Nuclear Disarmament and Nonproliferation

Examining the Linkage Argument

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Is there a connection between nuclear weapon states' policies on nuclear disarmament and the likelihood of nuclear proliferation? Article 6 of the Nuclear Nonproliferation Treaty (NPT) calls for good-faith negotiations to eliminate nuclear weapons. This has led some commentators to suggest that, unless the NPT-recognized nuclear weapon states are perceived to be seriously committed to and making progress toward disarmament, the nonproliferation regime will unravel. Other observers, in contrast, contend that nuclear weapon state actions on disarmament have no bearing on the factors that might lead to the further spread of nuclear weapons.

Policy experts have strongly asserted both positions. On one side, for example, former U.S. officials George Shultz, William Perry, Henry Kissinger, and Sam Nunn see the connection between disarmament efforts and nonproliferation as obvious. This so-called gang of four has endorsed nuclear abolition owing in large part to concern about the dangers of proliferation, such as an increased risk of nuclear terrorism. To halt proliferation, they argue, will require a "realization that continued reliance on nuclear weapons as the principal element for deterrence is encouraging, or at least excusing, the spread of these weapons, and will inevitably erode the essential cooperation necessary to avoid proliferation."[1]

In an essay published around the same time as the Shultz et al. op-ed, Josef Joffe and James Davis put forward an equally confident version of the anti-

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1. George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, "Deterrence in the Age of Nuclear Proliferation," *Wall Street Journal*, March 7, 2011.

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linkage position: "[T]he premise that the have-nots will arm because the haves have not disarmed does not hold. It reflects neither history nor present-day realities. The truth is that the decisionmaking of aspiring nuclear powers is only remotely related, if it is related at all, to the strategic choices of the existing nuclear powers."[2]

This issue became a point of contention in the debate in 2010 over whether to ratify the New Strategic Arms Reduction (START) treaty between the United States and Russia. In testimony before the Senate Armed Services Committee, Rose Gottemoeller, the lead U.S. negotiator for the treaty, argued that treaty ratification would contribute to nonproliferation: "By demonstrating that we are living up to our obligations under Article 6 of the Nuclear Non-Proliferation Treaty (NPT), we enhance our credibility to convince other governments to help strengthen the international nonproliferation regime and confront proliferators."[3] In Senate floor debate, however, the treaty's leading critic challenged these claims. According to Jon Kyl, "[O]ne can argue that the dramatic reduction in the arsenals of Russia and the United States of strategic weapons has been a good thing. . . . But it has had no discernible effect on nuclear proliferation. We have had more proliferation since, after the Cold War, we began to reduce these weapons."[4]

If both sides of the argument can be advanced with equal conviction, then a more systematic analysis is required.[5] Too often, participants in the debate state claims about the relationship between nuclear disarmament and nonproliferation as if they are self-evident, with only a brief or even no discussion of the supporting logic and evidence. This article aims to elaborate and assess the theoretical underpinnings of the debate. Specifically, it seeks to identify all of the different theoretical logics that might support conclusions either in favor of or against what the article calls "the linkage hypothesis." By identifying different mechanisms that might lead to predictions of either a correlation or a lack of correlation between disarmament and nonproliferation, the follow-

2. Josef Joffe and James W. Davis, "Less Than Zero: Bursting the New Disarmament Bubble," *Foreign Affairs,* Vol. 90, No. 1 (January/February 2011), p. 8.
3. Assistant Secretary of State Rose Gottemoeller, testimony on the New Start treaty, Senate Armed Services Committee, Washington, D.C., July 29, 2010.
4. U.S. Senate, *Treaty with Russia on Measures for Further Reduction and Limitation of Strategic Offensive Arms,* 111th Cong., 2d sess., 2010, treaty doc. 111-5.
5. This point has been made previously in Christopher F. Chyba, "Time for a Systematic Analysis: U.S. Nuclear Weapons and Nuclear Proliferation," *Arms Control Today,* Vol. 38, No. 10 (December 2008), pp. 24–29.

ing discussion aims to facilitate future empirical testing of the linkage premise. Once there is greater clarity about the different logics that might create or prevent a linkage, it will be easier to determine the types of empirical evidence most pertinent to evaluating the linkage hypothesis.

The following analysis distinguishes between direct and indirect forms of potential linkage. In direct linkages, something about the existence or behavior of nuclear weapon states will lead to proliferation by others. In indirect linkages, something about nuclear weapon state behavior will affect some other variable, which will in turn affect proliferation. As is shown below, most recent comments on the possible link between disarmament and nonproliferation place greater emphasis on indirect linkages, especially the proposition that nonnuclear weapon states will not cooperate to enforce nonproliferation if nuclear weapon states do not fulfill what nonnuclear states perceive to be the latter's disarmament obligations.

The article proceeds as follows. First, it summarizes the different elements of what is often called the NPT "bargain" to show where the supposed link between nonproliferation and disarmament fits in the larger NPT context. Second, it discusses a handful of recent studies that have attempted to examine whether such a link really exists. The third section summarizes relevant theoretical perspectives and the hypotheses associated with them regarding whether nuclear weapon state disarmament efforts might affect proliferation. The fourth section outlines some empirical tests that would potentially be relevant for testing the various hypotheses and draws out the policy implications of the preceding analysis. The article concludes that signs of a commitment to nuclear disarmament by the nuclear weapon states will tend on balance to enhance support for nonproliferation. Because of the multitude of other factors that affect state decisionmaking, however, progress on disarmament will not by itself address all of the challenges to making the nonproliferation regime effective.

The NPT as a Set of Bargains: Placing Disarmament in Context

The NPT, which opened for signature in 1968 and entered into force in 1970, reflected three sets of bargains: one among nuclear weapon states, one among nonnuclear weapon states, and one between nuclear haves and have-nots. In the first bargain, contained in Article 1, existing nuclear weapon states agreed not to help any other countries, including their own allies, to join the nuclear

club.[6] A second bargain involved a series of "I won't if you won't" agreements among nonnuclear states. For states that preferred not to acquire nuclear weapons, but only as long as their neighbors and rivals remained nonnuclear as well, the NPT offered a convenient multilateral mechanism for establishing such mutual nonacquisition pacts.

Discussions of the NPT, however, typically give most attention to the third bargain. The NPT is unusual in international law in that it enshrines inequality by recognizing two categories of states: nuclear and nonnuclear. Only the five countries that had demonstrated nuclear weapon possession by testing devices before the treaty opened for signature were permitted to join as nuclear weapon states (since the breakup of the Soviet Union, the five acknowledged nuclear weapon states have been China, France, Russia, the United Kingdom, and the United States). All other countries were required to forswear nuclear weapons and join as nonnuclear weapon states. To persuade nonnuclear states to accept their unequal status required three concessions from nuclear weapon states. First, Article 4 of the NPT promised that nonnuclear weapon states would retain the right to develop peaceful uses of nuclear technology and pledged assistance to help them do so. Second, states that committed themselves not to seek the bomb requested security assurances to prevent the threat or use of nuclear weapons against them. No agreement could be reached on legally binding text, meaning that security assurances are not contained in the NPT itself. Instead, assurances have been offered in a variety of side arrangements.[7]

Nonnuclear weapon states viewed security assurances as a bridging mechanism to provide security against nuclear threats in the short to medium term. In the long term, these states sought to ensure that the inequality of the NPT would not last forever. Their ultimate security against nuclear threats, contained in Article 6, would be disarmament by the nuclear weapon states. This represented the third concession required to close the NPT bargain. In its entirety, Article 6 states: "Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the

6. On the importance that the superpowers attached to this bargain, see George Bunn, *Arms Control by Committee: Managing Negotiations with the Russians* (Stanford, Calif.: Stanford University Press, 1992), chap. 4.

7. For a history of security assurances in relation to the NPT, see John Simpson, "The Role of Security Assurances in the Nuclear Nonproliferation Regime," in Jeffrey W. Knopf, ed., *Security Assurances and Nuclear Nonproliferation* (Stanford, Calif.: Stanford University Press, 2012), pp. 57–85.

nuclear arms race at an early date and to nuclear disarmament, and on a Treaty on general and complete disarmament under strict and effective international control."[8]

Some commentators have argued that Article 6 does not constitute a legally binding commitment to nuclear disarmament. Christopher Ford, a former nonproliferation negotiator in the George W. Bush administration, interprets Article 6 as suggesting that nuclear disarmament was only meant to be achieved at the same time as or after general and complete disarmament.[9] On the face of it, moreover, the carefully negotiated wording calls only for a "good faith" effort, not necessarily actual achievement of nuclear disarmament. Other legal experts dispute this interpretation. Daniel Joyner contends that the negotiating history of the NPT, language about disarmament in its preamble, and standard methods for interpreting international law show that the NPT really does entail a nuclear disarmament obligation, one that enjoys equal weight with the treaty's nonproliferation and peaceful use pillars.[10] The International Court of Justice shares this view, as it ruled in 1996 that the NPT requires negotiations eventually "to achieve" the actual result of nuclear disarmament.[11] More important, a strictly legal interpretation is not sufficient. As noted by Thomas Graham, who had arms control responsibilities in several administrations, Article 6 has to be viewed as a political bargain.[12] Nonnuclear weapon states believe that the nuclear weapon states promised to pursue nuclear disarmament. Rather than legal arguments about the correct interpretation of the treaty text, these political expectations—and nonnuclear states' perceptions of whether they are being met—account for the behavior predicted by the linkage hypothesis.

Recognizing the different sets of bargains involved in the NPT leads to two conclusions. First, Article 6 creates a clear basis for linking nuclear nonprolifer-

8. "Treaty on the Non-Proliferation of Nuclear Weapons (NPT)," *IAEA Bulletin,* July 1, 1968, http://www.iaea.org/Publications/Magazines/Bulletin/Bull104/10403501117.pdf.
9. Christopher A. Ford, "Debating Disarmament: Interpreting Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons," *Nonproliferation Review,* Vol. 14, No. 3 (November 2007), pp. 401–428.
10. Daniel H. Joyner, *Interpreting the Nuclear Non-Proliferation Treaty* (New York: Oxford University Press, 2011).
11. International Court of Justice, "Legality of the Threat or Use of Nuclear Weapons," advisory opinion, The Hague, July 8, 1996, *ICJ Reports 1996,* pp. 263–264.
12. Thomas Graham Jr., "The Origin and Interpretation of Article VI," statement presented at the *Nonproliferation Review* Luncheon Briefing, Center for Nonproliferation Studies, Washington, D.C., November 29, 2007, http://cns.miis.edu/activities/071129_nprbriefing.

ation and disarmament. It reflects a perceived bargain in which nonnuclear weapon states expect to see progress toward nuclear disarmament by the nuclear weapon states as part of the price to keep the nonnuclear states inside the treaty regime. Second, however, Article 6 is only one part of the larger NPT agreement. To the extent that states emphasize other elements of the bargain, the practical importance of the disarmament-nonproliferation linkage might not be great. If nonnuclear states care more about security assurances or access to peaceful uses of nuclear technology or sustaining the "I won't if you won't" bargain to prevent further proliferation, then progress toward disarmament might not loom large in their strategic calculations. In short, one cannot predict on the basis of the NPT text itself how important the link between disarmament and nonproliferation will be in practice. Because the strength of the linkage cannot be inferred directly from the NPT text, evaluating the hypothesis requires analysts to consider the theoretical logics that might connect or delink disarmament and nonproliferation and to examine empirical evidence on the strength of this linkage in practice.

