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Bargaining in the Shadow of Violence: The NPT, IAEA, and Nuclear Non-Proliferation Negotiations

By
Arsalan M. Suleman*

ABSTRACT

The NPT non-proliferation regime is both a multilateral treaty of international law and a dispute system designed to manage conflict over the use of nuclear technology. The system seeks to balance the competing desires of member-states to have access to peaceful nuclear technology and to provide national security. In the course of implementation, the system must handle disputes over alleged violations of the NPT and IAEA safeguards agreements. Negotiations, crucial to the functioning of the NPT dispute system, are undertaken in the shadow of the law and the shadow of violence. The NPT and any relevant agreement signed with the IAEA serve as a legal endowment, a set of rules that allocate rights and obligations for all parties involved. This legal framework acknowledges and incorporates various means of coercion, including the use of armed force, in order to enforce those rights and obligations. Still, the system has no monopoly on coercion and violence, as states can act outside of the system's structure to influence actors within it. This article applies dispute systems design principles to analyze the NPT as a dispute system for nuclear proliferation concerns, and examines three case studies of non-proliferation negotiations—North Korea, Iran, and Pakistan—to see how negotiations were influenced by legal endowments and the shadow of violence.

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INTRODUCTION

"I am haunted by the feeling that by 1970, unless we are successful, there may be 10 nuclear powers instead of 4, and by 1975, 15 or 20."¹

Events of the last few years have caused many to fear that President Kennedy's prediction may indeed come true, albeit four decades later. India and Pakistan's nuclear tests in May 1998, North Korea's recent nuclear test on October 9, 2006, and Iran's ongoing uranium enrichment program have fueled speculation of an impending wave of proliferation.² To date, there are nine countries that are recognized as possessing nuclear weapons: the United States, Russia, the United Kingdom, France, China, Israel, India, Pakistan, and North Korea.³ In addition, there are a host of countries that have the materials and know-

1. President John F. Kennedy made this statement in March 1963. William J. Broad & David E. Sanger, *Restraints Fray and Risks Grow as Nuclear Club Gains Members*, N.Y. TIMES, Oct. 15, 2006, at A1.

2. North Korea's test has sparked fears that South Korea, Japan, and Taiwan may move towards possessing nuclear weapons capabilities of their own. Emma Chanlett-Avery & Sharon Squassoni, NORTH KOREA'S NUCLEAR TEST: MOTIVATIONS, IMPLICATIONS, AND U.S. OPTIONS 9 (C.R.S. Report for Congress, Oct. 24, 2006), available at <http://www.fas.org/sgp/crs/nuke/RL33709.pdf>. Many countries in the Middle East, including "Bahrain, Egypt, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, Syria, Turkey, Yemen and the seven sheikdoms of the United Arab Emirates," have reportedly expressed interest in acquiring nuclear energy technology in response to Iran's nuclear enrichment program. William J. Broad & David E. Sanger, *With Eye on Iran, Rivals Also Want Nuclear Power*, N.Y. TIMES, Apr. 15, 2007, at A1.

3. The United States, Russia, the United Kingdom, France, and China are the five Nuclear Nonproliferation Treaty (NPT) recognized nuclear-weapon states; India, Pakistan, and Israel are de facto nuclear-weapon states outside of the NPT system. Arms Control Association, *Nuclear Weapons: Who Has What at a Glance*, Apr. 2005, available at

how to rapidly manufacture a nuclear bomb, for example, Japan, and a few countries that are seeking to develop enrichment and/or reprocessing capabilities that would enable them to produce the fissile material necessary for a nuclear weapon, for example, Iran.⁴ Even if these countries do not actually develop nuclear arsenals or test nuclear weapons, there is a fear that they will develop “near-nuclear arsenals” or “virtual deterrence” capabilities.⁵ In other words, countries will develop all the capabilities necessary to produce and test a nuclear weapon, but instead of doing so they will technically remain in the Nuclear Nonproliferation Treaty (NPT)⁶.

Given the nuclear proliferation challenges facing the globe, the NPT has come under increasing scrutiny as to its effectiveness in preventing and curtailing proliferation.⁷ The NPT, which entered into force in 1970, is the bedrock of the global non-proliferation regime. It divides member states into nuclear-

<http://www.armscontrol.org/factsheets/Nuclearweaponswhohaswhat.asp>. North Korea has tested a nuclear weapon and is considered by most intelligence estimates to have enough fissile material for a few nuclear devices, so it is listed here as a current nuclear power, but negotiations are underway that may eventually lead to North Korea’s abandonment of nuclear weapons. However, North Korea’s nuclear test on October 9, 2006 may have been a failure, which further complicates efforts to classify its nuclear power status. Richard L. Garwin & Frank N. von Hippel, *A Technical Analysis of North Korea’s Oct. 9 Nuclear Test*, ARMS CONTROL TODAY, Nov. 2006, available at http://www.armscontrol.org/act/2006_11/NKTestAnalysis.asp.

4. Broad & Sanger, *supra* note 1 (“Mohamed ElBaradei, the director general of the I.A.E.A., has estimated that up to 49 nations now know how to make nuclear arms, and he has warned that global tensions could push some over the line.”). There are generally two types of nuclear weapons—those made with highly enriched uranium (most relevant for the Iran case, and also relevant for the second stage of the North Korea case), and those made from plutonium (most relevant for the first stage of the North Korea case). Natural uranium contains only 0.7% of the U-235 isotope, which is fissile or fissionable—the rest is the stable U-238 isotope. Enriching uranium is a process by which the percentage of fissile U-235 is increased in a given amount of uranium. For most energy production needs, uranium enrichment need only reach the level of 1.8-3% U-235. For a highly-enriched uranium weapon, however, the percentage of U-235 must be almost 93%. GARY T. GARDNER, *NUCLEAR NONPROLIFERATION: A PRIMER* 2-3, 6, 16 (1994). Plutonium, or P-239, is a byproduct of the nuclear energy fuel cycle and is highly fissile. P-239 is extracted from spent nuclear fuel rods in reprocessing facilities. *Id.* at 5-6, 19.

5. Andrew Grotto, *Who’s Next?*, WASH. POST, Oct. 15, 2006, at B3. The concept of “virtual arsenals” was developed as a means of promoting nuclear disarmament among the nuclear-weapon states. Nuclear-weapon states could dismantle their nuclear weapons to limit the number of operational nuclear devices, thereby limiting the role that nuclear weapons play internationally and preserving the core element of deterrence, as the arsenals could be reconfigured in a short period of time depending on national security concerns. See MICHAEL MAZAAR, ed., *NUCLEAR WEAPONS IN A TRANSFORMED WORLD: THE CHALLENGE OF VIRTUAL NUCLEAR ARSENALS* (1997). This concept, however, can also be applied to would-be proliferants seeking elements of deterrence while remaining within the legal strictures of the NPT. Germany and Japan are often cited as having a “virtual deterrence” capability because their mastery of the nuclear fuel cycle and strong industrial base give them the capacity to quickly develop nuclear weapons if the need were to arise. T.V. PAUL, *POWER VERSUS PRUDENCE: WHY NATIONS FORGO NUCLEAR WEAPONS* 59 (2000).

6. Treaty on the Non-Proliferation of Nuclear Weapons, *opened for signature* July 1, 1968, 21 U.S.T. 483, 729 U.N.T.S. 161 (entered into force Mar. 5, 1970) [hereinafter NPT].

7. See generally JOSEPH CIRINCIONE, *BOMB SCARE: THE HISTORY AND FUTURE OF NUCLEAR WEAPONS* (2007); Mario E. Carranza, *Can the NPT Survive? The Theory and Practice of U.S. Nuclear Non-proliferation Policy after September 11*, 27 CONTEMP. SECURITY POL’Y 489 (2006).

weapon states and non-nuclear-weapon states, allocating rights and responsibilities between them. It charges the International Atomic Energy Agency (IAEA) with monitoring and safeguarding nuclear material to ensure that peaceful nuclear endeavors do not result in nuclear weapons proliferation. The NPT is a multilateral treaty of international law, but it is also a dispute system designed to manage conflict over the use of nuclear technology between member-states. The system seeks to manage the competing desires of member-states to have access to peaceful nuclear technology and to provide national security. In the course of implementation, the system must handle disputes over alleged violations of the NPT and IAEA safeguards agreements.

The NPT represents a unique dispute system—it is designed to reduce the incentives of non-nuclear-weapon states to proliferate by a) offering them assistance and access to peaceful nuclear technology, and b) encouraging the nuclear-weapon states to move towards disarmament. The stakes are inordinately high—on the one hand, possession of nuclear weapons can virtually guarantee security against attack by other states. On the other hand, proliferation by one state increases the incentives for other states, especially neighboring states, to proliferate in order to preserve their own security and avoid potential nuclear blackmail, thereby increasing the security risks for the initial proliferant and other nearby states.⁸ Moreover, the period in which a state is in the act of proliferating, or is suspected to be in the act of proliferating, is extremely unstable and dangerous due to the risk of a preventative attack by other states seeking to thwart the proliferant's nuclear ambitions.⁹ The proliferating period is also wrought with the danger of nuclear accidents due to the largely clandestine nature of most proliferation efforts.¹⁰ It is in this period that the NPT dispute system is most important and most vulnerable.

Negotiations—between the IAEA and the suspected proliferant, and between global powers and the suspected proliferant—are crucial to the functioning of the NPT dispute system. These negotiations are undertaken in and influenced by the shadow of the law and the shadow of violence. On the one hand, the NPT and any relevant agreement signed with the IAEA serve as a legal endowment, a set of rules that allocate rights and obligations for all parties involved.¹¹ This legal endowment is couched within the larger NPT/IAEA dispute system which allocates roles to various actors, frames the issues in contention using measurable criteria, centralizes the source of information gathering and

8. For a complete debate over the potential benefits and harms from proliferation, including analysis of proliferation incentives, see SCOTT D. SAGAN & KENNETH N. WALTZ, *THE SPREAD OF NUCLEAR WEAPONS: A DEBATE RENEWED* (2003). See also CIRINCIONE, *supra* note 7, at 51-58; THE NUCLEAR TIPPING POINT: WHY STATES RECONSIDER THEIR NUCLEAR CHOICES (Kurt M. Campbell et al. eds., 2004).

9. Scott D. Sagan, *More Will be Worse*, in SAGAN and WALTZ, *supra* note 8, at 61.

10. *Id.* at 78.

11. For a discussion of the influence of legal bargaining endowments, see Robert H. Mnookin & Lewis Kornhauser, *Bargaining in the Shadow of the Law: The Case of Divorce*, 88 YALE L.J. 950, 968-69, 978-80 (1979).

processing, and adds iterations in potential disputes, prolonging the time available to negotiate a resolution. On the other hand, states in their individual and collective capacities have recourse to means of coercion and violence to achieve security objectives. States can unilaterally use economic sanctions or military force to implement their own national security objectives. In addition, the United Nations Security Council (UNSC), acting under Chapter VII, can authorize the use of armed forces or other measures not involving the use of armed forces, including economic sanctions, to “maintain or restore international peace and security.”¹² Indeed, by stipulating recourse to the UNSC at various levels of the dispute process, the NPT/IAEA system incorporates the shadow of violence within its legal structure.

Although there is considerable literature analyzing and criticizing the NPT and the IAEA, this article seeks to apply dispute systems design (DSD) principles¹³ to analyze the NPT as a dispute system for nuclear proliferation concerns. Part I of this article presents a list and description of relevant DSD principles for multilateral treaties like the NPT. Part II discusses the structure of the NPT system, including provisions for IAEA monitoring and inspection of facilities, potential penalties for violations of the NPT, provisions for withdrawal from the system, and finally, an assessment of the NPT structure in light of the applicable DSD principles from Part I. Part III of this article will look at three case studies of non-proliferation negotiations—North Korea, Iran, and Pakistan—to see how the negotiations were influenced by legal endowments and the shadow of violence. These cases were chosen because they constitute the three most recent negotiation efforts with countries that have significant nuclear programs.¹⁴ Each case study will include a background to the dispute, the relevant legal issues at

12. U.N. Charter arts. 39, 41 (authorizing measures not involving armed forces), 42 (authorizing the use of armed forces).

13. DSD refers to an emerging field of negotiation theory that focuses on the manner in which organizations, institutions, and legal regimes handle conflict. This field seeks to improve the management of conflicts by developing best practices for designing institutions to effectively cope with and manage conflict. A dispute system refers to any system that manages conflict, for example, the tort law system, workers’ compensation systems, grievance procedures, sexual harassment policies, arbitration systems, the WTO dispute system, *etc.*

14. North Korea is of interest because it recently tested a nuclear weapon after having withdrawn from the NPT; Iran was chosen because it is within the NPT system and is basing its claim to uranium enrichment on the legally-endowed NPT right to develop civilian nuclear technology; and Pakistan was included because it is a country outside the NPT system that tested its nuclear devices in the face of strong international pressure to refrain from testing. Libya was not chosen because its nuclear program was not very well developed; India was not chosen because it first tested a nuclear device in 1974; and Israel was not chosen because of the lack of information over negotiations for it to cease its nuclear program. There are many other cases of potential research interest that are beyond the scope of this article, including countries that a) inherited nuclear weapons but chose to surrender them and join the NPT (for example, Belarus, Kazakhstan, and Ukraine), b) developed nuclear weapons via indigenous programs, but later decided to dismantle the weapons and the program (for example, South Africa), c) started nuclear weapons programs but decided to end them (for example, Argentina, Brazil, Libya, South Korea, and Taiwan), and d) started nuclear weapons programs but were prevented by external force from developing nuclear weapons (for example, Iraq). Arms Control Association, *supra* note 3.

play, the implicit and explicit coercive means made available, and an analysis of the dispute system as it functioned in that particular case. Part IV will discuss potential improvements to the NPT/IAEA dispute system given the applicable DSD principles and the lessons learned from the case studies.

I.

APPLICABLE DISPUTE SYSTEMS DESIGN PRINCIPLES

Much of DSD literature concentrates on developing institutional structures for the effective management of conflict within dispute systems at the local or national level. This includes, for example, systems for small- to medium-sized organizations, policy-making dispute systems, alternatives to the tort law system, *etc.* The NPT, however, is a system designed for sovereign and independent nation-states that can legally develop nuclear technology outside of the NPT system. Nonetheless, many of the DSD principles that are useful at the local or national level are also helpful for systems at the international level.

In general, dispute systems approaches can be placed into three categories: those that focus on the parties' interests, those that focus on the parties' rights as defined by the system, and those focusing on the parties' power to effectuate change outside of the system.¹⁵ The approaches are meant to inform the focus of the system being designed, that is, whether the system encourages the parties to resolve disputes through interest-based negotiations, on a predetermined allocation of rights, or on the distribution of power between the parties. The interest-based approach, which demands attention to the core motivating concerns of the parties and stresses the use of interest-based negotiations, is often seen as the most cost-effective and efficient design method.¹⁶ In addition to focusing on the means of dispute resolution, various DSD principles also stress factors such as system membership, the scope of the system's subject-matter coverage and jurisdiction, centralization of information and access, allocation of decision-making control, and systemic flexibility.¹⁷

15. WILLIAM L. URY ET AL., *GETTING DISPUTES RESOLVED: DESIGNING SYSTEMS TO CUT THE COSTS OF CONFLICT* 7-19 (1993).

16. *Id.* at 42-52. In promoting the interest-based approach, Ury *et al.* present six DSD principles: 1) Put the focus of dispute resolution efforts on the parties' interests; 2) Build in "loop-backs" to negotiation throughout the process to encourage the parties to devise mutually-agreed-upon solutions; 3) Provide low-cost rights- and power-based backup means of resolution in case interest-based negotiations fail, for example, mediation or arbitration; 4) Build in means for the parties to consult with system administrators before, and provide feedback to them after, using the system; 5) Arrange procedures in a low-to-high-cost sequence to maximize cost effectiveness; and 6) Provide the necessary motivation, skills, and resources for the parties to effectively use the system. *Id.* at 42. These principles feature prominently among the principles discussed *infra* in detail.

