Why Do States Build Nuclear Weapons?

Three Models in Search of a Bomb

Scott D. Sagan

Why do states build nuclear weapons? Having an accurate answer to this question is critically important both for predicting the long-term future of international security and for current foreign policy efforts to prevent the spread of nuclear weapons. Yet given the importance of this central proliferation puzzle, it is surprising how little sustained attention has been devoted to examining and comparing alternative answers.

This lack of critical attention is not due to a lack of information: there is now a large literature on nuclear decision-making inside the states that have developed nuclear weapons and a smaller, but still significant, set of case studies of states' decisions to refrain from developing nuclear weapons. Instead, the inattention appears to have been caused by the emergence of a near-consensus that the answer is obvious. Many U.S. policymakers and most international relations scholars have a clear and simple answer to the proliferation puzzle: states will seek to develop nuclear weapons when they face a significant military threat to their security that cannot be met through alternative means; if they do not face such threats, they will willingly remain non-nuclear states.[1]

Scott D. Sagan is Associate Professor of Political Science and a faculty associate of the Center for International Security and Arms Control at Stanford University.

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1. Among policymakers, John Deutsch presents the most unadorned summary of the basic argument that "the fundamental motivation to seek a weapon is the perception that national security will be improved." John M. Deutsch, "The New Nuclear Threat," *Foreign Affairs*, Vol. 71, No. 41 (Fall 1992), pp. 124–125. Also see George Shultz, "Preventing the Proliferation of Nuclear Weapons," *Department of State Bulletin*, Vol. 84, No. 2093 (December 1984), pp. 17–21. For examples of the dominant paradigm among scholars, see Michael M. May, "Nuclear Weapons Supply and Demand," *American Scientist*, Vol. 82, No. 6 (November–December 1994), pp. 526–537; Bradley A. Thayer, "The Causes of Nuclear Proliferation and the Nonproliferation Regime," *Security Studies*, Vol. 4, No. 3 (Spring 1995), pp. 463–519; Benjamin Frankel, "The Brooding Shadow: Systemic Incentives and Nuclear Weapons Proliferation," and Richard K. Betts, "Paranoids, Pygmies, Pariahs, and Nonproliferation Revisited," both in Zachary S. Davis and Benjamin Frankel, eds. *The*

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The central purpose of this article is to challenge this conventional wisdom about nuclear proliferation. I argue that the consensus view, focusing on national security considerations as the cause of proliferation, is dangerously inadequate because nuclear weapons programs also serve other, more parochial and less obvious objectives. Nuclear weapons, like other weapons, are more than tools of national security; they are political objects of considerable importance in domestic debates and internal bureaucratic struggles and can also serve as international normative symbols of modernity and identity.

The body of this article examines three alternative theoretical frameworks—what I call "models" in the very informal sense of the term—about why states decide to build or refrain from developing nuclear weapons: "the security model," according to which states build nuclear weapons to increase national security against foreign threats, especially nuclear threats; "the domestic politics model," which envisions nuclear weapons as political tools used to advance parochial domestic and bureaucratic interests; and "the norms model," under which nuclear weapons decisions are made because weapons acquisition, or restraint in weapons development, provides an important normative symbol of a state's modernity and identity. Although many of the ideas underlying these models exist in the vast case-study and proliferation-policy literatures, they have not been adequately analyzed, nor placed in a comparative theoretical framework, nor properly evaluated against empirical evidence. When I discuss these models, therefore, I compare their theoretical conceptions of the causes of weapons development, present alternative interpretations of the history of some major proliferation decisions, and contrast the models' implications for nonproliferation policy. The article concludes with an outline of a research agenda for future proliferation studies and an examination of the policy dilemmas produced by the existence of these three proliferation models.

It is important to recognize from the start that the nuclear proliferation problem will be a critical problem in international security for the foreseeable future. Despite the successful 1995 agreement to have a permanent extension of the Nuclear Nonproliferation Treaty (NPT), there will be continuing NPT review conferences assessing the implementation of the treaty every five years; each member state can legally withdraw from the treaty, under the "supreme national interest" clause, if it gives three months notice; and many new states

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Proliferation Puzzle, special issue of *Security Studies,* Vol. 2, No, 3/4 (Spring/Summer 1993), pp. 37–38 and pp. 100–124; and David Gompert, Kenneth Watman, amd Dean Wilkening, "Nuclear First Use Revisited," *Survival,* Vol. 37, No. 3 (Autumn 1995), p. 39.

can be expected to develop a "latent nuclear weapons capability" over the coming decade. Indeed, some fifty-seven states now operate or are constructing nuclear power or research reactors, and it has been estimated that about thirty countries today have the necessary industrial infrastructure and scientific expertise to build nuclear weapons on a crash basis if they chose to do so.[2] The NPT encourages this long-term trend by promoting the development of power reactors in exchange for the imposition of safeguards on the resulting nuclear materials. This suggests that while most attention concerning proliferation in the immediate-term has appropriately focused on controlling nuclear materials in the former Soviet Union and preventing the small number of active proliferators (such as Iraq, Iran, Libya, and North Korea) that currently appear to have vigorous nuclear weapons programs from getting the bomb, the longer-term and enduring proliferation problem will be ensuring that the larger and continually growing number of latent nuclear states maintain their non-nuclear weapons status. This underscores the policy importance of addressing the sources of the political *demand* for nuclear weapons, rather than focusing primarily on efforts to safeguard existing stockpiles of nuclear materials and to restrict the *supply* of specific weapons technology from the "haves" to the "have-nots."

If my arguments and evidence concerning the three models of proliferation are correct, however, any future demand-side nonproliferation strategy will face inherent contradictions. For, in contrast to the views of scholars who claim that a traditional realist theory focusing on security threats explains all cases of proliferation and nuclear restraint,[3] I believe that the historical record suggests that each theory explains some past cases quite well and others quite poorly. Unfortunately, since the theories provide different and often contradictory lessons for U.S. nonproliferation policy, this suggests that policies designed to address one future proliferation problem will exacerbate others. As I discuss in more detail below, particularly severe tensions are likely to emerge in the future between U.S. extended deterrence policies designed to address security

2. See Steve Fetter, "Verifying Nuclear Disarmament," Occasional Paper No. 29, Henry L. Stimson Center, Washington, D.C., October 1996, p. 38; and "Affiliations and Nuclear Activities of 172 NPT Parties," *Arms Control Today*, Vol. 25, No. 2 (March 1995), pp. 33–36. For earlier pioneering efforts to assess nuclear weapons latent capability and demand, see Stephen M. Meyer, *The Dynamics of Nuclear Proliferation* (Chicago: University of Chicago Press, 1984); and William C. Potter, *Nuclear Power and Nonproliferation* (Cambridge, Mass: Oelgeschlager, Gunn and Hain, 1982).

3. For example, May, "Nuclear Weapons Supply and Demand"; Thayer, "The Causes of Nuclear Proliferation and the Nonproliferation Regime"; and Frankel, "The Brooding Shadow: Systemic Incentives and Nuclear Weapons Proliferation."

concerns of potential proliferators and U.S. NPT policies designed to maintain and enhance international norms against nuclear use and acquisition.

The Security Model: Nuclear Weapons and International Threats

According to neorealist theory in political science, states exist in an anarchical international system and must therefore rely on self-help to protect their sovereignty and national security.[4] Because of the enormous destructive power of nuclear weapons, any state that seeks to maintain its national security must balance against any rival state that develops nuclear weapons by gaining access to a nuclear deterrent itself. This can produce two policies. First, strong states do what they can: they can pursue a form of internal balancing by adopting the costly, but self-sufficient, policy of developing their own nuclear weapons. Second, weak states do what they must: they can join a balancing alliance with a nuclear power, utilizing a promise of nuclear retaliation by that ally as a means of extended deterrence. For such states, acquiring a nuclear ally may be the only option available, but the policy inevitably raises questions about the credibility of extended deterrence guarantees, since the nuclear power would also fear retaliation if it responded to an attack on its ally.

Although nuclear weapons could also be developed to serve either as deterrents against overwhelming conventional military threats or as coercive tools to compel changes in the status quo, the simple focus on states' responses to emerging nuclear threats is the most common and most parsimonious explanation for nuclear weapons proliferation.[5] George Shultz once nicely summarized the argument: "Proliferation begets proliferation."[6] Every time one state develops nuclear weapons to balance against its main rival, it also creates a

4. The seminal text of neorealism remains Kenneth N. Waltz, *Theory of International Politics* (New York: Random House, 1979). Also see Kenneth N. Waltz, "The Origins of War in Neorealist Theory," in Robert I. Rotberg and Theodore K. Rabb, eds., *The Origin and Prevention of Major Wars* (New York: Cambridge University Press, 1989), pp. 39–52; and Robert O. Keohane, ed., *Neorealism and Its Critics* (New York: Columbia University Press, 1986).

5. The Israeli, and possibly the Pakistani, nuclear weapons decisions might be the best examples of defensive responses to conventional security threats; Iraq, and possibly North Korea, might be the best examples of the offensive coercive threat motivation. On the status quo bias in neorealist theory in general, see Randall L. Schweller, "Bandwagoning for Profit: Bringing the Revisionist State Back In," *International Security,* Vol. 19, No. 1 (Summer 1994), pp. 72–107, and Richard Rosecrance and Arthur A. Stein, eds., *The Domestic Bases of Grand Strategy* (Ithaca, N.Y.: Cornell University Press, 1993).

6. Shultz, "Preventing the Proliferation of Nuclear Weapons," p. 18.

nuclear threat to another state in the region, which then has to initiate its own nuclear weapons program to maintain its national security.

