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Enforcing the Nuclear Nonproliferation Regime: The Legality of Preventive Measures

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Enforcing the Nuclear Nonproliferation Regime: The Legality of Preventive Measures

Cristian DeFrancia*

ABSTRACT

Efforts to limit the proliferation of nuclear weapons and nuclear-weapons-related technology have increasingly involved economic, technological, and military forms of coercion implemented in an environment of low-level conflict. Coercive counterproliferation measures have included a range of actions, including targeted economic sanctions, industrial sabotage, cyber attacks, targeted killings, and military strikes. While the nonproliferation obligations of states are well-established under relevant treaties, state practice, and the international monitoring system of the International Atomic Energy Agency (IAEA), norms relating to the enforcement of those obligations are not clearly defined in legal instruments. This Article reviews the legality of prevention and enforcement measures through the institutional framework of the global nonproliferation regime, considering the tensions between that framework and a range of cross-cutting disciplines of international law, including the law of nonforcible intervention, state responsibility, and the law of force. The Article advocates the continuing development of consistent technical criteria to determine proliferation risk at the institutional level of the IAEA monitoring system, and the prioritization of that system in the enforcement of nonproliferation obligations. It addresses the key legal issues associated with the full range of counterproliferation prevention and enforcement options, providing a comprehensive framework to facilitate the refinement of legal norms guiding global counterproliferation efforts.

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TABLE OF CONTENTS

I.	INTRODUCTION	707
II.	DEFINING THE PROBLEM: WHAT IS PROLIFERATION AND WHEN IS IT ILLEGAL?.....	714
	A. <i>Proliferation as an Internationally Wrongful Act</i>	715
	B. <i>Moving Toward a Definition of Proliferation</i>	718
III.	THE IAEA SAFEGUARDS SYSTEM: A FRAMEWORK FOR PEACEFUL USES	722
	A. <i>Comprehensive Safeguards Agreements</i>	722
	B. <i>The Model Additional Protocol</i>	724
	C. <i>New Facility Notification and Code 3.1</i>	726
	D. <i>Weaponization Activities Not Involving Nuclear Material</i>	727
	E. <i>Assessing the Credibility of Information Sources</i>	728
	F. <i>The Analytical Framework</i>	729
	G. <i>Assessing Capabilities: Technology and Intention</i>	730
IV.	PROLIFERATION QUANDARIES: PROMINENT CASE STUDIES.....	732
	A. <i>North Korea: Moving Beyond the Threshold</i>	732
	B. <i>Iran: The Problem of Ambiguity</i>	736
	C. <i>Reconciling Treatment of Non-NPT States with a Prevention Regime</i>	746
V.	ECONOMIC COUNTERPROLIFERATION MEASURES	748
	A. <i>Extraterritoriality: Jurisdictional Impediments to Effective Prevention</i>	749
	B. <i>Crippling Sanctions: Approaching a Pre-Force Maximum</i>	756
VI.	INTERFERENCE MEASURES: INTERDICTION AND CYBER ATTACKS.....	760
	A. <i>Interdiction: State Action and International Law</i>	762
	1. <i>Cuban Missile Redux</i>	763
	2. <i>Roving Police Authority</i>	765
	3. <i>Interdiction and Force</i>	769
	B. <i>The Advent of Low-Level Conflict: Cyber Attacks and Sabotage</i>	771
	1. <i>Cyber Measures and the Use of Force</i>	773
	2. <i>Cyber Measures, Intervention Law, and State Responsibility</i>	777
VII.	PREVENTIVE FORCE AND NONPROLIFERATION LAW	779

VIII.	CONCLUSION: ALL ROADS LEAD BACK TO EFFECTIVE MONITORING IN A COOPERATIVE POLITICAL ENVIRONMENT	782
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I. INTRODUCTION

Since the earliest days of atomic energy, the international community has sought to find ways to prevent the use of that technology in nuclear weapons development.¹ In 1963, President John F. Kennedy predicted that fifteen to twenty-five states would have nuclear weapons by the 1970s.² Since that time, five nations legally qualified to join the Nuclear Non-Proliferation Treaty³ (NPT) as nuclear-weapon states, another three states that never joined the Treaty are generally understood to possess nuclear weapons, and another state, the Democratic Republic of North Korea (DPRK), developed nuclear weapons after withdrawing from the Treaty. The success of the global nonproliferation regime has largely exceeded President Kennedy's expectations, though challenges remain. Preventing the diversion of nuclear technology to military uses has and will remain a top priority for the international community, requiring continued consideration of the legality of related measures of prevention.

