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Leveraging U.S. Nuclear Weapons Policy to Advance U.S. Nonproliferation Goals:

Implications of Major Theories of International Relations

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Leveraging U.S. Nuclear Weapons Policy to Advance U.S. Nonproliferation Goals:

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Abstract

National policymakers are currently considering a dilemma of critical importance to the continued security of the United States: how can U.S. nuclear weapons policies be leveraged to benefit U.S. nuclear nonproliferation goals in the near-term, without sacrificing U.S. national security? In its role supporting U.S. nuclear weapons policy, Sandia National Laboratories has a responsibility to provide objective technical advice to support policy deliberations on this question. However, to best fulfill this duty Sandia must have a broader understanding of the context of the problem. To help develop this understanding, this paper analyzes the two predominant analytical perspectives of international relations theory to explore their prescriptions for how nuclear weapons and nonproliferation policies interact. As lenses with which to view and make sense of the world, theories of international relations must play a crucial role in framing the trade-offs at the intersection of the nuclear weapons and nonproliferation policy domains. An analysis of what these theories suggest as courses of action to leverage nuclear weapons policies to benefit nonproliferation goals is then offered, with particular emphasis on where the policy prescriptions resulting from the respective theories align to offer near-term policy changes with broad theoretical support. These policy prescriptions are then compared to the 2001 Nuclear Posture Review to understand what the theories indicate policymakers may have gotten right in their dealing with the nuclear dilemma, and where they may have gone wrong. Finally, a brief international relations research agenda is proposed to help address the dilemma between nuclear deterrence and nuclear nonproliferation policies, with particular emphasis on how such an agenda can best support the needs of the policy community and a potential “all things nuclear” policy deliberation and decision-support framework.

Preface

An earlier version of this paper was researched and written for fulfillment of the term paper requirement associated with a graduate class I took at the University of New Mexico in spring of 2009. Offered through the Political Science Department, the class (International Relations: Theory and Practice, POLS 400/512) consisted of a survey of the major theories of international relations coupled with practical exercises on how those theories have been or could be applied to real-world issues. As an engineer that has always had some interest in government policy and international affairs, I found the class brought a great deal of very useful structure and clarity to my previously amateur understanding of these worlds.

This paper deals with a problem that Sandia National Laboratories and the larger strategic defense community is currently grappling with: how can U.S. nuclear weapons policies be leveraged to benefit U.S. nuclear nonproliferation goals in the near-term, without sacrificing U.S. national security? I strive to analyze what the two predominant academic theories of international relations recommend as possible answers to this question—focusing on where the recommendations of the theories appear to agree—and briefly review the 2001 Nuclear Posture Review to see if policymakers heeded or disregarded the implications and recommendations of theory.

It should be noted that neither I nor Sandia Labs is necessarily advocating for any of the recommendations described in this paper. My goal is merely to understand what the leading academic theories and theorists recommend so that Sandia can better fulfill its role supporting national security policymakers. This paper could be considered part of a series of efforts at Sandia to understand the "all things nuclear" context of national problems—in this case, what potential actions in the nuclear weapons policy domain might help advance U.S. goals in the nuclear nonproliferation domain?

Drew Walter
June 2009

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1 Introduction

1.1 The Dilemma

An inherent dilemma exists for U.S. national security policymakers regarding nuclear weapons. On one hand, the U.S. relies upon its arsenal of nuclear weapons as the ultimate means of assuring its national security and that of its allies—particularly against nuclear-armed adversaries. On the other hand, the U.S. seeks to prevent and roll-back the spread of nuclear weapons to other states. While not wholly incompatible, these two positions are inherently contradictory: U.S. efforts to dissuade other states from acquiring nuclear weapons are often undermined from the start by U.S. reliance upon such weapons for its own security. Because these positions are contradictory yet so tightly coupled, advancement toward the overall goal—reducing global nuclear danger—cannot be made without active consideration and coordination of how policy choices affect both domains.

1.2 A Recent Example

But too often, policy choices appear to be made in one domain without full consideration of their negative effects on policy goals in the other domain. For example, efforts by the George W. Bush Administration to develop a Robust Nuclear Earth Penetrator (RNEP) would undoubtedly have enhanced the capabilities of the U.S. military to hold hardened deeply buried targets at risk[1]—almost certainly an increase to national security. However, the RNEP program would likely have had major negative impacts on U.S. nuclear nonproliferation priorities by signaling to other nations the high value the U.S. places on its nuclear weapons capabilities.[2] Many experts reasoned such signaling could lead either to a renewed arms race among the nuclear powers, or

[1] "Effects of Nuclear Earth-Penetrator and Other Weapons", Committee on the Effects of Nuclear Earth-Penetrator and Other Weapons, National Research Council, National Academies Press, Washington, DC, 2005.
[2] Sidney D. Drell, "The Shadow of the Bomb 2006, *Policy Review*, Issue 136, April-May 2006, p55-69.

increased interest in acquiring nuclear capabilities by non-nuclear weapons states[3]—both dramatic negative impacts to national security.

The net impact to national security is difficult, sometimes impossible, to clearly discern when policymakers are weighing various policy options. When policy choices will have sweeping impacts across many domains, as in the RNEP example, this task is even harder. Because of the interdependencies inherent in the nuclear weapons and nonproliferation policy domains, a new policy deliberation and analysis construct is needed to facilitate the many imminent and important policy decisions facing U.S. leaders in these areas.

1.3 All Things Nuclear

Rolf Mowatt-Larssen, Director of the U.S. Department of Energy's Office of Intelligence and Counterintelligence, summarized this need well when he said, "we must make a strategic shift from our traditional views of terrorism, proliferation, nuclear weapons, and nuclear energy as being separate entities and instead view them as parts of a single framework of all things nuclear."[4] Ways of approaching and implementing an "all things nuclear" framework have been proposed by various entities within the federal government, including Sandia National Laboratories.[5] But because these proposals have largely been put forward by operationally-oriented organizations and individuals, the implications of academic theories to such an integrated nuclear policymaking structure have not been examined. As lenses with which to view and make sense of the world, theories of international relations must play a crucial role in framing the trade-offs at the intersection of the nuclear weapons and nonproliferation policy

[3] Daryl Kimball, "Congress Cuts Nuclear Bunker-Buster", Carnegie Endowment for International Peace, October 26, 2005.
[4] David R. Sands, "Nuclear dangers rise with oil costs", *The Washington Times*, June 17, 2008.
[5] Andrew Walter, "An 'All Things Nuclear' Approach to Reducing Global Nuclear Danger", CSIS Project on Nuclear Issues 2008 Capstone Conference, Center for Strategic and International Studies and United States Strategic Command, December 2008.

domains. To enable development of any type of "all things nuclear" decision-support framework, a conceptual understanding of international relations theories is needed.

