Union during the 1980s, before the advent of the MTCR. Scud systems are at the heart of most of the ballistic missile proliferation over the last two decades (e.g., Iraq's Al Hussein missiles prior to the first Gulf War and North Korea's Scud B, Scud C, and No Dong ballistic missiles, which were exported to Pakistan and Iran). Over a dozen other states have older versions of Scud B and Scud C Soviet missiles. Using Scud technologies, both Iraq (prior to the first Gulf War) and North Korea developed modest indigenous ballistic missile programs. Most current ballistic missile proliferation derives from these programs. This is particularly the case with North Korea, which has become a second-tier supplier outside of the MTCR.

This said, large liquid-propellant ICBMs and their components and large solid-propellant ballistic missiles are not widely available. The MTCR can play a very important role in limiting the speed at which these technologies spread, thereby reducing the impetus for U.S. national missile defense deployment. U.S. pressure on Russia over the past several years to cancel the sale of large liquid-propellant rocket engines to Iran is a case in point. Thus a clear multilateral priority in the coming decade is to increase the number of states cooperating under the MTCR, especially to include China, and to pay more attention to those technologies critical to the development of long-range ballistic missiles. In addition, the regime should focus on the proliferation of solid-propellant missile technology. At this point, almost all of the solid-propellant ballistic missiles that have spread to other countries have a relatively short range (i.e., less than about 600 kilometers). In strengthening the MTCR, member states should offer inducements—not just sanctions—such as subsidized access to space launch for states that want to launch their own commercial satellites. This particular inducement could reduce substantially the interest in indigenous space launch vehicle programs, given their high cost relative to current Russian or Chinese launch costs. Disclosure of payload would have to be required under such a regime.

> **"Using Scud technologies, both Iraq (prior to the first Gulf War) and North Korea developed modest indigenous ballistic missile programs. Most current ballistic missile proliferation derives from these programs. This is particularly the case with North Korea, which has become a second-tier supplier outside of the MTCR."**

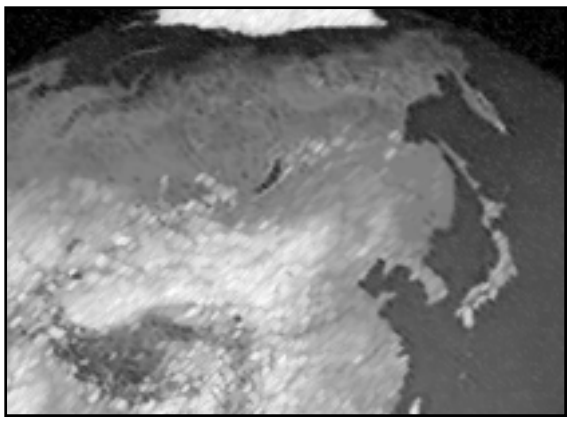
In dealing with second-tier suppliers, such as North Korea, that are not members but rather targets of the MTCR, more coercive multilateral measures might be appropriate. The Proliferation Security Initiative, which currently is directed at interdicting shipments of weapons of mass destruction, could be extended to include shipments of ballistic missiles and their components. Such a coercive multilateral approach could deter shipments, and even result in their seizure should they occur on ships from countries that have agreed to be searched under the PSI. However, if North Korea exports missile components on its own ships, there is no legal basis for interdicting them. To interdict them with military force would be an act of war and thus would create a difficult situation that falls outside the realm of multilateral measures. Nevertheless, the PSI helps to reinforce a norm against trafficking in such technologies, and it therefore increases the chance of collective action against violators even if the system is not leak-proof.

More idealistic proposals include multilateral negotiations in the Conference on Disarmament to ban the deployment of ballistic missiles globally, as was suggested at Reykjavik by President Ronald Reagan in 1988. While interesting in principle, such a negotiation is not likely to occur in practice, because it requires agreement on the goal by all states with modest or large ballistic missile arsenals—not least of which are the United States, Russia, China, Great Britain, and France. Regional bans on one class of ballistic missiles, similar to the Intermediate-Range Nuclear Forces Treaty, may be more feasible, although even here common interests may be elusive in the difficult cases such as South Asia or China and Taiwan. Neither India nor Pakistan is likely to want to dispense with its principal nuclear delivery system, medium-range and intermediate-range ballistic missiles, as long as it retains nuclear weapons. Moreover, many of India's long-range ballistic missiles are designed with China in mind. Such a ban would therefore not be of interest to India unless it included China.

Managing the Consequences of Ballistic Missile Defense Deployment

The Antiballistic Missile Treaty, although a bilateral treaty, was widely viewed as a pillar of stability during the cold war, because it prevented an unrestrained offense-defense arms race between the two superpowers. In theory at least, it also helped to avoid the creation of a strategic balance that was unstable with respect to incentives to strike first in a crisis. The absence of the ABM Treaty by itself does

not undermine strategic stability, but the newly allowed defenses might if they are deployed in sufficient number. For example, China might react to U.S. national missile defense deployment by expanding its strategic modernization program, thereby triggering concern within the United States about China's intentions, just as U.S. national missile defense deployment triggers concern within China about U.S. intentions. If unchecked, this action-reaction phenomenon could lead to deteriorating relations, an increased emphasis on Sino-U.S. military competition as opposed to economic cooperation, and a potentially expensive arms race that improves neither country's security.



The impact of a ballistic missile defense on stability depends on the size and character of the defense. National missile defense has very different implications than theater missile defense. Also, a national missile defense system with twenty interceptors is quite different from one with two hundred interceptors in terms of its impact on strategic stability. Similarly, whether the system is terrestrially based or space-based makes a difference, because this distinction determines which states are vulnerable to intercept. In addition, once defenses of any size are deployed, attention will focus on the U.S. BMD production infrastructure and whether a given BMD system can be rapidly expanded in size.