Tense historical moments relating to the deployment and spread of nuclear weapons range from the Cuban Missile Crisis, to Israel's attack on Iraq's Osirak reactor, to the First and Second Gulf Wars in Iraq, to the ongoing standoffs with the DPRK and Iran. In more recent years, various measures have been taken to target alleged nuclear weapons development programs, including air strikes against Syria and various forms of sabotage against Iran.⁴ In the midst of these events, the International Atomic Energy Agency (IAEA) endeavors to maintain an effective and globally applicable monitoring system to verify that atomic energy is used for exclusively peaceful

1. See, e.g., Agreed Declaration by the President of the United States of America, the Prime Minister of the United Kingdom of Great Britain and Northern Ireland, and the Prime Minister of Canada Relating to Atomic Energy art. 6, Nov. 15, 1945, 26 U.N.T.S. 123 (calling for an enforceable "system of safeguards" to prevent the military uses of nuclear energy); G.A. Res. 49/1, U.N. Doc. A/RES/49/1 (Jan. 24, 1964) (calling for the establishment of a commission to ensure the use of atomic energy for exclusively peaceful purposes and for effective safeguards to further this end).

2. Remarks at the El Coco Airport, Costa Rica, upon Leaving for the United States, 1964 PUB. PAPERS 280 (Mar. 21, 1963).

3. 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].

4. See, e.g., Dan Bilefsky, *U.N. Nuclear Watchdog Presses Case Against Syria*, N.Y. TIMES, June 9, 2011, at A6; Scott Shane, *Adversaries of Iran Said to Be Stepping up Covert Actions*, N.Y. TIMES, Jan. 11, 2012, at A1.

purposes. As rhetoric heats up over possible military dimensions of Iran's nuclear energy program, and with some degree of low-level conflict underway, questions of the legality of measures to prevent the spread of nuclear weapons gain renewed prominence. Counterproliferation prevention and enforcement measures addressed in this Article include peaceful measures effected through diplomatic channels, as well as coercive measures, including economic sanctions, sabotage, and force.

The global nonproliferation regime comprises both cooperative and coercive legal and political mechanisms, including the NPT, the IAEA's system of safeguards, the Chapter VII authority of the UN Security Council, and the sovereign authorities of individual states. The legal core of the nonproliferation regime is the NPT, under which member states that did not possess nuclear weapons as of January 1, 1967,⁵ agree not to use nuclear technology for military purposes in exchange for established rights to receive and use nuclear technology for peaceful purposes. Non-nuclear-weapon states parties to the NPT agree to the application of IAEA "safeguards" to their peaceful nuclear energy programs,⁶ which are agreements between the IAEA and states designed to facilitate the auditing, monitoring, and inspection of nuclear energy programs. Under this system, it is the task of the IAEA to provide credible assurances that nuclear energy is used for exclusively peaceful purposes. The application of consistent criteria to assess proliferation risk and safeguards compliance is critical to this task.

The IAEA safeguards system consists of (1) safeguards agreements implemented in accordance with relevant treaties,⁷ most notably the NPT and Nuclear Weapon Free Zone Treaties (NWFZ),⁸ (2) the Statute of the IAEA, to the extent it is incorporated into

5. NPT, *supra* note 3, art. IX(3). Five states parties to the NPT qualified to join as nuclear-weapons states—China, France, the Russian Federation, the United Kingdom, and the United States. See generally INT'L ATOMIC ENERGY AGENCY [IAEA], THE SAFEGUARDS SYSTEM OF THE INTERNATIONAL ATOMIC ENERGY AGENCY ¶ 10 (2011) [hereinafter IAEA SAFEGUARDS SYSTEM], available at http://www.iaea.org/OurWork/SV/Safeguards/documents/safeg_system.pdf.

6. NPT, *supra* note 3, art. III.1.

7. States that are not subject to comprehensive safeguards requirements may enter into "item-specific" safeguards on a voluntary basis to facilitate trade with states parties to the NPT. See generally Cristian DeFrancia, *The Continuing Role of Item-Specific Safeguards in the IAEA Safeguards System*, 88 NUCLEAR L. BULL. 33, 37–38 (2011).