Recent Research

Although commentators have long expressed strong—and contradictory—views on whether or not activity related to nuclear disarmament affects nonproliferation, there has not been much research to assess the merits of either view. In recent years, however, several scholars have begun exploring how nonproliferation and disarmament might—or might not—be linked. As with the public debate, their conclusions remain divided, although supporters of the linkage hypothesis far outnumber those who reject it.

To my knowledge, a 2007 book chapter by Steven Miller represents the earliest academic publication to focus explicitly on the linkage hypothesis. Miller put forward seven arguments for why nuclear weapon state behavior on disarmament affects nonproliferation.[13] In a subsequent analysis with similar conclusions, Harald Müller identified five causal pathways that might link nonfulfillment of Article 6 pledges and nuclear proliferation.[14] The analyses by

13. Steven E. Miller, "Proliferation, Disarmament, and the Future of the Non-Proliferation Treaty," in Morten Bremer Maerli and Sverre Lodgaard, eds., *Nuclear Proliferation and International Security* (London: Routledge, 2007), pp. 50–70.
14. Harald Müller, "The Future of Nuclear Weapons in an Interdependent World," *Washington*

Miller and Müller did not delve deeply into empirical evidence, but a report by Deepti Choubey made this its focus. Choubey interviewed officials from sixteen nonnuclear weapon states. Many of them predicted that nonnuclear states would be reluctant to take new steps to strengthen nonproliferation given a perception that nuclear weapon states have not lived up to the disarmament part of the NPT bargain.[15] Soon after the release of Choubey's report, Christopher Chyba proposed that future empirical analysis disaggregate countries into different types. He hypothesized, for example, that disarmament progress is unlikely to affect determined proliferators but might influence some of the more activist nonnuclear NPT states such as members of the New Agenda Coalition.[16]

Christopher Ford has offered the most detailed critique of the linkage hypothesis. He makes two arguments.[17] First, he disputes claims that the nuclear weapon states, and the United States in particular, have failed to take significant action on their Article 6 commitments. He points out that there have been deep cuts in U.S. and Russian arsenals since the peak of the Cold War, and he notes that the United States has taken some military missions away from nuclear weapons and reassigned them to various conventional options.[18] Second, Ford contends that there is no empirical correlation between progress on disarmament and cooperation to enforce nonproliferation. He observes that more states joined the NPT when superpower nuclear arsenals were larger than have joined since they have reached lower numbers.[19]

Quarterly, Vol. 31, No. 2 (Spring 2008), pp. 71–72; and Harald Müller, "Nuclear Disarmament and the Nonproliferation Treaty," *WMD Insights*, December 2008/January 2009.

15. Deepti Choubey, "Are New Nuclear Bargains Attainable?" (Washington, D.C.: Carnegie Endowment for International Peace, October 2008).

16. Chyba, "Time for a Systematic Analysis."

17. Christopher Ford, "Nuclear Disarmament, Nonproliferation, and the 'Credibility Thesis,'" briefing paper (Washington, D.C.: Hudson Institute, September 2009).

18. Needless to say, there is disagreement about this question as well. Critics point out that if the United States continues to invest in nuclear modernization, the 1,500 nuclear weapons that will remain after New START is implemented will still appear to be overkill to states with no nuclear weapons, and that the United States has proposed adding new missions to its nuclear forces, especially in the Bush years. See Graham, "The Origin and Interpretation of Article VI"; and Russ Wellen, "Are Nonproliferation and Disarmament, Once Joined at the Hip, Headed for Divorce?" *Huffington Post*, December 11, 2010, http://www.huffingtonpost.com/russ-wellen/are-nonproliferation-and-_b_795302.html.

19. How to interpret this data is not obvious. There were more nonmembers available to join in the early years of the NPT and a dwindling pool of potential new members once most states had joined. Thus, the rate of joining would likely have gone down regardless of whether there has been progress on disarmament.

The import of this observation remains a subject of dispute. Nonnuclear states tend not to view nuclear arms reductions as the best indicator of nuclear weapon state compliance with Article 6; they attach greater weight to what they see as indicators in weapon state policies of a future intent to keep nuclear weapons indefinitely.[20] As a result, even if there is no correlation between previous stockpile reductions and nonproliferation, this is not the only relevant empirical evidence for assessing the linkage hypothesis. The way nonnuclear states have responded, or have failed to respond, to significant stockpile reductions remains relevant but must be supplemented by other empirical tests. The analysis in the rest of this article clarifies what these other tests might look like.

The foregoing studies emphasized either theoretical arguments or empirical evidence, but they did not do much to combine the two. Three recent studies have moved further toward considering both logic and evidence. The best existing study, by Andrew Grotto, asks why some states that support the NPT nevertheless resist measures to strengthen the treaty.[21] These measures, which he calls "NPT-plus" policies, include the Additional Protocol, limits on nuclear fuel cycle activities, and sanctions against new proliferators. Grotto follows Scott Sagan's well-known depiction of three models of proliferation, which emphasize security, norms, and domestic politics, respectively,[22] to identify possible causes of support or nonsupport for NPT-plus measures.

The norms model provides the main argument for why states that support the NPT might still refrain from cooperating to enforce it. A belief that nuclear weapon states have failed to live up to their Article 6 obligations lies at the heart of this argument. Grotto does not devote much attention to potential direct links between nuclear weapon state policies and proliferation. Instead, he advances an interesting twist on the indirect linkage argument. Grotto observes that states might vary in the degree to which their policies are influenced by the disarmament norm contained in the NPT bargain. States that feel dissatisfied with other aspects of the international order and thereby consider

20. Choubey, "Are New Nuclear Bargains Attainable?" p. 7; and Tanya Ogilvie-White and David Santoro, "Disarmament and Non-Proliferation: Toward More Realistic Bargains," *Survival,* Vol. 53, No. 3 (June/July 2011), p. 106.
21. Andrew Grotto, "Why Do States That Oppose Nuclear Proliferation Resist New Nonproliferation Obligations? Three Logics of Nonproliferation Decision-making," *Cardozo Journal of International and Comparative Law,* Vol. 18, No. 1 (Winter 2010), pp. 1–44.
22. Scott D. Sagan, "Why Do States Build Nuclear Weapons? Three Models in Search of a Bomb," *International Security,* Vol. 21, No. 3 (Winter 1996/97), pp. 54–86.

themselves "have-nots" in general, he hypothesizes, will be more likely to withhold cooperation on NPT enforcement if they perceive a lack of commitment to disarmament on the part of nuclear weapon states.[23]

Grotto also recognizes that disarmament considerations might not prove decisive. State decisions about nonproliferation policy might have other causes, which Grotto locates in the security and domestic politics models. For example, states facing threats from potential new nuclear nations will likely cooperate to enforce nonproliferation even if they think that nuclear weapon states have not made sufficient progress on Article 6, whereas states with domestic economic interests in developing nuclear technology or exporting nuclear materials will be wary of NPT-plus measures even if they are satisfied with nuclear weapon state efforts on disarmament.[24]

Although Grotto devotes most of his analysis to explicating alternative theoretical lenses, he also explores relevant empirical evidence. In support of the norms hypothesis, Grotto points out that nearly all of the countries with developed economies have accepted the Additional Protocol. In contrast, at the time he wrote, less than one-third of the members of the nonaligned movement had adopted the Additional Protocol.[25] Because these states express more dissatisfaction with the global order in general, their reluctance to embrace the Additional Protocol fits the predictions of the norms model. As his main empirical example, however, Grotto considers the 1995 NPT Review Conference. Because the NPT had an initial duration of twenty-five years, this conference had to determine the treaty's future; it decided to extend the NPT indefinitely. Grotto finds all three models helpful for explaining some of the decision-making that led even skeptical countries to ultimately support making the treaty permanent. Because all three models have some explanatory power, Grotto concludes that greater progress toward nuclear disarmament would not by itself bring about full support for NPT-plus measures. If not sufficient, though, such progress would nevertheless be beneficial.

In a recent book, Sverre Lodgaard makes a distinction similar to the differentiation between direct and indirect linkages introduced above. He suggests

23. Grotto, "Why Do States That Oppose Nuclear Proliferation Resist New Nonproliferation Obligations?" pp. 8–17.
24. Ibid., pp. 22–32.
25. Ibid., p. 16.

that disarmament (or its absence) could affect either state decisionmaking (the direct linkage) or management of the nonproliferation regime (the indirect linkage). Like Chyba, Lodgaard sees value in disaggregating states, but he differentiates within those that have undergone nuclear reversal. Among these, he predicts that lack of progress on disarmament would be most likely to affect the calculations of states that are still hedging; states that have internalized an antinuclear norm are unlikely to change course.[26] This analysis seems to apply only to the direct linkage argument, however, as one can imagine that states firmly committed to nuclear renunciation might nevertheless withhold cooperation on new nonproliferation measures if they believed that nuclear-armed states were not living up to their obligations.

With a more empirical orientation, a special issue of the *Nonproliferation Review* edited by Scott Sagan and Jane Vaynman examines international reactions to the Obama administration's 2010 Nuclear Posture Review and President Barack Obama's initiatives on arms control and disarmament. The editors' stated goals include exploring whether U.S. behavior on nuclear disarmament influences the policies of other states.[27] Sagan and Vaynman identify four causal pathways that might produce such a linkage, but unfortunately most of the case studies in the volume do not attempt to assess these pathways. The empirical findings offer mixed support: some states have been unimpressed by the latest Nuclear Posture Review whereas others have reacted positively. The clearest positive finding comes from an analysis of the 2010 NPT Review Conference by Harald Müller. He shows that Obama administration policies facilitated a relatively successful review conference, especially compared to the utter collapse of the previous 2005 conference.[28] Although narrowly focused, this volume contains the most in-depth empirical research so far. Ultimately, Sagan and Vaynman reach a similar conclusion to Grotto's: that progress on

26. Sverre Lodgaard, *Nuclear Disarmament and Non-Proliferation: Towards a Nuclear-Weapon-Free World?* (London: Routledge, 2011), chap. 9, especially pp. 172–173, 176.
27. Scott D. Sagan and Jane Vaynman, "Introduction: Reviewing the Nuclear Posture Review," *Nonproliferation Review,* Special Issue: Arms, Disarmament, and Influence: International Responses to the 2010 Nuclear Posture Review, Vol. 18, No. 1 (March 2011), p. 26.
28. Harald Müller, "A Nuclear Nonproliferation Test: Obama's Nuclear Policy and the 2010 NPT Review Conference," in ibid. Some observers question the significance of this outcome, arguing that reaching agreement at a review conference is not meaningful unless it leads to concrete actions that bolster nonproliferation. Christopher Ford, "Disarmament versus Nonproliferation?" New Paradigms Forum, October 29, 2010, http://www.newparadigmsforum.com/NPFtestsite/?p=531.

nuclear disarmament is a necessary but not sufficient condition for sustaining nonproliferation.[29]

The studies discussed here represent significant improvement over the nearly pure assertion that has characterized most commentary on the possible disarmament-nonproliferation link. Viewed collectively, they point in three directions in which further research would be useful. None of the studies by itself catalogues all of the potential causal pathways that could affect the relationship between disarmament and nonproliferation. In addition, none of them attempts the systematic assessment of empirical evidence favored by social scientists. Finally, the studies do not always describe the microfoundations of the causal or empirical arguments they make. That is, they do not explain why, to give an example, a perceived violation of norms might lead states to withhold cooperation on enforcing the NPT and thereby jeopardize the whole regime. The next section of this article attempts to identify and describe all of the potentially relevant causal pathways, including the different microlevel foundations that might provide a causal mechanism for the various arguments. In doing so, it consolidates all of the causal pathways identified in the various studies discussed above and introduces some additional possibilities.