17. Khalil Z. Shariff, *Designing Institutions to Manage Conflict: Principles for the Problem Solving Organization*, 8 HARV. NEGOT. L. REV. 133, 134 & 141-42 (2003). Shariff lists seven DSD principles that can be summarized as follows: 1) Include all interested stakeholders and those likely to be affected by the institution; 2) Broad coverage of issues of interest to the institution's members; 3) Depth of jurisdiction to take action within the areas of coverage; 4) Build central sources of in-

The following ten DSD principles are the most relevant in analyzing a multilateral framework that affects the entire world, like the NPT non-proliferation regime:

1. Seek universal state membership, especially of those states that would be important targets of regulation in the regime, and allow interested non-state parties to be involved.
2. Allocate legal endowments to protect parties that are more vulnerable to coercion given imbalances in the distribution of economic, military, and political power across states.
3. Focus dispute resolution efforts on the interests of the immediate parties in light of the interests of the collective membership.
4. Rely on and loop back to negotiations throughout the process.
5. Provide for rights- and power-based backups, arranged in a low-to-high-cost sequence to maximize cost effectiveness.
6. Use an independent and neutral body with specialized knowledge and capacity to monitor and police the system and to function in a consultative role.
7. Allow broad and deep coverage of the issues related to the regime's purpose.
8. Connect the goals of the regime to oversight, monitoring, and implementation mechanisms.
9. Vest control over decisions with the most interested and affected parties, except in the case of power back-ups, where control should lay with a recognized representative body of the international community.
10. Provide for meaningful periodic review mechanisms of the system based on measurable criteria.

First, because nuclear proliferation affects the security of all states and people, universal state membership should be a primary goal, with unofficial status available for specialized and interested non-governmental organizations (NGOs) and interest groups. Because possession of nuclear weapons or nuclear energy technology outside of the system has security implications for parties within the system, it is essential that all parties, particularly those in possession of nuclear weapons and technology, are within the system so that dispute mechanisms are utilized to contest a party's violations. Otherwise, for actions outside of the system, there is no way to mold state behavior through the use of legal endowments, and there is less of a chance of encumbering the use of force through an iterative, controlled dispute process. NGOs should have some form of recognized interaction with the system because they can bring highly valuable sources of intelligence, expertise, advocacy, and oversight resources to supplement the system.¹⁸

formation gathering and dissemination and specialized institutional capacity; 5) Decentralize and multiply conversations among members in multiple forms and fora; 6) Vest control over decisions in the most interested and affected parties; and 7) Regularly review the institution's design and integrate lessons learned. *Id.* at 143-56. Some of Shariff's principles also feature prominently among the principles discussed *infra*. The elements that were incorporated from Ury *et al.* and Shariff's lists were adjusted to reflect an international environment as opposed to a domestic one.

18. Unofficial or observer-like status for certain approved NGOs can supplement the system, especially where state action or compliance may be unreliable. Even though states technically represent their populations, NGOs may be more forthcoming with criticism about a state's compliance with its NPT obligations. International NGOs can also help unite groups of people from different countries behind a common cause related to nuclear policy, thereby strengthening the voice of grass-

Second, the regime's legal endowments, that is, the rights that the regime allocates to the various parties, should be calibrated to protect the rights of parties that are least capable of enforcing or defending their rights outside of the system. In the NPT context, because nuclear-weapon states possess so much coercive potential relative to non-nuclear-weapon states, the non-nuclear-weapon states should benefit from a legal endowment that protects its right to develop peaceful civilian nuclear technology, even in the face of coercive opposition from nuclear-weapon states that would oppose such developments.

Third, disputes within the system need to be resolved according to the competing interests of the affected parties, as they are the most directly concerned with the outcome of the dispute. However, the overall goals of the system must also play a salient role in the resolution of the dispute because the totality of the membership is interested in the outcome, even though not all members have the most vested regional interests at stake in the particular dispute.

Fourth, in order to maximize member autonomy and ensure that the most durable solutions to conflicts are developed, the system should rely on negotiations as much as possible.¹⁹ Interest-based negotiations that are framed within the established rights and obligations of the NPT system should increase the probability that a viable solution to the conflict will be reached. However, as recognized in the fifth principle, there must be rights- and power-based backups in case negotiations ultimately fail, and they should be arranged in a way to maximize the efficiency of their use.²⁰ Thus, in addition to maximizing the availability of and reliance on negotiation, other means of facilitating conflict resolution, such as arbitration, mediation, or judicial remedies, should be considered.

Principle six acknowledges that because monitoring of nuclear facilities and dissemination of peaceful nuclear technology is important for the system to function, an independent and neutral body with specialized knowledge and capacity is essential. The IAEA plays this role within the NPT system. As per principle seven, the system should have competence to address all issues related to the core goals of the system, for example, nuclear energy development concerns, enrichment technology concerns, arms control agreements, *etc.* Principle eight is important because it requires that the goals of the system have independent means of supervision in order to ensure that the system does not over-focus on some goals while neglecting others. This principle serves as a means of

roots movements. While unlimited NGO participation may be unreasonable, participation within limits defined by agreement of the state parties should be encouraged. The U.N. provided for such regulated involvement by NGOs at the 2005 NPT review conference. U.N., Aide Memoire for Non-Governmental Organizations, available at <http://www.un.org/events/npt2005/AideMemoire.pdf>.

19. See URY ET AL., *supra* note 15, at 52-56.

20. See *id.* at 56-60. Ury *et al.* view rights-based back-ups as appeals to contractually recognized entitlements or to independent arbiters of disputes, for example, courts or arbitrators. *Id.* at 7. Power-based actions refer to those actions taken to coerce the other party, for example, economic sanctions, military strikes, *etc.* *Id.* at 7-8.

testing whether the regime is effective in balancing the competing goals that often underlie the grand bargain involved in multilateral treaties.

The issue of control addressed in principle nine is especially important. Simply vesting control over decisions with the most interested parties is not enough because the decision to use power-backups by some interested parties may lead to severely negative ramifications for other state parties.²¹ Thus, where power back-ups are contemplated, control over such decisions should lie with international representative bodies, for example, the United Nations Security Council (UNSC).²² Finally, the tenth principle demands meaningful periodic review of the system, that is, a review that evaluates the system with reference to the ten DSD principles listed above, and with regard to the system's overall performance in light of measurable criteria. Such criteria could include the number of new proliferants, progress towards disarmament measured by changes in the level of nuclear-weapon states' arsenals, levels of cooperation over peaceful nuclear technology, *etc.*

II. THE NON-PROLIFERATION DISPUTE SYSTEM

A. Structure of NPT/ IAEA Non-Proliferation Regime

1. Nuclear Non-Proliferation Treaty (NPT)

The NPT is founded on the core value that no state should possess nuclear weapons. In expressing this value, the NPT is structured around three goals: non-proliferation, peaceful use of nuclear technology, and disarmament. The world according to the NPT is divided into official nuclear-weapon states, and non-nuclear-weapon states. A nuclear-weapon state is defined as one that has "manufactured and exploded a nuclear weapon or other nuclear explosive device prior to January 1, 1967,"²³ which includes the United States, Russia, the United

21. In other words, if the United States or Israel, both very interested in Iran's nuclear program, were to launch military strikes on Iranian nuclear facilities, that action would cause serious complications and problems for other states in the region, who may oppose such action but lack the means of preventing the action from happening.

22. Despite the many flaws in the UNSC, it is currently the only option recognized by the U.N. Charter in terms of an international representative body having the authority to approve the use of force or multilateral sanctions against other states. Relying on the UNSC better safeguards the rights and interests of other states because it ensures a minimum level of international approval for some of the most lasting and violent power options available, especially compared to the alternative of unilateral actions by any interested state. Thus, where decisions regarding the use of power-backups have to be made, the UNSC is currently the best option available, outside of attempting to create a new structure with similar powers. For a proposal to create such a new "Counsel on Weapons of Mass Destruction," see Richard Butler, *Improving Nonproliferation Enforcement*, 25 WASH. Q. 133 (2003).

23. NPT art. IX ¶ 3.

Kingdom, France, and China. The nuclear-weapon states pledge not to transfer nuclear weapons to any other state or assist in their development,²⁴ and non-nuclear-weapon states party to the treaty agree not to receive, develop, or seek to develop nuclear weapons.²⁵

The basis of enforcing this non-proliferation pledge is found in Article III of the treaty, which requires non-nuclear-weapon states party to the treaty to accept comprehensive IAEA safeguards. The comprehensive safeguards agreement, to be negotiated by the state and the IAEA, allows the IAEA to verify that the non-nuclear-weapon state is not diverting nuclear technology for weapons purposes.²⁶ The safeguards agreement covers “all source or special fissionable material in all peaceful nuclear activities” carried out under the state’s control.²⁷ All states party to the treaty pledge not to provide fissionable material or the means to produce it unless it is subject to IAEA safeguards.²⁸

In promoting the peaceful use of nuclear energy, the NPT reaffirms the “inalienable right” of states to develop, research, and use nuclear energy “without discrimination” for peaceful purposes.²⁹ Cooperation and the exchange of equipment, materials, and technology in furtherance of such peaceful use of nuclear energy are encouraged.³⁰ Nuclear-weapon states also undertake, under proper international observation and procedures or via bilateral agreements, to provide non-nuclear-weapon states with the potential benefit from any peaceful application of nuclear explosions.³¹

Finally, the NPT seeks eventual disarmament. Article VI requires that each party “undertake to pursue negotiations in good faith” to cease the nuclear arms race and comply with nuclear disarmament treaties subject to strict international control.³² In furtherance of this objective, the NPT notes the possibility of states creating regional nuclear weapons-free zones.³³

While member states are expected to follow the guidelines of the NPT, they retain the sovereign right to withdraw from the treaty if “extraordinary events” relating to nuclear weapons have “jeopardized [their] supreme interests.”³⁴ A state making such a withdrawal must give three-months notice to the other NPT parties and the UNSC, and such notice must include a statement explaining the

24. *Id.* at art. I.

25. *Id.* at art. II.

26. *Id.* at art. III ¶ 1.

27. *Id.*

28. *Id.* at art. III ¶ 2.

29. *Id.* at art. IV ¶ 1.

30. *Id.* at art. IV ¶ 2.

31. *Id.* at art. V.

32. *Id.* at art. VI.

33. *Id.* at art. VII.

34. *Id.* at art. X ¶ 1.

extraordinary events jeopardizing its supreme national interests.³⁵

The NPT also includes a list of review procedures that ensure the treaty's effectiveness in the face of this state autonomy. Five years after the treaty's entry into force, member states are expected to organize a conference to review the operation and success of the NPT "with a view to assuring that the purposes of the Preamble and the provisions of the Treaty are being realized."³⁶ If member states then feel compelled to hold further review conferences, they may vote to do so at subsequent intervals of five years. Furthermore, the treaty requires that a second conference be held twenty-five years after the treaty enters into force. At this final conference, the parties will decide, by majority vote, whether the treaty should continue in force indefinitely, or whether it should only be extended incrementally for additional five-year periods.³⁷

2. International Atomic Energy Agency (IAEA)

In 1957, well before the NPT entered into force, the International Atomic Energy Agency was founded and charged with promoting peaceful nuclear cooperation. Its motto, "Atoms for Peace," provides a clear indication of the Agency's objectives. The IAEA's official purpose is to "accelerate and enlarge" atomic energy's contribution to world peace, health, and prosperity, and to ensure, through assistance and monitoring, that the technology does not further any military purpose.³⁸ Much of the IAEA's work involves encouraging and assisting in research, development, and application of peaceful uses of atomic energy.³⁹ The IAEA's most important job, however, is the monitoring and safeguarding of nuclear material to prevent its use for weapons purposes in accordance with the provisions of the NPT and its dispute system.

The Statute of the IAEA authorizes the Agency to "establish and administer safeguards designed to ensure that special fissionable and other materials, services, equipment, facilities, and information . . . under [IAEA] supervision or control are not used in such a way as to further any military purpose."⁴⁰ In carrying out the safeguard functions, the IAEA is empowered to examine facility designs, prescribe health and safety measures, require operational records to ensure accountability of fissionable material, call for progress reports, send inspectors who are to have access to all places, data, and personnel associated with nuclear materials, equipment, or facilities under a safeguard agreement, and suspend or

35. *Id.* For a proposal to amend the withdrawal clause of the NPT, see Raven Winters, *Preventing Repeat Offenders: North Korea's Withdrawal and the Need for Revisions to the Nuclear Non-Proliferation Treaty*, 38 VAND. J. TRANSNAT'L L. 1499 (2005).

36. NPT art. VIII ¶ 3.

37. *Id.* at art. X ¶ 2.

38. Statute of the IAEA art. II, Oct. 23, 1956, 8 U.S.T. 1039, 276 U.N.T.S. 3 (entered into force July 29, 1957) [hereinafter IAEA Statute].

39. *Id.* at art. III ¶ 1.

40. *Id.* at art. III ¶ A.5.

terminate assistance to a state if they are found in violation of the agreements and fail to take corrective measures.⁴¹ In order to gain authorization to administer safeguards in each state, the Agency must enter into a comprehensive safeguards agreement, specific project agreement, or “voluntary offer” agreement.⁴² These agreements determine the scope of the IAEA’s monitoring and verification powers. Monitoring can include routine inspections of principal nuclear facilities or ad hoc inspections of transferred safeguarded nuclear materials,⁴³ as well as short-notice inspections of undeclared facilities, if the state has negotiated an *Additional Protocol* safeguards agreement.⁴⁴ *Additional Protocol* inspec-

41. *Id.* at art. XII ¶ A.

42. Non-nuclear-weapon states party to the NPT are required to negotiate comprehensive safeguards agreements with the IAEA. NPT art. III ¶ 1. Comprehensive safeguards agreements place “all source or special fissionable material in all peaceful nuclear activities” under the IAEA inspections regime. *Id.*; IAEA Information Circular, *The Structure and Content of Agreements Between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*, ¶ 2, INFCIRC/153 (Corrected), June 1972, available at <http://www.iaea.org/Publications/Documents/Infcircs/Infcircs153.pdf>. Agreements under INFCIRC/66/Rev.2 apply IAEA safeguards only to the nuclear material, facilities, or items specified in that agreement itself. IAEA Information Circular, *The Agency’s Safeguard’s System*, ¶ 15, INFCIRC/66/Rev.2, Sept. 16, 1968, available at <http://www.iaea.org/Publications/Documents/Infcircs/Infcircs153.pdf>. The NPT nuclear-weapon states have special “voluntary offer” agreements with the IAEA which allow the Agency to apply safeguards to nuclear material in facilities selected by the Agency from a list provided by the NPT nuclear-weapon state. IAEA, *Safeguards Statement for 2006*, available at <http://www.iaea.org/OurWork/SV/Safeguards/es2006.pdf>, at 8.

43. IAEA Information Circular INFCIRC/66/Rev.2, *supra* note 42, at ¶¶ 45-54. Routine inspections include audits of records and reports, verification of the amount of safeguarded nuclear material, examination of principal nuclear facilities, and review of operations at principal nuclear facilities and research and development facilities containing safeguarded nuclear material. *Id.* at ¶ 49. Special inspections can be undertaken if the study of a report makes such an inspection desirable, if any unforeseen developments require immediate action, or if a substantial amount of safeguarded nuclear material is being transferred outside of the state’s jurisdiction. *Id.* at ¶ 53-54. Ad hoc inspections are typically used to verify a state’s initial reporting of nuclear material, and to verify material involved in international transfers. IAEA, *IAEA Safeguards Overview: Comprehensive Safeguards Agreements and Additional Protocols*, available at http://www.iaea.org/Publications/Factsheets/English/sg_overview.html. “Safeguards visits” relate to verification of facility design and operation information. *Id.* The first North Korean crisis spawned the terminology of inspections for “continuity of safeguards information,” which referred to inspections for the purposes of maintaining IAEA safeguarding and monitoring equipment. JOEL S. WIT ET AL., *GOING CRITICAL* 43-44 (2004).