1.4 Scope

This paper strives to layout the beginnings of this understanding by exploring what the leading academic theories and theorists of international relations suggest as possible courses of action for addressing the inherent tensions—the dilemma—between U.S. nuclear weapons policy and U.S. nuclear nonproliferation policy. To scope this rather broad inquiry, I will focus specifically on a question where nuclear weapons and nonproliferation policies inherently meet and whose answer is very much on the national agenda for the forthcoming year:

- How can U.S. nuclear weapons policies be leveraged to benefit U.S. nuclear nonproliferation goals in the near-term, without sacrificing U.S. national security?

To approach this question, two predominant analytical perspectives of international relations (realism, as laid out by leading structural neo-realists Waltz and Mearsheimer; and a broadly defined liberalism as described by Sagan and others) will be examined for their prescriptions for how nuclear weapons and nonproliferation policies interact. An analysis of what these theories suggest as courses of action to leverage nuclear weapons policies to benefit nonproliferation goals will then be offered, with particular emphasis on where the policy prescriptions resulting from the respective theories align to offer near-term policy changes with broad theoretical support. These policy prescriptions will then be compared to a recent U.S. nuclear weapons policy effort (the 2001 Nuclear Posture Review) to understand what the theories indicate policymakers may have gotten right in their dealing with the nuclear dilemma, and where they may have gone wrong. Finally, a brief research agenda will be proposed to help address the dilemma between nuclear deterrence and nuclear nonproliferation policies, with particular

emphasis on how such an agenda can best support the needs of the policy community and a potential "all things nuclear" policy deliberation and decision-support framework.

2 Survey of Theoretical Perspectives

2.1 A Brief History; and Why Nuclear Weapons Policy Affects Nonproliferation

Since their invention in 1945, nuclear weapons have played a variety of roles in the national security strategy of the United States.[6] In the earliest years of the Cold War, the U.S. relied upon its nuclear superiority to bring about the total defeat of the Soviet Union via strategic nuclear bombing should war break out. As Soviet nuclear capability grew this strategy shifted to one of integrated conventional and nuclear warfighting through use of U.S. nuclear weapons to deter and delay a potential westward advance of the Soviet military through Europe. A policy of graduated escalation and "flexible response" was articulated in the hopes of avoiding full-scale nuclear war. But as both countries developed the ability to deliver nuclear weapons to the heart of their adversary's homeland a condition of "mutually assured destruction" was recognized, even if policies continued to focus on nuclear warfighting measures (i.e., counterforce). The eventual development of assured second-strike capabilities by both sides effectively settled U.S. nuclear weapons into this deterrence role for much of the Cold War. Since the collapse of the Soviet Union and end of the Cold War, U.S. nuclear weapons policy has again shifted to address the increased prominence of "rogue states" in U.S. security considerations by allowing that nuclear weapons could be employed with greater flexibility to deal with a wider array of threats.

Of course, these shifts in nuclear weapons policy have not been occurring in a vacuum. The strategic role given by the U.S. to its nuclear weapons has very real impacts on proliferation. As

[6] David M. Kunsman and Douglas B. Lawson, "A Primer on U.S. Strategic Nuclear Policy", Sandia National Laboratories, SAND2001-0053, Unlimited Release, January 2001.

Alexei Arbatov noted in 2008, "interaction between the two is not linear or simple… the attitude of the great powers towards nuclear weapons sets the general background to nuclear proliferation [and] the efforts to stop and reverse it."[7] So what do the leading theoretical perspectives of international relations say about the role nuclear weapons should play in U.S. strategy to maximize benefits to its nonproliferation priorities, but without sacrificing U.S. security? What role leads to the greatest reduction in global nuclear danger?

2.2 Realism: Central Tenets and Their Implications

Realism and its proponents emphasize that the anarchic nature of the international system makes the acquisition of nuclear weapons by a steadily increasing number of states inevitable. Because of the self-help environment that states operate within, every state must look after its own interests and security as best it can[8], and nuclear weapons are often seen as the ultimate tool for ensuring the security and existence of a state. This basic premise of realism leads to the conclusion that since nuclear proliferation cannot be stopped, the U.S. can at best try to manage it to ends that suit U.S. interests.[9] Managing proliferation could lead to tacitly allowing proliferation in certain cases where it stabilizes a region to suit U.S. interests (e.g., the India-Pakistan conflict[10]) or actively preventing it when it directly threatens U.S. interests or regional stability (e.g., Iran). To help in managing proliferation, realists generally recognize that U.S. nuclear weapons policy can be leveraged to affect the security perceptions and calculations of potential proliferators.

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[7] Alexei Arbatov, "Reducing the Role of Nuclear Weapons", International Conference on Nuclear Disarmament, Oslo, Norway, Feb 26-27, 2008.
[8] Kenneth N. Waltz, *Theory of International Politics*, Boston, MA, McGraw-Hill, 1979.
[9], Ted G. Carpenter and Charles V. Pena, "Rethinking Non-proliferation", *The National Interest*, Issue 80, Summer 2005, p81-86.
[10] John J. Mearsheimer, "India Needs the Bomb", *The New York Times*, Mar 24, 2000, A-21.

Throughout his career, leading neo-realist Kenneth Waltz has been a driving force behind clarifying what he calls "decades of fuzzy thinking in high places about what deterrence is."[11] Drawing upon previous deterrence theorists, Waltz has articulated three requirements for effective deterrence. Understanding each of these requirements and structuring U.S. nuclear forces around them would likely provide significant leverage for pursuing U.S. nonproliferation priorities.