The size and character of U.S. NMD and TMD deployments over the next ten to fifteen years will depend on threat perceptions and domestic politics. What size and type of defenses might the United States deploy in the next ten to fifteen years, assuming that political support and funding for ballistic missile defense remain high? It is plausible to imagine that the United States will deploy as many as 1,000–2,000 TMD interceptors (e.g., Patriot Advanced Capability-3, Theater High Altitude Area Defense, and Navy Theater Wide defenses) and perhaps 20–200 NMD ground-based, midcourse defense interceptors at two to four sites, possibly including one site outside of the United States. In addition, several hundred Standard Missile-3 interceptors may be deployed aboard Aegis cruisers as an NMD adjunct. The sensor architecture will likely include upgraded early warning radar, upgraded radar aboard Aegis cruisers, multiple "imaging" X-band radar, and a high-orbit, space-based infrared system (SBIRS High) as a replacement for the Defense Support Program for ballistic missile early warning. Lower-orbit SBIRS satellites for tracking objects in space probably will not be deployed in the next ten to fifteen years because of technical difficulties and cost overruns. The emphasis in U.S. BMD architectures will be on midcourse and terminal defenses using land- and sea-based platforms. A limited boost-phase defense capability based on terrestrial platforms is also possible, depending on the outcome of the Airborne Laser Program and boost phase kinetic-kill vehicle research and development programs. However, space-based BMD is unlikely in this time frame because of cost and technical challenges. Space-based lasers, for example, simply will not be technically feasible for fifteen to twenty years. Space-based interceptors using kinetic-kill vehicles are more feasible, but their cost will likely be prohibitive. Nevertheless, unless constrained, component and prototype testing of space-based BMD systems might occur in the next ten to fifteen years.

If an effective BMD is feasible deployed, avoiding a costly offense-defense arms race is a common interest shared by both the offense and defense. This common goal might provide the basis for a stable multilateral regime, or at least provide an incentive for bilateral or multilateral discussions between interested states. Confidence-building measures such as increased transparency about BMD deployment plans and offensive responses also would also help to manage the negative consequences of an offense-defense arms race.[1]

U.S. BMD deployment will not create a strategic problem for Russia for quite a while because of the size of Russia's residual arsenal of long-range missiles and its long-range bomber force that can circumvent

BMD systems for nuclear delivery. However, the same cannot be said for China. The whole point of the Bush administration's decision to withdraw from the ABM Treaty in 2001 was to allow the United States the freedom to deploy BMD systems that undermine strategic stability for emerging ballistic missile states in a one-sided manner—with the United States retaining freedom of action to threaten regional states with impunity. For many emerging missile states, attempts to engage in an offense-defense arms race with the United States could be inordinately expensive given the relative strength of the U.S. economy. However, China could afford such a race in the long run, even if it would prefer to avoid this outcome.

"Transparency on both sides would undercut both the temptation to engage in worst-case planning and the support for domestic political constituencies that want to portray the other side as aggressive and hostile in intent."

It is important that both the United States and China share the goal of avoiding Sino-U.S. misperceptions about U.S. BMD deployments and possible Chinese responses. The extent to which U.S. BMD deployments are not aimed at China must be made transparently clear, because such systems can intercept Chinese ballistic missiles and thus will appear threatening to Chinese military planners. Clearly, any defense that can intercept a North Korean ICBM warhead might also intercept a Chinese warhead launched from ICBM bases in eastern China. Confidence-building measures, possibly in the form of military-to-military exchanges and discussions that address the anticipated capabilities of U.S. national and theater missile defenses would be important. Similarly, if China responds to U.S. NMD deployment by increasing the size of its strategic missile force, deploying multiple independently targeted reentry vehicles (MIRVs), or engaging in countermeasures, it must be clear to U.S. leaders that none of these actions is a sign of hostile intent but simply a limited response to ensure the effectiveness of China's limited nuclear deterrent capability.

Transparency on both sides would undercut both the temptation to engage in worst-case planning and the support for domestic political constituencies that want to portray the other side as aggressive and hostile in intent. Indeed, dialogue between the United States and China could prevent limited BMD deployments and limited offensive responses from turning into an open-ended arms race. Both sides should have an interest in such a goal. But if U.S. NMD and TMD systems are deployed specifically to blunt China's missile force, then no common interest exists and a classic offense-defense arms race would likely be the outcome, with ripple effects that will influence China's interest in the Comprehensive Test Ban Treaty, negotiations on a Fissile Material Cutoff Treaty, and the size of its reserve nuclear warhead stockpile. In a world that allows unlimited BMD deployment, offensive missile states are likely to adopt hedging strategies and to retain relatively large reserve nuclear stockpiles so that the size of their missile force can be expanded relatively quickly.

Sino-U.S. discussions about TMD deployments in Taiwan and the Chinese offensive ballistic missile buildup across the Taiwan Strait might also help to reduce tensions. China currently has few military options in its effort to pressure Taiwan into eschewing independence. Ballistic missiles are its principal coercive instrument, as witnessed by the 1996 missile firings on the eve of Taiwan's national elections. Any attempt to transfer a TMD capability to Taiwan is viewed with great suspicion and rhetorical hostility by China. Similarly, ballistic missile deployments across the Taiwan Strait are viewed with suspicion in Taipei. Multilateral discussions among China, Taiwan, and the United States could seek some compromise whereby China would withdraw the missiles currently threatening Taiwan in return for a commitment that provocative TMD systems would not be deployed on Taiwan. However, China places great emphasis on its short-range and medium-range ballistic missiles, widely known as its "pocket of excellence." Thus Chinese withdrawal of these missiles may not be readily achieved in the absence of a pledge by Taiwan not to forge ahead with its independence. Until Taiwan convincingly makes such a pledge, this issue remains a major impediment to inducing China to curtail its ballistic missile system,

irrespective of Taiwan's decision to participate in a TMD system.