44. Arms Control Association, Fact Sheets, *The 1997 IAEA Additional Protocol at a Glance*, Jan. 2005, available at <http://www.armscontrol.org/factsheets/IAEAProtocol.asp>. Given the experience of North Korea and Iraq, the IAEA sought to fill potential gaps in the coverage of its inspections regime. It produced a model Additional Protocol that member states can voluntarily agree to in order to grant the IAEA greater access to and coverage of the state’s domestic nuclear program, including any location where nuclear material is or may be present. IAEA, *Model Protocol Additional To The Agreement(S) Between State(S) And The International Atomic Energy Agency For The Application Of Safeguards*, INFCIRC/540 (Corrected), available at <http://www.iaea.org/Publications/Documents/Infcircs/1998/infirc540corrected.pdf>. As of May 2007, 81 states have Additional Protocol agreements in force. IAEA, *Strengthened Safeguards System: Status of Additional Protocols*, available at http://www.iaea.org/OurWork/SV/Safeguards/sg_protocol.html.

tion agreements give the IAEA increased access and more robust options for carrying out its safeguarding and inspecting duties.⁴⁵

The IAEA Statute also lays out a protocol for the regulation of state action. In the case of state non-compliance with IAEA safeguards, IAEA inspectors must send a report to the Director General, who then transmits the report to the IAEA Board of Governors.⁴⁶ After direct negotiation attempts with the state fail, the Board of Governors reports the non-compliance to all Agency members and also to the UNSC and U.N. General Assembly.⁴⁷ The Board may then take measures to cease IAEA assistance and rescind IAEA materials and support.⁴⁸ The statute also allows members of the IAEA to withdraw from the Agency by providing notice in writing to that effect.⁴⁹ Finally, the statute stipulates that when there are disputes over the interpretation or application of the IAEA statute that cannot be resolved through negotiations, and parties are unable to agree on any other forum or mode of settlement, the issue is referred to the International Court of Justice (ICJ).⁵⁰

The Statute of the IAEA is supplemented by IAEA guidelines on the basic structure and content of comprehensive safeguards agreements between the IAEA and states party to the NPT.⁵¹ The guidelines specify the details of the inspections and monitoring relationship between the IAEA and the NPT member state, including the specific procedures and backups for dispute settlements. In dispute settlement cases, one party may consult the other regarding questions of interpretation or application, and the member state may request that a particular question be considered by the Board of Governors.⁵² If a dispute over the interpretation or implementation of the agreement, unrelated to a decision of the Board regarding non-compliance, cannot be settled by negotiation, it must be settled by binding arbitration.⁵³ Similarly, disputes over access for inspectors are handled according to this same order of procedures. The following table provides a diagram of the NPT/IAEA dispute system.

45. For comprehensive information on the status of Safeguards Agreements and Additional Protocol status, see IAEA, *Safeguards Current Status*, available at http://www.iaea.org/OurWork/SV/Safeguards/sir_table.pdf.

46. IAEA Statute at art. XII § C.

47. *Id.*

48. *Id.*

49. *Id.* at art. XVIII § D.

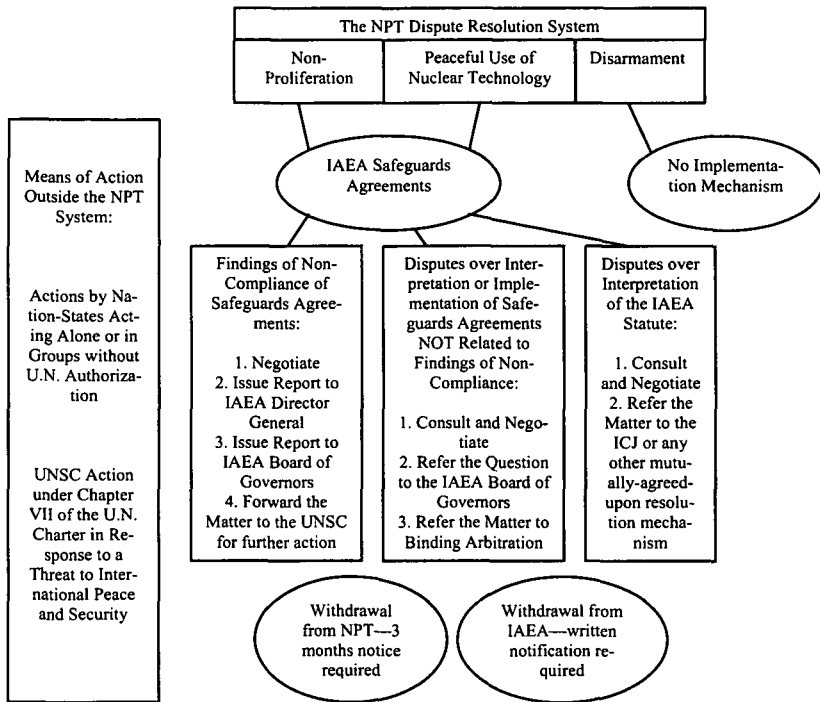
50. *Id.* at art. XVII § A.

51. IAEA Information Circular INFCIRC/153, *supra* note 42.

52. *Id.* at ¶ 20-21.

53. *Id.* at ¶ 22. The guidelines also provide for the naming of arbitrators—each party designates an arbitrator, and the two arbitrators elect a third arbitrator to be the Chairman. The tribunal is to select the arbitral procedure. *Id.*

TABLE 1
DIAGRAM OF NPT/IAEA DISPUTE SYSTEM



B. Analysis of NPT as a Dispute System

Having outlined and diagrammed the basic structure of the NPT non-proliferation regime, I now proceed to analyze the system based on the ten DSD principles outlined above.

1. Seek universal state membership, especially of those states that would be important targets of regulation in the regime, and allow interested non-state parties to be involved.

Nuclear proliferation affects the security of all states, and the possession of nuclear weapons by any one state increases the chances that other states might also seek to acquire nuclear weapons in response. Furthermore, because the NPT system aims to achieve eventual disarmament of nuclear-weapon states, full membership is essential to ensuring that all states in possession of nuclear weapons participate in the process. Any nuclear-weapon state outside of the system will generate proliferation incentives for states within the system, thereby

weakening the effectiveness of the system's ability to both limit proliferation and achieve ultimate disarmament.

Although universality of membership is recognized as an "urgent priority" for the NPT,⁵⁴ four critical states are not parties to the treaty: Israel, India, Pakistan, and North Korea.⁵⁵ Out of 193 states, 187 are NPT members. While that ratio is impressive, the non-participation of four states that possess nuclear weapons is quite debilitating to the NPT because those states influence the incentives for other states to proliferate. Of a total of nine states possessing nuclear weapons, only five are NPT members—44% of states that possess nuclear weapons are not NPT members. The problematic membership deficit, seen in this way, is glaring. Those non-member nuclear-weapon states reduce the chances that any of the nuclear powers will ever give up their weapons, thus reducing the incentives for states to remain in the NPT system.⁵⁶

Clearly the NPT intended to include all states within its system, but as a system it has thus far been unable to achieve that goal. In the face of non-universal membership, the rest of the parties to the treaty have to work to isolate the impact from treaty outliers, and also to create incentives, both positive and negative, for a) treaty members to remain within the treaty, and b) non-treaty members to eventually join the treaty. The system could be faulted for failing to persuade India, Pakistan, and Israel to join the treaty in the first place, for example, for not providing enough security assurances, or not helping to alter the security environment through nuclear weapons-free zones or other security-building measures. The NPT is also subject to criticism for not being imaginative enough in finding ways to include the remaining few states within the system, or to restructure the system with another tier of members below the five originally recognized nuclear-weapon states.⁵⁷ Such changes could have helped to create a universal system, though that would come at the expense of sacrificing some of the regime's credibility, as many states could forcefully argue that including the four non-NPT nuclear states in the NPT as anything but non-nuclear-weapon states would reward them for non-compliance with the treaty. An additional hurdle would be to secure the support needed to make such

54. Principles and Objectives for Nuclear Non-Proliferation and Disarmament ¶ 1, NPT/CONF.1995/32/DEC.2, May 11, 1995 ("Universal adherence to the Treaty on the Non-Proliferation of Nuclear Weapons is an urgent priority. All States not yet party to the Treaty are called upon to accede to the Treaty at the earliest date, particularly those States that operate unsafeguarded nuclear facilities. Every effort should be made by all States parties to achieve this objective.").

55. United Nations, Status of Multilateral Arms Regulation and Disarmament Agreements, available at <http://disarmament.un.org/TreatyStatus.nsf>.

56. For a discussion of the implications of the exclusion of these four countries from the NPT and some potential options for including the four states in the current NPT regime, see David S. Jonas, *Variations on Non-Nuclear: May the "Final Four" Join the Nuclear Nonproliferation Treaty as Non-Nuclear Weapon States While Retaining Their Nuclear Weapons?*, 2005 MICH. ST. L. REV. 417 (2005).

57. See *id.*

changes to the system, though it could also be possible to have a separate agreement relating to those countries that would not require tinkering with the NPT.

NGOs, either domestic NGOs focusing on a particular country's NPT obligations or international NGOs focused on global nuclear policy such as disarmament, can play an important supplementary role in regimes like the NPT. First, these organizations can play the role of local watchdog in terms of pressuring their home state to comply with NPT requirements. Such internal political pressure may be an important factor in the way some states make decisions regarding nuclear policy.⁵⁸ Second, these groups can serve a technical function by helping to uncover violations of the treaty and alerting the IAEA and other states about clandestine nuclear activity.⁵⁹ Furthermore, NGO groups can help in developing ideas for changes within the regime to improve its effectiveness, or general oversight and advocacy for across-the-board regime compliance.⁶⁰ While the role of NGOs need not be institutionalized within the treaty structure, their contributions to the system should be welcomed and encouraged. In the NPT context this involvement has been positive.

Though lack of universality is an impediment to its long-term success, the NPT has done fairly well throughout the years in preventing more widespread proliferation. The NPT has survived for over thirty-five years with Israel, India, and Pakistan outside of the system and with only one country, North Korea, leaving the treaty to proliferate. North Korea is arguably the NPT's only major failure because Israel, India, and Pakistan were never NPT members. Ultimately, some states just might not want to take the NPT deal and give up the option of possessing nuclear weapons—perhaps because their security environment is such that they are distrustful of arms control and security guarantees, or perhaps because they are skeptical that the nuclear-weapon states will ever fully disarm. Nonetheless, the membership challenge will continue to plague the NPT, espe-

58. For example, the UK's nuclear delivery system is based on submarine-launched Trident missiles. There is an ongoing debate, which has motivated nuclear abolitionists in the UK, as to whether the submarine fleet should be upgraded because to do so might contravene the NPT requirement that states work towards disarmament. Eric Hundman, *U.K. Trident Debate Energizes Opposition to Nuclear Weapons*, CDI, Mar. 21, 2007, available at <http://www.cdi.org/program/document.cfm?documentid=3883&programID=32>.

59. Such non-governmental whistle-blowing activity was important in uncovering information about the Israeli and Iranian nuclear programs. For the story of Mordechai Vanunu's revelation of Israel's nuclear program, see, e.g., MARK GAFFNEY, *DIMONA: THE THIRD TEMPLE? THE STORY BEHIND THE VANUNU REVELATION* (1989). The National Council of Resistance of Iran has made multiple revelations of Iran's nuclear program. See National Council of Resistance of Iran, Foreign Affairs Committee, *Nuclear Revelations*, available at <http://www.ncr-iran.org/content/blogcategory/107/151/>.

60. The 2005 NPT review conference included participation by NGO groups. See, e.g., U.N., *Aide Memoire for Non-Governmental Organizations*, *supra* note 18, available at <http://www.un.org/events/npt2005/AideMemoire.pdf>; Non-Governmental Organizations' Statements to the States Party to the Seventh Review Conference of the Treaty on the Non-Proliferation of Nuclear Weapons, May 11, 2005, available at <http://www.lcnp.org/disarmament/npt/ArtVIcompliance.pdf>.

cially as it deals with North Korea's proliferation.

2. Allocate legal endowments to protect parties that are more vulnerable to coercion given imbalances in the distribution of economic, military, and political power across states.

In a regime designed to enhance security like the NPT, it is impossible to ignore imbalances in the distribution of economic, military, and political power across states. For instance, so long as the nuclear-weapon states retain their nuclear weapons, they can a) potentially use or threaten to use nuclear weapons in an offensive or confrontational manner, b) more easily deter other states from attacking them given the threat of nuclear retaliation, at least as compared to non-nuclear-weapon states, and c) potentially use or threaten to use conventional weapons in an offensive or confrontational manner more readily due to the ultimate defensive security in possessing nuclear weapons. These factors are particularly important for states that view a nuclear-weapon state as a security threat because protecting against such a threat will always require assessing the potential use of nuclear weapons. Also, countries with stronger economies are able to afford more defense expenditures, enhancing their ability to provide for national security through military and other means. Furthermore, wealthy countries can more readily develop indigenous nuclear technologies, allowing them to independently develop nuclear capabilities without assistance or cooperation from the nuclear-weapon states or the IAEA.

Given the potential for nuclear-weapon states to abuse their power, and given that certain countries are more affluent in terms of economic, military, and political resources, the legal endowment provided by the NPT regime should protect the rights of non-nuclear-weapon states since they are giving up the right to possess nuclear weapons that would otherwise be inherent in the nature of sovereignty. In this respect, the NPT does clearly provide that non-nuclear-weapon states have the "inalienable right" to develop, research, and use nuclear energy "without discrimination" for peaceful purposes.⁶¹ Furthermore, rather than recognizing a right to possess nuclear weapons, NPT article VI requires that parties to the treaty "undertake to pursue negotiations in good faith" on efforts to cease the nuclear arms race and achieve nuclear disarmament through a treaty on complete disarmament under strict international control.⁶²

This legal endowment allows states, assuming that there are no contrary obligations, for example, from UNSC resolutions, to develop enrichment and re-processing technologies that could pose significant potential proliferation risks. The solution to these risks, however, lies not in altering the legal endowment, but rather in providing alternatives that would persuade non-nuclear-states to refrain from developing those technologies, and in ensuring that the system has

61. NPT, *supra* note 6, art. IV ¶ 1.

62. *Id.* at art. VI.

effective monitoring and safeguarding provisions to ensure that those technologies are used only for peaceful purposes. Even though non-nuclear-weapon states can still be subject to various means of coercion by nuclear-weapon states, the NPT does clearly guarantee their right to peaceful nuclear development while simultaneously encouraging disarmament.

3. Focus dispute resolution efforts on the interests of the immediate parties in light of the interests of the collective membership.

Negotiations and dispute resolution efforts should focus on the interests of the immediate parties to the dispute while also taking care to address the interests and concerns of the collective membership. The IAEA, as a representative body of member states, embodies this approach because it carries out its mandate bearing its responsibilities for the collective, while operating within the confines of the specific agreements that it negotiates with each individual member state. Whether negotiations between member states over non-proliferation disputes effectively focus on the interests of the parties is a question that should be posed in assessing particular negotiation efforts.

4. Rely on and loop back to negotiations throughout the process.

Negotiation plays a very big role in the NPT non-proliferation regime. States are encouraged to negotiate with one another over disputes. Article III of the NPT stipulates that states are to negotiate safeguards agreements with the IAEA, thereby allowing states to specify the inspection and monitoring procedures that they are most comfortable with. Article IV of the treaty encourages parties to cooperate over civilian use of nuclear technology in bilateral or multilateral contexts. Article VI commits members to negotiate in good faith over effective measures to achieve an end to the arms race, for example, a test ban treaty, and also to negotiate a treaty of general disarmament. The three-month window of time in Article X for withdrawal of a state from the NPT is provided specifically to give states time to negotiate with the state seeking withdrawal. Allowing this time to negotiate proved effective with North Korea in 1993, though not in 2006.

The IAEA agreements also rely heavily on negotiations to resolve disputes and disagreements between the IAEA and the state subject to its monitoring. First, any disputes over the interpretation or application of the IAEA statute are to be settled by negotiation, and only if such negotiations fail will the disputes either go to the ICJ or to any other dispute settlement option chosen by the parties. Second, safeguards agreements between the IAEA and the member states are to be negotiated between the parties. Disputes that arise from those agreements and that do not involve issues of non-compliance go to negotiation first and binding arbitration second. Finally, negotiations to resolve disputes over non-compliance with safeguards agreements, which are the most likely forms of dispute because they involve the actual monitoring of a state's nuclear facilities

and fissile materials, are encouraged given the ample time built into the IAEA reporting process.