Waltz's first requirement is that, "a state's nuclear forces must appear to be able to survive an attack and launch one of their own."[12] Digging deeper into this requirement, within his statements on the size of the survivable second-strike force needed we find what may be the most dramatic means of leverage implied by Waltz: "a minimal deterrent deters as well as a maximal one."[13] While he certainly subscribes to the stabilizing effects of a mutually assured destruction nuclear deterrent posture between adversaries, he dismisses as absurd the idea that thousands of weapons are needed to accomplish this. In Waltz's view, a small assured second-strike force capable of destroying several of an adversary's major cities is sufficient. Indeed, Waltz has been remarkably precise (for a social scientist) in how his arguments suggest sizing the U.S. deterrent when he offered that, "it is easy to say how large the small force needs to be: large enough to sustain a first strike without losing the ability to retaliate with some tens of warheads."[14] With this logic, Waltz rejects the reasoning of earlier realist scholars and policymakers (e.g., Paul Nitze and Albert Wohlstetter)[15] who argued that the relative sizes of opposing deterrent arsenals

[11] Kenneth N. Waltz, "Nuclear Myths and Political Realities", *American Political Science Review*, Vol 84 No 3, Sep 1990, p731-745.
[12] Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed*, W. W. Norton and Company, New York, 2003, p20.
[13] Ibid, p110.
[14] Kenneth N. Waltz, "The Emerging Structure of International Politics", *International Security*, Vol. 18, No. 2, Fall 1993, p51.
[15] Paul H. Nitze, "Assuring Strategic Stability in an Era of Détente", *Foreign Affairs*, Vol 54 No 2, January 1976.

are critical. To Waltz, "second-strike forces have to be seen in absolute terms."[16] Thus, from the logic of realist balance-of-power principles, Waltz and other realists[17] suggest that as long as the U.S. maintains an assured survivable nuclear force, the overall size of the arsenal can be relatively small—even if Russian forces remain large.

Waltz's second requirement for effective deterrence essentially states that the survivability of the second-strike forces must not depend upon an immediate, "launch-on-warning" response. In other words, each nuclear power must be capable of absorbing a first-strike and be assured that it can respond with an attack inflicting unacceptable damage (i.e., destruction of a few enemy cities) in the subsequent days or weeks. This implies that all U.S. nuclear weapons can be removed from an alert posture without sacrificing the credibility of the deterrent or U.S. national security. Such de-alerting is consistently called for by arms control and nonproliferation advocates, and could provide credibility to U.S. nonproliferation efforts.

Waltz's third and final requirement for effective nuclear deterrence is that command and control of nuclear weapons must be maintained at all times to prevent accidental or unauthorized use. This requirement is important not because of how it should affect U.S. nuclear weapons (which are largely already extremely safe and secure), but how it should affect U.S. policies towards other states' nuclear weapons. This requirement implies that policies should be considered that allow the U.S. nuclear weapons community to share information on nuclear weapons safety and security with other nuclear states—if such sharing does not give these states information to improve the functionality, capability, or reliability of their weapons. Realist Paul Bracken suggests as much when he advocates broadening the notion of arms control beyond simply arms limitation treaties to include "helping India and Pakistan make their weapons more

[16] Sagan and Waltz, *The Spread of Nuclear Weapons*", p25.
[17] Robert Jervis, "Why Nuclear Superiority Doesn't Matter," *Political Science Quarterly*, Vol 94 No 4, Winter 1979.

secure and survivable"[18] Tentative policies to publicly release some safety-related design information exist, but bolder and more concrete steps could be taken in all aspects of safety, security, and command and control. In the end, ensuring that the highest national command authorities of each nuclear power have complete control over where and when their nuclear weapons detonate is in the interest of every state—particularly the U.S.

Waltz's three requirements for effective nuclear deterrence derive from a fundamental assumption: he emphatically subscribes to the notion that nuclear weapons have created a "revolution" in international relations—that nuclear weapons are military capability of such destructive power that they have altered the fundamentals of state interaction.[19] Fellow neo-realist John Mearsheimer is more unclear in his views of the effects of nuclear weapons on international relations, and therefore more unclear in his conclusions for U.S. nuclear weapons and nonproliferation policy.[20] Recently, Mearsheimer has argued that possession of nuclear weapons does not provide a state the absolute degree of security assumed by Waltz, and therefore does not directly lead the state to more peaceful interactions with others.[21] Instead, Mearsheimer has argued that the normal expansionist wars states wage to achieve security will continue via conventional means, but be made more dangerous by the presence of nuclear weapons. This "offensive realist" perspective could naturally lead to the conclusion that the global hegemon (i.e., the U.S.) should attempt to preempt imminent nuclear proliferation by destroying nascent nuclear programs before they can achieve weaponization. If the hegemon does not undertake this action, its freedom of action and dominance of the region containing the

[18] Paul Bracken, "The Structure of the Second Nuclear Age", *Orbis*, Vol 47 Issue 3, Summer 2003, p399-413.
[19] Robert Jervis, *The Meaning of the Nuclear Revolution: Statecraft and the Prospect of Armageddon*, Cornell University Press, Ithaca, NY, 1989.
[20] Zanvyl1Krieger and Ariel Roth, "Nuclear Weapons in Neo-Realist Theory", *International Studies Review*, Vol. 9 Issue 3, Sep 2007, p369-384.
[21] John J. Mearsheimer, *The Tragedy of Great Power Politics*, W. W. Norton, New York, 2001.

new nuclear power is substantially diminished. Following this logic to its most extreme (something which Mearsheimer does not appear to do), preemption by nuclear weapons may be needed, if no conventional means will suffice to destroy the nuclear program. However, even the most aggressive realists recognize that this type of nuclear preemption brings with it a whole host of problems for U.S nonproliferation efforts.

Conflicting with his most recent arguments that lead toward a strategy of preemption, Mearsheimer has also at times agreed with Waltz's view that "more may be better"—as in his post-Cold War arguments for Ukraine[22] and Germany[23] to acquire nuclear weapons to stabilize their respective regions. These inconsistencies make Mearsheimer's views on how to deal with the proliferation problem difficult to pin down, though like most realists he appears to conclude that limited, well-managed proliferation that suits U.S. interests is likely the best course. But Mearsheimer takes a much more pessimistic view than Waltz of the likelihood that proliferation will be well-managed when he states, "mismanaged proliferation could produce disaster… unfortunately, any proliferation is likely to be mismanaged."[24] He goes on to specify several actions the U.S. could take to reduce the risks of proliferation, including extending security guarantees to nascent nuclear powers to deter preventative attack by other powers, and the provision of technical assistance to ensure the safety and security of new nuclear arsenals. Both of these suggested actions imply that changes to U.S. nuclear weapons policy (through a larger "extended deterrent" nuclear umbrella and transparency in U.S. nuclear weapons safety and security design) could allow the U.S. to more favorably manage proliferation.