From this perspective, one can envision the history of nuclear proliferation as a strategic chain reaction. During World War II, none of the major belligerents was certain that the development of nuclear weapons was possible, but all knew that other states were already or could soon be working to build the bomb. This fundamental fear was the central impetus for the United States, British, German, Soviet, and Japanese nuclear weapons programs. The United States developed atomic weapons first, not because it had any greater demand for the atomic bomb than these other powers but, rather, because the United States invested more heavily in the program and made the right set of technological and organizational choices.[7]

After August 1945, the Soviet Union's program was reinvigorated because the U.S. atomic attacks on Hiroshima and Nagasaki demonstrated that nuclear weapons were technically possible, and the emerging Cold War meant that a Soviet bomb was a strategic imperative. From the realist perspective, the Soviet response was perfectly predictable. Josef Stalin's reported request to Igor Kurchatov and B.L. Yannikov in August 1945 appears like a textbook example of realist logic:

> A single demand of you comrades. . . . Provide us with atomic weapons in the shortest possible time. You know that Hiroshima has shaken the whole world. The balance has been destroyed. Provide the bomb—it will remove a great danger from us.[8]

The nuclear weapons decisions of other states can also be explained within the same framework. London and Paris are seen to have built nuclear weapons because of the growing Soviet military threat and the inherent reduction in the credibility of the U.S. nuclear guarantee to NATO allies once the Soviet Union was able to threaten retaliation against the United States.[9] China developed the bomb because Beijing was threatened with possible nuclear attack by the United States at the end of the Korean War and again during the Taiwan Straits

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7. On the genesis of the atomic programs in World War II, see McGeorge Bundy, *Danger and Survival: Choices about the Bomb in the First Fifty Years* (New York: Random House, 1988) pp. 3–53; and Richard Rhodes, *The Making of the Atomic Bomb* (New York: Simon and Schuster, 1986).
8. A. Lavrent'yeva in "Stroiteli novogo mira," *V mire knig*, No. 9 (1970), in David Holloway, *The Soviet Union and the Arms Race* (New Haven, Conn.: Yale University Press, 1980), p. 20, also quoted in Thayer, "The Causes of Nuclear Proliferation," p. 487.
9. Important sources on the British case include Margaret Gowing, *Britain and Atomic Energy, 1939–1945* (London: Macmillan, 1964); Margaret Gowing, *Independence and Deterrence: Britain and Atomic Energy 1945–1952*, vols. 1 and 2 (London: Macmillan, 1974); and Andrew Pierre, *Nuclear*

crises in the mid-1950s. Not only did Moscow prove to be an irresolute nuclear ally in the 1950s, but the emergence of hostility in Sino-Soviet relations in the 1960s further encouraged Beijing to develop, in Avery Goldstein's phrase, the "robust and affordable security" of nuclear weapons, since the border clashes "again exposed the limited value of China's conventional deterrent."[10]

After China developed the bomb in 1964, India, which had just fought a war with China in 1962, was bound to follow suit. India's strategic response to the Chinese test came a decade later, when their Atomic Energy Commission successfully completed the long research and development process required to construct and detonate what was called a "peaceful nuclear explosion" (PNE) in May 1974. According to realist logic, India has maintained an ambiguous nuclear posture since that time—building sufficient nuclear materials and components for a moderate-sized nuclear arsenal, but not testing or deploying weapons into the field—in a clever strategic effort to deter the Chinese, while simultaneously not encouraging nuclear weapons programs in other neighboring states.[11] After the Indian explosion, however, the nascent Pakistani weapons program had to move forward according to the realist view: facing a recently hostile neighbor with both nuclear weapons and conventional military superiority, it was inevitable that the government in Islamabad would seek to produce a nuclear weapon as quickly as possible.[12]

Politics: The British Experience with an Independent Strategic Force, 1939–1970 (London: Oxford University Press, 1972). On the French case, see Lawrence Scheinman, *Atomic Energy Policy in France Under the Fourth Republic* (Princeton, N.J.: Princeton University Press, 1965) and Wilfred L. Kohl, *French Nuclear Diplomacy* (Princeton, N.J.: Princeton University Press, 1971).

10. Avery Goldstein, "Robust and Affordable Security: Some Lessons from the Second-Ranking Powers During the Cold War," *Journal of Strategic Studies*, Vol. 15, No. 4 (December 1992), p. 494. The seminal source on the Chinese weapons program, which emphasizes the importance of U.S. nuclear threats in the 1950s, is John W. Lewis and Xue Litai, *China Builds the Bomb* (Stanford, Calif.: Stanford University Press, 1988).

11. Recent estimates of the number of weapons India could deploy on short notice range from 25 to 105. See Mitchell Reiss, *Bridled Ambition: Why Countries Constrain Their Nuclear Capabilities* (Washington, D.C.: Woodrow Wilson Center Press, 1995), p. 185; Leonard S. Spector and Mark G. McDonough, *Tracking Nuclear Proliferation* (Washington, D.C.: Carnegie Endowment for International Peace, 1995), p. 89; and Eric Arnett, "Implications of the Comprehensive Test Ban," in Eric Arnett, ed., *Nuclear Weapons after the Comprehensive Test Ban* (Oxford: Oxford University Press, 1996), p. 13. Important sources on the Indian nuclear program include Ashok Kapur, *India's Nuclear Option: Atomic Diplomacy and Decision Making* (New York: Praeger, 1976); Brahma Chellaney, "South Asia's Passage to Nuclear Power," *International Security*, Vol. 16, No. 1 (Summer 1991), pp. 43–72; and T. T. Poulose, ed., *Perspectives of India's Nuclear Policy* (New Delhi: Young Asia Publications, 1978).

12. Valuable sources on Pakistan's program include Ziba Moshaver, *Nuclear Weapons Proliferation in the Indian Subcontinent* (Basingstoke, U.K.: Macmillan, 1991) and Ashok Kapur, *Pakistan's Nuclear Development* (New York: Croom Helm, 1987).

EXPLAINING NUCLEAR RESTRAINT

Given the strong deterrent capabilities of nuclear weapons, why would any state give up such powerful sources of security? The major recent cases of nuclear weapons restraint can also be viewed through the lens provided by the security model if one assumes that external security threats can radically change or be reevaluated. The case of South Africa has most often been analyzed in this light, with the new security threats that emerged in the mid-1970s seen as the cause of South Africa's bomb program and the end of these threats in the late 1980s as the cause of its policy reversal. As President F.W. de Klerk explained in his speech to Parliament in March 1993, the Pretoria government saw a growing "Soviet expansionist threat to southern Africa"; "the buildup of the Cuban forces in Angola from 1975 onwards reinforced the perception that a deterrent was necessary, as did South Africa's relative international isolation and the fact that it could not rely on outside assistance should it be attacked."[13] Six atomic weapons were therefore constructed, but were stored disassembled in a secret location, between 1980 and 1989, when the program was halted. The South African nuclear strategy during this period was designed to use the bomb both as a deterrent against the Soviets and as a tool of blackmail against the United States. If Soviet or Soviet-supported military forces directly threatened South Africa, the regime reportedly planned to announce that it had a small arsenal of nuclear weapons, dramatically testing one or more of the weapons if necessary by dropping them from aircraft over the ocean, hoping that such a test would shock the United States into intervention on behalf of the Pretoria regime.[14]

South Africa destroyed its small nuclear weapons arsenal in 1991, the theory suggests, because of the radical reduction in the external security threats to the regime. By 1989, the risk of a Soviet-led or sponsored attack on South Africa was virtually eliminated. President de Klerk cited three specific changes in military threats in his speech to Parliament: a cease-fire had been negotiated

13. F. W. de Klerk, March 24, 1993 address to the South African parliament as transcribed in Foreign Broadcast Information Service (FBIS), JPRS-TND-93-009, (March 29, 1993), p. 1 (henceforth cited as de Klerk, "Address to Parliament.") For analyses that focus largely on security threats as the cause of the program, see Darryl Howlett and John Simpson, "Nuclearization and Denuclearization in South Africa," *Survival*, Vol. 35, No. 3 (Autumn 1993), pp. 154–173; and J.W. de Villers, Roger Jardine, and Mitchell Reiss, "Why South Africa Gave up the Bomb," *Foreign Affairs*, Vol. 72, No. 5 (November/December 1993), pp. 98–109. For a more detailed and more balanced perspective see Reiss, *Bridled Ambition*, pp. 7–44.

14. Military planners nonetheless developed nuclear target lists in their contingency military plans and research was conducted on development of the hydrogen bomb until 1985. See Reiss, *Bridled Ambition*, p. 16.

in Angola; the tripartite agreement granted independence to Namibia in 1988; and most dramatically, "the Cold War had come to an end."[15]

Although the details change in different cases, the basic security model has also been used to explain other examples of nuclear restraint. For example, both Argentina and Brazil refused to complete the steps necessary to join the Latin American nuclear weapons-free zone (NWFZ) and began active programs in the 1970s that could eventually have produced nuclear weapons; however, their 1990 joint declaration of plans to abandon their programs is seen as the natural result of the recognition that the two states, which had not fought a war against one another since 1828, posed no fundamental security threat to each other.[16] Similarly, it has been argued that the non-Russian former states of the Soviet Union that were "born nuclear"—Ukraine, Kazakhstan, and Belarus—decided to give up their arsenals because of a mixture of two realist model arguments: their long-standing close ties to Moscow meant that these states did not perceive Russia as a major military threat to their security and sovereignty, and increased U.S. security guarantees to these states made their possession of nuclear weapons less necessary.[17] In short, from a realist's perspective, nuclear restraint is caused by the absence of the fundamental military threats that produce positive proliferation decisions.

POLICY IMPLICATIONS OF THE SECURITY MODEL

Several basic predictions and prescriptions flow naturally from the logic of the security model. First, since states that face nuclear adversaries will eventually develop their own arsenals unless credible alliance guarantees with a nuclear power exist, the maintenance of U.S. nuclear commitments to key allies, in-

15. See de Klerk, "Address to Parliament," p. 2.

16. Thayer, "The Causes of Nuclear Proliferation," p. 497; and May, "Nuclear Weapons Supply and Demand," pp. 534–535. For analyses of the Argentine-Brazilian decision, see Monica Serrano, "Brazil and Argentina," in Mitchell Reiss and Robert S. Litwak, eds. *Nuclear Proliferation After the Cold War* (Washington, D.C.: Woodrow Wilson Center Press, 1994), pp. 231–255; Jose Goldemberg and Harold A. Feiveson, "Denuclearization in Argentina and Brazil," *Arms Control Today*, Vol. 24, No. 2 (March 1994), pp. 10–14; Reiss, *Bridled Ambition*, pp. 45–88; and John R. Redick, Julio C. Carasales, and Paulo S. Wrobel, "Nuclear Rapprochement: Argentina, Brazil, and the Nonproliferation Regime," *Washington Quarterly*, Vol. 18, No. 1 (Winter 1995), pp. 107–122.