Possible Causal Mechanisms for the Linkage and Nonlinkage Hypotheses

Scholars who do research on nuclear proliferation have developed a number of theories to explain patterns of nuclear proliferation and restraint.[30] Traditional analyses emphasize access to technology and security considerations as key drivers. As adherence to the NPT has grown, others have come to see the nonproliferation regime itself as an important factor. More recently, some studies have emphasized norms and ideas or internal factors such as domestic coalitions and leader psychology. These explanations, in turn, can be linked to more general theoretical approaches in international relations. Security explanations

29. Scott D. Sagan and Jane Vaynman, "Conclusion: Lessons Learned from the 2010 Nuclear Posture Review," *Nonproliferation Review,* Special Issue: Arms, Disarmament, and Influence: International Responses to the 2010 Nuclear Posture Review, Vol. 18, No. 1 (March 2011), p. 240.
30. This article will not reference all of the major studies that propound each theory. For a two-volume set that cites and discusses all of the key studies, see William C. Potter and Gaukhar Mukhatzhanova, eds., *Forecasting Nuclear Proliferation in the 21st Century* (Stanford, Calif.: Stanford University Press, 2010).

fit well with realist theory. Institutional aspects of the nonproliferation regime are a logical focus for neoliberal institutionalism. Norms and ideas represent central concerns in social constructivism. Finally, domestic politics and psychological factors serve as key variables in theories based at levels of analysis below the international system. Given that prevailing explanations have affinities with realism, institutionalism, constructivism, and two lower levels of analysis, the following analysis groups possible arguments relating to the linkage hypothesis into five broad categories: security perspectives, institutional and bargaining perspectives, norms arguments, domestic factors, and psychological considerations.

The security, norms, and domestic politics perspectives have been the source of almost all the existing arguments on both sides of the linkage debate. Institutional and psychological perspectives, in contrast, have received little attention. As a result, the hypotheses identified below in association with those two perspectives are mostly new. Where possible, each section differentiates hypotheses in terms of whether they predict direct linkages between disarmament and nonproliferation, indirect linkages, or no linkage, although not necessarily in that order. In general, arguments for and against the linkage hypothesis tend to illustrate limitations on the other perspective, suggesting that neither is universally applicable. This means that some degree of linkage likely exists, but of varying strength depending on circumstances.

SECURITY CONSIDERATIONS

Security motivations lie at the heart of the leading theoretical argument against the linkage hypothesis. The primary critique of the linkage hypothesis holds that proliferation results mainly from causes other than the actions of the NPT nuclear weapon states.[31] The most common variant of this claim invokes security concerns. It relies on a traditional security explanation for proliferation, but locates the relevant security threats in states' regional environments.[32] In this view, local rivals, rather than the global superpowers, drive proliferation decisions. If regional rivalries or aggressive neighbors loom largest in pro-

31. Pierre Hassner, "Who Killed Nuclear Enlightenment?" *International Affairs,* Vol. 83, No. 3 (May 2007), pp. 462–463; and Joffe and Davis, "Less Than Zero," p. 8.
32. T.V. Paul, *Power versus Prudence: Why Nations Forgo Nuclear Weapons* (Montreal: McGill-Queen's University Press, 2000). Paul's book does not evaluate the linkage hypothesis; it is cited here as the best academic study to make a case for the primacy of the regional security environment in explaining proliferation.

liferation decisions, then the arsenals of the NPT nuclear states will not factor in the calculations of the states most likely to pursue a new nuclear program. The case of Israel supports this perspective. Israel did not fear a superpower nuclear threat. Instead, it perceived an existential threat from its conventionally armed neighbors and sought nuclear weapons as an ultimate deterrent against being overrun.[33]

Two possible exceptions, however, could still make NPT nuclear weapon states relevant: the local rival could also be a nuclear weapon state, or a nuclear weapon state could pose a long-distance threat that creates security concerns.[34] In either of these scenarios, security considerations could produce a direct link between the continued maintenance of nuclear arsenals by one or more of the five nuclear states and new proliferation cases. India provides a possible example of the first situation. India shares a disputed border with China, and the two fought a border war in 1962. Many Indian elites point to a potential threat from China, including from China's nuclear weapons, as a major motivation for India's efforts to develop a nuclear arsenal.[35] This suggests that security concerns could in some cases directly motivate states involved in a regional rivalry with a nuclear weapon state to seek their own deterrent.

A second scenario in which security concerns could lead to a link between nuclear weapon state behavior and proliferation involves relatively weak pariah or renegade regimes that find themselves on the receiving end of threats by NPT nuclear states. The direction of causality can be tricky here. Efforts by rogue states to explore a nuclear option may be one reason why they draw the ire of nuclear weapon states, in which case proliferation would be the cause rather than the result of a new security threat to the state. Yet even states without an active intent to develop nuclear weapons might find themselves being threatened by a nuclear weapon state. Such a state might fear that the United States in particular will seek to impose regime change as a result of that state's involvement in some combination of chemical and biological weapons efforts, support for terrorism, conventional threats against its neighbors, and unsavory human rights practices. The most likely form of U.S. military action

33. Avner Cohen, *Israel and the Bomb* (New York: Columbia University Press, 1998), pp. 148–150.
34. Müller, "Nuclear Disarmament and the Nonproliferation Treaty."
35. T.V. Paul, "The Systemic Bases of India's Challenge to the Global Nuclear Order," *Nonproliferation Review,* Vol. 6, No. 1 (Fall 1998), pp. 1–11; and Sumit Ganguly, "India's Pathway to Pokhran II: The Prospects and Sources of New Delhi's Nuclear Weapons Program," *International Security,* Vol. 23, No. 4 (Spring 1999), pp. 148–177.

would be a coercive bombing campaign or conventional invasion, but in some circumstances a rogue regime might fear being the subject of nuclear coercion or attack. The U.S. Nuclear Posture Review in the George W. Bush administration, for example, contemplated possible preemptive use of nuclear weapons against chemical and biological weapons sites.[36] The possibility of such threats could motivate a rogue state without an active nuclear program to decide it needs a nuclear deterrent. This would be a second scenario in which security concerns might produce a direct link between continued nuclear possession by NPT weapon states and further proliferation. The two linkage pathways identified here, moreover, seem unlikely to have been greatly affected by U.S. and Russian nuclear arms reductions since the Cold War. As long as nuclear weapon states retain usable nuclear arsenals, their capacity to pose a nuclear threat could lead certain nonnuclear states to seek the capacity to respond in kind.

If security threats posed by nuclear weapon states can directly motivate proliferation in response, then an indirect linkage scenario also becomes possible. States that are not threatened by an NPT nuclear weapon state might nevertheless be threatened by a neighbor that seeks nuclear weapons in response to such a threat. Pakistan is the obvious example. Pakistan's nuclear weapons program clearly emerged in response to India's effort. To the extent India decided to seek the bomb because of a perceived threat from China, then Pakistan's nuclear program represents an indirect consequence of the impact of nuclear weapon state behavior on India's choice. Should a threat posed by an existing nuclear weapon state become a direct motivation for proliferation in another case, that case could potentially trigger similar spillover effects leading to further proliferation.

This danger should not be overstated. Recent research suggests that there is nothing inevitable about proliferation chain reactions.[37] Proliferation does not always beget further proliferation. Yet, even if indirect effects of security threats posed by nuclear weapon states will not always lead to secondary proliferation, the risk remains that they will do so in some cases. Hence, security concerns could be one possible source of indirect linkages between a lack of disarmament and new cases of proliferation.

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36. George Bunn and Jean du Preez, "More Than Words: The Value of U.S. Non-Nuclear-Use Promises," *Arms Control Today*, Vol. 37, No. 6 (July/August 2007), p. 18.
37. William C. Potter and Gaukhar Mukhatzhanova, "Divining Nuclear Intentions: A Review Essay," *International Security*, Vol. 33, No. 1 (Summer 2008), pp. 139–169.

Critics of the linkage hypothesis also have a second security-based counterargument to the linkage proposition. This one represents an especially important challenge because it suggests that disarmament would actually have the opposite effect. Many analysts believe that security guarantees provided by nuclear weapon states, in the form of extended nuclear deterrence, serve to inhibit proliferation. According to this logic, states protected by a "nuclear umbrella" do not need their own deterrent and hence will not seek nuclear weapons. If the nuclear weapon states really started to disarm, however, they might eventually reach numbers of nuclear weapons so low that their allies would begin to doubt the continued credibility of extended deterrent commitments. At this point, progress toward nuclear disarmament could suddenly lead to increased proliferation. As Keith Payne, a longtime defense analyst and former official in the George W. Bush administration, puts the point, "The presumption that United States movement toward nuclear disarmament will deliver nonproliferation success is a fantasy. On the contrary, the United States nuclear arsenal has itself been the single most important tool for nonproliferation in history, and dismantling it would be a huge setback."[38]

The security guarantees offered by nuclear weapon states are a form of positive security assurance. A recently published study that I directed, which includes several case studies, finds that positive security assurances have played a role in preventing proliferation.[39] This finding provides empirical support for the claim that disarmament might be counterproductive for nonproliferation. This support comes with important caveats, however. The case findings also show that the impact of security assurances is conditional on other factors, including the perceived legitimacy of nonproliferation norms.[40] Some states accept reliance on a nuclear umbrella rather than seek a deterrent of their own because they are already moving toward rejecting the legitimacy of nuclear weapons. Were the legitimacy of the nonproliferation regime and its norm against nuclear weapons possession to crumble, it is not clear if nuclear security guarantees would continue to be an effective inhibitor to proliferation. If nonproliferation norms become too weakened, even allies protected by a nuclear umbrella might be tempted to reconsider their choice.