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[22] John J. Mearsheimer, "The Case for a Ukrainian Nuclear Deterrent", *Foreign Affairs*, Vol. 72 No. 3, Summer 1993, p50-66.
[23] John J. Mearsheimer, "Back to the Future: Instability in Europe after the Cold War", *International Security*, Vol. 15 No. 1, p5–56.
[24] Ibid, p37.

Taking a step back from the analysis and conclusions of individual realist scholars and again examining the central tenets of realism reveals another stark implication for the intersection of U.S. nonproliferation and nuclear weapons policies. Realism's central focus on how a state's perceived security situation affects its decision making leads to an immediate conclusion that U.S. threats (nuclear or conventional) to a non-nuclear state will drive its leaders to seek nuclear weapons to deter U.S. action. Waltz notes that the more vulnerable a state feels, "the more strenuously it will pursue a nuclear program. The pattern has been universal ever since the United States led the way into the nuclear age. Noticing this, we should be careful about conveying military threats to weak states."[25] Scott Sagan implies that this is an inherent conclusion from realist principles when he stated, "in the modern world, the strong may not want to do what they can, for excessively aggressive behavior will force the weak to develop their own weapons of mass destruction."[26]

The idea that states will attempt to balance against perceived threats to their security is central to realism. It also is nearly universally accepted among realists that the most effective means for a minor power to achieve balance against a threatening great power is to develop a nuclear weapons capability. For realists, this desire to prevent great power interference in their affairs is a major cause of nuclear proliferation among minor and regional powers. And unlike the other major cause realism recognizes (security tensions and rivalries with other regional powers), the great powers have significant influence on the former cause simply through their posture towards other states. Theorists from across the realist spectrum have noted that the great powers—particularly the U.S. hegemon—should seek peaceful and non-threatening means of

[25] Sagan and Waltz, *The Spread of Nuclear Weapons*, p40.
[26] Scott D. Sagan, "Realist Perspectives on Ethical Norms and Weapons of Mass Destruction", Chapter 3 in *Ethics and Weapons of Mass Destruction: Religious and Secular Perspectives*, Sohail Hashmi and Steven Lee, eds, Cambridge University Press, 2004, p73-95.

integrating emerging regional powers to avoid security confrontations that could lead to undesirable proliferation.[27,28] Direct nuclear threats by the U.S. to weak states and regional powers are the antithesis of this, so realist principles suggest that they should be avoided.

It is within this line of argument that realism's implications for policies regarding the use of U.S. nuclear weapons against non-nuclear states must be considered. At its core this amounts to a debate over the efficacy of a "no-first-use" policy towards non-nuclear states. Such "negative security assurances" from the U.S. to non-nuclear states seems like a logical conclusion based on the discussion above. Such a declaration would surely assuage some of the security fears of potential proliferators, giving them less incentive to acquire nuclear weapons. Realism also appears to indicate that U.S. conventional military power is so overwhelming, that a no-first-use policy against non-nuclear states would sacrifice very little in terms of freedom of action. Despite these arguments based on central tenets of realism, many realists do not advocate the U.S. declare a no-first-use policy against non-nuclear states. In their view, the desire for a no-first-use policy (intended to prevent proliferation among states adversarial to the U.S.) is trumped by a desire to maintain the credibility of the U.S. extended deterrent (intended to prevent proliferation among U.S. allies). Therefore, to fully understand what realism implies about the desirability of a no-first-use policy, its implications for extended deterrence require examination.

The U.S. has formally or informally extended nuclear security guarantees to a number of allied states. These include members of the NATO alliance, Japan, South Korea, and Taiwan. In addition to deterrence of adversarial states, a primary role of these agreements is to prevent

[27] Stephen M. Walt, *Taming American Power: The Global Response to U.S. Primacy*, W.W. Norton and Co., New York, 2005.
[28] T.V. Paul and John A. Hall, "Great Equalizers or Agents of Chaos? WMD and the Emerging International Order", in International Order and the Future of World Politics, Cambridge University Press, 1999, p373-392.

nuclear proliferation among these U.S. allies by guaranteeing U.S. intervention on their behalf in the event they are attacked by another state. Several of these allies could, "with little effort and time, develop their own nuclear weapons but do not because they trust in and rely on the U.S. nuclear deterrent."[29] Realism undoubtedly understands the value of such state-to-state security arrangements—if they further the interests of the major powers involved. In the case of U.S. extended deterrence arrangements, realist principles would suggest that by preventing proliferation among its allies, the U.S. is preventing the proliferation among its adversaries that would naturally follow to balance. The U.S. is therefore preserving its freedom of action against its adversaries by preventing widespread, cascading proliferation. Importantly, realists who view nuclear weapons as the ultimate guarantee of security see an implied threat of nuclear first-use by the U.S. as key to maintaining the credibility of extended deterrence guarantees.[30]

And so we find in the cases of no-first-use and extended deterrence that the implications of realist principles are in conflict. On the one hand, realism suggests that to prevent nuclear proliferation the U.S. should assuage the security fears of non-nuclear states by extending nuclear negative security guarantees to them. On the other hand, realism suggests that a no-first-use policy would undercut the credibility of extended deterrence agreements—which are critical to preventing proliferation among U.S. allies. Because of this conflict, realism leads strategists to weigh the benefits and risks of the two policies against each other. Some argue that the benefits of nuclear security guarantees are overrated—that non-nuclear powers are not really all that concerned about U.S. nuclear weapons (they are much more concerned with U.S. conventional power) and therefore a U.S. no-first-use policy would do little to prevent proliferation. The often unstated result of this logic is that the U.S. must run the slight risk of pushing its adversaries to

[29] Kathleen C. Bailey et al, "White Paper on the Necessity of the U.S. Nuclear Deterrent", unknown publisher, August 2007, (available from the current author).
[30] Lewis Dunn, *Controlling the Bomb*, Yale University Press, New Haven, Connecticut, 1982.

develop a nuclear capability to ensure that its allies do not. The implication is that the risks inherent in the cascade of allied followed by adversarial proliferation that many realists foresee if the credibility of the U.S. nuclear umbrella is eroded is worse than the slight risk that individual adversarial states may decide to develop nuclear capabilities. Others imply that the concept of extended deterrence could be modified to be less-threatening to non-nuclear states while continuing to provide allies the security assurances they need to refrain from developing nuclear arsenals. In the end, realism is unlikely to provide a clear-cut answer to this question.