17. Sherman Garnett writes, for example, that "for many Ukrainian citizens—not just the ethnic Russians—it is difficult to conceive of Russia as an enemy to be deterred with nuclear weapons." Sherman W. Garnett, "Ukraine's Decision to Join the NPT," *Arms Control Today*, Vol. 25, No. 1 (January 1995), p. 8. Garnett also maintains that "the role that security assurances played in the creation of a framework for Ukrainian denuclearization is obvious. They were of immense importance." Sherman W. Garnett, "The Role of Security Assurances in Ukrainian Denuclearization," in Virginia Foran, ed., *Missed Opportunities?: The Role of Security Assurances in Nuclear Non-Proliferation* (Washington, D.C.: Carnegie Endowment for International Peace, forthcoming 1997).

cluding some form of continued first-use policy, is considered crucial.[18] Other efforts to enhance the security of potential proliferators—such as confidence-building measures or "negative security assurances" that the nuclear states will not use their weapons against non-nuclear states—can also be helpful in the short-run, but will likely not be effective in the long-term given the inherent suspicions of potential rivals produced by the anarchic international system.

Under the security model's logic, the NPT is seen as an institution permitting non-nuclear states to overcome a collective action problem. Each state would prefer to become the only nuclear weapons power in its region, but since that is an unlikely outcome if it develops a nuclear arsenal, it is willing to refrain from proliferation if, and only if, its neighbors remain non-nuclear. The treaty permits such states to exercise restraint with increased confidence that their neighbors will follow suit, or at a minimum, that they will receive sufficient advance warning if a break-out from the treaty is coming. It follows, from this logic, that other elements of the NPT regime should be considered far less important: specifically, the commitments that the United States and other nuclear states made under Article VI of the treaty—that the nuclear powers will pursue "negotiations in good faith on measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament"—are merely sops to public opinion in non-nuclear countries. The degree to which the nuclear states follow through on these Article VI commitments will not significantly influence the actual behavior of non-nuclear states, since it will not change their security status.

Under realist logic, however, U.S. nonproliferation policy can only slow down, not eliminate, the future spread of nuclear weapons. Efforts to slow down the process may of course be useful, but they will eventually be countered by two very strong structural forces that create an inexorable momentum toward a world of numerous nuclear weapons states. First, the end of the Cold War creates a more uncertain multipolar world in which U.S. nuclear guarantees will be considered increasingly less reliable; second, each time one state develops nuclear weapons, it will increase the strategic incentives for neighboring states to follow suit.[19]

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18. See Lewis Dunn, *Controlling the Bomb* (New Haven, Conn.: Yale University Press, 1982); May, "Nuclear Weapons Supply and Demand," p. 535; and Frankel, "The Brooding Shadow," pp. 47–54.
19. See Kenneth N. Waltz, "The Emerging Structure of International Politics," *International Security*, Vol. 18, No. 2 (Fall 1993), pp. 44–79; and John J. Mearsheimer, "Back to the Future: Instability in Europe after the Cold War," *International Security*, Vol. 15, No. 1 (Summer 1990), pp. 5–56.

PROBLEMS AND EVIDENCE

What's wrong with this picture? The security model is parsimonious; the resulting history is conceptually clear; and the theory fits our intuitive belief that important events in history (like the development of a nuclear weapon) must have equally important causes (like national security). A major problem exists, however, concerning the evidence, for the realist history depends primarily on first, the statements of motivation by the key decision-makers, who have a vested interest in explaining that the choices they made served the national interest; and second, a correlation in time between the emergence of a plausible security threat and a decision to develop nuclear weapons. Indeed, an all too common intellectual strategy in the literature is to observe a nuclear weapons decision and then work backwards, attempting to find the national security threat that "must" have caused the decision. Similarly, scholars too often observe a state decision not to have nuclear weapons and then work backwards to find the change in the international environment that "must" have led the government to believe that threats to national security were radically decreasing.

These problems suggest that a more serious analysis would open up the black box of decision-making and examine in more detail how governments actually made their nuclear decisions. Any rigorous attempt to evaluate the security model of proliferation, moreover, also requires an effort to develop alternative explanations, and to assess whether they provide more or less compelling explanations for proliferation decisions. The following sections therefore develop a domestic politics model and a norms model of proliferation and evaluate the explanations that flow from their logic, versus the security model's arguments offered above, for some important cases of both nuclear proliferation and nuclear restraint.

The Domestic Politics Model: Nuclear Pork and Parochial Interests

A second model of nuclear weapons proliferation focuses on the domestic actors who encourage or discourage governments from pursuing the bomb. Whether or not the acquisition of nuclear weapons serves the national interests of a state, it is likely to serve the parochial bureaucratic or political interests of at least some individual actors within the state. Three kinds of actors commonly appear in historical case-studies of proliferation: the state's nuclear energy establishment (which includes officials in state-run laboratories as well as civilian reactor facilities); important units within the professional military

(often within the air force, though sometimes in navy bureaucracies interested in nuclear propulsion); and politicians in states in which individual parties or the mass public strongly favor nuclear weapons acquisition. When such actors form coalitions that are strong enough to control the government's decision-making process—either through their direct political power or indirectly through their control of information—nuclear weapons programs are likely to thrive.

Unfortunately, there is no well-developed domestic political theory of nuclear weapons proliferation that identifies the conditions under which such coalitions are formed and become powerful enough to produce their preferred outcomes.[20] The basic logic of this approach, however, has been strongly influenced by the literature on bureaucratic politics and the social construction of technology concerning military procurement in the United States and the Soviet Union during the Cold War.[21] In this literature, bureaucratic actors are not seen as passive recipients of top-down political decisions; instead, they create the conditions that favor weapons acquisition by encouraging extreme perceptions of foreign threats, promoting supportive politicians, and actively lobbying for increased defense spending. This bottom-up view focuses on the formation of domestic coalitions within the scientific-military-industrial complex. The initial ideas for individual weapons innovations are often developed inside state laboratories, where scientists favor military innovation simply because it is technically exciting and keeps money and prestige flowing to their laboratories. Such scientists are then able to find, or even create, sponsors in the professional military whose bureaucratic interests and specific military responsibilities lead them also to favor the particular weapons system. Finally, such a coalition builds broader political support within the executive or legislative branches by shaping perceptions about the costs and benefits of weapons programs.

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20. This is a serious weakness shared by many domestic-level theories in international relations, not just theories of proliferation. On this issue, see Ethan B. Kapstein, "Is Realism Dead? The Domestic Sources of International Politics," *International Organization*, Vol. 49, No. 4 (Autumn 1995), pp. 751–774.

21. The best examples of this literature include Morton H. Halperin, *Bureaucratic Politics and Foreign Policy* (Washington, D.C.: The Brookings Institution, 1974); Matthew Evangelista, *Innovation and the Arms Race: How the United States and Soviet Union Develop New Military Technologies* (Ithaca, N.Y.: Cornell University Press, 1988); and Donald MacKenzie, *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance* (Cambridge, Mass.: MIT Press, 1990). For a valuable effort to apply insights from the literature on social construction of technology to proliferation problems, see Steven Flank, "Exploding the Black Box: The Historical Sociology of Nuclear Proliferation," *Security Studies*, Vol. 3, No. 2 (Winter 1993/94), pp. 259–294.

Realists recognize that domestic political actors have parochial interests, of course, but argue that such interests have only a marginal influence on crucial national security issues. The outcome of bureaucratic battles, for example, may well determine whether a state builds 500 or 1000 ICBMs or emphasizes submarines or strategic bombers in its nuclear arsenal; but a strong consensus among domestic actors will soon emerge about the need to respond in kind when a potential adversary acquires nuclear weapons. In contrast, from this domestic politics perspective, nuclear weapons programs are not obvious or inevitable solutions to international security problems; instead, nuclear weapons programs are solutions looking for a problem to which to attach themselves so as to justify their existence. Potential threats to a state's security certainly exist in the international system, but in this model, international threats are seen as being more malleable and more subject to interpretation, and can therefore produce a variety of responses from domestic actors. Security threats are therefore not the central cause of weapons decisions according to this model: they are merely windows of opportunity through which parochial interests can jump.

PROLIFERATION REVISITED: ADDRESSING THE INDIA PUZZLE

The historical case that most strongly fits the domestic politics model is the Indian nuclear weapons experience. In contrast to the brief realist's account outlined above, a closer look at the history of the Indian program reveals that there was no consensus among officials in New Delhi that it was necessary to have a nuclear deterrent as a response to the 1964 Chinese nuclear test. If that had been the case, according to realist logic, one of two events would likely have occurred. First, a crash weapons program could have been initiated; there is no evidence that such an emergency program was started, however, and indeed, given the relatively advanced state of Indian nuclear energy at the time, such an effort could have produced a nuclear weapon by the mid-to-late 1960s, relatively soon after the Chinese test, instead of in 1974.[22] Second, leaders in New Delhi could have made a concerted effort to acquire nuclear guarantees from the United States, the Soviet Union, or other nuclear powers. Indian officials, however, did not adopt a consistent policy to pursue security guaran-

22. In 1963, U.S. intelligence agencies estimated that India could test a nuclear weapon in four to five years (1967 or 1968). By 1965, U.S. estimates were that it would take one to three years additional years. See Peter R. Lavoy, "Nuclear Myths and the Causes of Proliferation," in Davis and Frankel, *The Proliferation Puzzle*, p. 202; and George Bunn, *Arms Control by Committee: Managing Negotiations with the Russians* (Stanford, Calif.: Stanford University Press, 1992), p. 68.

tees: in diplomatic discussions after the Chinese test, officials rejected the idea of bilateral guarantees because they would not conform with India's nonaligned status, refused to consider foreign bases in India to support a nuclear commitment, and publicly questioned whether any multilateral or bilateral guarantee could possibly be considered credible.[23]