One should be careful not to view negotiation as a panacea, however. Given that the issues are so complex and the stakeholders so numerous, non-proliferation negotiations can fail.⁶³ Still, the loose structure of the NPT allows negotiations to permeate almost every level of potential disagreement, thereby empowering the parties to arrive at a resolution of their own making.

5. Provide for rights- and power-based backups, arranged in a low-to-high-cost sequence to maximize cost effectiveness.

Rights-based back-ups refer to legal entitlements, or means of ascertaining a decision regarding disputed legal entitlements, that are contemplated by the system. One rights-based back-up of last resort is the ability of a state to withdraw from the NPT. Prior to becoming a party to the NPT, a state is free to proliferate without any legal encumbrance from positive treaty law, assuming they are not party to any other treaty limiting their development of nuclear weapons. In the NPT system, however, non-nuclear-weapon states give up that right, and can only regain it by withdrawing from the treaty. Thus a state has the right to reclaim its sovereign choice to possess nuclear weapons.⁶⁴ Rights-based back-ups are clearly present in resolving certain disputes with the IAEA. Any disputed interpretation of the IAEA Statute can be taken to the ICJ or any other mutually-agreed upon dispute resolution system. Also, any disputes over safeguards agreements unrelated to issues of non-compliance can be taken to arbitration.⁶⁵ Both of these situations provide for rights-based options for either party where negotiations fail.

As for disputes that involve non-compliance with safeguards agreements, there is no similar rights-based back-up. A party found to be non-compliant by the IAEA has no means of appealing that decision to a non-IAEA-related body.

63. Compare the 1994 Agreed Framework that was negotiated with North Korea, which ultimately did not work because North Korea later developed clandestine uranium enrichment facilities, with the current six-party talks that are also now facing some difficulties. For a complete analysis of the first round of negotiations with North Korea in 1993-94, see generally WIT ET. AL., *supra* note 43. For an analysis of the recent six-party negotiations, see Carla Anne Robbins, *Wrestling Nuclear Genies Back Into the Bottle, or at Least a Can*, N.Y. TIMES, May 9, 2007, at A24; John S. Park, *Inside Multilateralism: The Six-Party Talks*, 28 WASH. Q. 75 (2005); Eric Yoon-Joong Lee, *The Six-Party Talks and the North Korean Nuclear Dispute Resolution Under the IAEA Safeguards Regime*, 5 ASIAN-PACIFIC L. & POL'Y J. 101 (2004). For a discussion of the North Korea nuclear crisis in general, see MICHAEL O'HANLON & MIKE M. MOCHIZUKI, CRISIS ON THE KOREAN PENINSULA: HOW TO DEAL WITH A NUCLEAR NORTH KOREA (2003); VICTOR D. CHA & DAVID C. KANG, NUCLEAR NORTH KOREA: A DEBATE ON ENGAGEMENT STRATEGIES (2003).

64. This right will not necessarily end or resolve the dispute, however. The only effect of withdrawal is to release the state from the legal requirements and obligations of the NPT. States can still be subject to punishment via unilateral state actions or via actions authorized by the UNSC.

65. For a discussion of the benefits of arbitration in the NPT context, see Edwin J. Nazario, Note & Comment, *The Potential Role of Arbitration in the Nuclear Non-Proliferation Treaty Regime*, 10 AM. REV. INT'L ARB. 139 (1999).

While the IAEA may choose not to forward the report to the UNSC or the UNSC may choose not to act, there is no intermediate step that gives the accused party resort to a court or a third-party alternative dispute resolution mechanism. While this lack of rights-based back-up reinforces the reliance on the IAEA as discussed below in principle six, it also results in a missed opportunity to capitalize on potentially effective means of dispute resolution procedures.

Power-based options are those in which a party takes actions that involve elements of coercion against the other party, even if those actions are contemplated by the system. For instance, if a state has breached its safeguards commitments with the IAEA, the IAEA could submit a noncompliance report, which eventually would get forwarded to the UNSC at the discretion of the IAEA Board of Governors. Before the report is submitted, the state can try to negotiate a solution with the IAEA, and after the report is submitted, the state being reported can try to persuade the Director General, Board of Governors, or the UNSC not to take action against it. Where such negotiation efforts fail, however, the IAEA and the UNSC both have power-based options that they can exercise. The IAEA can terminate its assistance to the state and report the noncompliance to the UNSC. The UNSC has the power-backup of being able to authorize sanctions, the use of force, or other coercive measures.⁶⁶

Other states may have a preferred outcome in various situations, and they may seek to engage in a power play to achieve such goals. First, states can legally institute unilateral economic sanctions and other means of non-military coercion based on levers of influence at the bilateral level. Similarly, for a state seeking to develop certain questionable technologies, it could potentially coerce parties that are trying to prevent such developments by utilizing economic or military levers of influence. Examples of such influence include controlling the price of commodities such as oil, and the ability to play a destabilizing role in a region or conflict in which the other party is involved. Second, there is little that the international system can do to prevent a state from invading or attacking another state, aside from having established a legal norm and a mechanism to encourage other forms of opposition, for example, negotiation through the NPT system. Despite this norm and the NPT system, such attacks have taken place in the context of nuclear proliferation, for example, Israel's attack of Iraq's Osiraq nuclear reactor in 1981.⁶⁷ Israel is not an NPT member and was therefore outside of the system when it attacked Iraq's reactor; thus, one might argue that the NPT reduces the need to resort to such preventive strikes.⁶⁸ However, an NPT

66. U.N. Charter arts. 41, 42.

67. Federation of American Scientists, *Osiraq—Iraq Special Weapons Facilities*, available at <http://www.fas.org/nuke/guide/iraq/facility/osiraq.htm>.

68. The United States invasion of Iraq is another potential example, but that invasion was most probably not about nuclear proliferation—if it was ever about weapons proliferation, it was probably about chemical and biological stockpiles. The nuclear link was so far removed that it was not a credible justification, but it can still be used as an example of a power play by a third-party interested in enforcing a non-proliferation norm.

member could have also unilaterally used military means to force a desired outcome on the parties to the dispute, even though that action would be outside of the NPT system.

Thus, within the NPT system, states have certain rights that they can rely on to help resolve disputes in their favor, for example, the withdrawal provision. The NPT also provides recourse to the ICJ and arbitrators in cases of disputes with the IAEA over questions of statutory interpretation or disagreements regarding safeguards agreements not related to non-compliance issues. Unfortunately, the NPT system lacks rights-based back-ups within the non-compliance dispute resolution track. Power-backups recognized by the NPT include the ability of the IAEA to cease cooperation and report the party in breach to the UNSC, and the UNSC's power to authorize punishment against the party in breach of its commitments. These back-ups are generally arranged in order from the lowest to highest level of force. Power-backups outside of the NPT system also exist and include both economic and military options for coercion.

6. Use an independent and neutral body with specialized knowledge and capacity to monitor and police the system and to function in a consultative role.

The NPT succeeds in this aspect of DSD principles because of its use and reliance on the IAEA. As an independent body made up of member states, the IAEA has specialized knowledge in the realm of nuclear technology, can facilitate research and development of civilian nuclear power, and has the credibility and expertise to function as the monitoring and inspecting agency for the NPT system. The IAEA's reports are authoritative and its findings are generally relied upon by the international community when assessing a state's compliance with its NPT obligations.

7. Allow broad and deep coverage of the issues related to the regime's purpose.

The NPT can be improved in providing breadth and depth of coverage of nuclear technology challenges. Most facets of potential use of nuclear technology are generally covered—peaceful uses are promoted and facilitated, while military uses are discouraged and monitored. Any violation or action that might indicate a move towards military application should trigger alarm within the system. The key concern in making the move from civilian to military applications hinges on the ability of a state to enrich its own uranium, or reprocess its spent fuel to extract weapons-grade plutonium. Thus, any state seeking either of these material production mechanisms will subject itself to intense IAEA and international scrutiny, for example, Iran.⁶⁹ The NPT could help to alleviate this problem

69. For a discussion of Iranian negotiations under the NPT regime, see Amir Azaran, Development, *NPT, Where Art Thou? The Nonproliferation Treaty and Bargaining: Iran as a Case Study*,

by sponsoring an international fuel bank, along the lines of Director General Mohamed ElBaradei's proposal, that might reduce the need for states to build their own enrichment or reprocessing facilities.⁷⁰

Another aspect that deserves increased resources and attention is the ability of the IAEA to conduct comprehensive inspections. The IAEA Additional Protocol would greatly enhance the IAEA's inspection capabilities, but only a limited number of states have agreed to the protocol.⁷¹ If more states were to agree to the Protocol, and if greater resources were given to the IAEA, the most difficult task of verification and monitoring might become easier for the IAEA.⁷² Furthermore, the NPT must do more in working towards disarmament. The longer the nuclear-weapon states maintain their nuclear weapons, the greater the chance that other states will revisit the logic of possessing the same.

8. Connect the goals of the regime to oversight, monitoring, and implementation mechanisms.

The NPT fails to effectively connect its goals with oversight, monitoring, and implementation devices. Of the NPT's three major goals—non-proliferation, cooperative development of peaceful nuclear technology, and disarmament—only the first two goals have well-established implementation mechanisms. The IAEA serves to monitor, oversee, and foster the development of peaceful civilian nuclear technology so that states can share in the benefits of such technology, and in order to ensure that such technology is not diverted for military purposes. There is, however, no institution or implementation mechanism that is tasked with ensuring that the NPT's disarmament goal is pursued. This task is left to NGOs and the NPT parties themselves, resulting in collective action problems that stand in the way of agreement on the means and methods of achieving disarmament. While the NPT has survived this long without any specific disarmament agreements having been negotiated, the long-term viability of the regime remains in doubt so long as this essential goal, a fundamental component of the baseline NPT bargain, continues to be ignored.

6 CHI. J. INT'L L. 415 (2005).

70. See Mohamed ElBaradei, Director General, IAEA, Speech during the 50th Session of the IAEA General Conference: A New Framework for the Nuclear Fuel Cycle (Sept. 19, 2006), available at <http://www.iaea.org/NewsCenter/Statements/2006/ebsp2006n015.html>.

71. A total of 81 countries have Additional Protocol agreements in force, and 112 countries have formally signed onto the Additional Protocol. IAEA, Strengthened Safeguards System: Status of Additional Protocols, *supra* note 44; IAEA, Safeguards Current Status, *supra* note 45.

72. See Mohamed ElBaradei, Director General, IAEA, Speech at the Symposium on International Safeguards in Vienna, Austria: Addressing Verification Challenges (Oct. 16, 2006), available at <http://www.iaea.org/NewsCenter/Statements/2006/ebsp2006n018.html>.

9. Vest control over decisions with the most interested and affected parties, except in the case of power back-ups, where control should lay with a recognized representative body of the international community.

The first half of this principle is provided for in that the states subject to IAEA monitoring will be the ones making the most important decisions, and rightfully so since they have the most to gain or lose depending on the situation. The negotiation-friendly structure also ensures that interested third-parties will be able to exert influence on the final outcome by involving themselves in the negotiation process.

The second part of this principle seeks to prevent the resort to military actions unauthorized by the UNSC. First, if conflict can be avoided via peaceful means, those means should be exercised to the fullest extent possible. Second, to allow for such actions would be to grant certain states greater say over the outcome of an issue than other states, even though other states may be just as concerned, if not more so. For example, Iran's neighbors may be very concerned about Iran's potential desire to proliferate, but if the United States were to attack, the outcome may be even worse for those neighboring states. If the United States were to engage in preventive strikes against Iran, this would privilege America's perceived security interests over those of Iran's neighbors, without any clear justification for why that should be. On the other hand, if the decision were to be vested completely within the control of an international representative body, the security interests of the collective would take precedence over the concerns of individual states. Thus, such authority should either be vested with the UNSC or with another similar body as per Richard Butler's suggestion for a Counsel on Weapons of Mass Destruction.⁷³ In this sense, the NPT partially achieves the second objective of the principle because non-compliance reports from the IAEA may eventually be sent to the UNSC, which can decide to act if it so chooses. The NPT fails to fully meet the second objective, however, in that it does not seek to prevent or discourage the possibility of unauthorized or unilateral actions. Such non-UNSC-sponsored threats or actions are quite salient in influencing non-proliferation negotiations, as demonstrated in the case studies below.

10. Provide for meaningful periodic review mechanisms of the system based on measurable criteria.

Article VIII ¶ 3 of the NPT provides for review of the treaty every five years if a majority of the members so desire. The regular five-year review process has had mixed results. The 2005 Review Conference was largely seen as a failure, with the President of the conference, Mr. Duarte of Brazil, stating that "substantively—in terms of results and agreements—very little had been ac-

73. Butler, *supra* note 22.

completed.”⁷⁴ Furthermore, under Article X ¶ 2, the treaty is reviewed on its twenty-fifth anniversary to determine whether it should be permanently extended. In 1995, the NPT member states voted to indefinitely extend the NPT.⁷⁵ The stipulated review process, while noting a desire to review the NPT’s implementation in light of the perambulatory purposes, is not explicitly linked to any measurable criteria. For example, problems in progress towards disarmament would be more readily addressed in review sessions that focused on the relative increase or decline in overall numbers of nuclear warheads, especially if target goals were set by the parties, because that progress can be tracked over time and pressure can be brought to bear by the other member-states to encourage results that move in the direction of disarmament. Additionally, the review conferences should focus on means of involving those parties that have thus far chosen to remain outside of the system, perhaps by inviting them to participate in discussions regarding the challenges of obtaining universal membership. Overall, the NPT should have more meaningful review mechanisms than currently in operation.

C. Summary of NPT DSD Analysis

The NPT and its associated IAEA safeguards regime constitute a dispute system which can be vastly improved by the application of DSD principles. In analyzing the NPT from the DSD perspective, various weaknesses become apparent. The lack of universal membership, particularly with regard to the four of nine states that possess nuclear weapons, and the system’s lack of symmetry between its goals and its oversight, monitoring, and implementation mechanisms are two serious shortfalls in need of significant attention. Gaps in the regime’s coverage of important areas of nuclear policy, for example, reactor fuel production and disarmament, as well as meaningful review mechanisms based on measurable criteria, are areas that need much improvement. The availability of rights- and power-based backups, particularly rights-based back-ups in the realm of safeguards non-compliance disputes and issues of control over decisions regarding certain power-based actions, are also areas that could be enhanced. The NPT system is fairly effective, on the other hand, with respect to balancing the legal endowment, maintaining the focus on both individual and collective interests, providing multiple entry and exit points into negotiations, and the presence of a strong and specialized institution to monitor the system. Despite having success in these areas, the system can certainly improve.

74. 2005 Review Conference of the Parties to the Treaty on the Nonproliferation of Nuclear Weapons (NPT), Press Conference on Non-Proliferation Treaty, May 27, 2005, *available at* <http://www.un.org/News/briefings/docs/2005/NPTpc050527.doc.htm>.

75. Extension of the Treaty on the Non-Proliferation of Nuclear Weapons, NPT/CONF.1995/32/DEC.3, May 1, 1995, *available at* <http://www.fas.org/nuke/control/npt/text/extensio.htm>. For a comprehensive discussion and analysis of the 1995 Review Conference, see JAYANTHA DHANAPALA & RANDY RYDELL, *MULTILATERAL DIPLOMACY AND THE NPT: AN INSIDER’S ACCOUNT* (2005).

III.

CASE STUDIES—NORTH KOREA, IRAN, AND PAKISTAN

Having analyzed the NPT as a dispute system in light of relevant DSD principles, this part of the article will examine three case studies of recent non-proliferation negotiations in order to compare and contrast the competing influences of the shadow of the law and the shadow of violence. These case studies are meant to test the question of whether international law, as embodied by the NPT, matters in the context of serious national security threats to states. More specifically, the case studies help to examine whether the NPT makes a substantive difference in non-proliferation negotiations that would otherwise not be in the interests of more powerful states as regards structuring the terms of negotiations, allocating rights through legal endowments, affecting expectations and potential courses of action, and iterating disputes. In addition to analyzing the role of the dispute system within each particular negotiation, each case study will include a background to the dispute, the relevant legal issues at play, and the coercive means relevant to the dispute. The independent variable between these case studies is the country's NPT status: North Korea having left the NPT, Iran still being within the NPT, and Pakistan always having been outside of the NPT.