2.3 Liberalism: Sub-System Factors and Their Implications

Compared to realists, liberal theorists tend to be much more pessimistic in their outlook on the consequences of nuclear proliferation. If the realist position is summarized by an uncertain but optimistic Waltz ("more *may* be better"), the liberal position is summarized by a much more definite and pessimistic Scott Sagan ("more *will* be worse").[31] Liberals stress that the systemic-level focus of realists misses many important factors at the state-, organization-, and individual-levels that are cause for deep concern about increasing nuclear proliferation.

A central component of liberal criticism of realism is that realism's assumption that states are rational actors—that they make rational decisions to maximize their perceived self-interest—is flawed because the organizations and individuals that compose a state have conflicting, parochial interests that do not necessarily lead to "rational" state-level decision making. As an example, Sagan frequently points to senior military officers as an organization within states that push for nuclear outcomes that are often not in the overall interest of the state, but are certainly in the parochial interests of the military. For instance, military leaders often seek greater numbers of more capable weapons simply because larger budgets inherently come with them—therefore

[31] Sagan and Waltz, *The Spread of Nuclear Weapons*.

enhancing the power and prestige of the military. Also, senior military officers are more likely to push for preventative war against an adversary on the verge of nuclear capability because successful acquisition of that capability will severely constrain their military options in the future. Similarly, scientists in state-run nuclear weapons laboratories often "favor military innovation simply because it is technically exciting and keeps money and prestige flowing to their laboratories."[32] When powerful scientific-military-industrial coalitions form to push certain policies that benefit their parochial interests, they frequently succeed to persuade reluctant policymakers.[33] But as we have seen even leading realists point out in the discussion above, these outcomes are often not in the "rational" overall interest of the state.

For these reasons, Sagan and many other liberals assert that *all* proliferation is bad, even if it at appears at the time to be in U.S. interests for balance-of-power or stability reasons. Perhaps indirectly drawing on the foundational tenet of "classical realism" that states that it is the unalterable tragedy and fallibility of the human condition that inevitably leads to conflict[34], liberals argue that the human-based structures that compose a state will eventually and inevitably lead to irrational decision making on the part of the state. And because the success of nuclear deterrence is based on states making fully rational decisions, a failure to make rational decisions will inexorably lead to a failure of deterrence.

It is from this basic conclusion of a liberal perspective that prescriptions flow for how U.S. nuclear weapons policy can be leveraged to benefit U.S. nuclear nonproliferation priorities. Perhaps foremost among these are the recommended size and structure of U.S. nuclear forces.

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[32] Scott D. Sagan, "Why do States Build Nuclear Weapons: Three Models in Search of a Bomb", *International Security*, Vol 21 No 3, Winter 1996-1997, p64.
[33] George Perkovich, *India's Nuclear Bomb: The Impact of Global Proliferation*, The University of California Press, 1999.
[34]Hans J. Morgenthau, *Politics Among Nations: The Struggle for Power and Peace*, McGraw-Hill, 1948.

Like Waltz, Sagan and most other liberals subscribe to the idea of a minimal deterrent.[35] On the face of it, liberals and realists agree on this for a similar reason: a national leader that is rational enough to be deterred by the destruction of a few of his or her country's cities is unlikely to be significantly *more* deterred by the destruction of all of their cities. But the liberal argument for a minimal deterrent goes deeper: liberals note that because the chances that a rational leader would initiate a nuclear war in which their country is guaranteed to be destroyed are extremely small, an accidental or inadvertent cause is a primary concern. Studies of U.S. nuclear posture using organizational theory have shown that safety problems and the probability of inadvertent launches inherently increase as the size of the stockpile grows.[36] Taken together, liberals' concerns about the inevitable irrationality of states' nuclear decision making and the intrinsic safety/security/command and control risks of large nuclear forces—both caused by the normal failures of human organizations and structures—lead to their emphatic advocacy for dramatic reductions in the size of U.S. and Russian nuclear forces.

Tightly coupled to this prescription for reduced force size is a recommendation to remove U.S. forces from launch-ready alert. The launch-on-warning posture the U.S. continues to maintain (whether it remains actual policy or simply force-of-habit is debated)[37], leads to much greater risk of inadvertent launch, particularly during a crisis, and does not provide significant additional deterrent value. Instead, liberal scholars have recommended strengthening the United States' nuclear command and control architecture, to ensure that it can fully absorb a first-strike and still have the resiliency to launch a retaliatory strike in the subsequent days or weeks.[38] The

[35] Jeffery A. Lewis, "Minimum Deterrence", *Bulletin of the Atomic Scientists*, Vol 63 No 3, May-June 2008, p38-41.
[36] Scott Douglas Sagan, *The Limits of Safety*, Princeton University Press, 1993.
[37] Bruce G. Blair, "A Rebuttal of the U.S. Statement on the Alert Status of U.S. Nuclear Forces", *The Lawyers Committee on Nuclear* Policy, Oct 13, 2007, http://lcnp.org/disarmament/opstatus-blair.htm
[38] Bruce G. Blair, *Strategic Command and Control: Redefining the Nuclear Threat*, Brookings Institution Press, 1985.

larger point here is that retaliation need not necessarily be immediate for deterrence to work—so long as survivable second-strike forces are assured.

Liberal analysis sees both the reduction in quantity and de-alerting of U.S. nuclear forces as critical steps to deemphasizing the value of nuclear weapons around the world and therefore preventing and rolling-back nuclear proliferation. But unlike realism, which sees these steps as merely assuaging the security-fears of potential proliferators, liberals point to more complex reasons for why such steps will work. These reasons boil down to factors strict structural realists cannot and will not recognize: the concepts of international ethics and norms. Liberal arguments suggest that if nuclear powers (but particularly the U.S. and Russia) deemphasize the role of nuclear weapons in their own security strategies, it strengthens the international norm against nuclear weapons. Scholars have suggested that this norm has already played a key role in preventing proliferation, citing examples in Latin America[39] and elsewhere. In short, the results of liberal analysis implies that by shaping its deterrent in a minimal, survivable, and delayed manner, the U.S. can maintain a highly effective deterrent while reducing the likelihood that other nations will proliferate.