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38. Keith B. Payne, "A Vision Shall Guide Them? The Strategic Risks of President Obama's Call for Nuclear Disarmament," *National Review,* November 2, 2009, pp. 20–21.
39. Knopf, *Security Assurances and Nuclear Nonproliferation.*
40. On this point, see also Maria Rost Rublee, *Nonproliferation Norms: Why States Choose Nuclear Restraint* (Athens: University of Georgia Press, 2009).

Apart from the equivocal empirical evidence, the prediction that disarmament would trigger greater proliferation as a result of the removal of security guarantees also rests on an assumption that nonnuclear states will continue to need protection via extended deterrence, but with progress toward nuclear abolition the need for extended deterrence might go away. The nuclear weapon states are unlikely to eliminate their nuclear capabilities unless they have high confidence that no other actor is able to suddenly break out with a covertly developed nuclear arsenal. Complete nuclear disarmament, if it is ever reached, will occur only when international political relationships have improved and strong verification measures have been put in place. In such circumstances, nonnuclear states would be unlikely to perceive nuclear threats that would motivate them to develop their own nuclear weapon program.

In addition, positive security assurances are not universal. Many states do not have a nuclear-armed ally. For these states, the actions of nuclear weapon states could potentially motivate decisions to proliferate or to refrain from cooperating on nonproliferation efforts. This means that a lack of progress on nuclear disarmament could have contradictory effects, providing proliferation-inhibiting assurances to some while creating proliferation-facilitating motivations for others. Because some countries do value nuclear security guarantees, any serious movement toward abolition will require careful management of alliance relations and associated security assurances.

One final security-related argument comes from those who endorse the linkage hypothesis. In addition to the possibility that a nuclear weapon state arsenal poses a security threat, another potential direct link involves a demonstration effect of nuclear weapon state activities. Through the development of new weapons, shifts in doctrine, or strong statements about the continued value of nuclear weapon possession, a nuclear weapon state might demonstrate that it sees unique military utility in having a nuclear capability.[41] This could encourage other states, especially those that look to the military superpowers for lessons about the elements of a strong defense, to see military utility in acquiring the bomb for themselves.

In sum, security considerations provide two reasons for expecting no linkage or even a negative correlation between disarmament and nonproliferation, but they also suggest two possible sources of direct linkage and one indirect

41. Miller, "Proliferation, Disarmament, and the Future of the Non-Proliferation Treaty," p. 65; and Müller, "Nuclear Disarmament and the Nonproliferation Treaty."

linkage. Although skeptics of the linkage hypothesis often cite security explanations for proliferation as a reason why nuclear disarmament will not change patterns of proliferation, this is true only if weapons possessed by the NPT nuclear states are never perceived as a potential threat by any other state or as an object lesson in the military value of the bomb. Many states will have more powerful motivations for their actions than whether or not the nuclear weapon states are committed to disarmament, but one cannot logically conclude from this that every state will lack meaningful concerns about what the nuclear weapon states do.

Institutional and bargaining perspectives

Research on proliferation has often reflected realist thinking about security, and, to some degree, it has also drawn on social constructivism and the domestic and individual levels of analysis. Proliferation research does not cite the literatures on bargaining and institutions nearly as much, yet these literatures offer potential insights relevant to the linkage hypothesis. These research programs focus on situations in which states have a mixture of common and conflicting interests, and they explore the conditions under which such states will reach agreements or will develop and sustain international regimes.[42] Like realism, they assume that states will act as rational, self-interested actors, but they suggest some additional pathways beyond traditional security arguments that could either produce linkage or account for its absence. In particular, they point to some possible indirect connections that have not received much attention.

Although this article discusses several mechanisms that might directly link continued nuclear weapon possession by the nuclear weapon states and proliferation, most people who believe in a disarmament-nonproliferation linkage emphasize indirect connections between the two. The most frequently hypothesized indirect linkage predicts that nonnuclear weapon state perceptions that NPT nuclear states are not serious about disarmament will lead them to withhold cooperation on measures to strengthen the NPT. With less cooperation on nonproliferation, presumably the likelihood of future proliferation will increase. Yet commentators do not always make clear what underlying causal

42. Robert O. Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton, N.J.: Princeton University Press, 1984).

process would lead to reduced cooperation. This article identifies several different microfoundations that could produce this behavior.

Existing discussions generally imply a normative or psychological foundation for the indirect linkage. Drawing on institutionalist theory, though, makes it possible to also give an account based on rational self-interest. Nonnuclear weapon states may withhold cooperation as a way to pressure nuclear weapon states to do more to comply with Article 6 and, consistent with institutionalist theory, they might do so out of self-interest, specifically an interest in nuclear abolition. Nonnuclear states might believe that they have an interest in nuclear disarmament even if they do not perceive themselves to be in imminent danger of attack by a nuclear weapon state. Realist folk wisdom holds that today's friend might still turn out to be tomorrow's enemy. Hence, prudent states will not want to leave themselves permanently vulnerable to possible nuclear coercion or attack, just in case a benign security situation turns less benign in the future. This gives them an interest in pushing for eventual nuclear disarmament.

In addition, one should not forget the Cold War context in which states negotiated the NPT. Had there been a U.S.-Soviet nuclear war, no state would have escaped unscathed. Many of the allies and friends of the superpowers would also have been targeted with nuclear weapons. Even states not directly targeted would have been exposed to radioactive fallout and suffered great economic harm from the destruction of the world's leading economies. Nonnuclear weapon states sought measures to halt the arms race and achieve disarmament in part because they wanted to avoid becoming collateral damage in the event of a superpower nuclear war. Indeed, the NPT's preamble lists "the devastation that would be visited upon all mankind by a nuclear war" first among the motivations for concluding the treaty.[43] In short, although security explanations have emphasized threats from hostile or nuclear-armed neighbors, many states also have a generic security interest in reducing and if possible eliminating the danger of nuclear war. As South Africa's foreign minister, Nkosazana Dlamini Zuma, put the point at a Nuclear Suppliers Group meeting in 2007, "Whilst South Africa is committed to the continuous review and strengthening of measures aimed at preventing the proliferation of weapons of mass destruction, we believe that real progress in securing our world

43. "Treaty on the Non-Proliferation of Nuclear Weapons (NPT)."

from the threat of nuclear weapons can only be achieved through concomitant progress in the area of nuclear disarmament."[44]

What can states with a general interest in nuclear abolition do if the nuclear weapon states seem disinclined to move in that direction? Neoliberal theories of cooperation suggest a possible answer. Neoliberalism focuses on mixed-motive situations, in which states will benefit from mutual cooperation but also have incentives to defect. When defection occurs, because there is no central authority that can enforce agreements, states must rely on their own efforts to bring about compliance. Cooperation research points to the potential value in this context of using a strategy of tit-for-tat.[45] Under this strategy, if the other side defects, one responds by defecting in turn, but then resumes cooperation if the other does too. When the other side sees that it will not get away with exploitation and will fare worse under mutual defection than it did under mutual cooperation, its rational self-interest will lead it to return to cooperation.

How might this tit-for-tat strategy operate in the nonproliferation regime? The nonproliferation regime suffers from the problem that strict tit-for-tat, meaning defection in kind, is undesirable. If a new state, such as North Korea, defects from the regime by developing nuclear weapons, states in its region, such as South Korea or Japan, could respond in kind. These states, however, do not actually want to "go nuclear" or to experience a nuclear arms race in their region. Indeed, the whole point of the regime is to prevent proliferation, not to add to it. This makes threats to retaliate in kind counterproductive to the regime's goals and less than fully credible as a deterrent to the initiation of new nuclear weapon programs. In practice, therefore, the international community relies instead on imposing sanctions and enhancing denial measures, such as export controls, rather than on answering proliferation with proliferation.

If ensuring that some new country will not join the nuclear club ranks as the greatest interest for a nonnuclear weapon state, then its self-interest should lead it to cooperate in imposing these enforcement measures. In some cases, however, a state may calculate that it has an equal or greater interest in promoting progress toward nuclear disarmament. Such a calculation may be especially likely for middle powers in regions without an immediate proliferation

44. Quoted in Noel Stott, "Motivations and Capabilities to Acquire Nuclear, Biological, or Chemical Weapons and Missiles: South Africa," in James J. Wirtz and Peter R. Lavoy, eds., *Over the Horizon Proliferation Threats* (Stanford, Calif.: Stanford University Press, 2012), p. 76.
45. Robert Axelrod, *The Evolution of Cooperation* (New York: Basic Books, 1984).

threat—states such as Brazil, Indonesia, or South Africa. What should states with an interest in enforcing disarmament commitments do if they perceive noncompliance by the NPT nuclear states? Again, the option of strict tit-for-tat is not desirable. A state could respond to a perceived lack of seriousness about disarmament by initiating its own nuclear weapons program. But if its goal is to foster a nuclear-weapon-free world, this represents movement in the wrong direction. Because the initial term of the NPT ran for twenty-five years, nonnuclear weapon states could exert leverage before 1995 by threatening not to support renewal of the treaty if the nuclear weapon states did not do more on disarmament. Since the decision to make the treaty permanent, this option is no longer available. Today, if a state wants to practice tit-for-tat by defecting in some other way that is still linked to the nonproliferation regime, the logical option would be to withhold its cooperation from the various NPT-plus measures to strengthen the regime. If nuclear weapon states get the message, they may conclude that their own interest in preventing proliferation requires them to commit more strongly to nuclear disarmament.

Viewing the nonproliferation regime as an ongoing bargaining process, Sagan and Vaynman identify a less coercive way than the use of tit-for-tat in which disarmament and nonproliferation might become indirectly linked. In their special issue on international reactions to the Obama Nuclear Posture Review, Sagan and Vaynman highlight how signs of renewed commitment to disarmament can change bargaining dynamics.[46] When nonnuclear weapon states do not expect nuclear weapon states to be receptive to new disarmament measures, they have no incentive to offer new compromise proposals. But when nuclear states appear serious about making progress on Article 6, this creates a more favorable environment for negotiations. It can encourage nonnuclear states to come forward with new bargaining offers in the hope that they will be reciprocated via concrete steps on disarmament. Along these lines, Tanya Ogilvie-White and David Santoro have proposed several specific "mini-bargains" that would trade modest moves toward disarmament for specific nonproliferation actions, such as more states signing the Additional Protocol.[47]

One further potential source of indirect linkage between disarmament and nonproliferation also reflects institutional logic. It concerns perceptions of credi-

46. Sagan and Vaynman, "Introduction: Reviewing the Nuclear Posture Review," p. 32; and Sagan and Vaynman, "Conclusion: Reviewing the Nuclear Posture Review," p. 240.
47. Ogilvie-White and Santoro, "Disarmament and Non-Proliferation."

bility. Failure by nuclear weapon states to follow through on one aspect of the NPT bargain might raise doubts about the strength of their commitment to other parts of the bargain.[48] Nonnuclear states might fear that, if nuclear states do not fulfill their pledges on Article 6, they might also not uphold their Article 1 commitments not to help new states acquire nuclear weapons or their Article 4 commitments to assist with the development of peaceful uses of nuclear technology. In short, there might be spillover effects from Article 6 to the perceived credibility of the whole treaty regime, thereby lessening the incentives for nonnuclear weapon states to accept new nonproliferation measures or to help enforce compliance.