*A. North Korea**1. Background to the Dispute*

While the history of the North Korean nuclear dispute has its roots in the Korean War,⁷⁶ the two most important phases of the crisis occurred more recently—in 1994 and 2006. The Soviet Union supplied North Korea with a research reactor in 1965, which was built in Yongbyon and was later upgraded and supplemented by North Korean scientists with another nuclear reactor.⁷⁷ In 1985, the United States discovered a third reactor, and North Korea, under pressure from the Soviet Union, agreed to sign the NPT.⁷⁸ A reprocessing facility was discovered by U.S. intelligence in 1990, and under international pressure North Korea finally negotiated a safeguards agreement with the IAEA in 1992.⁷⁹ Once inspections by the IAEA began, disputes quickly arose over access to facilities, and evidence of unaccounted plutonium reprocessing was discovered. In March 1993, North Korea threatened to withdraw from the NPT, but suspended

76. Walter Pincus, *N. Korean Nuclear Conflict Has Deep Roots*, WASH. POST, Oct. 15, 2006, at A16.

77. *Id.*

78. *Id.* See also WIT ET AL., *supra* note 43, at 1-3.

79. The failure to quickly negotiate a safeguards agreement with the IAEA was in part the IAEA's fault for providing improper forms to North Korea and for failing to follow up quickly with the right information for them to submit. WIT ET AL., *supra* note 43, at 4.

its proposed withdrawal pending negotiations with the United States.⁸⁰ These negotiations and the events leading up to them make up the first phase of the nuclear dispute. The U.S.-led negotiations produced the Agreed Framework in 1994, wherein North Korea was to freeze and give up its nuclear program in exchange for fuel oil supplies and two light-water nuclear reactors.⁸¹ The Agreed Framework provided short-term stability to the crisis, but North Korea was still found to have clandestinely extracted enough plutonium for a nuclear device.⁸²

The second phase of the crisis spans from late 2001 to the present. In late 2001, U.S. intelligence sources discovered that North Korea had begun secret construction of a uranium enrichment plant.⁸³ The discovery of the covert uranium enrichment program effectively ended the already-troubled Agreed Framework. Just prior to its statement of withdrawal from the NPT in January 2003, North Korea expelled IAEA inspectors from its nuclear reactors and resumed reprocessing operations.⁸⁴ North Korea is the first and only country ever to withdraw from the NPT.⁸⁵ The reasons given for withdrawal include IAEA resolutions against North Korea, America's "vicious hostile policy" towards North Korea, America's listing of North Korea as part of an axis of evil, and U.S. failure to abide by the Agreed Framework.⁸⁶

The Six-Party talks⁸⁷ began in 2003 but did not show much immediate progress. A joint-statement from the Six-Party talks in September 2005, in which North Korea agreed to end its nuclear program and rejoin the NPT in exchange for energy and humanitarian assistance, the building of two light-water nuclear reactors, and the normalization of relations with the United States and Japan,⁸⁸ provided a moment of hope in an otherwise disappointing series of diplomatic

80. *Id.* at 26-28, 37, 59.

81. The full text of the 1994 Agreed Framework is available at Arms Control Association, Agreed Framework between the United States of America and the Democratic People's Republic of Korea, available at <http://www.armscontrol.org/documents/af.asp>.

82. Pincus, *supra* note 76.

83. Joby Warrick, *U.S. Followed the Aluminum*, WASH. POST, Oct. 18, 2002, at A1.

84. Paul Kerr, *North Korea Restarts Reactor; IAEA Sends Resolution to U.N.*, ARMS CONTROL TODAY, Mar. 2003, available at http://www.armscontrol.org/act/2003_03/nkorea_mar03.asp.

85. On January 10, 2003 North Korea announced its intention to withdraw from the treaty immediately, but given the three month notice provision of Article X of the NPT, most observers mark April 10, 2003 as the date of North Korea's withdrawal. Devon Chaffee, *North Korea's Withdrawal from Nonproliferation Treaty Official*, WAGING PEACE, April 10, 2003, available at http://www.wagingpeace.org/articles/2003/04/10_chaffee_korea-npt.htm. North Korea argued that because it gave notice of intent to withdraw from the treaty in 1993, it had already complied with the three month notice period. However, it declared a unilateral moratorium on that withdrawal effort, so the period should probably toll again. *Id.*

86. Center for Nonproliferation Studies, Text of North Korea's Statement on NPT Withdrawal, available at <http://www.cns.miis.edu/research/korea/nptstate.htm>.

87. The Six-Party talks include the United States, North Korea, South Korea, Japan, China, and Russia.

88. Joint Statement of the Fourth Round of the Six-Party Talks, Beijing, Sept. 19, 2005, available at <http://www.state.gov/r/pa/prs/ps/2005/53490.htm>.

exchanges. Enthusiasm over the joint-statement soon faltered, however, when North Korea tested a nuclear device on October 9, 2006.⁸⁹ Thus far, including UNSC Resolution 1718 sanctions,⁹⁰ North Korea has received only relatively mild punishment for its withdrawal from the system and its subsequent nuclear testing.

Despite the nuclear test and UNSC sanctions, an agreement over a timetable for implementing the joint-statement was eventually made, resulting in the February 13, 2007 Agreement.⁹¹ In July 2007, the IAEA confirmed that North Korea had shut down its five declared nuclear facilities in delayed compliance with the February Agreement.⁹² Efforts continue to try to implement the negotiated solution to the crisis, with attention now focused on obtaining a North Korean declaration of its nuclear facilities and material.⁹³

2. Law and Coercion

The legal requirements and rights of the NPT play an important role in the North Korean dispute. First, while North Korea was an NPT member, it was held up to non-proliferation standards that shaped the overall dispute. Given that North Korea's reprocessing and enrichment activities were in violation of its NPT obligations, the international community had leverage to demand that it cease those activities or risk that the matter be referred to the UNSC. Second, the first stage of the crisis would not have been discovered so early were it not for the IAEA inspections. Because the NPT system provided for IAEA inspection of North Korea's facilities, and imbalances in declared and actual plutonium amounts were discovered, North Korea was forced to either negotiate a resolution to the dispute, or face the consequences of its breach of legal obligations. Third, North Korea was able to use the NPT withdrawal clause to its advantage. Since withdrawing from the treaty would relinquish North Korea of its NPT obligations, there was a strong incentive for the other NPT member states to try to negotiate a deal to keep North Korea in the NPT. Preserving North Korea's NPT

89. For evidence indicating the possible failure of North Korea's nuclear test, see Garwin and Hippel, *supra* note 3.

90. On October 14, 2006, the UNSC passed UNSC Resolution 1718, condemning North Korea's nuclear test as a "clear threat to international peace and security" and taking action under Article 41 to prohibit trade in large-scale arms, luxury goods, and nuclear or ballistic missile technology and related training to North Korea, as well as an asset freeze on North Koreans involved in the nuclear or missile programs and authorization to inspect cargo to enforce the sanctions. UNSC Resolution 1718, S/RES/1718 (2006).

91. U.S. Dep't of State, *North Korea - Denuclearization Action Plan*, Feb. 13, 2007, available at <http://www.state.gov/r/pa/prs/ps/2007/february/80479.htm>.

92. Choe Sang-Hun, *North Korea Offers Nuclear Concessions*, N.Y. TIMES, July 18, 2007, available at <http://www.nytimes.com/2007/07/18/world/asia/18cnd-koreanuke.html>.

93. *Id.* While changes and new developments in the negotiations with North Korea will be continuous, the lessons to be drawn from the experience thus far are important in assessing and improving the NPT system, and understanding the effectiveness of the NPT and similar multilateral treaties.

membership was highly advantageous as it ensured that the system would not have to bear the shock of having a party withdraw, and it allowed for continued IAEA monitoring of North Korea's nuclear program. Moreover, the use of the withdrawal provision was a clear catalyst in forcing the parties to make progress in the talks, or else face having to deal with the situation outside the legal framework of the NPT.⁹⁴

Perhaps more so than the influence of the shadow of the law, the shadow of violence played a defining role in the North Korean nuclear crises. The historical roots of the conflict were born in the Korean War. The presence of U.S. nuclear weapons on the Korean peninsula began in 1958⁹⁵ and did not end until 1991.⁹⁶ Furthermore, Presidents Truman and Eisenhower both made veiled threats that they would be willing to use nuclear weapons against the North to end the war.⁹⁷ Years later, in 1975, Secretary of Defense James Schlesinger warned North Korea that the United States would consider using tactical nuclear weapons in response to North Korean aggression.⁹⁸ More recently, Christopher Hill, Assistant Secretary of State for East Asian and Pacific Affairs and Chief U.S. Negotiator with North Korea, said that "We are not going to live with a nuclear North Korea, we are not going to accept it."⁹⁹ In its statement regarding withdrawal from the NPT, North Korea cited discriminatory IAEA resolutions, America's "vicious hostile policy" towards North Korea, America's listing of North Korea as part of an axis of evil, and U.S. failure to abide by the Agreed Framework.¹⁰⁰ One high-level North Korean official warned South Korea that if war were to break out, Seoul would be a "sea of fire."¹⁰¹ Known for using passionate rhetoric, it is not surprising that in response to UNSC Resolution 1718, North Korea stated that it would "deal merciless blows" against anyone who violates its sovereignty" and that the U.N. sanctions were tantamount to a "declaration of war."¹⁰²

There is little doubt that North Korea feels that its security and perhaps survival as a state are threatened by the United States, a feeling influenced by statements and actions by the United States interpreted as threats of military

94. WIT ET AL., *supra* note 43, at 26-28, 37.

95. The Nuclear Information Project, A History of U.S. Nuclear Weapons in South Korea, available at <http://www.nukestrat.com/korea/koreahistory.htm>.

96. The Nuclear Information Project, The Withdrawal of U.S. Nuclear Weapons from South Korea, available at <http://www.nukestrat.com/korea/withdrawal.htm>.

97. Pincus, *supra* note 76; WIT ET AL., *supra* note 43, at 1-2.

98. WIT ET AL., *supra* note 43, at 2.

99. David E. Sanger & Jim Yardley, *U.S. Warns North Koreans about Nuclear-Weapon Test*, N.Y. TIMES, Oct. 5, 2006, at A8.

100. Center for Nonproliferation Studies, Text of North Korea's Statement on NPT Withdrawal, available at <http://www.cns.miis.edu/research/korea/nptstate.htm>.

101. WIT ET AL., *supra* note 43, at 149.

102. Bo Mi-Lim, *North Korea: Sanctions are Declaration of War*, WASH. POST, Oct. 17, 2006, available at <http://www.washingtonpost.com/wp-dyn/content/article/2006/10/17/AR2006101700135.html>.

force. North Korea's demands for bilateral negotiations with the United States may be evidence that the true interest it seeks to gain in negotiations is security assurances from the United States. The use of military strikes against North Korea during the first stage of the crisis was a very real option discussed by White House planners,¹⁰³ and President Bush's rhetoric of "axis of evil," combined with the administration's unilateral preemption policy as demonstrated in Iraq, surely give North Korean leaders reason for concern. Also, as seen in its reaction to the UNSC sanctions, North Korea views the lesser coercive tool of sanctions as severely provocative.

On the other side of this issue, North Korea's neighbors, particularly South Korea and Japan, feel very threatened by North Korea's behavior and rhetoric.¹⁰⁴ North Korea has repeatedly tested missiles, sometimes flying them directly over Japan.¹⁰⁵ Furthermore, North Korea has considerable conventional forces and armaments amassed on its side of the DMZ border with South Korea, giving it the capability to inflict massive damage on South Korea's population and the U.S. troops that are stationed there.¹⁰⁶

Undoubtedly, threats of violence and lesser means of coercion have influenced non-proliferation negotiations with North Korea. Although North Korea's decision to test may have reflected its desire to maintain nuclear weapons permanently, the February 2007 Agreement seems to indicate that North Korea is concerned with receiving both a large compensation package for giving up its nuclear weapons and energy program, as well as explicit and trustworthy security assurances from the United States that it will not attack. While the security concerns are manifest in the demand for no-attack guarantees, North Korea's repeated violations of previous agreements may also be driven by security considerations. If North Korea truly feels that the only way to protect its sovereignty and deter attacks from other nuclear powers is through the possession of nuclear weapons, then one logical conclusion might be that North Korea's perception of its security threats is so great that only an independent nuclear deterrent will suffice. If this were true, then fear of attack would have completely determined the outcome of the negotiations. On the other hand, North Korea could be using its nuclear weapons and energy program as a tool for nuclear blackmail, a means to demand an exorbitant price from other states in exchange for assurance that that

103. WIT ET AL., *supra* note 43, at 179-81, 210.

104. *South Korea, Japan Condemn North Korean Nuclear Test*, VOICE OF AMERICA NEWS, Oct. 9, 2006, available at <http://voanews.com/english/archive/2006-10/2006-10-09-voa15.cfm>.

105. *North Korea Test-Fires Several Missiles*, N.Y. TIMES, July 4, 2006, available at <http://www.nytimes.com/2006/07/04/world/asia/04cnd-korea.html>.

106. Military casualty estimates alone of another Korean war range in the hundreds of thousands, while civilian casualties would approach one million. WIT ET AL., *supra* note 43, at 101-102, 180-81. Former President Bill Clinton called the Korean DMZ, which has nearly two million troops facing off against each other every day, the "scariest place on Earth." Joe Havelly, *Korea's DMZ: 'Scariest Place on Earth'*, CNN.COM, Aug. 28, 2003, available at <http://edition.cnn.com/2003/WORLD/asiapcf/east/04/22/koreas.dmz/>.

North Korea will relinquish its programs.¹⁰⁷

3. Role of the Dispute System

In the case of North Korea, the NPT dispute system played a few roles. First, as mentioned above, it set standards of compliance by which to judge North Korea's behavior, and it provided the institutional capacity to actually inspect North Korea's facilities and discover covert proliferation activities. Second, the NPT process provided a means of pacing negotiations. Because of the withdrawal clause, North Korea could not shed its NPT obligations for three months after announcing its intention to withdraw. In 1993, this delay allowed the United States to convince North Korea not to withdraw from the NPT, and to negotiate instead. Thus, this iteration and pacing mechanism added a stabilizing element to a situation that could have very quickly ended in violence. North Korea's use of the withdrawal clause also served as a bargaining chip in its subsequent negotiations with the United States, as the United States was keen on keeping North Korea in the NPT.¹⁰⁸ Third, in creating this extra opportunity for negotiation, the system helped to minimize the possibility of military action. The system's emphasis on negotiations ensured that coercive means of dispute resolution were never the first option.

One interesting aspect of the North Korean case is that North Korea did not stress that it had a substantive right under the NPT to develop reprocessing or enrichment technologies. Rather than working within the system in that manner, North Korea instead relied upon claims of sovereign right, and a desire to protect its security and sovereignty to justify its actions. This might indicate that North Korea's negotiation strategies were not influenced much by the NPT system as North Korea made little attempt to leverage potential substantive legal endowments in its favor. On the other hand, North Korea was able to leverage *procedural* legal endowments, namely the withdrawal provision of the NPT, to engage in negotiation brinkmanship in an effort to extract concessions from the United States. Thus, while the United States and other interested parties were able to leverage North Korea's non-compliance in order to threaten UNSC action, North Korea was able to use the NPT's withdrawal provision to create a new bargaining chip—its reentry into the NPT. In the end, both sides to the dispute were able to leverage different aspects of the NPT system and its legal endowments to try to frame and influence the negotiations. While the shadow of violence was very salient in this dispute, the shadow of the law still played a significant role in shaping the outcome of the negotiations.

107. Mohamed ElBaradei, *No Nuclear Blackmail*, WALL ST. J., May 22, 2003, available at <http://www.iaea.org/NewsCenter/Statements/2003/ebWSJ20030522.shtml>.

108. WIT ET AL., *supra* note 43, at 45 ("North Korea might withdraw from the treaty as a bargaining ploy while taking whatever steps were necessary to keep the situation from spiraling out of control. Modulating its cooperation with IAEA inspectors could be a valuable spigot for Pyongyang to shape the political environment.").