A perhaps even more powerful norm than the one against the desirability of nuclear weapons is the one against the use of nuclear weapons. Liberal (and constructivist) scholars such as Nina Tannenwald have suggested that this "taboo" against the use of nuclear weapons has helped to constrain the actions of states by reinforcing deterrence and by "inducing restraint even in cases where deterrence did not operate."[40] With this last statement, Tannenwald is suggesting that even when security-based reasoning should push leaders to use nuclear weapons, the potent

[39] Arie M. Kacowicz, *The Impact Of Norms In International Society: The Latin American Experience, 1881-2001*, University of Notre Dame Press, July 2005.
[40] Nina Tannenwald, "Stigmatizing the Bomb: Origins of the Nuclear Taboo", *International Security*, Vol 29 No 4, Spring 2005, p6.

norm/taboo against their use has resulted in nonuse.[41] The liberal perspective therefore recognizes that powerful ethical and normative factors are at work that are supplementing rational, security-based deterrence, and that these norms should be strengthened to increase U.S. and global security. Indeed, preeminent Cold War strategist Thomas Schelling has argued that "a large part of the credit for their not having been used must be due to the 'taboo'… the evolution of that status has been as important as the development of nuclear arsenals."[42] A fundamental conclusion of liberal scholarship in this area is that U.S. nuclear weapons policy should be leveraged in an effort to strengthen the taboo, thereby reducing the probability of proliferation.[43] The rationale is that if potential proliferators perceive that nuclear weapons are essentially unusable due to overwhelming ethical/moral/normative reasons, they will be far less likely to undertake a program of nuclear weapons development. Scholars have suggested strengthening the taboo by reducing (or at least not improving) the "usability" and military capabilities of the U.S. arsenal, declaring an unequivocal and unqualified nuclear no-first-use policy, ratifying the Comprehensive Test Ban Treaty, and articulating a policy that U.S. weapons are maintained solely to deter and retaliate against the use of nuclear weapons upon the U.S. and its allies.

Although liberals generally conclude that all proliferation is "bad" and should be prevented, a liberal perspective leads to some recommendations for how to make proliferation "less bad" after it occurs. Organization-level analysis suggests that if U.S. attempts to prevent nuclear proliferation fail, a sharing of certain knowledge, "best practices", technology, and experience related to nuclear weapons may be prudent. For instance, procedures and technology used to maintain strict command-and-control in U.S. weapons could be shared with new nuclear states to

[41] Nina Tannenwald, "The Nuclear Taboo: The United States and Normative Basis of Nuclear Nonuse", *International Organization*, Vol 53 No 3, Summer 1999, p433-468.
[42] Thomas C. Schelling, "The Legacy of Hiroshima: A Half-Century without Nuclear War", Institute for Philosophy and Public Policy, 2000, http://www.publicpolicy.umd.edu/IPPP/Summer00/legacy_of_hiroshima.htm
[43] T.V. Paul, *The Tradition of Non-Use of Nuclear Weapons*, Stanford University Press, 2009.

ensure control of their weapons is maintained by the highest levels of national authority. Also, sharing U.S. knowledge and experience related to creating survivable second-strike forces may also be prudent due to the level of crisis stability such forces bring. Finally, the U.S. could share certain types of weapon design information that can improve the safety and security of other states' nuclear weapons if such sharing does not enhance the functionality or reliability of the weapon.[44]

Liberals acknowledge that some of these recommendations are fraught with the risk of failure and ineffectiveness—indeed, a pessimistic organizational theory perspective hints that many of them are likely to fail. But theory suggests that bringing new nuclear nations "up-to-speed" quickly (getting them through the earliest and most dangerous stages of being a nuclear power), could bring greater stability and less risk of the nuclear taboo being broken. Furthermore, the cooperation required to conduct such sharing may lead to more peaceful state interaction on subsequent critical issues. Of course the obvious downside is that such sharing may encourage other states to acquire nuclear weapons, because the U.S. will then offer the technology and expertise assistance. In the end, a liberal perspective is unlikely to yield a definitive conclusion on questions regarding providing assistance to new nuclear states.

2.4 Summary of Implications for Policymakers

Although it is dangerous to generalize the policy prescriptions implied by international relations theories (either across the theoretical spectrum or even within a particular theoretical perspective), the brief survey above indicates that the realist and liberal frameworks may align to allow several key recommendations on how U.S. nuclear weapons policies can be leveraged to support U.S. nonproliferation priorities. In this section I focus on those recommendations that:

[44] Sagan and Waltz, *The Spread of Nuclear Weapons*, p85-86.

(1) realism and liberalism most clearly appear to agree on, and (2) could be implemented in the near-term by U.S. policymakers. For instance, based on these criteria I will discuss the recommendations from theory on the size and role of the U.S. nuclear arsenal, but avoid discussions of total nuclear disarmament.

Perhaps the most clear policy prescription to which the majority of both realists and liberals would agree is that the U.S. nuclear arsenal has been—and still is—much larger than is needed to fulfill its deterrence mission. A dramatic reduction in the size of the U.S. stockpile would continue to allow a robust deterrent force, would be less susceptible to safety and security incidents, and could send a clear signal to the international community that the U.S. is progressing towards its obligations under Article VI of the Nuclear Nonproliferation Treaty. Cogent realist arguments have been made that such U.S. reductions may have little or no effect on the security-based reasons states pursue nuclear capabilities, but liberals would argue that significant reductions would certainly lend additional reinforcement to international norms against the desirability of nuclear weapons. And because realists would allow that such reductions do not sacrifice U.S. security in any way, they would generally support it even if they do not believe it will lead to direct benefits for U.S. nonproliferation priorities.

Another point of agreement between the theories appears to be that all U.S. nuclear forces should be taken off "launch-on-warning" alert posture. From the realist side, Waltz points out that this capability is simply unnecessary for deterrence to work and retaliation to be possible. From the liberal side, Sagan stresses that this will dramatically reduce safety accidents and unauthorized launches, which could lead to inadvertent nuclear war. This complete de-alerting would be welcomed by nuclear states and non-nuclear states alike, and would provide further credibility to U.S. nonproliferation efforts with no sacrifice to the nuclear deterrence mission.