8. See Central Asia Nuclear Weapon Free Zone, Sept. 8, 2006, available at cns.miis.edu/inventory/pdfs/aptcawz.pdf; African Nuclear Weapon Free Zone Treaty, Apr. 11, 1996, 35 I.L.M. 698; Treaty on the Southeast Asian Nuclear Weapon-Free-Zone Treaty, opened for signature Dec. 15, 1995, 1981 U.N.T.S. 129; South Pacific Nuclear Free Zone Treaty, opened for signature Aug. 6, 1985, 1445 U.N.T.S. 177; Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean, opened for signature Feb. 14, 1967, 22 U.S.T. 762, 634 U.N.T.S. 281.

safeguards agreements, and (3) practices of the IAEA that have evolved in the implementation of safeguards agreements. As the principal international agency responsible for monitoring the peaceful uses of nuclear energy, the IAEA plays a central role in verifying that states adhere to their nonproliferation obligations through its safeguards system. Problems arise when states elude, or are perceived to elude the verification authority of the IAEA's monitoring system. When questions of noncompliance with safeguards agreements arise, the IAEA may impose a limited range of remedial measures, including special inspections, denial of assistance, or suspension of membership.⁹ The IAEA Statute and its safeguards agreements generally require that instances of noncompliance be reported to the Security Council.¹⁰

When issues of possible noncompliance with safeguards agreements are referred out of the IAEA, the Security Council assumes legal responsibility for determining appropriate prevention and enforcement steps. While state compliance with safeguards agreements is a key factor in determining whether a state is complying with legal nonproliferation obligations, legal determinations of NPT noncompliance are not directly within the province of the IAEA. The global nonproliferation regime relies on a broader framework for the development of nonproliferation norms. Specific legal authority for interpreting the NPT may rest with the NPT review conference of states parties¹¹ or under limited circumstances through a judicial forum such as the International Court of Justice.¹² Security Council and state practice may provide evidence of internationally agreed interpretations or even customary law. The development of nonproliferation norms thus takes place in a mixed law and policy framework, involving the administration of voluntarily entered legal agreements and the enforcement of those agreements through a collective security apparatus. Although nuclear law is highly specialized, the employment of coercive measures to enforce nonproliferation obligations implicates a range of cross-cutting international law disciplines, including the law of international sanctions, use of force law, and the law of intervention.

Measures aimed at preventing the spread of nuclear weapons need not be coercive. The optimal mechanism to resolve any doubts about possible military dimensions of a state's nuclear energy program is through the IAEA's safeguards system. When the IAEA can provide credible assurances that a state's nuclear energy program

9. Statute of the International Atomic Energy Agency art. XIII, Oct. 26, 1956, 1 U.S.T. 1093, 276 U.N.T.S. 3 [hereinafter IAEA Statute].

10. *Id.*

11. See NPT, *supra* note 3, art. VIII(3).

12. See generally Edwin J. Nazario, Note, *The Potential Role of Arbitration in the Nuclear Non-Proliferation Regime*, 10 AM. REV. INT'L ARB. 139 (1999).

is used for exclusively peaceful purposes, coercive measures to prevent the acquisition of nuclear weapons are wholly unnecessary. Even in cases when the IAEA refers a state to the Security Council for noncompliance with safeguards agreements, the suspect state may begin to resolve proliferation concerns directly with the IAEA, by fully participating in the safeguards system.¹³ It is important in this context that diplomatic efforts to address proliferation-related crises permit a rolling back of coercive measures (e.g., sanctions) in exchange for cooperation as a means to avoid vicious circles of crisis escalation.¹⁴ The technical verification role of the IAEA under its safeguards system provides a primary mechanism for preventing the spread of nuclear weapons, the effective operation of which should be the aim of any prevention and enforcement measures.

The Security Council's role in addressing state noncompliance with nonproliferation obligations underscores the depth of international concern about the issue. The principal role of the Security Council in the UN system is to address threats to international peace and security. It has various coercive tools available to it under Chapter VII of the UN Charter (assuming that nine of its members agree and none of the permanent members vote against).¹⁵ Article 41 of the Charter empowers the Security Council to institute coercive measures not involving the use of force, which may involve, *inter alia*, economic sanctions, interruption of communication, and a cessation of diplomatic relations.¹⁶ Article 42 empowers the Security Council to authorize the use of force.¹⁷ Due to the referral mechanism contained in safeguards agreements and the IAEA Statute, the Security Council has primary responsibility for enforcing related nonproliferation obligations and the discretion to determine what measures might be appropriate under the UN Charter.