Instead of producing a united Indian effort to acquire a nuclear deterrent, the Chinese nuclear test produced a prolonged bureaucratic battle, fought inside the New Delhi political elite and nuclear energy establishment, between actors who wanted India to develop a nuclear weapons capability as soon as possible and other actors who opposed an Indian bomb and supported global nuclear disarmament and later Indian membership in the NPT. Soon after the Chinese nuclear test, for example, Prime Minister Lal Bahadur Shastri argued against developing an Indian atomic arsenal, in part because the estimated costs ($42–84 million) were deemed excessive; Homi Bhabba, the head of the Atomic Energy Commission (AEC), however, loudly lobbied for the development of nuclear weapons capability, claiming that India could develop a bomb in 18 months and that an arsenal of 50 atomic bombs would cost less than $21 million (a figure that excluded the construction of reactors, separation plants, and the opportunity costs of diverting scientists from development projects).[24] Although Shastri continued to oppose weapons development and rebuked legislators in congressional debates for quoting Bhabba's excessively optimistic cost estimates, he compromised with the pro-bomb members of the Congress party and the AEC leadership, agreeing to create a classified project to develop an ability to detonate a PNE within 6 months of any final political decision.[25] However, even this compromise was short-lived, as Bhabba's successor at the AEC, Vikram Sarabhai, opposed the development of any Indian nuclear explosives, whether they were called PNEs or bombs, and ordered a halt to the PNE preparation program.[26]

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23. See A.G. Noorani, "India's Quest for a Nuclear Guarantee," *Asian Survey*, Vol. 7, No. 7 (July 1967), pp. 490–502.

24. Frank E. Couper, "Indian Party Conflict on the Issue of Atomic Weapons," *Journal of Developing Areas*, Vol. 3, No. 2 (January 1969), pp. 192–193. Also see Lavoy, "Nuclear Myths and the Causes of Proliferation," p. 201.

25. See Shyam Bhatia, *India's Nuclear Bomb* (Ghaziabad: Vikas Publishing House, 1979), pp. 120–122. The director of the PNE study later wrote that "getting the Prime Minister to agree to this venture must have required great persuasion, as Shastriji was opposed to the idea of atomic explosions of any kind." Raja Ramanna, *Years of Pilgrimage: An Autobiography* (New Delhi: Viking, 1991), p. 74.

26. See Kapur, *India's Nuclear Option*, p. 195; Mitchell Reiss, *Without the Bomb: The Politics of Nuclear Nonproliferation* (New York: Columbia University Press, 1988), p. 221 and p. 325 (note 42); and Ramanna, *Years of Pilgrimage*, p. 75.

After Sarabhai's death in 1971, the pro-bomb scientists in the AEC began to lobby Prime Minister Indira Gandhi, and developed an alliance with defense laboratories whose participation was needed to fabricate the explosive lenses for a nuclear test.[27] Unfortunately, firm evidence on why Gandhi decided to approve the scientists' recommendation to build and test a "peaceful" Indian nuclear device does not exist: indeed, even nuclear scientists who pushed for the May 1974 test now acknowledge that it is impossible to know whether Gandhi was primarily responding to domestic motives, since she neither asked questions at the critical secret meetings in early 1974 nor explained why she approved their PNE recommendations.[28] A number of observations about the decision, however, do suggest that addressing domestic political concerns, rather than countering international security threats, were paramount. First, it is important to recognize that the decision was made by Prime Minister Gandhi, with the advice of a very small circle of personal advisers and scientists from the nuclear establishment. Senior defense and foreign affairs officials in India were not involved in the initial decision to prepare the nuclear device, nor in the final decision to test it: the military services were not asked how nuclear weapons would affect their war plans and military doctrines; the Defense Minister was reportedly informed of, but not consulted about, the final test decision only 10 days before the May 18 explosion; the Foreign Minister was merely given a 48-hour notice of the detonation.[29] This pattern suggests that security arguments were of secondary importance, and at a minimum, were not thoroughly analyzed or debated before the nuclear test. Second, the subsequent absence of a systematic program for either nuclear weapons or PNE development and testing, and New Delhi's lack of preparedness for Canada's immediate termination of nuclear assistance, suggest that the decision was taken quickly, even in haste, and thus may have focused more on immediate political concerns rather than on longer-term security or energy interests.

Third, it is important to recognize that domestic support for the Gandhi government had fallen to an all-time low in late 1973 and early 1974 due to a

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27. Ramanna, *Years of Pilgrimage*, p. 89.

28. See George Perkovich, "Indian Nuclear Decision-Making and the 1974 PNE," unpublished manuscript, W. Alton Jones Foundation, Charlottesville, Va., 1996, p. 15; and Ramanna, *Years of Pilgrimage*, p. 89.

29. See Neil H.A. Joeck, *Nuclear Proliferation and National Security in India and Pakistan*, unpublished dissertation, UCLA, 1986, p. 229; and Kapur, *India's Nuclear Option*, p. 198. One former Indian Defense Secretary, K.B. Lall, has stated that the chairman of the chiefs of staff, the defense minister, and the defense secretary were not involved in the planning and argued therefore that "[the test] did not arise out of the Defense Ministry or on security grounds" since "if it was a defense project, there should have been some discussion." Lall interview quoted in Joeck, *Nuclear Proliferation and National Security*, p. 229.

prolonged and severe domestic recession, the eruption of large-scale riots in a number of regions, and the lingering effects of the splintering of the ruling Congress Party. From a domestic politics perspective, it would be highly surprising for a politician with such problems to resist what she knew was a major opportunity to increase her standing in public opinion polls and to defuse an issue about which she had been criticized by her domestic opponents.[30] Indeed, the domestic consequences of the test were very rewarding: the nuclear detonation occurred during the government's unprecedented crackdown on the striking railroad workers and contributed to a major increase in support for the Gandhi government. Indian public opinion polls taken in June 1974 reported, for example, that a full 91 percent of the adult literate population knew about the explosion and 90 percent of those individuals answered in the affirmative when asked if they were "personally proud of this achievement." The overall result was that public support for Mrs. Gandhi increased by one-third in the month after the nuclear test according to the Indian Institute of Public Opinion, leading the Institute to conclude that "both she [Gandhi] and the Congress Party have been restored to the nation's confidence."[31]

These arguments linking decision-making processes and domestic results to potential causes of proliferation clearly do not prove that the domestic politics model provides the correct explanation of the Indian case. But they do constitute stronger evidence than what has been offered in the literature to support a security model explanation, and provide an answer to what is otherwise the very puzzling occurrence of a state (India) *not* developing the bomb for ten years after one rival (China) tested a weapon, and then changing its proliferation policy and developing and testing a weapon less than three years after it attacked and dismembered its other rival state (Pakistan). In light of the domestic politics model, the unusual nature of Indian nuclear weapons policy since the 1974 test also becomes more understandable; it appears less like a calculated strategy of nuclear ambiguity and more like a political rationalization for latent military capabilities developed for other reasons. Finally, from

30. Although Gandhi denied, in a later interview, that domestic concerns influenced her 1974 decision, she did acknowledge that the nuclear test "would have been useful for elections." See Rodney W. Jones, "India," in Jozef Goldblat, ed., *Non-Proliferation: the Why and the Wherefore* (London: Taylor and Francis, 1985), p. 114.

31. The Institute's analysis was that the increase was the result of both "the demonstration of India's atomic capability and the decisive action on the Railway strike," though the data outlined above suggests that more emphasis should be placed on the weapons test. See "The Prime Minister's Popularity: June 1974," and "Indian Public Opinion and the Railway Strike," in *Monthly Public Opinion Surveys* (Indian Institute of Public Opinion), Vol. 19, No. 8 (May 1974), pp. 5–6 and pp. 7–11; and "Public Opinion on India's Nuclear Device," *Monthly Public Opinion Surveys*, Vol. 19, No. 9 (June 1974), Blue Supplement, pp. III–IV.

the domestic model's perspective, the 1974 test and subsequent building of significantly greater nuclear weapons capabilities are not seen as proud symbols of the success of an Indian national security program; instead, they are symbols of the failure of the Indian civilian nuclear power industry, which was forced to form an alliance with the pro-bomb lobby to justify its existence and funding after its failure to avoid cost overruns and prevent safety problems in its domestic energy program.[32]

DEVELOPMENT AND DENUCLEARIZATION: SOUTH AFRICA REVISITED

From the domestic model's perspective, one would expect that reversals of weapons decisions occur not when external threats are diminished, but rather when there are major internal political changes. There are a number of reasons why purely internal changes could produce restraint: a new government has an opportunity to change course more easily because it can blame failed policies of the previous regime; actors with parochial interests in favor of weapons programs may lose internal struggles to newly empowered actors with other interests; and the outgoing government may fear that the incoming government would not be a reliable custodian over nuclear weapons. It is important to note, however, that each of these domestic pathways to restraint can be relatively independent of changes in international security threats.

A quite different interpretation of the South African weapons program emerges when one reexamines the history with a focus on domestic political interests rather than national security. For example, President de Klerk's public explanation for the program stressed that it was caused by the need to deter "a Soviet expansionist threat to Southern Africa," especially after Cuban military forces intervened in Angola in October 1975. Yet the preliminary research needed to develop nuclear devices was started inside South Africa's Atomic Energy Board in 1971, on the independent authority of the Minister of Mines; a non-nuclear scale model of a gun-type explosive device was secretly tested in May 1974; and later in 1974, after the results of this test were known, Prime Minister John Voster approved plans to construct a small number of explosive devices and to build a secret testing site in the Kalahari desert.[33] Such evidence

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32. For a detailed analysis, see Itty Abraham's *Atomic Energy and the Making of the Indian State,* unpublished manuscript, Center for International Security and Arms Control, Stanford University, 1996; and Itty Abraham, "India's 'Strategic Enclave': Civilian Scientists and Military Technologies," *Armed Forces and Society,* Vol. 18, No. 2 (Winter 1992), pp. 231–252.