Realists and liberals also agree on the importance of all nuclear states maintaining the safety and security of their nuclear weapons—though for somewhat different reasons. Prominent theorists from both sides have argued that U.S. information and technology related to the safety, security, and command-and-control of nuclear weapons should be shared with other nuclear weapon states. U.S. policy has historically restricted the sharing of any weapon-design information, for fear of revealing possible vulnerabilities in U.S. weapons or providing other states with information that could enhance the functionality or capability of their weapons. International relations theories suggest a reexamination of this policy is in order, and that sharing high-level concepts and design practices that enable safe, secure, survivable, and controlled nuclear weapons is a prudent course.

The realist reasoning that a threatening great power leads to development of nuclear capability by targeted minor powers is undoubtedly accepted by liberals as well. This agreement leads to a recommendation that U.S. nuclear weapons policy be made as nonthreatening as possible to non-nuclear states. To this end, liberals advocate that an unequivocal no-first-use policy be declared by the United States. But because realists generally see first-use as necessary to maintain credible nuclear security guarantees to allies, they are more ambiguous in how they recommend carrying out a nuclear weapons policy that is nonthreatening. However, it is likely that adherents to both schools of theory could agree to certain principles for the U.S. nuclear posture that may reduce the threats non-nuclear nations perceive from it. First, the U.S. should clearly separate its nuclear forces from its conventional forces, making it clear to the international community that it views its nuclear forces as having a special but very narrow primary mission: deterring and retaliating against the use of nuclear weapons on the U.S. and its allies. Second, the U.S. should announce that it will not use its nuclear weapons on non-nuclear

states unless they are attacking the sovereign territory of the U.S. or a declared ally of the U.S. and pose an existential threat to the U.S. or allied state. Third, the U.S. views any attack (conventional or nuclear) upon its nuclear arsenal as the gravest of matters, and reserves the right to respond with nuclear weapons regardless of the perpetrator. An implementation of these principles in U.S. nuclear doctrine may be acceptable to a majority of theorists on both sides, and could send the appropriate signals to the international community.

A final point of agreement between realists and liberals appears to be the success of U.S. extended deterrence security agreements at preventing proliferation. Many have suggested that these agreements have been instrumental at preventing the cascade of proliferation that has been feared since 1945. Most theorists would agree that maintaining the credibility of these agreements is a paramount issue for preventing proliferation (hence the hesitancy of realists toward a no-first-use policy). Steps should be taken to strengthen and reinforce these security agreements, understand on a state-by-state basis what our allies require for the agreements to be seen as fully credible, and discuss and communicate with allies any potential changes to U.S. nuclear policy before such changes are implemented.

3 The 2001 Nuclear Posture Review: How does it align with recommendations from theory?

In the 2001 Nuclear Posture Review (NPR), the George W. Bush Administration performed the most recent comprehensive review of U.S. nuclear weapons policy.[45] The policy represented a significant shift from the United States' Cold War era nuclear posture in several ways. These shifts are explored individually below, and judged against the generalized prescriptions of international relations theories outlined above.

[45] Nuclear Posture Review [Excerpts], January 2002, http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm.

First, the NPR's review of the capabilities and structure of U.S. nuclear forces led to the conclusion that the U.S. arsenal could be reduced significantly from its Cold War-era size. This reduction was formalized with the Russians through the SORT/Moscow Treaty in 2002, which reduced the number of operationally deployed strategic warheads on both sides to a maximum of 2,200—down from the 6,000 allowed under START. Such reductions are widely supported by the international relations theoretical literature. Indeed, theory suggests that much more dramatic reductions could be made without sacrificing the security of the U.S. or the credibility of its security guarantees to allies.

Critics of the negotiated 2,200 cap argue that it disingenuous because it does not limit "substrategic" nuclear weapons and allows each side to keep unlimited "nondeployed" nuclear weapons in reserve. These dramatic caveats allow the U.S. and Russia to maintain very large nuclear stockpiles—much larger than the 2,200 "maximum"—effectively undercutting any benefits the reductions could have had to nonproliferation efforts. The prescriptions of theory would appear to suggest that U.S. undertake (jointly with the Russians if possible, though unilaterally if not) further dramatic reductions to the stockpile, but do so in a manner that is fully credible and transparent to the international community. For instance, the U.S. could begin by providing clear statements on the size and makeup of its stockpile. Such unambiguous statements do not undercut the credibility of the deterrent nor make it more vulnerable (since assured second-strike forces remain), and would signal that the U.S. is serious about starting down the path of transparency in nuclear weapons policy that a world without nuclear arms will require.

A second shift in U.S. nuclear weapons policy initiated by the NPR was a broader scope for what nations should be considered during U.S. nuclear force planning. Most dramatically, the NPR formally expanded the focus of U.S. nuclear targeting plans from Russia and China to

include “emerging threats” like rogue states and terrorists. Specifically, the NPR document singled out several minor powers with antagonistic relations with the U.S.: North Korea, Iraq, Iran, Syria, and Libya. Realists and liberals would agree that this very overt and public naming of certain states in the document guiding the global hegemon’s nuclear planning will immediately make their leaders more concerned for their national security. The natural tendency of states in such positions is to balance the threat by either obtaining a security guarantee from another nuclear-armed state or by developing an indigenous nuclear capability. Because it is doubtful that any of the existing nuclear weapons states would find it in its interests to antagonize the U.S. by offering a security guarantee to a weak state, the latter option is really all that is left. In the end, most international relations theorists would recommend that the U.S. refrain from overtly and specifically threatening, nuclear or otherwise, minor or regional powers. Such threats lead to unwanted proliferation that will only further constrain U.S. options.

A third shift indicated in the NPR is an expanded list of potential missions for U.S. nuclear weapons. The NPR suggests that new nuclear capabilities and force structures be developed to provide U.S. decision makers more flexible means of applying nuclear weapons to a greater array of targets and conflicts. Specifically, the NPR lists three new missions U.S. nuclear weapons could be used to accomplish: (1) to destroy hardened deeply buried targets, (2) to destroy chemical, biological and other weapons of mass destruction agents, and (3) to destroy mobile targets that could have uncertain locations. Technical experts have questioned the validity of these missions, and how much more effective nuclear weapons are at carrying them out versus conventional weapons. But international relations theorists have questioned these new missions for another reason: they appear to send a message that the U.S. places a high-value on the warfighting capability of its nuclear weapons, thereby weakening the international taboos against

their desirability and use and weakening the United States' ability to win international cooperation on nonproliferation issues. Many theorists identify these taboos as working dramatically in favor of the U.S. because of its overwhelming conventional superiority. If the use of nuclear weapons remains verboten, its dominant conventional military strength gives the U.S. increased flexibility. Theory suggests that to benefit nonproliferation goals, the role of U.S. nuclear weapons should be deemphasized by contracting the list of missions given to U.S. nuclear weapons, not expanding it.