What is true for China and the United States is also true, in principle, for other regional states—such as Japan and China or India and Pakistan—where ballistic missile defenses might be deployed in the future. In the case of Japan, sea-based TMD systems deployed against the North Korean missile threat may have a collateral impact on China's missile capabilities. From China's perspective, Japan's TMD capability, when combined with Japan's latent nuclear weapons capability (owing to its stockpile of plutonium for its breeder reactor program) and the offensive ballistic missile capability inherent in its space launch vehicle program, gives Japan a "sword and shield" that worries Chinese long-range planners. Again, such concerns could be addressed in a bilateral or multilateral forum.

> "For reasons of cost and vulnerability to enemy tampering, space has not been used so far to station weapons permanently."

The Indo-Pakistani case is different because India's recently expressed interest in ballistic missile defense presumably derives from an interest in blunting Pakistan's nuclear-capable ballistic missiles. Consequently, misperception is not an issue here. Rather, multilateral discussions should focus on the potential risks associated with limited Indian BMD deployments. Such deployments would place pressure on Pakistan to increase the size of its nuclear missile force and possibly to increase the alert status of its missile force to ensure that it cannot be degraded by an Indian first strike, with the attendant risk of Indian misperception of Pakistan's intentions and the increased risk of accidental and unauthorized ballistic missile launch. Consequently, the discussions between India and Pakistan should aim for the two countries to avoid ballistic missile defenses altogether, rather than manage their consequences if they are deployed within the region.

In any of these and other situations arising from missile defense deployments, the United States could exercise significant leverage by limiting its own deployments and transfers of U.S.-origin technology and missile systems. Such an approach should be limited to cases in which there is a clear net benefit based on the overall political consequences and a lack of more effective alternatives, not just the enhancement of a particular technical capability.

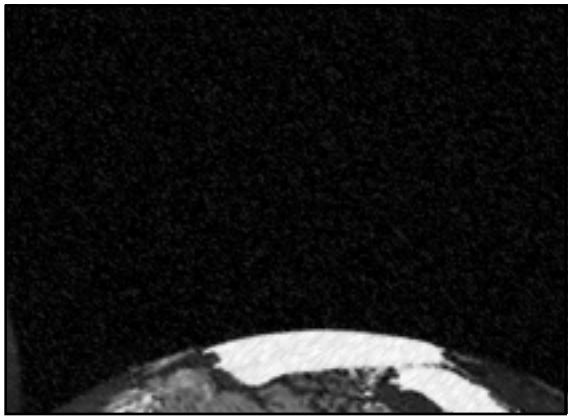
Space-Based Weapons

The belief is widely held that outer space, just like the oceans, is the province not of a single nation but of all mankind. Therefore, regimes to regulate the use of space should enjoy broad support, provided such regimes can be monitored and enforced. The space-faring nations have a common interest in preserving access to space, noninterference with each other's commercial satellites, and noninterference with each other's space monitoring networks. They also have a common interest in minimizing the hazards associated with space debris. These common interests form the basis for multilateral cooperation on various activities in space. For example, the International Telecommunication Union currently allocates slots in the increasingly crowded geosynchronous orbit, and it assigns radio frequencies to minimize interference between satellites. The Radio Frequency Interference Forum is another multilateral body that helps to resolve issues arising from radio frequency interference between satellites.

For decades, the United States has relied on remote sensing from space for intelligence, early warning of ballistic missile attack, and weather monitoring. Recent space-based developments are the Global Positioning System, which has taken navigation to new levels, communication using ever-increasing bandwidth via commercial and military satellites, and the proliferation of important commercial interests in outer space by a growing number of space-faring nations. To a large extent, the commercial and military uses of space overlap—communication, navigation, remote sensing/intelligence gathering, and weather prediction. Thus the satellites used for these purposes can be considered dual use, despite the different levels of sophistication in military versus civilian satellites. Ballistic missile early warning is the only military function that does not have a commercial equivalent. Presently technologies that overlap with civilian

applications are the only military activities in space; no weapons have been stationed there.

The dilemma is that states that rely on satellites to support terrestrial military operations want to preserve this capability for themselves in times of war and deny it to their adversaries. Clearly, warring parties have no common interest when it comes to interference with each other's military satellites. However, all countries might have a common interest in eschewing certain activities on the grounds that they, including the United States, would be more secure if such capabilities were not developed. Weapons based in space fall into this category.



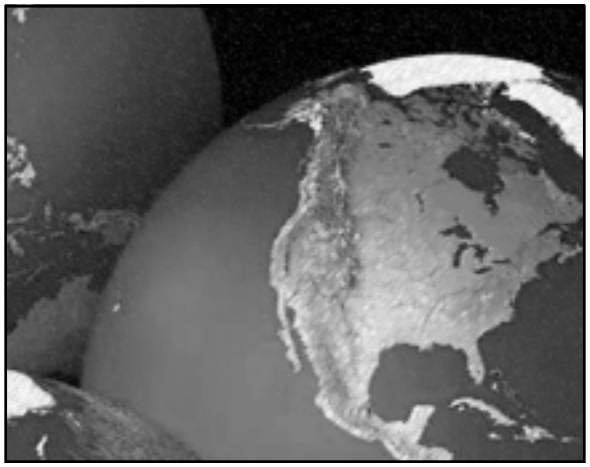
For reasons of cost and vulnerability to enemy tampering, space has not been used so far to station weapons permanently. Space-based weapons are expensive because they must remain operational in a space environment for five to ten years without human intervention and because they are costly to launch into orbit. As such weapons orbit the earth, they are vulnerable to attack or to tampering with their communication links, which could affect their station-keeping commands and raise the specter of taking a weapon out of orbit prematurely.