33. See the chronology in Reiss, *Bridled Ambition,* p. 8 and p. 27; and Waldo Stumpf, "South Africa's Nuclear Weapons Program: From Deterrence to Dismantlement," *Arms Control Today,* Vol. 25, No. 10 (December 1995/January 1996), p. 4. Also see David Fischer, "South Africa," in Mitchell

strongly supports the claims of South African scientists that the nuclear program was originally designed to produce PNEs, and was championed within the government by the South African nuclear power and mining industries to enhance their standing in international scientific circles and to be utilized in mining situations.[34]

This explanation for the origin of the nuclear program helps in turn to explain South African nuclear doctrine, which otherwise appears so strange, as a *post hoc* development used to exploit devices that were originally developed for other purposes. (Testing a nuclear device in the event of a Soviet invasion might, after all, *reduce* the likelihood of U.S. intervention and would raise great risks of the use of Soviet nuclear weapons.) Senior officials in the program have stated, for example, that the military was not consulted about the bomb design and that operational considerations, such as the size and weight of the devices, were not taken into account.[35] As a result, the first South African nuclear device was actually too large to be deliverable by an aircraft and had to be redesigned because it did not meet the safety and reliability standards set by Armscor, the engineering organization run by the South African military, which took over the nuclear program in 1978.[36]

The timing and details of actions concerning the decision to dismantle and destroy the existing bomb stockpile also suggest that domestic political considerations were critical. In September 1989, de Klerk was elected president and immediately requested a high-level report on the possibility of dismantling the existing six nuclear devices. It is important to note that this request came before the Cold War was unambiguously over (the Berlin Wall fell in November 1989), and that de Klerk's action was considered by officials in South Africa as a sign that he had already decided to abandon the weapons program. Although possible concerns about who would inherit nuclear weapons are rarely discussed in the public rationales for the dismantlement decision, the de Klerk government's actions spoke more loudly than its words: the weapons components were dismantled *before* IAEA inspections could be held to verify the activities, and all the nuclear program's plans, history of decisions, and ap-

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Reiss and Robert S. Litwak, eds., *Nuclear Proliferation After the Cold War* (Washington, D.C.: Woodrow Wilson Center Press, 1994), p. 208; and David Albright, "South Africa's Secret Nuclear Weapons," *ISIS Report* (Washington, D.C.: Institute for Science and International Security, May 1994), pp. 6–8.

34. See Mark Hibbs, "South Africa's Secret Nuclear Program: From a PNE to a Deterrent," *Nuclear Fuel*, May 10, 1993, pp. 3–6; and Stumpf, "South Africa's Nuclear Weapons Program," p. 4.

35. See Reiss, *Bridled Ambitions*, p. 12.

36. Albright, "South Africa's Secret Nuclear Weapons," p. 10.

proval and design documents were burned prior to the public announcement of the program's existence. This was a highly unusual step and strongly suggests that fear of ANC control of nuclear weapons (and perhaps also concern about possible seizure by white extremists) was critical in the decision.[37]

Domestic politics can also be seen as playing critical roles in other cases of nuclear restraint. In Argentina and Brazil, for example, the key change explaining the shift from nuclear competition to cooperative restraint in the 1980s could not have been a major reduction of security threats, since there was no such reduction. Indeed, a traditional realist view would predict that the experience of the 1982 Falklands/Malvinas War—in which Argentina was defeated by a nuclear power, Great Britain—would have strongly encouraged Argentina's nuclear ambitions. Instead, the important change was the emergence of liberalizing domestic regimes in both states, governments supported by coalitions of actors—such as banks, export-oriented firms, and state monetary agencies—who value unimpeded access to international markets and oppose economically unproductive defense and energy enterprises. Nuclear programs that were run as fiefdoms and served the interests of the atomic industry bureaucrats and the military were therefore abandoned by new civilian regimes with strong support of liberalizing coalitions.[38]

POLICY IMPLICATIONS OF THE DOMESTIC POLITICS MODEL

With respect to U.S. nonproliferation policy, a domestic politics approach both cautions modest expectations about U.S. influence and calls for a broader set of diplomatic efforts. Modest expectations are in order, since the key factors that influence decisions are domestic in origin and therefore largely outside the control of U.S. policy. Nevertheless, a more diverse set of tools could be useful to help create and empower domestic coalitions that oppose the development or maintenance of nuclear arsenals.

A variety of activities could be included in such a domestic-focused nonproliferation strategy. International financial institutions are already demand-

37. A rare public hint that concerns about domestic stability played a role in the decision is the acknowledgment by the head of the Atomic Energy Corporation that the government discussed issuing an immediate announcement revealing the existence of the weapons and thus permitting the IAEA to dismantle them because "the state of the country's internal political transformation was not considered conducive to such an announcement at the time." See Stumpf, "South Africa's Nuclear Weapons Program," p. 7.

38. The best analysis is Etel Solingen, "The Political Economy of Nuclear Restraint," *International Security*, Vol. 19, No. 2 (Fall 1994), pp. 126–169.

ing that cuts in military expenditures be included in conditionality packages for aid recipients. More direct conditionality linkages to nuclear programs—such as deducting the estimated budget of any suspect research and development program from IMF or U.S. loans to a country—could heighten domestic opposition to such programs.[39] Providing technical information and intellectual ammunition for domestic actors—by encouraging more accurate estimates of the economic and environmental costs of nuclear weapons programs and highlighting the risks of nuclear accidents[40]—could bring new members into anti-proliferation coalitions. In addition, efforts to encourage strict civilian control of the military, through educational and organizational reforms, could be productive, especially in states in which the military has the capability to create secret nuclear programs (like Brazil in the 1980s) to serve their parochial interests. Finally, U.S. attempts to provide alternative sources of employment and prestige to domestic actors who might otherwise find weapons programs attractive could decrease nuclear incentives. To the degree that professional military organizations are supporting nuclear proliferation, encouraging their involvement in other military activities (such as Pakistani participation in peacekeeping operations or the Argentine Navy's role in the Persian Gulf) could decrease such support. Where the key actors are laboratory officials and scientists, assistance in non-nuclear research and development programs (as in the current U.S.-Russian "lab-to-lab" program) could decrease personal and organizational incentives for weapons research.

A different perspective on the role of the NPT also emerges from the domestic politics model. The NPT regime is not just a device to increase states' confidence about the limits of their potential adversaries' nuclear programs; it is also a tool that can help to empower domestic actors who are opposed to nuclear weapons development. The NPT negotiations and review conferences create a well-placed elite in the foreign and defense ministries with considerable bureaucratic and personal interests in maintaining the regime. The IAEA creates monitoring capabilities and enforcement incentives against unregulated activities within a state's own nuclear power organizations. The network of

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39. Etel Solingen, *The Domestic Sources of Nuclear Postures*, Institute of Global Conflict and Cooperation, Policy Paper No. 8, October 1994, p. 11.

40. On these costs and risks, see Kathleen C. Bailey, ed., *Weapons of Mass Destruction: Costs Versus Benefits* (New Delhi: Manohar Publishers, 1994); Stephen I. Schwartz, "Four Trillion and Counting," *Bulletin of the Atomic Scientists*, Vol. 51, No. 6 (November/December 1995); Bruce G. Blair, *The Logic of Accidental Nuclear War* (Washington, D.C.: The Brookings Institution, 1993); and Scott D. Sagan, *The Limits of Safety: Organizations, Accidents, and Nuclear Weapons* (Princeton, N.J.: Princeton University Press, 1993).

non-governmental organizations built around the treaty supports similar anti-proliferation pressure groups in each state.

According to this model, the U.S. commitment under Article VI to work for the eventual elimination of nuclear weapons is important because of the impact that the behavior of the United States and other nuclear powers can have on the domestic debates in non-nuclear states. Whether or not the United States originally signed Article VI merely to placate domestic opinion in non-nuclear states is not important; what is important is that the loss of this pacifying tool could influence outcomes in potential proliferators. In future debates inside such states, the arguments of anti-nuclear actors—that nuclear weapons programs do not serve the interests of their states—can be more easily countered by pro-bomb actors whenever they can point to specific actions of the nuclear powers, such as refusals to ban nuclear tests or the maintenance of nuclear first-use doctrines, that highlight these states' continued reliance on nuclear deterrence.

The Norms Model: Nuclear Symbols and State Identity

A third model focuses on norms concerning weapons acquisition, seeing nuclear decisions as serving important symbolic functions—both shaping and reflecting a state's identity. According to this perspective, state behavior is determined not by leaders' cold calculations about the national security interests or their parochial bureaucratic interests, but rather by deeper norms and shared beliefs about what actions are legitimate and appropriate in international relations.

Given the importance of the subject, and the large normative literature in ethics and law concerning the use of nuclear weapons, it is surprising that so little attention has been paid to "nuclear symbolism" and the development of international norms concerning the acquisition of nuclear weapons.[41] Sociologists and political scientists have studied the emergence and influence of international norms in other substantive areas, however, and their insights can

41. On nuclear ethics, see Joseph S. Nye, Jr., *Nuclear Ethics* (New York: Free Press, 1986); and Steven P. Lee, *Morality, Prudence, and Nuclear Weapons* (New York: Cambridge University Press, 1993). For a recent analysis of legal restraints on the use of nuclear weapons, see Nicholas Rostow, "The World Health Organization, the International Court of Justice, and Nuclear Weapons," *Yale Journal of International Law*, Vol. 20, No. 1 (Winter 1995), pp. 151–185. For a rare analysis of the symbolism of nuclear weapons, see Robert Jervis, "The Symbolic Nature of Nuclear Politics," in Jervis, *The Meaning of the Nuclear Revolution* (Ithaca, N.Y.: Cornell University Press, 1989), pp. 174–225.

lead to a valuable alternative perspective on proliferation. Within sociology, the "new institutionalism" literature suggests that modern organizations and institutions often come to resemble each other (what is called institutional isomorphism) not because of competitive selection or rational learning but because institutions mimic each other.[42] These scholars emphasize the importance of roles, routines, and rituals: individuals and organizations may well have "interests," but such interests are shaped by the social roles actors are asked to play, are pursued according to habits and routines as much as through reasoned decisions, and are embedded in a social environment that promotes certain structures and behaviors as rational and legitimate and denigrates others as irrational and primitive.