Various prevention and enforcement measures have been undertaken by the Security Council and individual states and groups

13. See, e.g., Rick Gladstone & William J. Broad, *Iran Is Pressed on Access for Nuclear Inspectors*, N.Y. TIMES, Mar. 8, 2012, at A11 (discussing role of IAEA in resolving concerns relating to possible military dimensions of Iran's nuclear energy program).

14. Despite its central role in the global nonproliferation regime, however, the IAEA's role relates principally to technical verification of the peaceful uses of atomic energy. Neither the IAEA's Statute nor safeguards agreements envision for it a role as a political intermediary. The IAEA may, however, "if requested to do so, . . . act as an intermediary for the purposes of securing the performance of services or the supplying of materials, equipment, or facilities by one member of the Agency for another . . ." IAEA Statute, *supra* note 9, art. III.A.1.

15. U.N. Charter art. 27, para. 3.

16. *Id.* art. 41.

17. *Id.* art. 42.

of states to target states suspected of developing nuclear weapons.¹⁸ These measures have included condemnation, economic sanctions, travel bans, interdiction of weapons-related material, sabotage, and the unilateral or collective use of force. Reliance on a Security Council resolution may signal some legal clarity about whether particular actions are lawful, while unilateral measures taken by states often lack the benefit of that textual clarity.

On the economic level, legal options exist for states to implement sanctions—unilaterally or collectively—without Security Council authorization. Additionally, states may cooperate under multilateral regimes to deny or place conditions upon the provision of certain forms of sensitive technology to states. International law permits broad freedom of action in the economic sphere, although unilateral economic action will not be as effective as coordinated multilateral or international action. Putting aside questions of the effectiveness of economic sanctions, there is significant precedent for coordinated and comprehensive international sanctions targeting a wide range of economic activity. Legal questions involving unilateral sanctioning efforts generally center on the legal effect of sanctions on third parties that do business with the target state, and increasingly, on due process rights.¹⁹ Unilateral attempts at exercising extraterritorial jurisdiction in economic relationships may not necessarily be a violation of international law, but extraterritorial authority can be legally counteracted by third-party states that have conflicting legal policies (although corporations may nonetheless comply for business reasons).

The low-level conflict now typical in the counterproliferation context invites renewed focus on the distinctions between international law on the use of force and the law prohibiting certain forms of intervention in a state's internal affairs. Tactics of low-level conflict may include sabotage of industrial systems, cyber attacks, or interdictions. These tactics may not in all cases be significant enough to constitute a use of force under international law. Uses of force are categorically prohibited under the UN Charter unless authorized by

18. The terms "prevention," "preventive," and "enforcement" are not strictly associated with the use or nonuse of force in the international legal context. The UN Charter variously uses the terms "measures for the prevention and removal of a threats to the peace," U.N. Charter art. 1, para. 1, "preventive action," *id.* art. 2, para. 5, "enforcement action," *id.* arts. 1, 5, 53, "preventive measures," *id.* art. 50, and "enforcement measures," *id.* arts. 2, 50. The Charter does not preclude the application of force in its use of the term preventive measures and the UN High-Level Panel on Threats has expressly contemplated preventive military action. Chairman of the High-Level Panel on Threats, Challenges, and Change, *A More Secure World: Our Shared Responsibility: Rep. of the High-Level Panel on Threats, Challenges and Change*, U.N. Doc. A/59/565 (Dec. 2, 2004).

19. See discussion *infra* Part V.

the Security Council under Article 42²⁰ or taken in self-defense under Article 51.²¹ The fact that the behavior targeted by a use of force is itself wrongful is not generally recognized as providing an excuse to use force. If force is not involved, the legality of actions targeting wrongful behavior may be considered under the legal framework of a general prohibition upon intervention in the internal affairs of states, which may apply when force is not used. The law of intervention, which overlaps with and has been largely overshadowed by the law of force in recent years, deserves renewed attention in light of its potential application to situations of low-level conflict in which force may not be involved. Because the categorical prohibition that applies to uses of force will not necessarily apply to acts of intervention in a state's affairs, the law of countermeasures may be applicable in cases of intervention that do not involve a use of force, providing more clear legal rules for low-level conflict involving counterproliferation.