Weapons based in space for attacking targets on or near the surface of the earth, in particular, make little military sense. They are neither timelier nor more accurate than terrestrially based weapons such as ICBMs or high-velocity cruise missiles. In fact, the accuracy with which a warhead can be delivered from space could be worse than for terrestrial delivery systems. The benefits of basing bombs in space thus do not outweigh the costs. It is not surprising, then, that the Soviets abandoned their Fractional Orbital Bombardment System; that many nations, especially the United States and the Soviet Union, agreed to ban weapons of mass destruction in orbit and on celestial bodies in the Outer Space Treaty of 1967; and that ICBMs have long been the preferred method for delivering nuclear weapons, if not other weapons, over intercontinental distances. It is therefore conceivable that weapons in space could be banned through negotiations arising from a multilateral forum such as the Conference on Disarmament discussions on Prevention of an Arms Race in Outer Space, or PAROS. After all, the Outer Space Treaty has already banned stationing weapons of mass destruction in orbit and on celestial bodies.

In the absence of a shift from recent U.S. policy, it would be impossible to achieve a more ambitious ban on space-based ballistic missile defenses and antisatellite weapons than that currently in place. Although the George W. Bush administration has been eager to pursue space-based BMD systems because they offer global coverage against long-range ballistic missile launches, such defenses still must overcome substantial technical hurdles, and they may never be cost-effective relative to other forms of ballistic missile defense. Spaced-based BMD may therefore never become a reality, and so it could be particularly appropriate that U.S. opposition to banning such systems wane, possibly opening the door to discussion of a multilateral ban on space-based BMD systems. Such talks should not commingle other BMD functions that occur in space, such as ballistic missile detection and tracking, with space-based BMD systems, which are best dealt with separately. These other functions include space-based sensors that are essential for all BMD systems. Linking progress in talks on banning space-based missile defenses to progress in constraining ballistic missile proliferation and on various measures to reduce the chance of accidental and unauthorized ballistic missile launches—another rationale for ballistic missile defense—should improve the chance of successful multilateral negotiations, at least as far as U.S. participation is concerned.

Ballistic missile defense overlaps somewhat with space weaponry. This overlap occurs not because BMD interceptors and the missiles they target fly through outer space but because BMD interceptors have some residual antisatellite (ASAT) capability. Ballistic missile defense necessarily implies a low-

altitude ASAT capability, but not geosynchronous or high-altitude ASAT capability. This ASAT capability by itself would not justify the deployment of ballistic missile defense, but it is a collateral mission. In addition, the technologies for ballistic missile defense (e.g., kinetic-kill vehicles) can be directly transferred to produce dedicated ASAT weapons. However, the modest ASAT capability provided by BMD systems should not sound the death knell for larger multilateral efforts to control weapons in space, especially ASAT weapons.



Multilateral approaches to banning dedicated ASAT weapons might be possible if the United States, which currently is blocking such discussions, adopted the view that it would be better off if no one had such weapons than if every nation were free to deploy them—that is, the United States might obtain equivalent security at a cost lower than that associated with unconstrained competition. Clearly, from a national point of view the United States would be better off possessing ASAT weapons while denying them to all conceivable opponents. However, as it is with most unilateral advantages, the benefits are likely to be fleeting—just as it was in the late 1940s when the United States held the advantage of superior nuclear forces.

Moreover, because almost all of the space-faring nations are allies or strategic partners of the United States, it is difficult to envision against whom such ASAT capabilities would be directed. For example, India will not become a serious threat to U.S. space assets for political and technical reasons, unless both countries seriously mismanage their relationship. Elsewhere, all of the regional powers with whom the United States is likely to come into conflict in the next decade or more are not space-faring nations, nor will they become ones in the near future.

China is arguably the exception. Would the benefits of unconstrained ASAT competition with China make the United States more secure, given that U.S. forces will be more dependent on satellite capabilities in any future conflict in the Asia-Pacific region that involves China (e.g., over Taiwan)? China is likely to view U.S. ASAT weapons as a signal that the United States is actively seeking dominance in space. It behooves both states to avoid a potentially deleterious action-reaction cycle that may lead to a downward spiral in Sino-U.S. relations and end with a self-fulfilling prophecy in which the United States and China each define the other as an adversary and act accordingly. The essential question is whether such a scenario is inevitable, or whether some bilateral or multilateral forum can help to dispel misperceptions about the other's intent. The answer is that the deployment of ASAT weapons does not appear to hold any military benefits. Moreover, any misunderstanding about intent of military uses of space could be better addressed through patient diplomatic contacts, and possibly even formal negotiations with China.

Therefore, the United States would be better off banning dedicated ASAT weapons and the testing of any weapon in an ASAT mode (assuming that BMD tests are still allowed). Such a test ban would gain support from space-faring nations concerned about space debris, because high-altitude ASAT tests could create considerable debris that orbits the earth for many millennia. Such debris is a much more serious long-term threat to use of space than the debris produced by BMD tests and low-altitude ASAT tests. The latter debris is on suborbital trajectory or it falls from low earth orbit in a matter of days or months. A negotiated ban on dedicated ASAT systems also could include sanctioned reprisals against any state that attacks another state's satellites, thereby adding to the credibility of deterrence.