From this sociological perspective, military organizations and their weapons can therefore be envisioned as serving functions similar to those of flags, airlines, and Olympic teams: they are part of what modern states believe they have to possess to be legitimate, modern states. Air Malawi, Royal Nepal Airlines, and Air Myanmar were not created because they are cost-effective means of transport nor because domestic pressure groups pushed for their development, but rather because government leaders believed that a national airline is something that modern states have to have to be modern states. Very small and poor states, without a significant number of scientists, nevertheless have official government-sponsored science boards. From a new institutionalist perspective, such similarities are not the result of functional logic (actions designed to serve either international or domestic goals); they are the product of shared beliefs about what is legitimate and modern behavior.[43]

Within political science, a related literature has evolved concerning the development and spread of norms within international regimes. Although this norms perspective has rarely been applied to the proliferation problem, schol-

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42. Among the most important sources are the essays collected in Walter W. Powell and Paul J. DiMaggio, eds., *The New Institutionalism in Organizational Analysis* (Chicago: University of Chicago Press, 1991); and John W. Meyer and W. Richard Scott, *Organizational Environments: Ritual and Rationality*, 2nd ed. (Newbury Park, Calif.: Sage Publications, 1992).

43. See Marc C. Suchman and Dana P. Eyre, "Military Procurement as Rational Myth: Notes on the Social Construction of Weapons Proliferation," *Sociological Forum*, Vol. 7, No. 1 (March 1992), pp. 137–161; Martha Finnemore, "International Organizations as Teachers of Norms: UNESCO and Science Policy," *International Organization*, Vol. 47, No. 4 (Autumn 1993), pp. 565–598; Francisco O. Ramirez and John Boli, "Global Patterns of Educational Institutionalization," in George M. Thomas, John W. Meyer, Francisco O. Ramirez, and John Boli, eds., *Institutional Structure: Constituting State, Society, and the Individual* (Newbury Park, Calif.: Sage Publications, 1987), pp. 150–172. For an excellent survey and critique, see Martha Finnemore, "Norms, Culture, and World Politics: Insights from Sociology's Institutionalism," *International Organization*, Vol. 50, No. 2 (Spring 1996), pp. 325–348.

ars have studied such important phenomena as the global spread of anti-colonialism, the abolition of the African slave trade, the near-total elimination of piracy at sea, and constraints against the use of chemical weapons.[44] There is a diverse set of ideas emerging in this field, producing a valuable debate about the role of global norms, but not a well-developed theory about their causal influence. Still, as one would expect of political scientists, coercion and power are seen to play a more important role in spreading norms than is the case in the sociologists' literature. Normative pressures may begin with the actions of entrepreneurial non-state actors, but their beliefs only have significant influence once powerful state actors join the cause. Religious and liberal opposition to slavery, for example, was clearly important in fueling American and British leaders' preferences in the nineteenth century, but such views would not easily have become an international norm without the bayonets of the Army of the Potomac at Gettysburg or the ships of the British Navy patrolling the high seas between Africa and Brazil.[45] Similarly, normative beliefs about chemical weapons were important in creating legal restrictions against their use in war; yet, the norm was significantly reenforced at critical moments by the fear of retaliation-in-kind and by the availability of other weapons that were believed by military leaders to be more effective on the battlefield.[46]

The sociologists' arguments highlight the possibility that nuclear weapons programs serve symbolic functions reflecting leaders' perceptions of appropriate and modern behavior. The political science literature reminds us, however,

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44. For rare applications of the norms perspective to proliferation, see Harald Müller, "The Internationalization of Principles, Norms, and Rules by Governments: The Case of Security Regimes," in Volker Rittberger, ed., *Regime Theory and International Relations* (Oxford: Clarendon Press, 1995), pp. 361–390; and Müller, "Maintaining Non-Nuclear Weapon Status," in Regina Cowen Karp, ed., *Security With Nuclear Weapons?* (New York: Oxford University Press, 1991), pp. 301–339. Also see Robert H. Jackson, "The Weight of Ideas in Decolonization: Normative Change in International Relations," in Judith Goldstein and Robert O. Keohane, eds., *Ideas and Foreign Policy* (Ithaca, N.Y.: Cornell University Press, 1993), pp. 111–138; Neta C. Crawford, "Decolonization as an International Norm," in Laura W. Reed and Carl Kaysen, eds., *Emerging Norms of Justified Intervention* (Cambridge, Mass.: American Academy of Arts and Sciences, 1993), pp. 37–61; Ethan A. Nadelmann, "Global Prohibition Regimes: The Evolution of Norms in International Society," *International Organization*, Vol. 44, No. 4 (Autumn 1990), pp. 479–526; and Richard Price, "A Genealogy of the Chemical Weapons Taboo," *International Organization*, Vol. 49, No. 1 (Winter 1995), pp. 73–104.

45. Ethan Nadelman, who stresses this point about power, also adds, however, that "even among the laggards, indeed especially among the laggards, the consciousness of being perceived as primitive and deviant surely weighed heavily in the decisions of local rulers to do away with slavery." Nadelman, "Global Prohibition Regimes," p. 497.

46. See Price, "A Genealogy of the Chemical Weapons Taboo"; and Jeffrey Legro, *Cooperation Under Fire: Anglo-German Restraint During World War II* (Ithaca, N.Y.: Cornell University Press, 1995), pp. 144–216.

that such symbols are often contested and that the resulting norms are spread by power and coercion, and not by the strength of ideas alone. Both insights usefully illuminate the nuclear proliferation phenomenon. Existing norms concerning the non-acquisition of nuclear weapons (such as those embedded in the NPT) could not have been created without the strong support of the most powerful states in the international system, who believed that the norms served their narrow political interests. Yet, once that effort was successful, these norms shaped states' identities and expectations and even powerful actors became constrained by the norms they had created.[47] The history of nuclear proliferation is particularly interesting in this regard because a major discontinuity—a shift in nuclear norms—has emerged as the result of the NPT regime.

Although many individual case studies of nuclear weapons decisions mention the belief that nuclear acquisition will enhance the international prestige of the state, such prestige has been viewed simply as a reasonable, though diffuse, means used to enhance the state's international influence and security. What is missing from these analyses is an understanding of why and how actions are granted symbolic meaning: why are some nuclear weapons acts considered prestigious, while others produce opprobrium, and how do such beliefs change over time? Why, for example, was nuclear testing deemed prestigious and legitimate in the 1960s, but is today considered illegitimate and irresponsible? An understanding of the NPT regime is critical here, for it appears to have shifted the norm concerning what acts grant prestige and legitimacy from the 1960s notion of joining "the nuclear club" to the 1990s concept of joining "the club of the nations adhering to the NPT." Moreover, the salience of the norms that were made explicit in the NPT treaty has shifted over time. These arguments are perhaps best supported by contrasting two cases—the French decision to build and test nuclear weapons and the Ukrainian decision to give up its nuclear arsenal—in which perceptions of legitimacy and prestige appear to have had a major influence, albeit with very different outcomes.

PROLIFERATION REVISITED: FRENCH GRANDEUR AND WEAPONS POLICY

According to realist theory, the French decision to develop nuclear weapons has a very simple explanation: in the 1950s, the Soviet Union was a grave military threat to French national security, and the best alternative to building

47. For an excellent analysis of how such a process can work in other contexts, see Michael Byers, "Custom, Power, and the Power of Rules," *Michigan Journal of International Law,* Vol. 17, No. 1 (Fall 1995), pp. 109–180.

an independent arsenal—reliance on the United States's nuclear guarantee to NATO—was ruled out after the Soviet development of a secure second strike capability reduced the credibility of any U.S. nuclear first-use threats. According to this explanation, the need for a French arsenal was driven home by the 1956 Suez Crisis, when Paris was forced to withdraw its military intervention forces after a nuclear threat from Russia and under U.S. economic pressure. "The Suez humiliation of 1956 was decisive," writes David Yost. "It was felt that a nuclear weapons capability would reduce France's dependence on the U.S. and her vulnerability to Soviet blackmail."[48] The central realist argument for French nuclear weapons was clearly expressed in the rhetorical question Charles de Gaulle posed to Dwight Eisenhower in 1959: "Will they [future U.S. presidents] take the risk of devastating American cities so that Berlin, Brussels and Paris might remain free?"[49]

This explanation of French nuclear policy, however, does not stand up very well against either existing evidence or logic. Indeed, the two most critical decisions initiating the weapons program—Prime Minister Mendes-France's December 1954 decision to start a secret nuclear weapons research program inside the Commissariat à l'énergie atomique (CEA) and the May 1955 authorization by the Ministry of Defense for funds to be transferred to the CEA for the development of a prototype weapon—predated the 1956 Suez Crisis.[50] In addition, as Lawrence Scheinman has argued, it is by no means clear why French leaders would think that the traumatic Suez experience could have been avoided if there had been an independent French nuclear arsenal, since Great Britain had also been forced to withdraw from the intervention in Egypt under U.S. and Soviet pressure, despite its possession of nuclear weapons.[51] A simple exercise in comparative logic also raises doubts about the security model. If the critical cause of proliferation in France was the lack of credibility of U.S. nuclear guarantees given the growing Soviet threat in the mid-1950s, why then did other nuclear-capable states in Europe, faced with similar security threats at the time, not also develop nuclear weapons?[52] If one even briefly examines

48. David S. Yost, "France's Deterrent Posture and Security in Europe, Part I: Capabilities and Doctrine," Adelphi Paper No. 194 (London: International Institute for Strategic Studies [IISS], Winter 1984/85), p. 4. Also see Kohl, *French Nuclear Diplomacy*, p. 36.
49. Jean Lacouture, *De Gaulle: The Ruler 1945–1970* (New York: W.W. Norton, 1993), p. 421, as quoted in Thayer, "The Causes of Nuclear Proliferation," p. 489.
50. See Bertrand Goldschmidt, *The Atomic Complex* (La Grange Park, Ill.: American Nuclear Society, 1982), p. 131; and Scheinman, *Atomic Energy Policy in France Under the Fourth Republic*, pp. 120–122.
51. Scheinman, *Atomic Energy Policy in France Under the Fourth Republic*, pp. 171–173.
52. The British acquisition of nuclear weapons in 1952 predated the Soviet development of a secure second-strike capability.

the list of all the nuclear-capable states in Europe that were both threatened by Soviet military power and had reasons to doubt the credibility of the U.S. first-use pledge, France appears alone on the nuclear proliferation side of the ledger; West Germany, the Netherlands, Italy, Switzerland, Belgium, Norway, and Sweden were all on the nuclear restraint side. This presents a puzzle for the security model, since the Soviet Union's conventional and nuclear threat to most of these states' security was at least as great as the Soviet threat to France; the American nuclear guarantee should not have been not considered more credible by those states that had been U.S. enemies or neutrals in World War II, compared to France, a U.S. ally of long standing, and one which the United States had strongly aided once it entered the war in 1941.