In the case of nonforcible intervention, principles of state responsibility may apply, permitting countermeasures when those measures target the cessation of an unlawful act. Legal problems multiply in the context of low-level conflict relating to proliferation, however, as international law lacks clarity on (1) what constitutes a use of force, (2) the legal character of nonproliferation obligations (specifically, what behavior may be considered wrongful in the context of proliferation), and (3) what legal framework applies to targeted counterproliferation measures. The question of what qualifies as illegal behavior in the context of proliferation may be crucial to determining whether certain forms of nonforcible intervention are legally permissible as countermeasures.

International efforts to interdict illicit shipments in nuclear materials similarly raise questions concerning the dividing line between forcible and nonforcible measures, as well as the distinction between military and police actions. The authority to interdict is generally a function of the sovereign consent of the flag-state of the vessel, leaving a critical legal gap when rogue states engage in trafficking on the high seas. Nearly five decades after the Cuban Missile Crisis, the interdiction of nuclear-weapons-related material without flag-state consent on the high seas remains legally problematic. As new legal regimes develop to criminalize aspects of the trade in nuclear weapons and proliferation-sensitive materials, the interdiction of such material may be considered either on a model of police action and law enforcement, or under the law on the use of force. In this context, the question of whether there is a meaningful distinction between the use of force and police action has not been fully vetted or resolved in international law. Recent trends permitting

20. U.N. Charter art. 42.

21. *Id.* art. 51.

the apprehension of suspects for international criminal prosecution support such a distinction.²² The development of a criminal law regime targeting proliferation-related shipments may provide some space for the lawful exercise of domestic authorities on the high seas.

Finally, assuming that certain proliferation-related behavior can be defined as illegal, and coercive measures may be legally employed domestically and unilaterally to counteract such behavior, it is important to anticipate the desired effect of such measures in the framework of the nonproliferation regime. While coercion may be useful in certain situations, a successful end game requires that coercive actions do not become an independent source of conflict. A successful nonproliferation regime is ultimately a cooperative regime, centered around effective international monitoring in which states are at all phases given opportunities to return to the diplomatic negotiating table. Most importantly, a successful nonproliferation regime is one in which the IAEA is able to provide assurances that nuclear energy is used for exclusively peaceful purposes.

This Article considers the global nonproliferation regime in both its cooperative and coercive elements, outlining the range of legal issues presented by efforts to contain the use of nuclear technology in the wider framework of international law. The first sections of the Article address the core features of the nonproliferation system, including important legal definitions and the institutional framework of the IAEA and its safeguards system. The latter sections address the legality of actions taken by states both unilaterally and within the collective security apparatus of the Security Council, including economic sanctions, interdiction, sabotage, and the use of force. In the course of this analysis, the Article calls attention to the need for clarity on definitions relating to proliferation, the use of force, intervention, and distinctions between international police and military actions. The emergence of more predictable prevention and enforcement norms in the nuclear nonproliferation context is critical to the task of achieving the security of a world free of nuclear weapons. This Article endeavors to illustrate the framework of the global nonproliferation regime that permits the continuing development of clear yet adaptive prevention and enforcement norms.

22. See, e.g., Rome Statute of the International Criminal Court art. 58, July 17, 1998, 2187 U.N.T.S. 90 (outlining procedures for arrest and detention of war crimes suspects).

II. DEFINING THE PROBLEM: WHAT IS PROLIFERATION AND WHEN IS IT ILLEGAL?

While it is fairly clear that proliferation of nuclear weapons and nuclear-weapons-related technology is generally prohibited for states integrated into the global nonproliferation regime, it is less clear what sorts of behaviors count as proliferation. Prevailing standards of nonproliferation law may be found in an amalgam of relevant treaty texts, state practice, IAEA practice, and Security Council pronouncements. The basic framework of the global nonproliferation regime begins with the NPT. The Treaty embodies core norms of nonproliferation, articulated in Articles 1 and 2, namely that nuclear-weapons states should not assist non-nuclear-weapon states in developing nuclear weapons or nuclear explosive devices and that non-nuclear-weapon states may not manufacture, acquire, or seek to develop such weapons or devices. Two principal institutions are responsible for compliance and enforcement matters under this regime, the IAEA and the Security Council. Under Article 3 of the NPT, non-nuclear-weapon states parties are required to conclude safeguards agreements with the IAEA as a mechanism to verify their commitments to the exclusively peaceful uses of nuclear energy under the NPT.²³ The IAEA's authorities extend to auditing, monitoring, and inspecting nuclear energy programs under these agreements,²⁴ while the Council's prevention and enforcement powers are rooted in the broader political context of maintaining peace and security,²⁵ with authority to approve action up to and including force.