Even if an ASAT ban were in place, the United States and other countries would remain concerned about covert or improvised ASAT capabilities such as commercial docking satellites armed with explosive devices. Rules governing the distance of closest

approach between two states' satellites may somewhat reduce this concern, and they would provide a basis for early warning of an impending attack. However, whether this warning would be sufficient to take evasive action is not clear. Noninterference in space tracking capabilities would likely be part of such an agreement as well as sanctioned reprisals in the event of an ASAT attack to enhance deterrence. Ultimately, the United States would have to invest in passive defense measures such as stealth and maneuver capability for its critical satellites. Such passive measures, along with deterrence, might reassure U.S. leaders to the point where they would be willing to entertain a ban on dedicated ASAT weapons. If so, there may indeed be a common interest in banning such weapons.

Finally, there is the issue of whether nondestructive interference with an opponent's satellites by jamming or spoofing also should be banned. It makes sense to ban these activities as well, but deterrence may not be effective in this case, because it is often difficult to know who is conducting the jamming or spoofing. Moreover, leaving such activities out of an ASAT ban might be one price the international community must pay to achieve an agreement on a dedicated ASAT ban; it leaves one avenue open by which a country can degrade an opponent's military satellites in times of war. However, if this loophole remains, the United States may have to invest in jam-resistant communication links and encrypted messages to minimize the chance that this loophole would compromise its own military capability in times of war.

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1 One possible multilateral approach to dealing with missile threats would be to encourage movement toward a BMD-dominant world. This vision was offered by President Reagan during the Star Wars debate in the mid-1980s, but it has not been raised since. Although current U.S. interest in such an idea seems limited, a broad international consensus might be built for BMD proliferation. A "defense-protected build-down" was offered in the 1980s as way in which states that once relied on offensive missiles for deterrence might deploy partial defenses and then reduce the size of their offensive ballistic missile arsenals rapidly in order to pass quickly through the unstable region where middling level defenses are effective against ragged retaliatory strikes. After offensive missile arsenals are destroyed, ballistic missile defense helps to protect against cheating. The end point of defense dominance is attractive and, in principle, stable. However, such a regime is possible only if those states with modest to large ballistic missile arsenals share a common interest in this goal. If not, the prospect of a classic offense-defense arms race emerges in which, in response to defense deployment, the offense builds up its arsenal or deploys countermeasures to undermine the effectiveness of the defense, leading to little improvement in security for either side at considerable cost.

CHAPTER 5

Conclusions

The end of the cold war and the outcome of subsequent U.S.-led interventions in the Persian Gulf and elsewhere challenge both the earlier multilateral security framework that evolved after the cold war and the subsequent unilateralist approach that at least briefly supplanted it. These developments provide an opportunity to rethink U.S. policy from the ground up rather than persist with a troubled approach or simply revert to an older paradigm. That neither the current Strategic Arms Reduction Treaties nor the Moscow Strategic Offensive Reductions Treaty will have force after 2012 suggest that by 2011, the year before that 2012 presidential election, it would be useful to have a new strategic arms control framework in place. Likewise, for continuity it would be useful if the 2009–2013 U.S. administration could be well along the road by 2011 in implementing policies on energy and on military uses of outer space that enhance security along the lines described in this volume.

Policy Questions

With the altered international security context in mind, this analysis has addressed six questions that can now be answered explicitly.

Securing Nuclear Weapons

1. *What inducements are needed to convince countries to halt the production of fissile materials for nuclear weapons programs as soon as possible?*

The United States should be prepared to take the lead in ensuring that, if necessary, all payment on Pakistan's current foreign debt will be suspended indefinitely if and when Pakistan transparently halts nuclear technology exports and fissile materials production for weapons programs. The United States should encourage but not try to enforce resolution of Indo-Pakistani tensions, and it should recognize the legitimacy of India's concerns about global nuclear armaments.

2. *What needs to be done to more rapidly approach comprehensive global protection, control, and accounting of nuclear weapons materials in the safest possible forms?*

The United States and Russia should make and follow through on parallel policy declarations that they will conform the size of their nuclear weapons stocks to an agreed maximum, including strategic delivery capabilities and smaller tactical stocks, without future buildup. Both countries should then consider making periodic *percentage* reductions in this maximum, as long as China's long-term planning and other security concerns are consistent with a declining upper limit on the maximum size of the nuclear weapons stockpiles of any country. Such reductions should help to reassure India about the continued adequacy of its "minimum deterrent." Finally, the United States and Russia should cooperate on a much more rapid implementation of a comprehensive nuclear materials, protection, control, and accounting system to reduce the chances that nuclear weapons materials will be misused.

Ensuring Energy Security

1. *What mix of market competition, collective bargaining, political pressure, covert action, and military force will influence Middle East and global oil production levels and pricing?*

The United States should align its energy security policy to maximize the bargaining leverage of oil importers with OPEC. This policy should include an appropriate mix of energy taxation policy and better use of the country's strategic petroleum reserves. It should also include judicious incentives to increase the short-, intermediate-, and long-term elasticity of

demand for petroleum via transport fleet diversification and new energy efficiency and production technologies.

2. *What assumptions will underlie U.S. planning for possible future military intervention where there are significant energy resources?*

The United States should not intervene militarily in international or internal conflicts solely or primarily for the purpose of influencing who has control over energy resources, unless it has substantial multilateral support for an action that has a high probability of success and is essential for averting a major global economic disaster.