A stronger explanation for the French decision to build nuclear weapons emerges when one focuses on French leaders' perceptions of the bomb's symbolic significance. The belief that nuclear power and nuclear weapons were deeply linked to a state's position in the international system was present as early as 1951, when the first French Five-Year Plan was put forward with its stated purpose being "to ensure that in 10 years' time France will still be an important country."[53] France emerged from World War II in an unusual position: it was a liberated victor whose military capabilities and international standing were not at all comparable to the power and status it had before the war. It should therefore not be surprising that the governments of both the Fourth and the Fifth Republics vigorously explored alternative means to return France to its historical great power status.[54] After the war, the initial French effort to restore its tarnished prestige focused on the fight to hold onto an overseas empire, yet as Michel Martin has nicely put it, "as the curtain was drawn over colonial domination, it became clear that the country's *grandeur* had to be nourished from other sources."[55]

After 1958, the Algerian crisis contributed greatly to Charles de Gaulle's obsession with nuclear weapons as the source of French *grandeur* and independence. In contrast, de Gaulle appeared less concerned about whether French nuclear forces could provide adequate deterrence against the Soviet

53. The document is quoted in Goldschmidt, *The Atomic Complex*, p. 126.
54. For detailed analyses of the French nuclear weapons decision which focus attention on political prestige as the central source of policy, see Scheinman, *Atomic Energy Policy in France Under the Fourth Republic;* and Kohl, *French Nuclear Diplomacy.* Also see Bundy, *Danger and Survival*, pp. 472–487, 499–503.
55. Michel L. Martin, *Warriors to Managers: The French Military Establishment Since 1945* (Chapel Hill, N.C.: University of North Carolina Press, 1981), p. 21.

military threat. For example, during both the Berlin crisis of 1958 (before the 1960 French nuclear weapons test) and the 1962 Cuban crisis (after the test, but before French nuclear forces were operational), de Gaulle expressed great confidence that the Soviets would not risk an attack on NATO Europe.[56] Wilfred Kohl also reports on a revealing incident in which a French military strategist sent de Gaulle a copy of a book on French nuclear doctrine and de Gaulle replied, "thanking the man for his interesting analysis of strategic questions, but stressing that for him the central and clearly the only important issue was: 'Will France remain France?'"[57] For de Gaulle, the atomic bomb was a dramatic symbol of French independence and was thus needed for France to continue to be seen, by itself and others, as a great power. He confided to President Dwight Eisenhower in 1959:

> A France without world responsibility would be unworthy of herself, especially in the eyes of Frenchmen. It is for this reason that she disapproves of NATO, which denies her a share in decision-making and which is confined to Europe. It is for this reason too that she intends to provide herself with an atomic armament. Only in this way can our defense and foreign policy be independent, which we prize above everything else.[58]

When the French nuclear weapons arsenal is viewed as primarily serving symbolic functions, a number of puzzling aspects of the history of French atomic policy become more understandable. The repeated Gaullist declarations that French nuclear weapons should have world-wide capabilities and must be aimed in all directions (*"tous azimuts"*) are seen, not as the product of security threats that came from all directions, but rather because only such a policy could be logically consistent with global *grandeur* and independence. Similarly, the French strategic doctrine of "proportional deterrence" against the Soviet Union during the Cold War—threatening more limited destruction in a retaliatory strike than did the United States under its targeting doctrine—is seen as being produced, not by France's geographical position or limited economic resources, but rather because deterrence of the Soviet Union was a justification, and never the primary purpose of its arsenal. Finally, the profound French reluctance to stop nuclear testing in the mid-1990s is seen as being produced,

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56. See Philip H. Gordon, "Charles de Gaulle and the Nuclear Revolution," *Security Studies*, Vol. 5, No. 1 (Autumn 1995), pp. 129–130.
57. Kohl, *French Nuclear Diplomacy*, p. 150, quoted in Bundy, *Danger and Survival*, p. 502.
58. Charles de Gaulle, *Memoirs of Hope: Renewal and Endeavor* (New York: Simon and Schuster, 1971), p. 209 (emphasis in the original), quoted in Yost, *France's Deterrent Posture and Security in Europe*, pp. 13–14.

not only by the stated concerns about weapons modernization and warhead safety, but also because weapons tests were perceived by Parisian leaders as potent symbols of French identity and status as a great power.

RESTRAINT REVISITED: THE NPT AND THE UKRAINE CASE

Stark contrasts exist between French nuclear decisions in the 1950s and Ukrainian nuclear decisions in the 1990s. When the Soviet Union collapsed in 1991, an independent Ukraine was "born nuclear" with more than 4,000 nuclear weapons on or under its soil. In November 1994, however, the Rada in Kiev voted overwhelmingly to join the NPT as a non-nuclear state, and all weapons were removed from Ukrainian territory by June 1996.

This decision to give up a nuclear arsenal is puzzling from the realist perspective: a number of prominent realist scholars, after all, maintained that given the history of Russian expansionist behavior and continuing tensions over the Crimea and the treatment of Russian minorities, Ukraine's independence was seriously threatened, and further argued that nuclear weapons were the only rational solution to this security threat.[59] The disarmament decision is also puzzling from a traditional domestic politics perspective. Despite the tragic consequences of the Chernobyl accident, public opinion polls in Ukraine showed rapidly growing support for keeping nuclear weapons in 1992 and 1993: polls showed support for an independent arsenal increasing from 18 percent in May 1992 to 36 percent in March 1993, to as much as 45 percent in the summer of 1993.[60] In addition, well-known retired military officers, such as Rada member General Volodomyr Tolubko, vigorously lobbied to maintain an arsenal and senior political leaders, most importantly Prime Minister (then President) Leonid Kuchma, came from the Soviet missile-building industry and would not therefore be expected to take an anti-nuclear position.[61]

An understanding of Ukraine's decision to eliminate its nuclear arsenal requires that more attention be focused on the role that emerging NPT nonproliferation norms played in four critical ways. First, Ukrainian politicians

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59. See John J. Mearsheimer, "The Case for a Ukrainian Nuclear Deterrent," *Foreign Affairs*, Vol. 72, No. 3 (Summer 1993), pp. 50–66; and Barry R. Posen, "The Security Dilemma and Ethnic Conflict," *Survival*, Vol. 35, No. 1 (Spring 1993), pp. 44–45.

60. See William C. Potter, "The Politics of Nuclear Renunciation: The Cases of Belarus, Kazakhstan, and Ukraine," Henry L. Stimson Center, Occasional Paper No. 22, April 1995, p. 49.

61. For a detailed analysis see Bohdan Nahaylo, "The Shaping of Ukrainian Attitudes Toward Nuclear Arms," *RFE/RL (Radio Free Europe/Radio Liberty) Research Report*, Vol. 2, No. 8 (February 19, 1993), pp. 21–45.

initially adopted anti-nuclear positions as a way of buttressing Kiev's claims to national sovereignty. In one of its first efforts to assert an independent foreign policy from Moscow, Ukraine tried to accede to the NPT as a non-nuclear state in early 1990, attempting to use NPT membership as a way of separating itself from the Soviet Union.[62] In July 1990, this policy was underscored when the parliament in Kiev issued its Declaration of Sovereignty. Embedded in declarations about Ukraine's right to participate as a full member in all agreements concerning "international peace and security" was the proclamation that Ukraine would "become a neutral state that does not participate in military blocs and that adheres to three non-nuclear principles: not to maintain, produce, or acquire nuclear weapons." This extraordinary statement was an expedient designed to buttress Kiev's claim to independence from the Soviet Union, rather than a blueprint laying out Ukraine's long-term strategy: indeed, it was adopted by a vote of 355–4, without extensive debate, by the parliament in which conservative communists (many of whom would later take pro-nuclear positions) still held the majority of seats.[63] Nevertheless, the declaration placed the onus of reneging on an international commitment on the politicians and scholars who afterwards called for keeping an arsenal, and it is revealing that even many of the more hawkish analysts thereafter defensively advocated keeping the arsenal on a temporary basis until other sources of security could be found.[64] Second, although Ukrainian officials continued to be interested in enhancing the state's international prestige, the strength of the NPT regime created a history in which the most recent examples of new or potential nuclear states were so-called "rogue states" such as North Korea, Iran, and Iraq. This was hardly a nuclear club whose new members would receive international prestige, and during the debate in Kiev, numerous pro-NPT Ukrainian officials insisted that renunciation of nuclear weapons was now the best route to enhance Ukraine's international standing.[65] Third, economic pressures were clearly critical to the Ukrainian decision: the United States and NATO allies encouraged Kiev to give up the arsenal not by convincing officials that nuclear weapons could never serve as a military deterrent against Moscow, but by persuading them that not following the NPT norm would result in very

62. Potter, "The Politics of Nuclear Renunciation," p. 19.
63. See Nahaylo, "The Shaping of Ukrainian Attitudes," pp. 21–22.
64. Potter, "The Politics of Nuclear Renunciation," pp. 21–23; and Nahaylo, "The Shaping of Ukrainian Attitudes."
65. See Potter, "The Politics of Nuclear Renunciation," p. 44; and Garnett, "Ukraine's Decision to Join the NPT," p. 12.

negative economic consequences.[66] It is important to recognize, however, that the ability to coordinate such activities, and credibly to threaten collective sanctions and promised inducements for disarmament, were significantly heightened by the existence of the NPT norm against the creation of new nuclear weapons states. Fourth, the Kiev government and the Ukrainian public could more easily accept the economic inducements offered by the United States—such as Nunn-Lugar payments to help transport and destroy the weapons—with the belief that they were enabling Ukraine to keep an international commitment.