Reaction to the 2005 U.S.-India nuclear deal suggests how this process might work. The U.S. deal to assist India's civilian nuclear sector did not directly contradict Article 6. It was, however, widely perceived as a violation of Article 4.[49] Most NPT parties believe that technical assistance in the development of peaceful uses of nuclear energy promised under Article 4 should be reserved for nonnuclear weapon state parties to the NPT to create an incentive for nonsignatories to join. When the United States offered similar benefits to India despite the latter's nonmembership in the NPT, it led observers to question the U.S. commitment to the NPT as a whole. This could make nonnuclear state members less willing to invest in the treaty themselves. Complaints about the nuclear weapon states' commitment to Article 6 could have similar corrosive effects on how others perceive the credibility of the whole NPT bargain and its likely future survival. States that come to believe that the nuclear weapon states do not care greatly if the NPT survives will be unlikely to cooperate in efforts to sustain the regime.

Although institutionalist logic can be invoked to provide foundations for an indirect linkage argument, its emphasis on self-interest as the reason for cooperation also suggests several possible arguments against the linkage hypothesis. One possible counterargument directly disputes the prediction that lack of progress on disarmament will lead nonnuclear states to withhold cooperation. Most nonnuclear NPT members, one could argue, will continue to cooperate to strengthen the nonproliferation regime because it is in their interest to do so.

48. For research suggesting that a reputation for keeping (or breaking) promises affects credibility, see Anne E. Sartori, *Deterrence by Diplomacy* (Princeton, N.J.: Princeton University Press, 2007).
49. Oliver Bloom, "Is a Key Element of the NPT Dead?" (Washington, D.C.: Center for Strategic and International Studies, July 13, 2010), http://csis.org/blog/key-element-npt-dead.

The vast majority of NPT parties do not want to see new states obtain nuclear weapons. If states follow their national interests and it is in the interest of most states to stem further proliferation, then most states will likely continue to cooperate on measures to stop proliferation.

The decision of the 1995 Review Conference to make the NPT permanent reflected this kind of interest calculation. In the lead-up to the extension decision, many of the nonnuclear weapon states expressed unhappiness with nuclear weapon state efforts to date on Article 6. In the years immediately preceding the conference, however, revelations about the nuclear weapon programs of Iraq and North Korea made many states realize that nuclear proliferation remained a real danger. In these circumstances, many states concluded that their interests in strengthening the regime by extending the treaty permanently outweighed their desire to retain leverage over nuclear weapon states by agreeing to only a temporary extension. This is not the whole story, because the conference outcome also depended on compromises offered by the nuclear weapon states with regard to disarmament—most notably commitments to conclude a Comprehensive Test Ban Treaty and create a strengthened review process. Yet the argument that most states concluded that they had a national interest in upholding the nonproliferation regime captures an important core truth.[50]

Similar to the security-based counterarguments to the linkage hypothesis discussed above, however, this argument for expecting no linkage also may not hold universally. For some states, stopping further proliferation may not be the most important interest. Rising middle powers located in regions where proliferation is unlikely may believe that they have a greater national interest in eliminating some of the remaining gaps between them and the great powers. Countries such as Brazil or South Africa will not be greatly threatened by a North Korean bomb, but they may be highly motivated to reduce some of the remaining inequality between themselves and the five official nuclear powers. The counterargument based on interests is hence best interpreted as leading to a differentiated prediction: the greater a state's interest is in preventing proliferation, the more likely it is to cooperate with nuclear weapon states on enforcement. The less clear it is that a state has such an interest, or the stronger a potentially countervailing interest, the less likely it is to cooperate.

This latter proposition could also serve as a different rejoinder to the indirect

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50. Lewis A. Dunn, "High Noon for the NPT," *Arms Control Today*, Vol. 25, No. 6 (July/August 1995), pp. 3–9.

linkage hypothesis. It accepts the argument that nonnuclear weapon states might decline to cooperate with NPT-plus measures. It suggests, however, an alternative explanation that does not link that decision to a lack of progress on disarmament. Some states will not join in multilateral efforts to strengthen nonproliferation because they have no national interest in doing so, or they have an active interest against doing so—for instance, if they have an economic interest in developing or exporting nuclear materials or technology.[51] States that perceive no likely threat to themselves from nuclear proliferation will be reluctant to pay the costs of participating in enforcement measures, because there will be no benefits adequate to outweigh the costs. States, in short, may not cooperate for the simple reason that it is not in their interests, rather than because they feel discriminated against by the nuclear weapon states.

As with other rejoinders to the linkage hypothesis, the argument that states may lack an interest in cooperating to enforce nonproliferation has limitations. It might not be their top priority, but many states still have some interest in preventing proliferation. Even if currently suspected NPT violators are geographically distant, states have reasons to see unchecked nuclear proliferation as contrary to their interests. If current violators are allowed to develop nuclear weapons with impunity, this will reduce the disincentives for other states to follow suit. If the nonproliferation regime unravels, states that face no proliferation threat today could in the future find that some of their regional rivals have started to explore a nuclear option. Uncertainty about the future creates an incentive to uphold nonproliferation norms even against suspected NPT violators that pose no threat to one's own state.

The danger of nuclear terrorism creates an additional reason to limit as much as possible the number of states with nuclear weapon programs. New nuclear states might not be able to adequately safeguard their nuclear materials, leading to an increased risk that such materials could fall into the hands of violent nonstate actors. In a globally interconnected world, many countries could contain sites that are attractive targets for violent extremist groups. The 1998 attacks on U.S. embassies in Kenya and Tanzania show that no country can count on being immune from terrorist violence. This means that all states have an interest in limiting as much as possible the number of places where terrorists might find an opportunity to acquire nuclear weapons or materials.

51. Grotto, "Why Do States That Oppose Nuclear Proliferation Resist New Nonproliferation Obligations?" pp. 28–32.

This same consideration also creates another reason for an interest in nuclear disarmament, as even established nuclear weapon states could find it difficult to completely secure their nuclear materials forever against potential diversion to terrorists.

One additional argument for expecting no linkage can be derived from a bargaining perspective. Complaints about Article 6 compliance by nonnuclear states could simply be an attempt to gain a tactical edge in bargaining, but not something such states truly believe. This charge becomes especially plausible if compliance with Article 6 has actually been good. Some critics of the linkage hypothesis make precisely this claim, pointing to evidence that nuclear weapon states have made both firm commitments to and substantial progress toward nuclear abolition. The United States, for example, has reduced its nuclear forces from a Cold War peak of more than 30,000 warheads to about 5,000 warheads, and it is committed by the New START agreement to limit its deployed strategic warheads to 1,550.[52] At the 2000 NPT Review Conference, moreover, the final document included an "unequivocal undertaking by the nuclear-weapon states to accomplish the total elimination of their nuclear arsenals."[53] President Obama, in a speech in Prague in 2009, reiterated the U.S. commitment to eventual nuclear abolition. Some observers say that these facts refute the premise of a lack of progress on disarmament. If one believes that the NPT nuclear states have made a good-faith effort to comply with Article 6, and posits that this should be obvious to the nonnuclear weapon states, then the latter's complaints about the disarmament pillar of the nonproliferation regime will appear insincere. In this view, the rhetoric about disarmament serves as a smokescreen that enables some nonnuclear weapon states to hide the real reasons why they have resisted doing more to uphold their end of the NPT bargain. This leads to a prediction that virtually no actions the nuclear-armed states might take on disarmament (other than perhaps actually going to zero) would produce meaningful new action on nonproliferation.[54]

A certain amount of state rhetoric in international politics is clearly insincere, but this does not justify dismissing out of hand all state complaints about a lack of progress on disarmament. Perceptions, by definition, are in the eye of

52. Arshad Mohammed and Phil Stewart, "U.S. Says Nuclear Arsenal Includes 5,113 Warheads," Reuters, May 3, 2010, http://www.reuters.com/article/idUSTRE64251X20100503.
53. Rebecca Johnson, "The 2000 NPT Review Conference: A Delicate, Hard-Won Compromise," *Disarmament Diplomacy,* No. 46 (May 2000), http://www.acronym.org.uk/dd/dd46/46npt.htm.
54. Ford, "Disarmament versus Nonproliferation?"

the perceiver. However much government officials in nuclear weapon states may believe that their countries have made good-faith efforts to implement Article 6, these efforts might not be interpreted the same way in other countries. More than forty years after the NPT entered into force, the United States and Russia each continue to possess thousands of warheads. As part of the price of obtaining Senate ratification of New START, moreover, the Obama administration pledged to spend $85 billion over ten years to modernize the U.S. nuclear weapons complex.[55] A situation in which the leading nuclear weapon states will retain thousands of weapons and plan to spend heavily on nuclear modernization could reasonably be interpreted as reflecting something less than an unequivocal commitment to disarmament.

The United States can legitimately argue that it has made great strides away from the nuclear arms race that characterized the Cold War and has not been given sufficient credit for this. NPT nonnuclear states, however, are also looking for signs that the inequality between nuclear haves and have-nots will not last indefinitely. They see the failure of some countries to ratify the Comprehensive Test Ban Treaty, the lack of negotiations on a Fissile Material Cut-off Treaty, and the continued importance of nuclear deterrence in military doctrines as discouraging signs.[56] For these reasons, substantial nuclear arms reductions from Cold War levels are, in their eyes, not enough to demonstrate a nuclear weapon state commitment to actually achieve nuclear disarmament. A statement to the 2008 NPT PrepCom by the New Agenda Coalition (Brazil, Egypt, Ireland, Mexico, New Zealand, South Africa, and Sweden) directly addressed this point: "The New Agenda Coalition welcomes indications from some nuclear-weapon States that further cuts in nuclear arsenals are being advanced. However, the Coalition remains seriously concerned that intentions to modernize other nuclear forces seem to persist. The Coalition reiterates that States should not develop new nuclear weapons or nuclear weapons with new military capabilities or for new missions, nor replace nor modernize their nu-

55. The White House, Office of the Press Secretary, "Fact Sheet: An Enduring Commitment to the U.S. Nuclear Deterrent," November 17, 2010, http://www.whitehouse.gov/the-press-office/2010/11/17/fact-sheet-enduring-commitment-us-nuclear-deterrent.