Using Outer Space to Enhance Security

1. *What missile defense deployments make sense for the United States, and what multilateral approaches are required to minimize the need for them and manage their consequences?*

A U.S. ballistic missile defense makes sense only as a reaction to real emerging threats as opposed to hypothetical threats that remain largely unconstrained by sober analysis of actual offensive missile deployments. Although the Missile Technology Control Regime has not prevented the spread of offensive ballistic missiles, it has slowed the pace of ballistic missile proliferation. In doing so, it provides a useful model for multilateral cooperation to prevent the further proliferation of ballistic missiles, especially long-range ballistic missiles and solid-propellant missile technology. Such cooperation also could become a forum for placing pressure on indigenous ballistic missile proliferation programs and possibly for inhibiting their export via mechanisms such as the Proliferation Security Initiative. This approach will require that the PSI be reconfigured so that, for those countries in East Asia, it represents an instrument of genuine multilateral cooperation rather than an instrument of U.S. policy for dealing with North Korea. To the extent that the MTCR and PSI avoid diplomatic pitfalls and prevent, slow, or reverse ballistic missile proliferation, they will have a direct impact on the need for ballistic missile defenses.

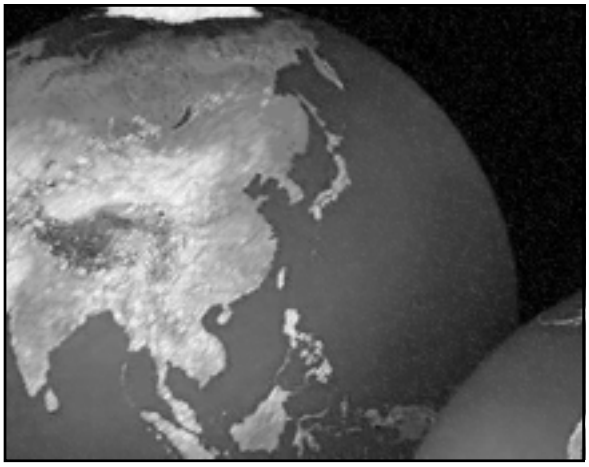
If ballistic missile defenses are deployed, multilateral or bilateral confidence building measures and transparency can help to manage the consequences of these deployments to avoid, for example, an unconstrained offense-defense arms race between China and the United States. Such discussions might also help to reduce misperceptions and misunderstandings about Japanese missile defense deployments among its neighbors in Northeast Asia. It is important to encourage regional forums to discuss the implications of ballistic missile defense deployments in Northeast Asia and in South Asia (given India's expressed interest in ballistic missile defense).

2. *Should weapons in space be controlled, and, if so, what multilateral approaches might be effective?*

Outer space is an important domain for commercial and military activities. To date, no weapons have been stationed in outer space. The space-faring nations have a common interest in preserving access to space and in not interfering with each other's commercial satellites and space monitoring networks. They also have a common interest in minimizing the hazards associated with space debris. These common interests form the basis for multilateral cooperation on various activities in space, especially the deployment of weapons.

Weapons based in space for attacking targets on or near the surface of the earth make little sense militarily. Through multilateral cooperation, countries could ban these weapons, much like the Outer Space Treaty has already banned the placement of weapons of mass destruction in orbit or on celestial bodies. Multilateral discussions to ban space-based ballistic missile defenses may also bear fruit once the United States realizes the enormous cost of deploying such defenses and opts instead for more practical terrestrially based ballistic missile defenses. Banning dedicated antisatellite weapons also may be possible. The dilemma, from a U.S. point of view, is to maintain military functions in space (i.e., communication, navigation, and reconnaissance), but to deny these same capabilities to a future opponent. However, if a dedicated ASAT ban could constrain the development of such weapons, passive defense measures (e.g., satellite maneuver) and deterrence might be able to manage the residual threat to U.S. satellites from other sources. Noninterference in space-tracking capabilities would be part of such an agreement as

well as sanctioned reprisals in the event of an ASAT attack. Ultimately, the United States would have to adopt the view that its security is better served if no one tests and deploys dedicated ASAT capabilities than if all states are free to engage in such activities. Finally, banning the testing of ASAT weapons would promote the common benefit of reducing space debris.



Policy Overview

The individual policy recommendations just listed are part of a broader approach to U.S. foreign policy that calls for "reinventing multilateralism," while retaining the capacity of the United States to act unilaterally on each of these issues and engage key countries on a bilateral basis if needed.

Securing Nuclear Materials

The United States should give top priority to halting the global production of fissile materials for nuclear weapons programs. Such production can be dangerous in its own right and increase the avenues available for proliferation. This initiative is intended to lay a more carefully coordinated groundwork for tipping the political balance against further such production as soon as possible.

As noted earlier in this chapter, neither financial incentives for Pakistan nor political incentives for India will halt their nuclear programs. However, because of its crippling debt burden and enormous development needs, Pakistan may find financial incentives tempting. The effectiveness of this initiative in relation to Pakistan (because of its relations with India and India's own nuclear policy) will likely require a considerable restructuring of U.S. and Russian nuclear stockpiling plans and the abandonment of an arms race between the United States and China. Such developments would be in the U.S. interest.

Both overall security and the likelihood that the United States and its allies will be able to deal successfully with Pakistan will be enhanced if substantial additional resources can be applied effectively to the redevelopment of political stability in Afghanistan, which will be difficult. Nevertheless, the fissile materials production cutoff for Pakistan should be a high priority for all of the negotiators on this topic in both fiscal and diplomatic terms. A natural complement to such a cutoff is a substantially accelerated and more thorough cooperative threat reduction program for Russia, leading as soon as possible to considerably greater confidence that nuclear weapons materials and technology will not end up in the hands of nonstate actors or clandestine state nuclear weapons programs.