As with all counterfactuals, it is impossible to assess with certainty whether Ukraine would have made the same decision had the NPT norms not been in existence. Still, it is valuable to try to imagine how much more difficult a disarmament outcome would have been in the absence of the NPT and its twenty-five year history. Without the NPT, a policy of keeping a nuclear arsenal would have placed Ukraine in the category of France and China; instead, it placed Ukraine in the company of dissenters like India and Pakistan and pariahs like Iraq and North Korea. International threats to eliminate economic aid and suspend political ties would be less credible, since individual states would be more likely to defect from an agreement. Finally, without the NPT norm, U.S. dismantlement assistance would have been seen in Kiev as the crass purchase of Ukrainian weapons by a foreign government, instead of being viewed as friendly assistance to help Kiev implement an international agreement.

POLICY IMPLICATIONS OF THE NORMS MODEL

If the norms model of proliferation is correct, the key U.S. policy challenges are to recognize that such norms can have a strong influence on other states' nuclear weapons policy, and to adjust U.S. policies to increase the likelihood that norms will push others toward policies that also serve U.S. interests. Recognizing the possibility that norms can influence other states' behavior in complex ways should not be difficult. After all, the norms of the NPT have already influenced U.S. nuclear weapons policy in ways that few scholars or policymakers predicted ahead of time: in January 1995, for example, the Clinton administration abandoned the long-standing U.S. position that the Comprehensive Test Ban Treaty (CTBT) must include an automatic escape clause

66. An excellent analysis of U.S. policy appears in Garnett, "Ukraine's Decision to Join the NPT," pp. 10–12.

permitting states to withdraw from the treaty after ten years. Despite the arguments made by Pentagon officials that such a clause was necessary to protect U.S. security, the administration accepted the possibility of a permanent CTBT because senior decision-makers became convinced that the U.S. position was considered illegitimate by non-nuclear NPT members, due to the Article VI commitment to eventual disarmament, and might thereby jeopardize the effort to negotiate a permanent extension of the NPT treaty.[67]

Adjusting U.S. nuclear policies in the future to reenforce emerging nonproliferation norms will be difficult, however, because many of the recommended policies derived from the norms perspective directly contradict recommendations derived from the other models. Focusing on NPT norms raises especially severe concerns about how existing U.S. nuclear first-use doctrine influences potential proliferators' perceptions of the legitimacy or illegitimacy of nuclear weapons possession and use.[68] To the degree that such first-use policies create beliefs that nuclear threats are what great powers do, they will become desired symbols for states that aspire to that status. The norms argument against U.S. nuclear first-use doctrine, however, contradicts the policy advice derived from the security model, which stresses the need for continued nuclear guarantees for U.S. allies. Similarly, the norms perspective suggests that current U.S. government efforts to maintain the threat of first use of nuclear weapons to deter the use of biological or chemical weapons would have a negative impact on the nuclear nonproliferation regime.[69] Leaders of non-nuclear states are much less likely to consider their own acquisition of nuclear weapons to deter adversaries with chemical and biological weapons illegitimate and ill-advised if the greatest conventional military power in the world can not refrain from making such threats.

Other possible policy initiatives are less problematic. For example, if norms concerning prestige are important, then it would be valuable for the United States to encourage the development of other sources of international prestige

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67. Douglas Jehl, "U.S. in New Pledge on Atom Test Ban," *New York Times*, January 31, 1995, p. 1; Dunbar Lockwood, "U.S. Drops CTB 'Early Out' Plan; Test Moratorium May Be Permanent," *Arms Control Today*, Vol. 25, No. 2 (March 1995), p. 27.

68. On this issue, see Barry M. Blechman and Cathleen S. Fisher, "Phase Out the Bomb," *Foreign Policy*, No. 97 (Winter 1994–95), pp. 79–95; and Wolfgang K.H. Panofsky and George Bunn, "The Doctrine of the Nuclear-Weapons States and the Future of Non-Proliferation," *Arms Control Today*, Vol. 24, No. 6 (July/August 1994), pp. 3–9.

69. For contrasting views on this policy, see George Bunn, "Expanding Nuclear Options: Is the U.S. Negating its Non-Use Pledges?" *Arms Control Today*, Vol. 26, No. 4 (May/June 1996), pp. 7–10; and Gompert, Watman, and Wilkening, "Nuclear First Use Revisited."

for current or potential proliferators. Thus, a policy that made permanent UN Security Council membership for Japan, Germany, and India conditional upon the maintenance of non-nuclear status under the NPT might further remove nuclear weapons possession from considerations of international prestige.

Finally, the norms model produces a more optimistic vision of the potential future of nonproliferation. Norms are sticky: individual and group beliefs about appropriate behavior change slowly, and over time norms can become rules embedded in domestic institutions.[70] In the short run, therefore, norms can be a brake on nuclear chain reactions: in contrast to more pessimistic realist predictions that "proliferation begets proliferation," the norms model suggests that such nuclear reactions to emerging security threats can be avoided or at least delayed because of normative constraints. The long-term future of the NPT regime is also viewed with more optimism, for the model envisions the possibility of a gradual emergence of a norm against all nuclear weapons possession. The development of such a norm may well have been inadvertent in the sense that the United States did not take its Article VI commitment to work in good faith for complete nuclear disarmament seriously, for quite understandable reasons, during the Cold War. But to the degree that other states believe that such commitments are real and legitimate, their perceptions that the United States is backsliding away from Article VI will influence their behavior over time. This emphasis on emerging norms therefore highlights the need for the nuclear powers to reaffirm their commitments to global nuclear disarmament, and suggests that it is essential that the U.S. and other governments develop a public, long-term strategy for the eventual elimination of nuclear weapons.[71] The norms model can not, of course, predict whether such efforts will ever resolve the classic risks of nuclear disarmament: that states can break treaty obligations in crises, that small arsenals produce strategic instabilities, and that adequate verification of complete dismantlement is exceedingly difficult. But the model does predict that there will be severe costs

70. For useful discussions, see Abram Chayes and Antonia Handler Chayes, *The New Sovereignty: Compliance with International Regulatory Agreements* (Cambridge, Mass.: Harvard University Press, 1995); and Andrew P. Cortell and James W. Davis Jr., "How Do International Institutions Matter?: The Domestic Impact of International Rules and Norms," *International Studies Quarterly*, Vol. 40, No. 4 (December 1996), pp. 451–478.

71. For important efforts to rethink the elimination issue, see "An Evolving U.S. Nuclear Posture," Report of the Steering Committee of the Project on Eliminating Weapons of Mass Destruction, Henry L. Stimson Center, Washington, D.C., December 1995; and Donald MacKenzie and Graham Spinardi, "Tacit Knowledge, Weapons Design, and the Uninvention of Nuclear Weapons," *American Journal of Sociology*, Vol. 101, No. 1 (July 1995), pp. 44–100.

involved if the nuclear powers are seen to have failed to make significant progress toward nuclear disarmament.

Conclusions: Causal Complexity and Policy Tradeoffs

The ideas and evidence presented in this article suggest that the widely held security model explanation for nuclear proliferation decisions is inadequate. A realist might well respond to this argument by asserting that evidence is always ambiguous in complex historical events, and that I underestimate foreign threats and thus provide a poor measure of the effects of security concerns on decision-makers. Moreover, it could be argued that the best theories are those that explain the largest number of cases and that the largest number of positive nuclear weapons decisions in the past (the United States, the Soviet Union, China, Israel, Pakistan) and the majority of the most pressing proliferation cases today (Iraq, Libya, and possibly North Korea and Iran) appear to be best explained by the basic security model.

I have no quarrel with the argument that the largest number of past and even current active proliferant cases are best explained by the security model. But the evidence presented above strongly suggests that multicausality, rather than measurement error, lies at the heart of the nuclear proliferation problem. Nuclear weapons proliferation and nuclear restraint have occurred in the past, and can occur in the future, for more than one reason: different historical cases are best explained by different causal models.

If this central argument is correct, it has important implications for future scholarship on proliferation as well as for U.S. nonproliferation policy. The challenge for scholars is not to produce increasing numbers of detailed, but atheoretical, case studies of states' nuclear proliferation and restraint decisions; it is to produce theory-driven comparative studies to help determine the conditions under which different causal forces produced similar outcomes. Predicting the future based on such an understanding of the past will still be problematic, since the conditions that produced the past proliferation outcomes may themselves be subject to change. But future scholarship focusing on how different governments assess the nuclear potential and intention of neighbors, on why pro-bomb and anti-bomb domestic coalitions form and gain influence, and on when and how NPT norms about legitimate behavior constrain statesmen will be extremely important.

For policymakers, the existence of three different reasons why states develop nuclear weapons suggests that no single policy can ameliorate all future pro-

liferation problems. Fortunately, some of the policy recommendations derived from the models are quite compatible: for example, many of the diplomatic tools suggested by the domestic politics model, which attempts to reduce the power of individual parochial interests in favor of nuclear weapons, would not interfere with simultaneous efforts to address states' security concerns. Similarly, efforts to enhance the international status of some non-nuclear states need not either undercut deterrence or promote pro-nuclear advocates in those countries.

Unfortunately, other important recommendations from different models are more contradictory. Most importantly, a security-oriented strategy of maintaining a major role for U.S. nuclear guarantees to restrain proliferation among allies will eventually create strong tensions with a norms-oriented strategy seeking to delegitimize nuclear weapons use and acquisition. The final outcome of these alternative strategies, of course, is not under the control of the United States, as leaders of potential proliferators will decide for themselves whether to pursue or reject nuclear weapons programs. Yet U.S. policy will not be without influence, and intelligent decisions will not emerge if we refuse to recognize that painful tradeoffs are appearing on the horizon. U.S. decision-makers will eventually have to choose between the difficult non-proliferation task of weaning allies away from nuclear guarantees without producing new nuclear states, and the equally difficult task of maintaining a norm against nuclear proliferation without the U.S. government facing up to its logical final consequence.