Nonproliferation enforcement norms have developed largely through state practice in restricting proliferation-sensitive technologies and the Security Council's practical exercise of its enforcement authorities. The global nonproliferation regime cannot be reconciled by reference to the NPT alone, as the Treaty is not at this time universally applicable. Broadly applicable norms have nonetheless evolved through the implementation of the NPT and related nonproliferation agreements, principally through verification and enforcement activities of the IAEA, states, and the Security Council.²⁶ These entities have carved out a host of authorities for international and state-based measures to prevent proliferation beyond the strictures of the NPT.

23. NPT, *supra* note 3, art. III.

24. *Id.*

25. U.N. Charter art. 24.

26. See generally Abram Chayes, *An Inquiry into the Workings of Arms Control Agreements*, 85 HARV. L. REV. 905, 945-46 (1972) (discussing verification and enforcement elements of arms control agreements).

A. Proliferation as an Internationally Wrongful Act

The Security Council has long considered proliferation to be a threat to international peace and security, meriting the application of preventive measures. Meeting at the heads of state level in 1992, the President of the Security Council, speaking on behalf of the members, declared that the proliferation of weapons of mass destruction (WMD) represents “a threat to international peace and security.”²⁷ States were encouraged to take “appropriate action” to “prevent the spread of technology related to the research for or production of such weapons.”²⁸ Regarding the proliferation of nuclear weapons, the Security Council further stated that “members of the Council will take appropriate measures” in the event that the IAEA notifies them of any violations of safeguards agreements.²⁹ By these pronouncements, the Security Council reinforced the proposition that a duty not to proliferate nuclear weapons is an obligation owed broadly by states to the international community. In this respect, nonproliferation legal norms have attained heightened status under international law as obligations owed by states “*erga omnes*” toward the international community as a whole.³⁰ The Council’s determinations, coupled with other international instruments seeking to prevent the spread of nuclear weapons,³¹ as well as the prevalence

27. President of the S.C., *Note by the President of the Security Council*, at 4, U.N. Doc. S/23500 (Jan. 31, 1992). This statement was reiterated in a series of subsequent Security Council Resolutions dealing with specific instances of noncompliance with the NPT and general matters of proliferation. See Orde F. Kittrie, *Averting Catastrophe: Why the Nuclear Non-Proliferation Treaty Is Losing Its Deterrence Capacity and How to Restore It*, 28 MICH. J. INT’L L. 337, 340 n.12 (2007) (noting that the Security Council has deemed nuclear proliferation to be a “threat to international peace and security,” and thus nuclear proliferation is subject to its Chapter VII sanctioning authority regardless of whether or not the proliferation activity violates the NPT, another treaty, or customary international law).

28. U.N. Doc. S/23500, *supra* note 27, at 4.

29. *Id.*

30. See, e.g., *Barcelona Traction, Light & Power Co. (Belg. v. Spain)*, 1970 I.C.J. 4, 32 (Feb. 5) (“[A]n essential distinction should be drawn between the obligations of a State towards the international community as a whole, and those arising vis-à-vis another State in the field of diplomatic protection. By their very nature the former are the concern of all States. In view of the importance of the rights involved, all States can be held to have a legal interest in their protection; they are obligations *erga omnes*.”).

31. See, e.g., International Convention for the Suppression of Acts of Nuclear Terrorism pmb., Apr. 13, 2005, 2445 U.N.T.S. 89 (“[N]oting that acts of nuclear terrorism may result in the gravest consequences and may pose a threat to international peace and security”); Comprehensive Nuclear-Test-Ban Treaty pmb., *opened for signature* Sept. 24, 1996, 35 I.L.M. 1439; Convention on the Physical Protection of Nuclear Material, Oct. 26, 1979, T.I.A.S. 11080 (“Desiring to avert the potential dangers posed by the unlawful taking and use of nuclear materials”); IAEA Statute, *supra* note 9, art. II (“[S]eek[ing] to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world.”); Int’l Maritime Org. [IMO], *Protocol of 2005 to the Convention for the Suppression of*

of multilateral nuclear weapon free zones, leaves little doubt that a norm of proliferation has evolved under multiple legal regimes and that action may be necessary to prevent or respond to it. Although the Security Council is not a legislative institution, its pronouncements are not devoid of legal effect,³² and, in the case of nonproliferation norms, those pronouncements reflect international practice and lawmaking.