B. Iran

1. Background to the Dispute

The direction of Iran's nuclear program has shifted considerably over the years in response to major domestic political changes and movements. Under Shah Pahlavi's regime, Iran was a major ally of the United States, and the United States assisted Iran in its plans to develop nuclear energy facilities with a civil nuclear cooperation agreement in 1957 and the building of a highly-enriched-uranium-fueled research reactor, which became operational in 1967.¹⁰⁹ Iran ratified the NPT in 1970 and has remained a party ever since.¹¹⁰ Cooperation over the development of various nuclear projects continued through the 1970's until the Islamic Revolution in 1979.

The Revolution ended the period of cooperation with the United States and European countries, and leaders of the Revolution sought to significantly curtail the Shah's nuclear plans.¹¹¹ However, smaller scale work continued on Iran's incomplete Bushehr reactor. In August 2002, the Iranian dissident group National Council of Resistance of Iran exposed the existence of two unreported and previously unknown nuclear facilities—a uranium enrichment facility in Natanz, and a heavy water production facility in Arak.¹¹² Iran possesses natural uranium deposits,¹¹³ so these facilities could either be in line with a program to create a closed domestic nuclear fuel cycle, or they could be part of a nuclear weapons program.¹¹⁴ In the wake of this revelation and via subsequent meetings and inspections by the IAEA, further evidence regarding Iran's violations of its agreements with the IAEA and obligations under the NPT materialized.¹¹⁵

In 2003, soon after the revelations, negotiations began to encourage Iran to fully comply and cooperate with IAEA inspectors and its safeguards agree-

109. Nuclear Threat Initiative, Iran Profile, Nuclear Chronology, *available at* http://www.nti.org/e_research/profiles/1825_1826.html.

110. *Id.*

111. Nuclear Threat Initiative, Iran Profile, Nuclear Overview, *available at* http://www.nti.org/e_research/profiles/Iran/1819.html.

112. Nuclear Control Institute, List of Revelations on Iran's Nuclear & WMD Activities by the Iranian Opposition since 2002, *available at* <http://www.nci.org/06nci/01-31/Revelations.htm>.

113. GlobalSecurity.org, Iran Special Weapons Facilities, Uranium Mines, *available at* <http://www.globalsecurity.org/wmd/world/iran/mines.htm>.

114. The uranium enrichment facility would produce enriched uranium for Iran's nuclear reactors. *See infra* note 150. Natural uranium can be used directly as fuel in a heavy-water reactor, eliminating the need to enrich uranium. However, such reactors produce significant amounts of highly fissile P-239. Thus, if a natural uranium heavy-water reactor were combined with a reprocessing facility, the proliferation risk would be high. GARDNER, *supra* note 4, at 20, 32-35. At the moment, Iran does not possess a reprocessing facility nor is one apparently under construction. For a full list of Iran's nuclear facilities, see IAEA, *List of Locations Relevant to the Implementation of Safeguards in Iran*, IAEA Doc. GOV/2004/83 annex 1, *available at* http://www.iaea.org/Publications/Documents/Board/2004/gov2004-83_annex1.pdf.

115. *See infra* notes 118-120.

ments. In December 2003 Iran signed the IAEA Additional Protocol, giving the IAEA rights to conduct more robust inspections of declared and undeclared facilities once the Protocol enters into force.¹¹⁶ These negotiations led Iran to declare a temporary, voluntary cessation of its enrichment activities on November 14, 2004.¹¹⁷ Although the IAEA has not characterized any of Iran's activities as constituting a nuclear weapons program, on November 15, 2004, the IAEA released a report listing activities that were in breach of Iran's safeguards agreement with the IAEA.¹¹⁸ It was not until September 2005, however, one month after Iran had restarted its uranium enrichment activities, that the IAEA Board of Governors officially concluded that Iran's violations of its safeguards agreements constituted non-compliance with its NPT obligations.¹¹⁹ Five months later, on February 4, 2006, the Board of Governors referred the matter to the UNSC.¹²⁰ The UNSC in turn issued UNSC Resolution 1696 on July 31, 2006, which called on Iran to suspend uranium enrichment and warned of future sanctions should Iran fail to comply.¹²¹ The UNSC followed through on its threat on December 23, 2006, when it acted under Article 41 of the U.N. Charter to impose sanctions on Iran via UNSC Resolution 1737, banning the supply of particular nuclear material and technology, and freezing the assets of persons and entities connected with Iran's nuclear program.¹²² On March 24, 2007, again acting under Article 41, the UNSC extended the sanctions via UNSC Resolution 1747 to include military equipment broadly, and reiterated its demand that Iran cease enriching uranium.¹²³

116. Although Iran has signed the Additional Protocol, the Iranian parliament has yet to approve it, so it has not entered into force. Safa Haeri, *Iran Confirms Stopping Additional Protocol of the NPT*, IRAN PRESS SERVICE, OCT. 9, 2005, available at http://www.iran-press-service.com/ips/articles-2005/october-2005/Iran_nuclear_91005.shtml; see also *supra* note 44, 45. Iran had voluntarily complied with the Additional Protocol since its signing, but has since suspended that voluntary compliance after the IAEA referred the issue to the UNSC in February 2007. Paul Kerr, *IAEA Reports Iran to U.N. Security Council*, ARMS CONTROL TODAY, Mar. 2006, available at http://www.armscontrol.org/act/2006_03/MARCH-IAEAIran.asp; see also *infra* note 120.

117. Paul Kerr, *Iran Agrees to Temporary Suspend Uranium-Enrichment Program*, ARMS CONTROL TODAY, Dec. 2004, available at http://www.armscontrol.org/act/2004_12/Iran.asp.

118. IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, IAEA Doc. GOV/2004/83 (Nov. 15, 2004), available at <http://www.iaea.org/Publications/Documents/Board/2004/gov2004-83.pdf>.

119. IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, IAEA Doc. GOV/2005/77 (Sept. 24, 2005), available at <http://www.iaea.org/Publications/Documents/Board/2005/gov2005-77.pdf>.

120. IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, IAEA Doc. GOV/2006/14 (Feb. 4, 2006), available at <http://www.iaea.org/Publications/Documents/Board/2006/gov2006-14.pdf>. This action by the IAEA to refer Iran's case to the UNSC has been criticized as being politicized by those opposed to Iran's nuclear program because the IAEA has not found Iran's activities to be part of a nuclear weapons program. Daniel Joyner, *The Iran Nuclear Standoff: Legal Issues*, JURIST FORUM, Mar. 1, 2006, available at <http://jurist.law.pitt.edu/forumy/2006/03/iran-nuclear-standoff-legal-issues.php>.

121. S.C. Res. 1696, U.N. Doc S/RES/1696 (July 31, 2006).

122. S.C. Res. 1737, U.N. Doc S/RES/1737 (Dec. 23, 2006).

123. S.C. Res. 1747, U.N. Doc S/RES/1747 (Mar. 24, 2007).

Although the effectiveness of these sanctions is questionable,¹²⁴ in August 2007 the IAEA and Iran negotiated a significant agreement that could resolve Iran's safeguards compliance issues. The August 21 agreement brings Iran's Natanz enrichment plant into its safeguards agreement with the IAEA, subjecting it to IAEA inspections.¹²⁵ While certain questions about Iran's past activities remain, the August 21 agreement sets out a timeline for resolving those issues. Most significantly, the IAEA has conducted inspections, including unannounced inspections, in line with the August 21 agreement and has verified "the non-diversion of declared nuclear material in Iran."¹²⁶ However, as Iran continues to press its NPT right to enrich uranium and cooperates with the IAEA, it remains in non-compliance with the UNSC resolutions calling for a halt to its enrichment activities.¹²⁷

2. Law and Coercion

The Iran case study has been influenced to a large degree by the NPT legal endowment. First, Iran has consistently defended its nuclear program and enrichment activities via reference to the Article IV ¶ 1 right to peaceful development of nuclear technology.¹²⁸ This right has given Iran means to justify its ac-

124. Steven R. Weisman, *Lack of ID Data Impedes U.N. Sanctions Against Iran*, N.Y. TIMES, Sept. 17, 2007, available at <http://www.nytimes.com/2007/09/17/world/middleeast/17sanctions.html>.

125. IAEA, Information Circular, *Communication dated 27 August 2007 from the Permanent Mission of the Islamic Republic of Iran to the Agency concerning the text of the "Understanding of the Islamic Republic of Iran and the IAEA on the Modalities of Resolution of the Outstanding Issues"*, INFCIRC/711 (Aug. 27, 2007), available at <http://www.iaea.org/Publications/Documents/Infcircs/2007/infcirc711.pdf>.

126. IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, IAEA Doc. GOV/2007/48 ¶ 22 (Aug. 30, 2007), available at <http://www.iaea.org/Publications/Documents/Board/2007/gov2007-48.pdf>; IAEA, *Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions 1737 (2006) and 1747 (2007) in the Islamic Republic of Iran*, IAEA Doc. GOV/2007/58 ¶¶ 31, 39 (Nov. 15, 2007), available at <http://graphics8.nytimes.com/packages/pdf/world/20071115IAEA-report.pdf>. Although the November 2007 report declares Iran to be in compliance with its IAEA obligations, it notes that, because Iran has not implemented the Additional Protocol, "the Agency's knowledge about Iran's current nuclear programme is diminishing," and that "the Agency is not in a position to provide credible assurances about the absence of undeclared nuclear material and activities in Iran without full implementation of the Additional Protocol." *Id.* at ¶¶ 39, 43. This latest report also includes the interesting history of Iran's black market acquisition of uranium enrichment technology. *Id.* at ¶¶ 4-23.

127. IAEA, IAEA Doc. GOV/2007/58, *supra* note 126, at ¶ 40. The successful negotiations between the IAEA and Iran in bringing its enrichment facility within its safeguards agreement has created friction between the IAEA and certain Western powers, including the United States, France, Germany, and the U.K. Elaine Sciolino and William J. Broad, *An Indispensable Irritant to Iran and its Foes*, N.Y. TIMES, Sept. 17, 2007, available at <http://www.nytimes.com/2007/09/17/world/middleeast/17elbaradei.html>; *Iran Expanding Its Nuclear Program, Agency Reports*, N.Y. TIMES, Aug. 30, 2007, available at <http://www.nytimes.com/2007/08/30/world/asia/31cnd-nuke.html>.

128. See, e.g., Press Release, United Nations, Foreign Minister of Iran Defends Country's Inal-

tivities in the negotiations as being within the bounds of the NPT. Second, the IAEA safeguards agreement was critically important in establishing criteria by which the IAEA could declare Iran to be in breach of its commitments. That legal standard helped to authorize subsequent actions to punish Iran for violations, even when Iran's current enrichment activities are legal under the treaty. In other words, past noncompliance is legally punishable, and the UNSC used Iran's past violations to pressure it to cease its current enrichment activities. Given the past violations, the UNSC had grounds to declare the current enrichment activity a threat to international peace and security, thereby providing legal recourse to impose sanctions.¹²⁹ Thus, a line has been drawn between substantive legal actions—uranium enrichment deemed by the IAEA to be for civilian purposes—and procedural mistakes—various reporting failures and mistakes that have so colored Iran's present activities that they are considered by the UNSC to be a threat to international peace and security. While the substantive actions could have been protected by the NPT, the procedures Iran followed violated protocol, justifying resort to coercion to punish past mistakes and provide negative incentives for behavioral modification.

Coercion has certainly also played a role in the negotiations, particularly the recent use of economic sanctions. The IAEA's delays in reporting Iran's breaches and referring the matter to the UNSC maximized the impact that the threat of economic sanctions might have had on the negotiations. While the long-term impact is unclear, the UNSC economic sanctions may have led to a defiant action by Iran to continue enrichment activities, and it also may have encouraged Iran to negotiate the positive August 21 agreement with the IAEA.¹³⁰ Subsequent to the imposition of sanctions, the IAEA's successful negotiations with Iran to come into full compliance with its safeguards agreement undercut to some extent the UNSC push for Iran to cease its enrichment activities, since those sanctions were initially prompted by the IAEA's report of Iranian non-compliance with its NPT obligations. Nonetheless, the UNSC sanctions currently remain in force, and further actions by the UNSC and other states in their individual or collective capacities cannot be ruled out.

It is worth noting that Iran is surrounded by often hostile neighbors, some of which possess nuclear weapons, for example, Israel, Pakistan, Russia, and the United States (via its presence in Iraq and other regional military deployments). Threats of military actions have been highly salient in the Iran nuclear crisis. Israel has indicated on numerous occasions that it might preemptively attack Iran,

ienable Right to Nuclear Technology for Peaceful Purposes (Jan. 29, 2004), available at <http://www.un.org/News/Press/docs/2004/dcf433.doc.htm>.

129. The UNSC Resolutions cited in *supra* notes 121-123 express concern as to "the proliferation risks presented by the Iranian nuclear programme" while remaining "mindful of [the UNSC's] primary responsibility under the Charter of the United Nations for the maintenance of international peace and security."

130. Kim Murphy, *Iran Warns World Against U.N. Sanctions*, L.A. TIMES, Nov. 11, 2006, available at <http://www.latimes.com/news/nationworld/world/la-fg-iran11nov11,1,3193191.story?coll=la-headlines-world>.

with or without help from the United States, in order to stymie Iran's nuclear program even if Iran is many years away from actually being able to build a nuclear bomb.¹³¹ Given Israel's actions against Iraq's Osiraq reactor,¹³² such a threat is probably viewed as credible by Iran. President Bush has warned that a nuclear Iran would risk World War III, and Vice President Cheney has warned that the United States would use its naval power to prevent Iran from developing nuclear weapons and from disrupting oil supplies.¹³³ In response, Iran has warned that it would respond and retaliate to any attack.¹³⁴ With the U.S. military positioned next door in Iraq, Iran is likely to perceive the threat of a U.S. attack as very serious. Thus, quite clearly, the use of force is a prevalent element hanging over the Iranian non-proliferation negotiations.

3. Role of the Dispute System

The NPT dispute system as a whole has played a significant role in shaping the conflict over Iran's nuclear program. First, the IAEA and official inspections have played an important part in defining the official status of Iran's compliance with its non-proliferation obligations. There has been no finding of a nuclear weapons program, and UNSC sanctions were only imposed after the IAEA referred the issue of non-compliance to the UNSC, in line with the NPT dispute system framework. Moreover, in prolonging the time in which it both issued its report of Iranian non-compliance and referred the matter to the UNSC, the IAEA managed to maximize the window for a negotiated solution to take hold. Thus, the system was able to frame the issues in the dispute and also provide for delay and iterations to give the parties time to craft a solution before the use of sanctions or force was officially contemplated.

Second, the legal endowment regarding the development of peaceful nuclear technology, including enrichment and reprocessing technology, has allowed Iran to defend its actions under the cloak of its NPT rights. The IAEA's inability to identify a nuclear weapons program has bolstered this defense, providing Iran with a defensible negotiating position in terms of its future actions, so long as they comply with IAEA agreements. Third, the NPT system has thus far successfully managed and mitigated the unauthorized use of force. While threats of military force abound, negotiations are still the preferred course of

131. Anne Penketh, *Israel Raises Nuclear Stakes with Iran*, THE INDEPENDENT, Jan. 25, 2007, available at http://news.independent.co.uk/world/middle_east/article2183872.ece.

132. See Federation of American Scientists, *supra* note 67.

133. Sheryl Gay Stolberg, *Nuclear Armed-Iran Risks World War, Bush Says*, N.Y. TIMES, Oct. 18, 2007, available at <http://www.nytimes.com/2007/10/18/washington/18prexy.html>; David E. Sanger, *On Carrier in Gulf, Cheney Warns Iran*, N.Y. TIMES, May 11, 2007, available at <http://www.nytimes.com/2007/05/11/world/middleeast/11cnd-cheney.html>. For a discussion of U.S. war planning against Iran, see Seymour M. Hersh, *The Iran Plans*, THE NEW YORKER, Apr. 17, 2006, available at http://www.newyorker.com/archive/2006/04/17/060417fa_fact.