A final shift in U.S. nuclear weapons policy described by the NPR is directly tied to the new missions the NPR envisaged—these new missions would require development of new nuclear weapons in order to carry them out. Specifically, two new capabilities would be required: (1) low or very-low yield weapons that result in less collateral damage, and (2) improved earth penetrating weapons. For similar reasons that theory suggests the new missions were poor policy, it also indicates that the development of new, more "usable" nuclear weapons would be poor policy that could drive other nations to proliferate. But the argument against these new weapons goes a step further: if U.S. weapons are lower-yield and cause less collateral damage, future U.S. leadership may be more tempted to actually use them to deal with problems. And as we have seen in the survey above, the predominant theories discussed in this paper generally indicate that the next use of nuclear weapons is almost assuredly against the long-term interests of the U.S., even if it is the U.S. that uses it.

4 A Research Agenda to Support Enhanced All Things Nuclear Decision Making

The review above indicates that, overall, the implications and recommendations of international relations theories were largely disregarded by policymakers as they crafted U.S.

nuclear weapons policy in 2001. Furthermore, the interdependencies between nuclear weapons policy and nonproliferation policy appear to have been inadequately addressed. This seems to indicate that to progress towards an overall goal of reducing global nuclear danger, an "all things nuclear" framework is needed to support future nuclear policymaking. International relations theorists can likely have significant impact on achieving this goal if their research agenda is properly oriented.

The critical component of an "all things nuclear" decision-support framework is a focus on the interdependencies between the nuclear weapons and nuclear nonproliferation (and nuclear energy and nuclear counterterrorism) domains. Because of the tight coupling between these nuclear domains, policy choices in one domain often have dramatic impacts on U.S. efforts in one or more of the other domains. The brief survey of realist and liberal perspectives presented above is a useful starting point for efforts to implement an operational all things nuclear framework, but deep research by international relations specialists in several key areas could provide much fuller context.

Research is needed to fully understand all of the highly complex and nuanced interdependencies that theory suggests may exist between the nuclear domains. This must necessarily include all of the security-based, balance-of-power factors that realists identify; but must also include the normative, ethical, organizational, and sociological factors that liberals suggest are critically important. A very broad but comprehensive understanding of all of the potential interdependencies is needed before a useful decision-support framework can be developed.

In conjunction with this broad understanding of interdependencies, international relations theorists can help policymakers understand what factors are likely to play a greater role in the

decision-making of particular states, organizations, and individuals.[46] Effectively influencing the course of international events usually requires a state-by-state, case-by-case understanding of what incentives and disincentives may have the greatest impact on a particular situation.[47] Expanding policymakers' knowledge of what options are more likely to work and why is likely to lead to better (or at least more fully-informed) decision making.

Also, political science can help integrate this research into practice by supporting the development of decision-support tools that guide policymakers through the exceedingly complex all things nuclear environment. These tools will not simply output the ideal policy choice, but will instead walk policymakers through the complexities of the environment in a rational manner, provide scenarios on how certain policy choices could play out, and—most importantly—show how policy choices reverberate to other nuclear domains and beyond.

Finally, I will offer a brief thought derived from my experiences this semester as an engineer peering into the realm of social science. While I agree with Stephen Walt's assessment that international relations as a discipline should do more to make its theoretical work relevant to policy practitioners[48], I believe that this is only half of the problem. In fact, in my review of the literature for this paper I have seen a great deal of theoretical work that is both interesting and highly-relevant to resolving the current tensions between U.S. nuclear weapons and nonproliferation policies. But this research is communicated in a fashion that makes it nearly impenetrable to policy practitioners. Effective communication of the concepts and implications of international relations theories is the other half of the problem that must be surmounted before

[46] Paul K. Davis, "Protecting Weak and Medium-Strength States: Issues of Deterrence, Stability, and Decision Making", in *Post-Cold War Conflict Deterrence*, National Research Council, Naval Studies Board, National Academy Press, 1997, p153-181.
[47] Elizabeth A. Stanley, "International Perceptions of U.S. Nuclear Policy", Sandia National Laboratories, SAND2007-0903, Feb 2007.
[48] Stephen M. Walt, "The Relationship Between Theory and Policy in International Relations", *Annual Review of Political Science*, Vol 8, 2005, p23-43.

theories can have a significant impact on policy. Borrowing principles from other disciplines like psychology, sociology, and marketing, international relations theorists should strive to understand their audience (policymakers and practitioners) and present their findings in ways amenable to it. And the larger political science community must be open to and incentivize such communication practices—because even though they may not directly "advance inquiry and the state of knowledge", they play a key role in enabling the field to make relevant contributions to the world they study.

5 Conclusion

Although their central tenets and reasoning differ substantially, international relations realism and liberalism appear to prescribe very similar recommendations on how U.S. policymakers can—in the near-term—leverage U.S. nuclear weapons policy to help meet its nuclear nonproliferation goals. Specifically, leading realist and liberal scholars appear to agree on the following recommendations:

- Dramatically reducing the size of the U.S. stockpile—in conjunction with Russia if possible, but unilaterally if not
- De-alerting all U.S. nuclear weapons and implementing retaliation plans and supporting systems (i.e., command and control) that do not depend on "launch-on-warning" response
- Deemphasizing the role of nuclear weapons in U.S. national security strategy by articulating a clear but narrow mission space for U.S. nuclear forces
- Strengthening the safety, security, survivability, and command and control of foreign nuclear weapons stockpiles by prudent sharing of U.S. knowledge, experience, and technology

- Strengthening U.S. extended nuclear deterrence agreements through enhanced communication and understanding of the needs of allied states

Comparing these recommendations to the 2001 NPR, it would seem that policymakers generally did not heed the advice of theorists. Still, theories and theorists of international relations can play an important role in shaping future nuclear policy. If theoretical researchers are willing to undertake the steps necessary to communicate effectively with policymakers the field can provide the deep understanding of complex issues and interdependencies, the analysis of decision processes and influence factors for individual states, and the tools for considering policy trade-offs in the all things nuclear environment that will be vital to the success of U.S. efforts to reduce global nuclear danger.

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