To the extent that the NPT provides the edifice of nonproliferation law, two Achilles heels present themselves. First, the Treaty is not universal insofar as three states—India, Pakistan, and Israel—never signed it. It cannot be denied that the nonproliferation regime originated as a voluntary regime. States that did not enter into the Treaty are not bound by its terms. Reconciling the decision of these three states to remain outside of the NPT regime with a global norm against nuclear weapons proliferation is a formidable challenge.³³ Second, Article 10 of the NPT allows for a state to withdraw “if it decides that extraordinary events, related to the subject matter of this Treaty, have jeopardized the supreme interests of its country.”³⁴ As Tom Coppen and Guido den Dekker note, the NPT withdrawal clause is framed as permitting withdrawal under a subjective standard, arguably providing a state some degree of discretion as to what constitutes extraordinary events meriting withdrawal.³⁵ Even if withdrawal from the Treaty can be accomplished on a purely subjective basis, however, withdrawing to develop nuclear weapons with the use of technology acquired in the framework of the Treaty fundamentally violates the spirit of the agreement and cannot cure a breach that occurred during the period when the state was party. To the extent that a state withdraws from the Treaty in order to conceal a breach, residual obligations may exist under the NPT and related safeguards agreements pertaining to the period prior to withdrawal.³⁶ Moreover, states parties to the NPT are

Unlawful Acts Against the Safety of Maritime Navigation, pmbi. para. 13, IMO Doc. LEG/CONF.15/21 (Nov. 1, 2005) [hereinafter SUA Protocol], available at <http://www.state.gov/documents/organization/58426.pdf> (“BELIEVING that it is necessary to adopt provisions . . . to suppress additional terrorist acts of violence against the safety and security of international maritime navigation and to improve its effectiveness . . .”).

32. See U.N. Charter art. 103 (stating that obligations under the UN Charter are superior to conflicting obligations under other international agreements).

33. See discussion *infra* Part IV.C.

34. NPT, *supra* note 3, art. 10.

35. Guido den Dekker & Tom Coppen, *Termination and Suspension of, and Withdrawal from, WMD Arms Control Agreements in Light of the General Law of Treaties*, 17 J. CONFLICT & SECURITY L. 25 (2012) (discussing the subjective character of the NPT withdrawal clause).

36. See generally Antonio F. Perez, *Survival of Rights Under the Nuclear Non-Proliferation Treaty: Withdrawal and the Continuing Right of International Atomic*

fully integrated in the global nonproliferation regime, and exit would in most cases be considered as a potential threat to international peace and security within the framework of the Security Council.³⁷

The mere declaration of a threat to peace and security does not necessarily indicate that all of the activity associated with the threat is internationally wrongful as a legal matter, however.³⁸ Although a refusal to fulfill a treaty obligation is usually a violation of international law,³⁹ the extent of activities that could be deemed wrongful under the broader legal norm of nonproliferation is less clear. Thus, rights relating to different parts of the nuclear fuel cycle remain in flux. The IAEA and Security Council treatment of particular instances will, however, carry great weight in determining whether specific proliferation-related activities are wrongful under international law.⁴⁰ Posing the question of whether certain proliferation activities are internationally wrongful is an important step in determining the legality of counterproliferation measures designed to address those activities.

Energy Agency Safeguards, 34 VA. J. INT'L L. 749, 823–26 (1994) (discussing post-NPT withdrawal rights in terms of the survivability of safeguards).

37. See generally Geoffrey S. Carlson, *An Offer They Can't Refuse? The Security Council Tells North Korea to Re-Sign the Nuclear Non-Proliferation Treaty*, 46 COLUM. J. TRANSNAT'L L. 420 (arguing that Security Council Resolution 1718 calling upon North Korea to return to the NPT after its first nuclear weapons test on October 9, 2006 was a legal and prudent action on the part of the Security Council).