Ensuring Energy Security

The United States should develop energy security strategies that will avoid repeated and ultimately ineffectual U.S.-led military interventions aimed at influencing who has control over oil resources and their levels of production. It should begin this process by clearly defining its policy on such interventions, and then allow energy security policies to follow from this definition rather than vice versa.

Using Outer Space to Enhance Security

The United States should deal with potential national security threats as they actually evolve rather than develop expensive and politically counterproductive aerospace technologies too far ahead in anticipation of such threats. In particular, national missile defense deployments can be capped and remain in testing mode unless or until North Korea or some other unlikely but clearly defined threat deploys long-range nuclear-armed missiles. The development of space-based weapons could be shelved unless or until a clear need arises. International negotiations among space-faring nations could defer or even eliminate the need for any such deployments.

The policy recommendations and framework outlined here may appear to be a bold departure from those previously pursued. However, recent and ongoing events have revealed the serious limitations of unilateral approaches, which were adopted in part because of frustrations with the limitations of longtime multilateral ones. In any case, there is no going back to the status quo ante. The world, and Asia in particular, has been transformed by the virtual collapse of the U.S.-Soviet cold war arms control framework, the Indian and Pakistani nuclear tests, North Korea's foray into weapons-grade plutonium reprocessing, the U.S.-led occupations of Afghanistan and Iraq, and the continued rapid economic development in China. Although much can be learned and something can be salvaged from the older multilateral framework, merely trying to reconstruct the old framework without asking fundamental questions about old assumptions dating back to the cold war and even World War II and before will yield very limited success.

This volume represents a beginning at trying to ask fundamental questions about U.S. security policy and providing some interesting answers. A U.S. administration willing to be bold and proactive would be well advised to let these perspectives help to guide its approach in principle, even if much of what is recommended here will in practice seem to pose formidable challenges.

APPENDIX

Workshop Participants

Il Hyun Cho is a Ph.D. candidate in the Government Department at Cornell University, majoring in international relations. His primary research interests include international relations theory, Asian security relations with special reference to defense modernization, and identity politics in East Asia. His dissertation examines the impact of the presence of North Korea on the regional security dynamics in East Asia.

John Endicott is a professor of international affairs at the Georgia Institute of Technology, where he founded the Center for International Strategy, Technology, and Policy in 1990. Endicott's twenty-eight-year career in the air force included assignments as associate dean of the National War College, deputy air force representative to the Military Staff Committee of the UN Security Council, and division chief of the International Affairs Division at Headquarters U.S. Air Force in the Pentagon. He also spent three years in the Senior Executive Service of the U.S. Department of Defense and was the SES director of the Institute for National Strategic Studies in Washington, D.C. Endicott chairs the interim secretariat of the Limited Nuclear Weapons Free Zone for Northeast Asia.

Nancy W. Gallagher is the associate director for research at the Center for International and Security Studies at Maryland (CISSM), where she co-directs the Advanced Methods of Cooperative Security Program. Gallagher served as the executive director of the Comprehensive Test Ban Treaty Task Force, working with the secretary of state, and as a special adviser to the President Bill Clinton on building bipartisan support for U.S. ratification. She also has served as an arms control specialist in the State Department and as a foster fellow in the Arms Control and Disarmament Agency. Gallagher is the author of *The Politics of Verification* (Johns Hopkins University Press, 1999) and the editor of *Arms Control: New Approaches to Theory and Policy* (Frank Cass, 1998). She received her Ph.D. in political science from the University of Illinois at Urbana-Champaign.

Gregory Kulacki is a China specialist in the Global Security Program at the Union of Concerned Scientists. Previously, he served as the director of academic programs in China for the Council on International Educational Exchange, as an associate professor and the director of the Sino-American Center for Environmental Education at Green Mountain College, and as the director of external studies for Pitzer College, where he established a program in Chinese Media Studies in cooperation with Peking University. Kulacki has recently held visiting scholar positions at the Institute of International Studies at Tsinghua University and in the Department of International Politics at Peking University. Current research interests include Chinese views of space security. Kulacki holds a Ph.D. in government and politics from the University of Maryland.

Henry Lee is a lecturer in public policy, the Jaidah family director of the Environment and Natural Resources Program at the Belfer Center for Science and International Affairs at Harvard University's John F. Kennedy School of Government., and co-chair of the Kennedy School's Program on Infrastructure in a Market Economy. Lee spent nine years in Massachusetts state government as director of the state's Energy Office and as special assistant to the governor for environmental policy and has served on numerous state, federal, and private advisory committees on both energy and environmental issues. His research is directed at environmental management, energy policy, global climate change, regulation of electric and water utilities, and public infrastructure projects in developing countries. He is the editor of *Shaping National Responses to Climate Change: A Post-Rio Guide* (Washington, D.C.: Island Press, 1995).

George Lewis is associate director of the Security Studies Program at the Massachusetts Institute of Technology. Lewis was a research associate in Cornell University's Department of Applied Physics, a postdoctoral fellow in Cornell's Peace Studies program, and a SSRC-MacArthur Fellow at Stanford University's Center for International Security and Arms Control. His research currently focuses on the technology of ballistic missile defense, the implications of the proliferation of ballistic missiles and of defenses against them, and the security aspects of satellites and outer space. He received his Ph.D. in experimental solid-state physics from Cornell University.

Jeffrey Lewis is working on the space policy component of the Advanced Methods of Cooperative Security project at the Center for International and Security Studies at Maryland (CISSM), while completing his Ph.D. dissertation in the University of Maryland's School of Public Affairs. His dissertation contemplates a more developed arms control framework for the U.S.-China relationship. Lewis previously worked in the Office of the Undersecretary of Defense for Policy. He graduated magna cum laude from Augustana College in Rock Island, Illinois, with degrees in philosophy and political science.