56. Miller, "Proliferation, Disarmament, and the Future of the Non-Proliferation Treaty," p. 54; Nabil Fahmy, "Mindful of the Middle East: Egypt's Reaction to the New U.S. Nuclear Posture Review," *Nonproliferation Review,* Vol. 18, No. 1 (March 2011), pp. 169–171; and Irma Argüello, "The Position of an Emerging Global Power: Brazilian Responses to the 2010 U.S. Nuclear Posture Review," ibid., pp. 188–191.

clear weapon systems, as any such action would contradict the spirit of the disarmament and non-proliferation obligations of the treaty."[57]

If true (and the claims at this point are impressionistic rather than corroborated by systematic data analysis), an absence of nonnuclear state responsiveness to deep cuts by Russia and the United States should be considered evidence against the linkage hypothesis. If nuclear have-nots had responded positively by embracing new nonproliferation measures, this would certainly have been cited as evidence in favor of the linkage hypothesis. The failure of such evidence to materialize thus legitimately counts against the hypothesis. This empirical observation is not by itself decisive, however. Nonnuclear states have long identified other steps beyond nuclear arms reductions as important indicators for how they evaluate nuclear weapon state compliance with Article 6. Because of this, additional empirical tests, discussed below, are necessary to fully evaluate the linkage hypothesis.

As with security considerations, institutionalist perspectives yield mixed expectations. Some states see nuclear disarmament as an important interest and might as a result withhold cooperation on nonproliferation if they perceive a failure by nuclear weapon states to fulfill Article 6 obligations. In other cases, states will make different self-interest calculations that would lead one to expect no linkage between disarmament and nonproliferation.

NORMS

Critics of the linkage hypothesis tend to base their case on arguments about interests. To them, states that proliferate or refuse to cooperate with new nonproliferation measures have other reasons for doing so unrelated to disarmament. And if states do have a strong interest in nonproliferation, critics expect this to override any unhappiness these states feel about a lack of greater progress on disarmament. As has been shown, security and institutionalist arguments about state interests can also be invoked in support of the linkage hypothesis. Those who see a connection between disarmament and nonproliferation, however, tend to rest their case more heavily on the impact of norms.

Norms can be a source of both direct and indirect linkages. The most commonly invoked direct linkage that involves norms points to a perception that nuclear weapon possession confers status. The fact that the five NPT nu-

57. Quoted in Joyner, *Interpreting the Nuclear Non-Proliferation Treaty*, p. 73.

clear weapon states are also the five permanent UN Security Council members (P-5), and hence the only Security Council members with veto power, sends an unfortunate signal that nuclear weapons have "political utility" and not just military utility.[58] The longer the P-5 maintain policies indicating a desire to retain nuclear weapons indefinitely, the more this creates a direct motivation for other states seeking great power status to imitate them. India presents a potential example. Many observers of the Indian program discount official claims that the Indian bomb was a response to security threats from China. They see it more as an expression of India's striving for great power status.[59]

Norms also provide a possible basis for two indirect linkage pathways. Norms could be a reason why nonnuclear states withhold cooperation when they believe that nuclear states are not fulfilling all of their Article 6 obligations. As noted above, Grotto identifies the norms model as the central explanation for why states refrain from embracing NPT-plus measures. Yet Grotto and others who emphasize norms do not always give a full account of the causal mechanism that would produce the linkage effect. This article proposes three alternative microfoundations that could give force to a norms argument. First, institutionalist logic could complement a norms argument. As discussed above, states with self-interest reasons for favoring a norm have incentives to punish defection. According to this logic, states that see an interest in nuclear abolition will have rational reasons to sanction noncompliance with Article 6 and its associated disarmament norm as a way to encourage future compliance.

A second possibility involves the logic of norms themselves. If state leaders believe in the value of norms and are committed to upholding them, this logically entails a secondary norm of enforcing norms by reacting against norm violations. Rather than an instrumental logic of consequences in which states try to elicit cooperation with disarmament norms by using tit-for-tat to show the consequences of not complying with Article 6, states may follow a normative logic of appropriateness in which it is seen as proper to sanction others who defy agreed-upon norms.[60] This normative logic is not entirely satisfying,

58. Müller, "Nuclear Disarmament and the Non-Proliferation Treaty."
59. Paul, "The Systemic Bases of India's Challenge to the Global Nuclear Order."
60. On the logic of appropriateness versus the logic of consequences, see James G. March and Johan P. Olsen, *Rediscovering Institutions: The Organizational Basis of Politics* (New York: Free Press, 1989); and Kjell Goldmann, "Appropriateness and Consequences: The Logic of Neo-Institutionalism," *Governance*, Vol. 18, No. 1 (January 2005), pp. 35–52.

however, because it does not explain why states would want to invest energy in the secondary norm of norm enforcement. A third possible microfoundation, drawn from psychology, is described below. It could complement a norms argument by explaining why an actor might react strongly against perceived norms violations.

Norms could also create an indirect connection between disarmament and nonproliferation through perceptions of double standards. Norms should gain in legitimacy when there is consistency in upholding them. If powerful actors claim that norms apply to others but then these actors exempt themselves, the charge of hypocrisy could undermine support for the norms in question. There have been accusations that the nuclear weapon states, especially the United States, follow a double standard: they get to judge whether others are in compliance with nonproliferation obligations, but they do not allow others to judge whether they are in compliance with disarmament obligations. This makes it harder to enlist support for holding nonnuclear state parties accountable for NPT violations.[61] The corrosive effect of perceived double standards can be seen in the question posed by a former UN ambassador from Singapore: "How can the violators of UN principles also be their enforcers?"[62]

Those who believe there is no linkage between disarmament and nonproliferation generally devote little attention to norms. As a result, all existing norms-based arguments suggest either a direct or an indirect linkage.

DOMESTIC POLITICS

The security, institutional, and norms perspectives all emphasize features of the international system. Sources of state decisions to proliferate or to reject new nonproliferation measures might also be found in internal politics. With respect to the linkage hypothesis, especially in its direct form, internal factors provide another basis for predicting no linkage. Critics of the linkage hypothesis often claim that decisions to acquire nuclear weapons are driven not by nuclear weapon state behavior, but by other factors. One version of this critique, described above, highlights regional security concerns. A second variant of this argument focuses instead on internal causes of proliferation. Much of the recent proliferation literature has discounted the adequacy of security explanations. It has instead located much of the impetus for nuclear weapons develop-

61. Miller, "Proliferation, Disarmament, and the Future of the Non-Proliferation Treaty," p. 66.
62. Quoted in Choubey, "Are New Nuclear Bargains Attainable?" p. 8.

ment in internal factors, including domestic political coalition dynamics and the psychology of individual leaders.[63] If state decisions about nuclear acquisition arise purely from such domestic-level factors, then they are unlikely to be affected by nuclear weapon state policies. Some critics of the linkage hypothesis cite Iran and North Korea as examples of states whose nuclear programs have internally driven motivations (including leaders or regimes that seek to project power or achieve regional dominance independently of the external security environment). This leads them to argue that additional steps to fulfill Article 6 requirements will not reduce proliferation.[64]

Proliferation, however, can have multiple causes. Domestic coalitions and the worldviews of political leaders probably account for part of the explanation in many cases, but they are usually not the whole story. Given their longstanding frictions with regional neighbors and the United States, Iran and North Korea plausibly have security concerns alongside their domestic motivations for wanting the bomb. To the extent internal factors have a role in explaining proliferation, a greater commitment to disarmament by nuclear weapon states will not alone be sufficient to prevent any future possibility of proliferation. Where multiple causes operate, however, acknowledging the impact of internal factors does not logically preclude nuclear weapon state actions from also having some impact on proliferation. Explanations based on an individual leader's psychology, for example, still have to account for the content of the leader's beliefs. A power-hungry, norm-defying leader might be attracted to nuclear weapons acquisition because he or she views the bomb as providing power and status to the nuclear weapon states and wants to obtain what they have. The causal factors of an individual leader's psychology and nuclear weapon state behavior could thus be interactive rather than mutually exclusive.

It is also possible for states to be internally divided. There can be differences of opinion within ruling circles, or between rulers and other influential domestic actors, about whether a state should seek nuclear weapons or should embrace new nonproliferation measures. Such internal divisions can create a pathway for either direct or indirect linkages. When there are internal debates,

63. Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton, N.J.: Princeton University Press, 2007); and Jacques Hymans, *The Psychology of Nuclear Proliferation: Identity, Emotions, and Foreign Policy* (Cambridge: Cambridge University Press, 2006).
64. Stephen Rademaker, "Commentary: Blame America First," *Wall Street Journal,* May 7, 2007.

the statements, policies, and actions of nuclear weapon states can become ammunition in those debates. A strong embrace by nuclear weapon states of the value of nuclear weapons will strengthen the position of those in nonnuclear states who favor a nuclear program or a more reserved stance on nonproliferation. Signs of a greater commitment to disarmament, in contrast, should help those who support stronger nonproliferation policies.[65] In these scenarios, domestic politics function as an intervening variable rather than a separate causal factor; internal divisions open a pathway that can connect causal mechanisms with nonproliferation outcomes. Overall, as with security and institutional perspectives, domestic-level considerations have mixed implications, suggesting that they may foster linkage in some cases but not others.

psychological considerations

Although they have not received much attention in previous discussions of the linkage hypothesis, findings from research on psychology suggest additional mechanisms that could create a linkage. In particular, psychological factors offer the most persuasive microfoundations for why nonnuclear states might attach great importance to disarmament norms. In this sense, psychological mechanisms can function as a complement to norms arguments.

Several lines of research suggest that people—and even other species—have an innate concern with fairness and justice.[66] Outcomes that strike people as inequitable can provoke strong, emotional reactions. Sometimes these reactions lead people to do things that economic rationality deems contrary to their self-interest. Studies of the ultimatum game provide supporting evidence. In this game, one player offers a division of, say, $10 provided by the researcher. The second player then either accepts or rejects the offer. The game ends there. By economic logic, the first player could propose to keep $9 and offer the other just one, and the second player should agree because she will still achieve a net gain. In practice, however, the more uneven the proposed split, the more likely the second player is to reject it. When people feel their sense of

65. Miller, "Proliferation, Disarmament, and the Future of the Non-Proliferation Treaty," pp. 65–66; and Sagan and Vaynman, "Introduction: Reviewing the Nuclear Posture Review," pp. 18, 31.
66. Kristen Renwick Monroe, Adam Martin, and Priyanka Ghosh, "Politics and an Innate Moral Sense: Scientific Evidence for an Old Theory?" *Political Research Quarterly*, Vol. 62, No. 3 (September 2009), pp. 614–634; and Marc Bekoff and Jessica Pierce, *Wild Justice: The Moral Lives of Animals* (Chicago: University of Chicago Press, 2009).

fair play has been offended, they react more to the perceived injustice than to a strictly economic cost-benefit calculation.[67]

Concerns over fairness might be the most powerful basis for predicting an indirect linkage. Some states might simply become angry at what they see as continued foot-dragging by the nuclear powers. If so, they may lash out against states that they think have reneged on their end of the bargain. The problem will be that much worse in the case of the nonproliferation regime because the original bargain encoded an inequality. It let some states keep nuclear arms even though all others had to forgo them. This inequality was made tolerable to some states only by the promise that it would be temporary.[68] Because nonnuclear states view the original NPT terms as already favoring nuclear weapon states, this makes perceived noncompliance with Article 6 all the more likely to cause nonnuclear states to react angrily to new demands on them.[69] Why, they will ask, should they agree to do more when the nuclear states have not yet fulfilled their original promises?