134. CNN.com, *Iran Warns U.S. Over Strike Threat*, available at <http://www.cnn.com/2007/WORLD/meast/05/14/iran.ahmadinejad.ap/index.html>.

dispute resolution, and the UNSC actions were only taken after the IAEA referred the issue for action. Again, the system's emphasis on negotiations at all levels of the dispute has allowed maximum opportunity for a negotiated settlement.

C. Pakistan

1. Background to the Dispute

The origins of Pakistan's nuclear program date back to 1972, when it was founded by General Zulfikar Ali Bhutto.¹³⁵ India's first nuclear test in 1974 spurred Pakistan to redouble its efforts to obtain a nuclear deterrent.¹³⁶ Subsequently, in 1975, Dr. Abdul Qadeer Khan joined the effort, bringing with him expertise in sensitive uranium enrichment technology, as well as stolen designs and other technology gained from his previous employment in the Netherlands.¹³⁷ Through Khan's efforts, Pakistan developed uranium enrichment capabilities, and was likely capable of producing a highly-enriched-uranium nuclear weapon by the late 1980's.

In 1985, the U.S. Congress passed the Pressler Amendment, which requires a total cut-off of U.S. aid to Pakistan unless the President can certify that Pakistan does not possess nuclear weapons.¹³⁸ In October 1990, President Bush stated that he could no longer certify that Pakistan did not possess a nuclear weapon.¹³⁹ In 1996, the Brown Amendment was passed to ease the restrictions of the Pressler Amendment and allow certain U.S. military sales to Pakistan.¹⁴⁰ These two amendments still managed to block a deal for Pakistan to purchase a number of F-16 aircraft.

Between May 11th and 13th, 2006, India conducted five nuclear tests.¹⁴¹ Pakistan was under considerable domestic pressure to reciprocate in order to fully demonstrate its deterrent. However, the international community, led by the United States, tried to persuade Pakistan not to test. Although those talks were focused on forgoing nuclear testing and not on forgoing nuclear weapons

135. Federation of American Scientists, *Pakistan Nuclear Weapons*, available at <http://www.fas.org/nuke/guide/pakistan/nuke/index.html>.

136. U.S. State Department Briefing Paper, *The Pakistani Nuclear Program*, June 23, 1983, at 5, available at http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB6/ipn22_5.htm.

137. William J. Broad et al., *A Tale of Nuclear Proliferation: How Pakistani Built His Network*, N.Y. TIMES, Feb. 12, 2004, available at <http://www.nytimes.com/2004/02/12/international/asia/12NUKE.html>.

138. Federation of American Scientists, *Pakistan Nuclear Weapons—A Chronology*, available at <http://www.fas.org/nuke/guide/pakistan/nuke/chron.htm>.

139. *Id.*

140. *Id.*

141. Federation of American Scientists, *Nuclear Forces*, available at <http://www.fas.org/nuke/guide/india/nuke/>.

wholesale, this case study focuses on those discussions in order to compare and contrast a case of non-NPT nuclear negotiations with the previous two cases of states that are or were NPT parties. Ultimately, Pakistan conducted six nuclear tests on May 28th and 30th, 2006.¹⁴²

2. Law and Coercion

Pakistan has never signed the NPT. It also does not have a comprehensive safeguards agreement with the IAEA like those relevant in the Iran and North Korea cases. Thus, it operates in the world of sovereign right in terms of its domestic nuclear energy and defense choices. The primary legal constraints here relate not to international law, but to U.S. law restricting foreign aid, and other forms of leverage and foreign relations. Those laws also represent part of the coercion dynamic at play. Forging a multilateral consensus on sanctions was much more difficult in the aftermath of Pakistan's nuclear tests, so the United States instead chose to impose unilateral sanctions.¹⁴³

In deciding whether or not to test nuclear weapons, Pakistan had to balance the security interest of demonstrating its nuclear deterrent against the positive incentives offered by the United States to refrain from testing. The security pressure to test was not absolute—it was known that Pakistan possessed a nuclear capability sufficient to produce a number of nuclear devices, and such knowledge alone may have been enough to effectively deter India, which was probably motivated to test its weapons not solely because of Pakistan, but primarily because of concerns over China's rising military and economic power.¹⁴⁴ Still, a security dimension was obviously at play, in addition to considerable domestic pressure to respond to India's perceived provocation.¹⁴⁵

The Clinton administration sought to balance positive and negative incentives in order to persuade Pakistan not to test. First, it threatened to impose sanctions under the Glenn amendment if Pakistan tested.¹⁴⁶ Those sanctions would include a tightening of the U.S. sanctions on Pakistan that were eased by the

142. Federation of American Scientists, Pakistan Nuclear Weapons, available at <http://www.fas.org/nuke/guide/pakistan/nuke/index.html>.

143. Alan Friedman, *Clinton Seeks Condemnation of India and a Plea for Pakistani Restraint*, INT'L HERALD TRIB., May 16, 1998, available at <http://www.iht.com/articles/1998/05/16/summit.t.php>.

144. Ministry of External Affairs, Disarmament & International Security Affairs Division, Embassy of India, Washington, D.C., Brief on India's Nuclear Tests, available at <http://www.indianembassy.org/pic/nuclear/briefonnucleartests.htm>.

145. Farah Zahra, *Will Pakistan Test? The View from Islamabad*, GLOBAL BEAT ISSUE BRIEF NO. 35, May 19, 1998.

146. Glenn amendment sanctions include the following: termination of economic development assistance, suspension of foreign military sales, suspension of U.S. government credits and credit guarantees, freezing of U.S. banks loans, suspension of loans from the IMF and World Bank, and prohibition of exports of dual-use nuclear or missile items. Howard Diamond, *India Conducts Nuclear Tests; Pakistan Follows Suit*, ARMS CONTROL TODAY, May 1998, available at http://www.armscontrol.org/act/1998_05/hd1my98.asp.

Brown amendment, as well as actions by the United States to limit, delay, or prevent World Bank and IMF loans from being given to the country.¹⁴⁷ In terms of positive incentives, the United States offered increased assistance and a completion of the F-16 arms sales deal.¹⁴⁸ Ultimately, Pakistan rejected the offer and chose to face the consequences of sanctions. Those sanctions were eventually waived in 2001 in order to reward Pakistan for its cooperation in the War on Terror.¹⁴⁹

3. *Role of the Dispute System*

In this negotiation, the lack of the NPT dispute system, or any dispute system for that matter, clearly affected the nature of the negotiations. First, there was no particular framework or timeline that influenced the talks. Pakistan could have tested its weapons at any point with or without holding talks with the United States. There was no procedure and no third party involved in any way to influence the nature or character of the talks. Second, in terms of legal endowment, Pakistan had the right to test nuclear weapons. There was no NPT obligation that tempered its right of action—it was free to act in its sovereign capacity. Therefore, persuading Pakistan not to test was difficult because the United States had to do so purely on the use of positive and negative incentives based in bilateral levers of influence, not on any international legal framework.

Third, a collective action problem surfaced in terms of attempts to get the international community to put pressure on Pakistan not to test its weapons. While parties to the NPT are already within a system that has procedures for both oversight and punishment, Pakistan did not face a similar regime, so it had the benefit of being free from a system of normative constraints. Because it was not in that system, other states were less inclined to apply those same norms to Pakistan when considering means of punishment for the nuclear tests. This disjunction in norms, in combination with a lack of framework for action, made collective international action difficult and ensured that Pakistan only had to fear bilateral forms of censure.

Finally, the nature of the negotiations was less principled than in the other two case studies. In the case of North Korea and Iran, the NPT framework supplied standards, procedures, and norms of behavior that guided the discussions.

147. *Id.*; Rick Marshall, *Spokesman Notes "Profound Disappointment" at Pakistani Test*, USIS, May 28, 1998, available at http://www.fas.org/news/pakistan/1998/05/98052807_npo.html; CNN.com, *Pakistan: Nuclear Test Is Not Imminent*, May 26, 1998, available at <http://www.cnn.com/WORLD/asiapcf/9805/26/pakistan.nuke.two/>.

148. CNN.com, *U.S. Offers Pakistan Arms Sales in Return for Nuclear Restraint*, May 15, 1998, available at <http://www.cnn.com/WORLD/asiapcf/9805/15/india.pakistan/index.html>; CNN.com, *Pakistan Remains Elusive on Nuclear Testing Plans*, May 16, 1998, available at <http://www.cnn.com/WORLD/asiapcf/9805/16/pakistan.nuke.update/index.html>.

149. Alex Wagner, *Bush Waives Nuclear-Related Sanctions on India, Pakistan*, ARMS CONTROL TODAY, Oct. 2001, available at http://www.armscontrol.org/act/2001_10/sanctionsoct01.asp.

In the case of Pakistan, however, negotiations around shared treaty-based principles were lacking, and the discussion instead turned primarily into an ad hoc bargaining game. If Pakistan were an NPT member, the positive and negative incentives used by the United States may still have been a factor in the negotiations, but the framework that the NPT provides would have placed the focus of the talks on the party's status of compliance with the treaty and its procedures for dispute resolution.

IV. LESSONS LEARNED

This final section of the article discusses various lessons that can be drawn from the use of DSD principles for the NPT. Table 2 below offers a diagram of the dispute resolution process that was followed in the three case studies.

A. Procedural Lessons

The cases of North Korea, Iran, and Pakistan help to illustrate the impact that the NPT has, or could have, in terms of influencing negotiations through its legal regime—both procedurally and substantively. First, Iran is the clearest case in which the NPT significantly structures the negotiation by providing iterations for the dispute. The Iran dispute is controlled in large part by the IAEA, which documented the areas of misreporting and breach of safeguards agreements, declared that Iran was not in compliance with its NPT obligations, and then referred the dispute to the UNSC. The IAEA was able to maximize opportunities for negotiation by following those steps deliberately and in taking time before, during, and after each of those stages. This strategy eventually led to the August 21 agreement between Iran and the IAEA. Similarly, in the North Korea case, the IAEA discovered North Korea's breach of its safeguards agreements, which sparked negotiations in which North Korea's threat to withdraw from the NPT helped to create time for negotiations and also added extra impetus to the talks. Though this effort ultimately failed to resolve the dispute, which is still ongoing, it did create procedural opportunities for negotiations to succeed. In the case of Pakistan, on the other hand, the complete lack of a framework was evident in Pakistan's absolute control over the timing of its decision regarding the nuclear testing. Even if Pakistan were in the NPT and was trying to break out, at least the NPT withdrawal provision would have established a concrete time frame in which other countries could have tried to persuade Pakistan to remain within the system. Thus, procedurally in terms of providing iterations in disputes, the NPT system helps to expand the time available for negotiations.

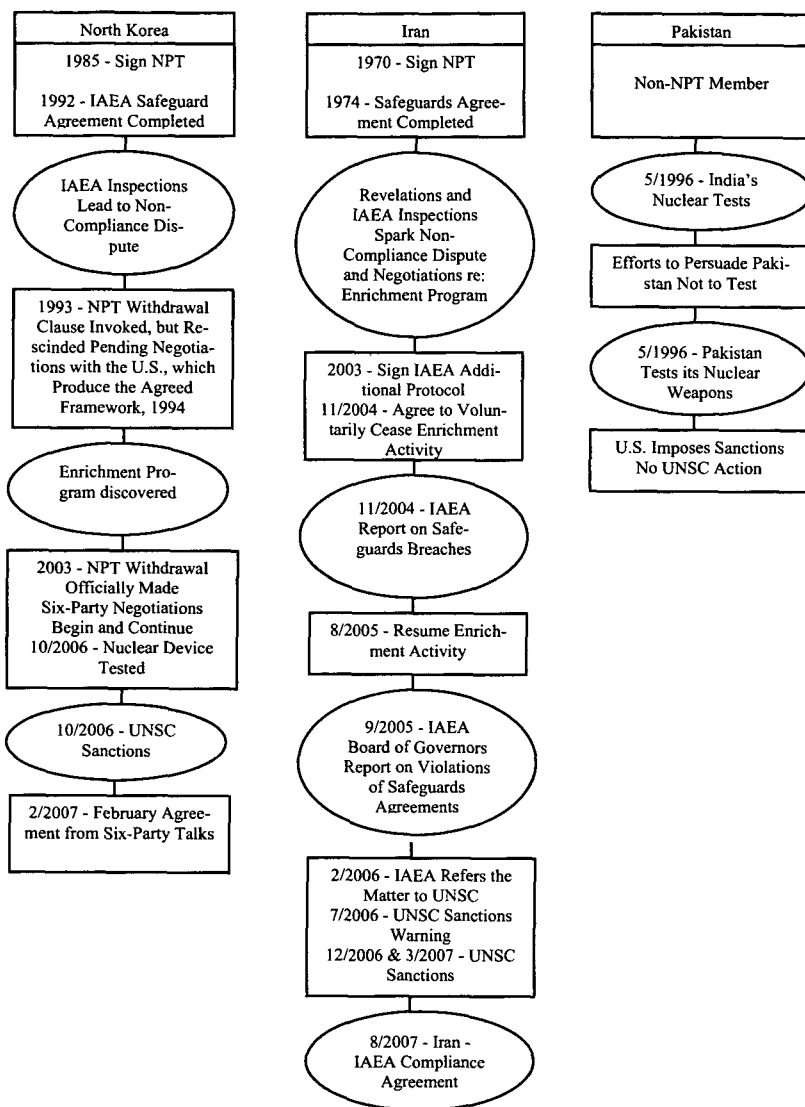
Second, the NPT structure also influences the actual terms of the negotiations. With North Korea, the issue continues to be abandonment of its nuclear weapons and energy program and reentry into the NPT. On the other hand, with Pakistan, the terms of the negotiations were never controlled by an independent

standard. Even if Pakistan chose not to test its weapons, the issue was not having to give up its nuclear program. With Iran, the issue is more complicated because both sides in the negotiations frame the dispute in different terms using the same standard. Iran claims that it is engaged in a lawful pursuit of enrichment technology, whereas the UNSC frames the dispute as preventing Iran from gaining the means of eventually creating fissile material for nuclear weapons. The IAEA has established that Iran is not pursuing the latter course at this point in time, but rather that it breached its safeguards agreement in the past and that it is not being as open about its current nuclear program as it could and should be. This provided justification for the UNSC to characterize Iran's enrichment activities as a threat to international peace and security and to impose sanctions upon Iran.

Third, the NPT legal endowments can make a difference if the parties to the dispute choose to make use of them for their own benefit. Iran has taken advantage of Article IV ¶ 1 of the NPT to justify its development of an enrichment capability. On the other hand, the IAEA and the UNSC made use of Iran's past breaches of its safeguards agreements to impose pressure, and ultimately sanctions on Iran for its decision to pursue its enrichment capability. North Korea made use of the legal right to withdraw in order to leverage negotiations and ultimately, to actually withdraw from the treaty. Pakistan also benefited from the default legal endowment of the international system, which grants them the right to develop nuclear technology without encumbrance. The international community, on the other hand, had no contrary legal endowment to leverage against Pakistan in its decision to test its nuclear devices.

Finally, the NPT can also help shape expectations and create predictability within the system. The Iran case study is a clear example where the parties to the dispute were aware of and followed the established dispute procedures. On the other hand, with the North Korea case, even though the conflict arose in the typical fashion with IAEA inspections, North Korea's quick recourse to the withdrawal procedure expedited the negotiation process. Also, after enrichment facilities were discovered and noncompliance with the Agreed Framework was clear, negotiations again were quickly complicated by North Korea's second attempt to withdraw from the treaty, which this time was successful. As for Pakistan, there were no expectations, nor was there predictability in terms of the negotiation process or procedures involved.

TABLE 2
CASE STUDIES COMPARED



B. Substantive Lessons

While the procedural aspects of the NPT seem to be helpful, the substantive deficiencies noted in Part II play a prominent role in the crises that make up the Part III case studies. First, regarding both North Korea and Pakistan, it is clear that the NPT was not able to provide either state with enough security guarantees to influence them to forgo nuclear weapons. For Pakistan, the threat of invasion and of a neighboring rival with nuclear weapons was too great for it not to reciprocate with nuclear tests of its own. For North Korea, the perceived threat from the United States, in the context of a long history of war and provocation, has thus far proven to outweigh the benefits of remaining within the NPT system. However, many states do not face significant security challenges, or if they do, they are able to provide for their security through conventional means. Such states would benefit from the NPT because of the potential for gain via peaceful nuclear technology transfers and cooperation, as well as the limitation on the number of other states possessing nuclear weapons. Some states view the proliferation of nuclear weapons as threatening to their security, so they would prefer the NPT system because it may normatively constrain other states from considering proliferation. But other states, like North Korea and Pakistan, face significant security threats, and the NPT's short- to medium-term incentive of atomic energy and long-term incentive of eventual disarmament may not be enough to convince these states to either join or remain in the NPT. This is especially the case if these states doubt the potential for long-term disarmament.