Robert W. Nelson is a senior fellow for science and technology at the Council on Foreign Relations in New York City and a research staff member of the program on science and global security at Princeton University. His research interests include nuclear weapons policy, technical arms control, and nonproliferation issues, and his recent publications have focused on low-yield, earth-penetrating nuclear weapons. Nelson received his Ph.D. in theoretical astrophysics from Cornell University.

Paul J. Quirk is a professor in the Department of Political Science and the Institute of Government and Public Affairs at the University of Illinois at Urbana-Champaign. He has published widely on regulatory politics and administration, Congress, interest groups, elections, public opinion and public policy, and presidential decision making. Quirk is the coauthor of the *Politics of Deregulation* (Brookings Institution, 1985). His current work focuses on deliberative processes among both ordinary citizens and policy-making elites. In addition, he is co-editing *Congress and American Democracy: Institutions and Performance* for the Institutions of Democracy Project of the Annenberg Public Policy Center and Oxford University Press.

Clifford E. Singer is a professor of nuclear, plasma, and radiological engineering and director of the Program in Arms Control, Disarmament, and International Security at the University of Illinois at Urbana-Champaign. Singer was a National Science Foundation postdoctoral fellow at the Massachusetts Institute of Technology. He undertook research in plasma physics, advanced space propulsion, and the computational simulation of thermonuclear plasma performance at the University of London, Princeton University, and the University of Illinois. Singer was an Alexander von Humboldt Fellow at the Max Planck Institutes for Strömungsforschung and Plasmaphysik at Göttingen and Garching in Germany. His current research includes work on energy economics. He has contributed chapters to books on conflict resolution, the technology of peacekeeping, and nuclear materials in South Asia. He has a Ph.D. in biochemistry from the University of California at Berkeley.

Kathleen M. Vogel is an assistant professor in the Department of Science and Technology Studies/ Peace Studies Program at Cornell University. Her research concentrates on the proliferation of biological weapons technology to terrorist groups and countries of proliferation concern and on related security issues involving the dual-use nature of biotechnology. Vogel has been a William C. Foster fellow with the Bureau of Nonproliferation in the Office of Proliferation Threat Reduction, U.S. Department of State; a visiting scholar at Sandia National Laboratories and the University of New Mexico under an Ed A. Hewett Fellowship; and a postdoctoral fellow at Cornell University's Peace Studies Program and the Center for Nonproliferation Studies, Monterey Institute of International Studies. She holds a Ph.D. in chemistry from Princeton University.

Jim Walsh is executive director of the Managing the Atom Project at the Belfer Center for Science and International Affairs at Harvard University's John F. Kennedy School of Government. His research and writings, which focus on weapons of mass destruction, terrorism, and the Middle East, have appeared in numerous domestic and foreign papers and scholarly publications. Walsh is currently working on a new book on Iran. Before coming to Harvard, he was a visiting scholar at the Center for Global Security Research at Lawrence Livermore National Laboratory, one of the country's three nuclear weapons labs. Earlier, he was named a Jennings Randolph Peace Scholar by the United States Institute for Peace and won the Hubert Humphrey Fellowship from the U.S. Arms Control and Disarmament Agency. Walsh received his Ph.D. from the Massachusetts Institute of Technology.

Sharon K. Weiner holds a research position at Princeton University's Program on Science and Global Security and is a lecturer in the Department of Politics. Her research interests center on the organizational and bureaucratic politics of U.S. national security and defense policy, and she is currently finishing a book on how the U.S. Departments of State, Defense, and Energy have implemented programs to limit proliferation from the nuclear weapons complex of the former Soviet Union. Additional research interests include the relationship between organizational design and policy outcome, institutional rivalry and cooperation in new weapons developments, and the regulation of private military contractors. She holds a Ph.D. in political science from the Massachusetts Institute of Technology.

Dean Wilkening directs the Science Program at the Center for International Security and Cooperation at Stanford University. He spent thirteen years at the RAND Corporation before joining Stanford. His major research interests have been nuclear strategy and policy; arms control; the proliferation of nuclear, biological, and chemical weapons; ballistic missile defense; and conventional force modernization. His most recent research focuses on ballistic missile defense and biological weapons proliferation. His work on missile defense examines the broad strategic and political implications of deploying national and theater missile defenses—in particular, the impact of theater missile defense in Northeast Asia—and the technical feasibility of boost-phase interceptors for national and theater missile defense. He holds a Ph.D. in physics from Harvard University.

Chunsi Wu is a visiting scholar in the Security Studies Program at the Center for International Studies, Massachusetts of Technology. Her research at the Center for American Studies of Fudan University has concentrated on arms control, non-proliferation, and regional security. Wu is the author of *Deterrence Theories and Missile Defense* (2001, in Chinese) and several papers, articles, and reports about export control, missile defense, outer space arms control, U.S.-China relations, South Asian security, and China's foreign policy. She received her Ph.D. in international relations from the School of International Relations and Public Affairs, Fudan University, for her dissertation "The Rational Mission of the Irrational Weapon: The Paradox of Nuclear Deterrence Theory."

UNIVERSITY OF ILLINOIS
ACDIS
Program in Arms Control, Disarmament, and International Security

359 Armory Building
505 East Armory Ave.
Champaign, Illinois 61820
217/333-7086
Fax: 217/244-5157

www.acdis.uiuc.edu

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1007 West Nevada
Urbana, Illinois 61801
217/333-3340
Fax: 217/244-4817

815 West Van Buren
Suite 525
Chicago, Illinois 60607
312/996-6188
Fax: 312/996-1404

PAC 482
Springfield, Illinois 62794
217/206-7682
Fax: 217/206-7397

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