Several researchers have presented evidence that fairness concerns play a role in decisions not to participate in measures to strengthen nonproliferation. They have found that some leading nonaligned states reject the idea that they should accept additional restrictions on peaceful nuclear technology, restrictions that were not part of the original NPT agreement, when in their view the nuclear weapon states have not made sufficient progress on implementing Article 6.[70] For example, shortly before the 2010 NPT Review Conference, Egypt's UN ambassador stated in a speech to the General Assembly that "[w]e are not as nonnuclear weapon states going to accept that each time there is progress on disarmament that we have to take more obligations on our side."[71] Simi-

67. David A. Welch, *Justice and the Genesis of War* (New York: Cambridge University Press, 1993); Jonathan Mercer, "Emotional Beliefs," *International Organization,* Vol. 64, No. 1 (Winter 2010), pp. 10–11; and Janice Gross Stein, "The Psychology of Assurance: An Emotional Tale," in Knopf, *Security Assurances and Nuclear Nonproliferation,* pp. 35–56.
68. This is the clear conclusion of the most detailed study of the NPT negotiations ever written. See Mohamed I. Shaker, *The Nuclear Non-Proliferation Treaty: Origin and Implementation, 1959–1979,* Vol. 2 (London: Oceania, 1980), p. 564, http://cns.miis.edu/activities/100525_shaker_egypt_un/index.htm.
69. Cecilia Albin, *Justice and Fairness in International Negotiation* (Cambridge: Cambridge University Press, 2001), p. 203.
70. Choubey, "Are New Nuclear Bargains Attainable?" pp. 1, 3, 11; Maria Rost Rublee, "The Nuclear Threshold States: Challenges and Opportunities Posed by Brazil and Japan," *Nonproliferation Review,* Vol. 17, No. 1 (March 2010), p. 54; and Lodgaard, *Nuclear Disarmament and Non-Proliferation,* pp. 84–85.
71. Fahmy, "Mindful of the Middle East," p. 171.

larly, Brazil's ambassador to the 2010 NPT Review Conference called it "simply not fair" to impose new verification measures on nonnuclear states when nuclear states had put forward no timeline for eliminating nuclear weapons.[72]

If indirect linkages arise from a psychological mechanism such as this, then nuclear weapon states are unlikely to gain much by pointing to deep cuts in their nuclear arsenals. Even though the United States and Russia have agreed to substantial reductions over the last twenty-five years, leaders of nonnuclear states do not seem to credit this as conveying sufficient commitment to Article 6. Psychological factors might explain why. According to this perspective, the difference that matters most is the one between haves and have-nots. If some states get to have nuclear weapons and others do not, this inequality will rankle and cause resentment, and this resentment may lead nonnuclear weapon states to withhold cooperation with NPT-plus measures. This might still be the case even if there are further cuts if it also appears that the NPT nuclear states have no intention of going lower.

Although they are most likely to lead to indirect linkages, psychological dynamics associated with perceptions of fairness might also produce a direct link from a perceived lack of progress on disarmament to proliferation. As noted, states that feel discriminated against might react with feelings of anger or wounded pride. In some cases, these feelings can produce a defiant response toward the international community, especially among countries that already define their national identity in oppositional terms. Jacques Hymans has argued that psychological factors associated with ideas about national identity can be a potent motivation for some state leaders to favor nuclear weapons acquisition. Proliferation efforts are especially likely, according to Hymans, when leaders with high levels of national pride also perceive high levels of opposition to their state among outside powers.[73] Continued efforts by nuclear weapon states to enforce nonproliferation while holding onto their own nuclear arsenals could produce exactly the psychological feelings that Hymans believes lead states to initiate nuclear weapon programs.

Suggestive evidence for this direct linkage pathway can be found in the rhetoric that potential proliferators have sometimes employed. Argentine diplomats, for example, used to refer to the NPT as "disarmament of the disarmed." They interpreted the nonproliferation regime as an attempt to prevent devel-

72. Ogilvie-White and Santoro, "Disarmament and Non-Proliferation," p. 116 n. 19.
73. Hymans, *The Psychology of Nuclear Proliferation.*

oping countries from acquiring indigenous technological capabilities that would enable them to reduce dependence on and to compete with developed countries. Argentina's efforts to master the nuclear fuel cycle were, in this view, more a response to perceived inequality and discrimination than part of a conscious effort to develop a nuclear deterrent.[74] India's diplomatic rhetoric has been even more pointed, characterizing the NPT as "nuclear apartheid."[75] A detailed history of India's nuclear program by George Perkovich supports this hypothesized linkage. Perkovich highlights how keenly Indian elites felt the sting of their country's former colonial status.[76] They saw the nuclear program, in part, as a way to prove that India was capable of accomplishing anything its former colonial overlords could do. To the extent that continued nuclear weapons possession becomes associated with legacies of colonialism or new forms of imperialism, elites in developing nations, especially those that are former colonies, may be motivated to pursue a nuclear option as a reaction against the slights of ongoing discrimination. As was the case with the literature on norms, proponents of the no-linkage position have not drawn on the psychology literature, so existing propositions from this perspective all favor the linkage hypothesis.

SUMMARY

This section has sought to identify all of the potentially significant arguments both for and against the linkage hypothesis. It has grouped them according to five theoretical perspectives, involving security, institutions and bargaining, norms, domestic politics, and psychology, respectively. Most previously developed arguments in the debate have been framed in terms of security, norms, or internal politics. By adding institutional and psychological perspectives, this article has pointed out additional causal pathways relevant to the hypothesis, including some that provide alternative microfoundations for how norms might exercise an effect.

Some of the hypotheses identified above predict a direct linkage, in which nuclear weapon state behavior directly motivates proliferation; others suggest an indirect linkage, in which perceived shortcomings on disarmament have ef-

74. Julio C. Carasales, "The So-Called Proliferator That Wasn't: The Story of Argentina's Nuclear Policy," *Nonproliferation Review,* Vol. 6, No. 4 (Fall 1999), pp. 51–64.
75. Jaswant Singh, "Against Nuclear Apartheid," *Foreign Affairs,* Vol. 77, No. 5 (September/October 1998), pp. 41–52.
76. George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation* (Berkeley: University of California Press, 1999).

fects that indirectly increase the chances of proliferation; finally, other hypotheses predict no linkage at all. In addition to sorting hypotheses by theoretical approach, it is useful to group them by prediction. Hence, this is how they are summarized here. Table 1 also lists all the hypotheses, sorted by the nature of the linkage predicted and the causal mechanism involved.

Four hypotheses envision a potential direct link between nuclear weapon state behavior and new cases of proliferation. A perceived lack of commitment to nuclear disarmament could stimulate new nuclear weapon programs due to a security threat posed by a nuclear weapon state, a demonstration effect that suggests nuclear weapons have military utility, a demonstration that nuclear weapons confer status, or a reaction against ongoing discrimination and inequality.

Seven pathways might indirectly link disarmament and nonproliferation. First, a nuclear program started by one state as a direct response to a threat from a nuclear weapon state could trigger secondary proliferation in that state's neighbors. Rather than focus on the possibility that a state could launch a new nuclear program, the other six indirect pathways involve state decisions to refrain from participating in new nonproliferation measures. Nonnuclear states might choose to withhold cooperation on nonproliferation strengthening measures for three distinct reasons: as a rational incentive to elicit greater nuclear weapon state compliance with Article 6, out of a belief in a norm of enforcing other norms, or as an emotional response to the perceived failure of nuclear weapon states to uphold their end of the NPT bargain. Lack of progress on disarmament could also call into question the credibility of nuclear weapon state commitments to other parts of the NPT bargain, making nonnuclear states think that they are less likely to benefit from investing in the regime. Lack of progress could also lead to charges of hypocrisy, undermining the nonproliferation norm associated with the regime. Conversely, in the seventh indirect pathway, movement on disarmament could change bargaining dynamics and increase the space for reciprocal concessions on nonproliferation. In addition, most of the direct and indirect pathways could be affected by the intervening variable of domestic politics. Where internal debates exist, the pathways summarized above could help tilt the balance in the direction of policies that are unfavorable for nonproliferation.

The article has also identified six reasons why there might be no link or even an inverse correlation between nuclear disarmament and nonproliferation. Three respond mainly to the direct linkage hypothesis. The first two involve other possible explanations for proliferation: it may be driven by threats aris-

Table 1. Hypotheses about the Connection between Nuclear Disarmament and Proliferation

Hypothesized Linkage	Source of Causal Mechanism				
	Security	Institutions/ Bargaining	Norms	Domestic Politics	Psychology
None	Regional threats cause proliferation, so NWS are irrelevant	States with interest in NP will cooperate regardless of DA concerns	N/A	Internal motivations drive proliferation, so NWS are irrelevant	N/A
	Nuclear security guarantees inhibit proliferation, so disarmament will increase proliferation	States with no interest in NP will not cooperate regardless of DA issue			
		States claim to care about DA as bargaining tactic but do not mean it			
Direct	NWS can pose threat that motivates proliferation	N/A	Association of nuclear weapons with great power status encourages others to imitate	(Where internal debates exist, other mechanisms in this row will tilt debate in favor of NW acquisition)	Anger at unfair, discriminatory regime will prompt creation of a nuclear program out of defiance
	NWS demonstrate military utility of weapons to others				
Indirect	States that get nuclear weapons in response to threat from NWS encourage secondary proliferation in their neighbors	States with an interest in DA will withhold cooperation on NP to get NWS to do more on DA	States that care about norms will seek to enforce norms by withholding cooperation on NP to punish noncompliance on DA	(Where internal debates exist, other mechanisms in this row will tilt debate against cooperation with NP)	Anger at unfair, discriminatory treatment will prompt noncooperation with NP
		NWS actions on DA will increase bargaining space for NNWS to offer new initiatives on NP	NWS hypocrisy undermines norms, so NNWS do not feel need to enforce NP norm		
		NWS noncompliance with Article 6 undermines credibility of regime, so NNWS will not invest in it			

NOTES: NWS = nuclear weapon states; NNWS = nonnuclear weapon states; NP = nonproliferation; DA = disarmament; ( ) = intervening variable, not separate causal mechanism

ing from sources other than the NPT nuclear states or alternatively by internal factors. If these factors predominate, behavior by the nuclear haves would not be the main factor triggering proliferation, and linkage would not exist. A third critique of the direct linkage hypothesis suggests that disarmament might even be counterproductive. Certain states might be restrained by the existence of nuclear security guarantees and would reconsider their nonnuclear path were disarmament measures to call these security guarantees into question.

Three further counterarguments address indirect linkages. If states have a strong interest in nonproliferation, one can predict that they will cooperate with NPT-plus measures out of self-interest even if they are dissatisfied with the degree of progress on disarmament. Conversely, an alternative explanation for a lack of cooperation might be that some nonnuclear states simply lack an interest in implementing new nonproliferation measures and would not act on them regardless of what happens on the disarmament front. Finally, complaints about compliance with Article 6 could be insincere and a way of deflecting attention from the real reasons certain nonnuclear weapon states do not want to go along with measures to strengthen nonproliferation.