Part of the challenge for the NPT system in this realm is the fact that security concerns relating to nuclear weapons are of such a high order that it may be very difficult to develop an incentive structure that would meet the security interests of some states. Perhaps the NPT could have elicited clear security guarantees from the nuclear-weapon states for the non-nuclear-weapon states, for example, clear and binding statements of the nonuse of nuclear weapons against non-nuclear-weapon states that are members of the NPT. Or perhaps the NPT could have offered more attractive energy incentives, such as free or heavily discounted access to reactor fuel. These incentives still may not be enough for some, but it could help in other cases.

Pakistan is a very clear example of the NPT's failure to achieve universal membership. Nuclear-weapon states outside of the system significantly weaken the regime's chances of long-term success, as the risks and calculations that might drive other states to acquire nuclear weapons would be allowed to develop unchecked. Thus, with India outside of the system due to its desire to deter China and maintain its ability to independently defend itself, Pakistan too is faced with a choice: either acquire its own deterrent to counter India's nuclear power, or enter the NPT system that has little chance of getting India to give up its nuclear weapons absent substantial progress towards global disarmament.

The North Korea example also demonstrates the NPT's substantive deficiency in achieving disarmament. If there was progress being made by the NPT

nuclear-weapon states to reduce their arsenals and work towards disarmament, then perhaps North Korea's perceived security threat from the United States would diminish, thus alleviating the need for it to proliferate. Absent such progress, however, there is little to counter such perceived security threats.

Iran is a classic example of the NPT's challenge in terms of both guarding against proliferation and allowing states to build civilian nuclear programs. Enrichment and reprocessing technologies are inherently dual use—to produce reactor fuel, states typically use either enriched uranium or reprocessed spent fuel.¹⁵⁰ If the state possesses the capacity to enrich or reprocess on its own for nuclear energy purposes, that same process can also be used to produce or access fissile material for use in a nuclear weapon. Thus, while the NPT technically allows states to build such facilities for peaceful purposes, there is no escaping the potential that those facilities could be used for military purposes as well, or that material could be diverted from those facilities for military use. The NPT could have dealt with this problem initially by including specific provisions regarding particularly tight international oversight or control over the production and reprocessing of nuclear fuel. The system could also have developed international fuel banks or other such programs to ensure that all states have guaranteed access to nuclear fuel without having to rely on the nuclear-weapon states or other suppliers. Regardless, the substantive deficiencies quite clearly underlie most of the problematic cases of nuclear proliferation concerns.

C. Reflections on Reform

Given the manner in which the NPT has developed from an implementation perspective, namely the lack of progress and the lack of any mechanism to enforce progress towards disarmament, there is a strong argument to be made that the NPT reflects the security interests of the nuclear-weapon states. In other words, the NPT reflects the interests of the more powerful states in the system, as non-nuclear-weapon states party to the NPT have forgone the right to develop nuclear weapons, essentially entrenching the nuclear status quo.¹⁵¹ So long as

150. The most popular nuclear reactor is a light-water reactor, which uses low-enriched uranium fuel (1.8-3% U-235). Natural uranium, however, can be used directly as fuel in a heavy-water reactor (which would also require the use of heavy water, or water enriched with deuterium oxide) or in a gas-cooled graphite-moderated reactor. A heavy-water reactor eliminates the need to enrich uranium, and when combined with a reprocessing facility, would produce significant amounts of P-239. A gas-cooled graphite-moderated reactor operates similarly to a heavy-water reactor, but uses graphite instead of heavy water to moderate the reaction, thereby eliminating the need to produce heavy water. Fast breeder reactors, which produce more fissile material than they consume, require P-239 and U-238 for fuel. GARDNER, *supra* note 4, at 20, 32-35.

151. This bias may have originated in the original creation of the NPT. The United States and the U.S.S.R. monopolized the early treaty drafting, perhaps slanting the NPT in favor of preventing horizontal proliferation (that is, nuclear weapons spreading to more countries), rather than limiting vertical proliferation (that is, an increase in the number of nuclear weapons possessed by status quo nuclear powers). This preoccupation with horizontal proliferation may account for the NPT's weakness in making progress towards nuclear disarmament. Dimitris Bourantonis, *Negotiating the Non-Proliferation Treaty 1965-68: Patterns of Compromise*, 28 *DIPLOMATIC STUDIES PROGRAMME*

those powers retain their nuclear weapons, they have a military advantage over non-nuclear powers. Thus, the total lack of enforceable legal commitments regarding disarmament, in addition to the highly capable IAEA inspections regime, serve to benefit the powerful states in the system to the detriment of the weaker states.

In response to this position, one could argue that the NPT's legal endowment and its procedural impact on non-proliferation negotiations, especially opportunities for states to defend their development of nuclear technologies within the system or withdraw from the system when security concerns demand it, help to mitigate the ability of powerful states to exercise power bluntly over the weaker states. In other words, the NPT legal system mitigates and manages the use of power, placing the law in between conflicting security concerns. While this argument may be true in terms of assessing the NPT's procedural impact on negotiations, the substantive deficiencies in the system seem to point in the other direction, in favor of the argument that the NPT system is imbalanced in favor of the powerful states. The fact that, aside from the five NPT nuclear-weapon states, the four other states that possess nuclear weapons are not NPT members provides support for the notion that the NPT is primarily intended for the security of the powerful states in the international system, particularly the five NPT nuclear-weapon states and their allies.

While the substantive challenges are daunting, they are not reasons to abandon the system or condemn it to inevitable failure. Sustaining the regime will be difficult, especially as the impact of the North Korean nuclear test runs its full course through the system. But the NPT can be strengthened and improved, so long as the parties to the treaty retain the political will to have the treaty succeed. Some potential reforms for particularly important challenges faced by the NPT are listed below.

1. Universal Membership

Achieving universal membership is critically important for the regime. While states cannot be forced to join the system, they can be isolated or punished for being outside of the system. The UNSC could pass a resolution authorizing certain political, economic, and military sanctions against those countries not in the NPT system. While the political will may be lacking for such an action, it would be one of the best and most direct ways to isolate those regimes that are in possession of nuclear weapons outside of the NPT.¹⁵² An alternative to this route would be to engage in concentrated efforts to negotiate agreements

DISCUSSION PAPERS 1-11 (1997). Where particular states monopolize or dominate treaty drafting, the resulting treaty may be skewed in favor of those states' interests over the interests of other states.

152. In this regard, it is unfortunate that the United States recently approved plans to cooperate with India's nuclear energy industry, as it reverses a long-standing policy not to cooperate with non-NPT countries on nuclear energy. Dafna Linzer, *Lawmakers Concerned About U.S.-India Nuclear Trade Deal*, WASH. POST, Nov 15, 2006, at A14. Indeed, this policy may weaken the NPT non-proliferation norm. CIRINCIONE, *supra* note 7, at 120-21.

with each of the states outside of the system in order to persuade them to join. This can be achieved by addressing the specific interests of each state that have thus far prevented them from joining the system. This might entail providing negative and positive security assurances, creating regional nuclear weapons-free zones, or negotiating a separate treaty on disarmament among the nine states currently possessing nuclear weapons.

2. Legal Rules Applicable to States Outside the System

While the states outside of the NPT/IAEA system may never join the NPT, it could be of great benefit to develop rules or procedures that would incorporate these states into the system as much as possible. Non-NPT parties can and do cooperate with the IAEA as member-states. For example, India, Pakistan, and Israel are IAEA member-states and have entered into limited project-specific safeguards agreements with the IAEA.¹⁵³ The IAEA could build on these existing relationships and establish special non-NPT-party safeguards relationships with these nuclear-weapon states so that there is a more robust body of information available to the IAEA regarding their nuclear programs and stockpiles of nuclear material. In light of these states' national security interests, the information regarding nuclear material could remain confidential between the non-NPT-party nuclear-weapon state and the IAEA, unless and until there is a security breach that warrants alerting the international community. Since such an event would rise to the level of a threat to international peace and security, the UNSC would have authority to act on it anyway. The only difference would be that there would be early warning of the problem from an independent source. Such a relationship would benefit the international community, because of the enhanced monitoring of the nuclear material, and the non-NPT-party nuclear-weapon states, because they would benefit from IAEA assistance in securing and accounting for their nuclear material. One of the gravest concerns today involves the transfer of nuclear devices or material to non-state actors and terrorist groups.¹⁵⁴ If the IAEA were to further monitor and account for such material, it could help alert the international community of potential threats from illicit transfers or from the leakage of material.

3. Implementation Mechanisms for Disarmament

One of the key deficits of the NPT is the lack of implementation mechanisms for the call to disarm. This deficiency affects other states when consider-

153. IAEA, IAEA Member States, *available at* <http://www.iaea.org/About/Policy/MemberStates/>; IAEA, *Safeguards Statement for 2006*, *supra* note 42, at 7 (noting that only India, Pakistan, and Israel have safeguards agreements with the IAEA solely on a project-specific basis under INFCIRC/66/Rev.2). The NPT nuclear-weapon states have entered into "voluntary offer" safeguards agreements with the IAEA. *Id.* at 8; *see supra* note 42.

154. *See, e.g.,* GRAHAM ALLISON, NUCLEAR TERRORISM: THE ULTIMATE PREVENTABLE CATASTROPHE (2005); CIRINCIONE, *supra* note 7, at 89-95.

ing their choices to remain outside of the NPT and also to proliferate, even if they are currently in or once were in the NPT.¹⁵⁵ There are a number of ways in which such mechanisms could be developed. One way is for there to be an absolute cap preventing the development of any new nuclear devices, and prohibiting the modification, refurbishment, repair, or retooling of any nuclear devices. Thus, if a device is nearing its shelf-life, it cannot be replaced and must be allowed to expire. Such a policy would ensure that eventually, by the natural process of decay and obsolescence, disarmament would be achieved. This type of system is being advocated in the UK because its submarine-based Trident nuclear missiles are reaching the end of their shelf-life, and some have argued that replacing them would be contrary to the spirit, if not the letter, of the NPT's disarmament provisions.¹⁵⁶ The IAEA could be in charge of monitoring nuclear weapons stockpiles to ensure that replacements are not being made.

Another way to achieve this would be to negotiate a disarmament treaty with the nine nuclear-weapon states. Such a treaty between those nine states could involve setting certain goals and benchmarks for the gradual elimination of nuclear weapons. A first step could involve de-mating warheads from delivery systems. A second step would be dismantling the actual devices and separating out the fissile material, creating a "virtual deterrence" system.¹⁵⁷ A third step could involve establishing proportional reductions in the number of devices. Again, the IAEA could be called upon to monitor this system.

4. Legal Rules Regulating Withdrawal

As states are allowed to withdraw from the NPT, it is uncertain what legal obligations remain with regard to their behavior. For example, if a state violated its safeguards agreement prior to withdrawal, can it be punished for that non-compliance even once it has completely withdrawn from the treaty?¹⁵⁸ The answer to this question is not certain, but a provision specifying the legal obligations could have easily been included in the treaty, and can still be included by amendment, or perhaps by a UNSC resolution. It is clear that in order to discourage states like North Korea from withdrawing from the treaty, there should be some clarity regarding the persistence of particular legal obligations that attach due to a state having previously signed or ratified the NPT.

5. Enhancing Procedural Iterations in Negotiations

As seen in the Part III case studies, procedural iterations in the NPT system help to prolong the amount of time available for negotiations where appropriate.

155. This deficiency may be linked to a possible pro-nuclear-weapon-state bias among the major powers when the NPT was being drafted. *See supra* note 151.

156. *See supra* note 58.

157. *See supra* note 5.

158. At the very least, the UNSC could act under its authority outside of the NPT framework.

Enhancing such provisions can help to maximize the potential for a negotiated solution. In particular, the UNSC should consider an iteration between passing a resolution, and the resolution having authoritative effect. In other words, if a state is doubtful that the UNSC will actually pass particular sanctions or authorize the use of force against it, the state may discount the threat of that action. However, if the UNSC passes such a resolution with the caveat that it will not be enforced until one week from the day it was passed, an extra week is created in which negotiations could take place. Because UNSC action would be ensured absent a compromise, states may be more willing to make concessions in the face of certain consequences. Similarly, the UNSC resolutions could list multiple punishments, each of which is to take effect at a different time in order to create an automatic ratchet-up effect that the target country can halt in the case of negotiation or compromise.

6. *Provide Robust Security Assurances*

As many states either leave or do not enter the NPT due to security concerns, the NPT could benefit from certain provisions that would mandate particular security guarantees. For example, all nuclear-weapon states could be required to issue no-first-use pledges to all non-nuclear-weapon states. Such pledges would oblige the nuclear-weapon state to not be the first party to use nuclear weapons in a conflict with the non-nuclear-weapon state. This measure would ensure that nuclear weapons would never be used in any such conflict. The nuclear-weapon states could also sign such agreements with each other, ensuring that nuclear weapons again would not be used, since neither party would initiate the use. While such negative security assurances may be very beneficial, positive security assurances can also play an important role in bolstering the NPT system, and should be encouraged.¹⁵⁹

7. *Legal Rules Regulating Enrichment and Reprocessing Facilities*

As the case of Iran demonstrates, the development of enrichment and reprocessing capabilities poses a long-term proliferation risk because those facilities could be used to produce fissile material. The IAEA could develop a special inspection and monitoring protocol that would be applicable to such facilities to ensure that they are very closely monitored. Alternatively, the NPT could be amended to grant non-nuclear-weapon states specific rights of access to low-cost nuclear fuel in order to ease their incentives to develop their own production capabilities. Another option to deal with the problem of enrichment and reprocessing facilities is the creation of an international nuclear fuel supply administered by the IAEA.¹⁶⁰ Such an international nuclear fuel bank would assure countries

159. A positive security assurance would be a guarantee that Country A would protect Country B, perhaps even with Country A's nuclear weapons, in case anyone attacked Country B.

160. For a detailed discussion of the possible ways to create and implement a multilateral nu-

that they would not be denied access to nuclear fuel because of political impediments, a concern that may currently limit certain states' access to nuclear fuel supplies. This unencumbered access to fuel may also ease the desire and economic incentive to build enrichment and reprocessing facilities. In fact, if the IAEA or the international fuel bank were to undercut other sellers, it would create a negative economic incentive for states to construct such facilities.

8. Enhance Punishment Options

A final option is to enhance the range and scope of punishment options available for noncompliance. Options here include political sanctions, such as the removal of ambassadors from the country or travel limitations, or automatic rescission of various forms of international assistance.

CONCLUSION

Like many other multilateral treaty regimes, the NPT is a dispute system that moderates the competing rights and claims of its members. The system allocates legal endowments, empowers institutional actors, provides a framework for dispute resolution, and incorporates coercive means of enforcing its non-proliferation norm. By harnessing the shadow of the law and the shadow of violence, the NPT system is able to influence the process and outcome of non-proliferation negotiations. Analyzing the NPT as a dispute system highlights its strengths and weaknesses, both of which continue to be exposed by ongoing developments in the case studies. While the future of non-proliferation efforts remain uncertain, the ten DSD principles discussed in this article should help focus NPT reform efforts on the issues that are most important in strengthening the non-proliferation regime. And though the experience of the NPT may be idiosyncratic, the lessons that can be gleaned from its thirty-seven-year history should also be considered when analyzing, reforming, or drafting other multilateral treaty regimes.

clear fuel cycle, see IAEA, *Multilateral Approaches to the Nuclear Fuel Cycle*, INFCIRC/640 (Feb. 22, 2005), available at <http://www.iaea.org/Publications/Documents/Infcircs/2005/infcirc640.pdf>.