These counterarguments provide a strong basis for caution before predicting that new disarmament efforts by the nuclear weapon states would have a decisive effect in strengthening the nonproliferation regime. There are too many other factors at play to expect that further action on Article 6 would dissuade all future efforts at proliferation or elicit robust cooperation across the board in upholding nonproliferation commitments. At the same time, analysis of the counterarguments has revealed that they do not preclude some possibility of linkage between disarmament and nonproliferation. Possible exceptions exist to each of the arguments for expecting no linkage. The counterarguments are best interpreted as suggesting limiting factors on the linkage hypothesis, but they do not rule it out and certainly do not disprove it. Even when all the possible counterarguments are taken into account, some possibility of a linkage effect remains. Estimating the actual strength of this linkage will require supplementing theoretical analysis with empirical research.

Implications for Research and Policy

This article has identified many different possible hypotheses about the relationship between nuclear weapon state efforts on disarmament and the

commitment of other states to nonproliferation. This theoretical exercise has implications for empirical analysis. It means that no one test or piece of evidence may be sufficient to evaluate whether there is a linkage. The different hypotheses discussed above lead to several different predictions. Evidence that supports or disconfirms one will not necessarily rule in or rule out the others. To fully assess the strength of the linkage between nuclear disarmament and nonproliferation, several different empirical tests will be necessary.

In particular, the foregoing analysis shows that one common empirical argument against the linkage hypothesis does not provide an adequate basis for rejecting it. Critics of the linkage proposition argue that more states moved to join or support the NPT when superpower nuclear arsenals were much larger than they are now, and that adherence with NPT norms has actually declined, or at least not increased, since the United States and Russia made deep cuts.[77] None of the theoretical arguments for expecting a linkage, however, would lead one to predict a linear correlation between the extent of reductions in U.S. and Russian arsenals and the level of support for the NPT. The lack of a more favorable response to stockpile cuts among nonnuclear states does make it important, though, to determine other forms of empirical evidence that are relevant for evaluating the linkage hypothesis. The theoretical arguments for predicting either direct or indirect linkages do not suggest that support for the NPT will be pegged to the extent of cuts in nuclear weapon state arsenals relative to Cold War peaks. They suggest instead that symbolic indicators of a nuclear weapon state commitment to Article 6 will be key.

The importance of symbolic indicators has implications for the types of empirical evidence that would permit a more compelling assessment of the linkage hypothesis. Such an assessment must start by ascertaining the types of actions by nuclear weapon states that convey seriousness about Article 6 to nonnuclear weapon states. One obvious yardstick exists. The 2000 NPT Review Conference agreed to thirteen "practical steps . . . to implement Article 6."[78] The steps included entry into force of the Comprehensive Test Ban Treaty and negotiations on a Fissile Material Cut-off Treaty, new nuclear arms reduction treaties and preservation of the Antiballistic Missile Treaty, greater

77. On this argument, see also Robert Kagan, "Why Is the GOP Fighting This Treaty?" *Washington Post*, July 30, 2010.
78. "2000 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons," final document, Vol. 1, pt. 1, New York, 2000, pp. 14–15.

transparency about and a reduced role for nuclear weapons in security policies, and work to improve verification capabilities for a potential future abolition agreement.[79] The thirteen steps and other NPT Review Conference outcomes suggest several indicators that nonnuclear weapon states seem to rely on to assess the weapon state commitment to disarmament. These indictors provide different ways of measuring nuclear weapon state compliance with Article 6 that could be incorporated into future attempts to assess the linkage hypothesis. Instead of focusing solely on the size of nuclear arsenals, research should also consider whether or not nonnuclear states respond positively when nuclear weapon states do any of the following: sign new nuclear arms control treaties, halt nuclear testing, ratify the test ban treaty, halt nuclear modernization efforts, reduce the role of nuclear weapons in military doctrine, or accept strong language regarding disarmament obligations as part of the final document at an NPT Review Conference. The most probative tests of the linkage hypothesis would assess the extent of correlation between movement toward or away from these types of steps and greater nonproliferation commitments by nonnuclear weapon states.

It would also be interesting to compare alternative mechanisms that support the linkage hypothesis to see if some might be stronger than others. This could be done by looking for patterns of regional variation or even variation across individual states. For example, if state behavior is driven by national interests, especially security interests, cooperation on enforcement should be greatest in regions where states confront serious threats from proliferation. This suggests that the greatest rates of cooperation will be found in the Middle East and East Asia, with Europe somewhere in the middle, and Africa and Latin America least motivated to join in enforcement efforts. If, in contrast, perceptions of fairness dominate decisionmaking, the regional patterns will be different. States in Asia and the Middle East will be among the least likely to cooperate in multilateral enforcement measures. With their legacies of colonialism and perceptions of double standards in the treatment of non-NPT members Israel and India, these states will be likely to withhold cooperation. States in Europe, which have little reason to view themselves as having been treated unfairly, will now be the most likely to cooperate.

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79. For a slightly dated scorecard of how much progress has been made on the thirteen steps, see Sharon Squassoni, "Grading Progress on 13 Steps toward Disarmament," Carnegie Endowment for International Peace, *Policy Outlook,* 2009.

In sum, it is possible to identify types of evidence that in principle would be helpful for evaluating the linkage hypothesis, in both its direct and indirect forms. A full empirical assessment of the linkage hypothesis will require careful collection of evidence concerning both different types of nuclear weapon state behavior and multiple ways in which nonnuclear states might respond. Until appropriate data can be collected and analyzed, any claim that the historical record either confirms or refutes the linkage hypothesis will be premature.

Despite the absence of strong empirical tests, some conclusions can be reached on the basis of the survey of potentially relevant theoretical hypotheses. When all of the plausible arguments for and against the linkage proposition are considered, it becomes apparent that the counterarguments do not logically preclude the possibility of linkage. They suggest, rather, that in some cases other considerations will matter more and hence override the factors that might produce linkage. This is unlikely to be true in every case, however. As a result, signs of a commitment to and progress toward nuclear disarmament among the P-5 would likely have the net effect of strengthening support for nonproliferation measures. At the same time, the same analysis applies to the arguments in support of the linkage hypothesis. Neither individually nor taken all together do the mechanisms that could produce either direct or indirect linkage appear likely to be decisive in every case. They will apply to some states in some circumstances, but in other cases, their influence will not be significant. This means that greater progress on Article 6 obligations will not, by itself, restore full health to the nonproliferation regime. Some of the challenges confronting the NPT arise from other causes and will have to be addressed with other solutions. Even with this caveat, the analysis in this article strongly suggests that increased evidence of nuclear weapon state commitment to eventual nuclear disarmament would, on balance, be likely to increase cooperation with the nonproliferation regime.

Four policy recommendations follow. First, nuclear weapon states, especially the United States, have not always made wise choices with respect to their diplomatic rhetoric. If they want their messages about nonproliferation and disarmament to have weight, they need to listen to and actually hear what nonnuclear weapon states have to say. Legalistic arguments that Article 6 does not require nuclear disarmament will only increase frictions with states whose cooperation the United States hopes to secure. Pointing to nuclear arms reductions as evidence of compliance with Article 6 will likewise not suffice. To con-

vince nonnuclear states that they are serious about eventual disarmament, nuclear weapon states need to embrace and show progress on an array of measures, such as those adumbrated in the thirteen steps.

Second, significant movement toward nuclear disarmament could have undesirable nonproliferation consequences given the importance some states attach to the protection offered by extended nuclear deterrence. If nuclear weapon states do move onto a clear path toward global zero, they will need to communicate and coordinate with allies that enjoy nuclear security guarantees. Ensuring the adequacy of verification and enforcement measures in support of global zero will be critical for convincing allies that value a nuclear umbrella that nuclear abolition will not jeopardize their security.

Third, because nuclear disarmament will not by itself be decisive in shoring up the nonproliferation regime, it may not be wise to base advocacy for nuclear abolition on the purported necessity of disarmament as a nonproliferation tool. One need not dismiss the linkage hypothesis, as Christopher Ford does, to see merit in his conclusion that the assessment of disarmament should be based on the feasibility and desirability of nuclear abolition in its own right, apart from its possible connection to the nonproliferation agenda.[80]

Fourth, as Scott Sagan has argued, the link between disarmament and nonproliferation is a two-way street, with implications for nonnuclear weapon state policies. According to Sagan, all parts of the NPT, including Article 6, involve "shared responsibilities."[81] In this regard, if nonnuclear weapon states want to make it realistically possible for the P-5 to eliminate their nuclear stockpiles, they need to help ensure that nuclear disarmament can be accomplished safely. In particular, they need to help keep the nonproliferation regime as strong as possible, to minimize the possibility that a new state could suddenly break out with a covertly developed nuclear weapon. If nonnuclear states really care about nuclear disarmament, one of the best ways they can show this is by demonstrating their own commitment to uphold and enforce nonproliferation norms. Helping to create conditions that make abolition appear feasible will strengthen the ability of nonnuclear weapon states to advocate for further nuclear weapon state action to fulfill Article 6.

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80. Ford, "Nuclear Disarmament, Nonproliferation, and the 'Credibility Thesis,'" p. 13.
81. Scott D. Sagan, "Shared Responsibilities for Nuclear Disarmament," *Daedalus,* Vol. 138, No. 4 (Fall 2009), pp. 157–168.

Conclusion

There has been much speculation about whether the continued maintenance of nuclear arsenals by the NPT nuclear weapon states increases the risk of future proliferation. Possible linkages could be either direct or indirect. Some states may be directly motivated to proliferate in reaction to the postures or behaviors of one or more of the nuclear weapon states. Others will not themselves seek nuclear weapons but may feel less reason to cooperate to uphold the NPT, indirectly lowering the barriers to proliferation. This article has identified several mechanisms that could lie behind both the direct and the indirect linkage scenarios. It has also identified a number of hypotheses for why there might not be any connection between disarmament and nonproliferation, or even an inverse correlation.

The analysis in this article shows that no individual hypothesis is likely to apply to all cases. The counterarguments offer persuasive reasons to think that not all states will react to the disarmament issue in the way assumed by those who expect a linkage. At the same time, the counterarguments do not logically rule out any realistic possibility of linkage. Analysis of the arguments *in toto* leads to the prediction that in some, but not all, cases either a direct or an indirect linkage will be a factor in a nonnuclear state's decisionmaking. This means that efforts to fulfill Article 6 commitments should help to strengthen the nonproliferation regime even though they will not be a cure-all for every ailment confronting it.

To say anything more definitive requires additional empirical research. By clarifying the logical structure of the relevant hypotheses, this article has helped to identify the types of evidence and analysis that are necessary. The empirical evidence cited in the debates to date has not been highly diagnostic, and more fine-grained analyses are needed.