38. See James Crawford, *The Relationship Between Sanctions and Countermeasures*, in UNITED NATIONS SANCTIONS AND INTERNATIONAL LAW 57 (Vera Gowlland-Debbas ed., 2001); Pierre-Marie Dupuy, *Après la guerre du Golfe*, 95 REVUE GÉNÉRALE DE DROIT INTERNATIONAL PUBLIC 621, 622 (1991) (Fr.). On the distinction between Security Council law-determining and law-enforcing powers, see generally Gaetano Arangio-Ruiz, *On the Security Council's "Law-Making,"* 83 RIVISTA DI DIRITTO INTERNAZIONALE 609, 627 (It.) (criticizing the Security Council's lawmaking role but recognizing the Security Council's powers to affect rights and obligations of states that are incompatible with authorized Chapter VII measures) and also Vera Gowlland-Debbas, *Security Council Enforcement Action and Issues of State Responsibility*, 43 INT'L & COMP. L.Q. 55, 78 (1994) (noting that where the Security Council links threat determinations to breaches of fundamental international obligations, "[s]uch determinations have had a definitive legal effect, as well as extensive legal consequences").

39. See, e.g., *Interpretation of Peace Treaties with Bulgaria, Hungary and Romania, Second Phase, Advisory Opinion*, 1950 I.C.J. 221, 228 (July 18) ("[R]efusal to fulfill a treaty obligation involves international responsibility."). See generally Rep. of the Int'l Law Comm'n, 53d Sess., Apr. 1–June 1, July 2–Aug. 10, 2001, Annex, at 43, U.N. Doc. A/56/10; GAOR, 56th Sess., Supp. No. 10 (2001), reprinted in [2001] 2 Y.B. Int'l L. Comm'n 1, U.N. Doc. A/CN.4/SER.A/2001/Add.1 (Part 1) [hereinafter Draft Articles on State Responsibility with Commentaries].

40. On the significance of IAEA findings for determinations of wrongfulness, see N. Jansen Calamita, *Sanctions, Countermeasures, and the Iranian Nuclear Issue*, 42 VAND. J. TRANSNAT'L L. 1393, 1420–21, 1434–37 (2009).

B. Moving Toward a Definition of Proliferation

Behaviors qualifying as proliferation are not generally defined under international law.⁴¹ The relevant legal instruments do not directly define what acts qualify as proliferation, yet these instruments represent the principal guides to determining whether it has occurred. Although states possess a right to the peaceful uses of atomic energy under the NPT, certain “proliferation-sensitive” aspects of the nuclear fuel cycle, such as uranium enrichment, reprocessing, and heavy water technology,⁴² may bring a state to a threshold capacity from which breakout to a nuclear weapon becomes a relatively simple act. Questions inevitably arise as to whether, as a legal matter, a state can be considered a proliferator prior to the point at which that state actually possesses a nuclear weapon. The lack of a clear definition of what qualifies as proliferation makes the task of answering that question somewhat complex.

The NPT imposes nonproliferation obligations on nuclear-weapon states parties (NWS) and non-nuclear-weapon states parties (NNWS) in Articles 1 and 2.⁴³ These articles generally prohibit (1) the

41. Extensive consideration has been given in the literature on nuclear politics to different types of proliferation, namely “vertical” proliferation (an increase in the weapons of NWS), “horizontal” proliferation (an increase in the number of states that possess nuclear weapons), and “advanced” proliferation (an increase in the number of weapons of states that newly possess nuclear weapons), yet these materials are not instructive as to what constitutes proliferation for a legal determination of unlawfulness. See generally DANIEL H. JOYNER, *INTERNATIONAL LAW AND THE PROLIFERATION OF WEAPONS OF MASS DESTRUCTION*, at xiv–xv (2009); Richard L. Williamson, Jr., *Law and the H-Bomb: Strengthening the Nonproliferation Regime to Impede Advanced Proliferation*, 28 CORNELL INT’L L.J. 71, 77 (1995) (discussing the definition of advanced proliferation to include both vertical and horizontal). On the need to define proliferation from a U.S. perspective, see Paula L. Scalingi, *Proliferation Policy: Managing the Process*, 87 AM. SOC’Y INT’L L. PROC. 82, 85–86 (1993).

42. See *infra* note 57 and accompanying text.

43. Article I states:

Each nuclear-weapon State Party to the Treaty under-takes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly; and not in any way to assist, encourage, or induce any non-nuclear-weapon State to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices.

NPT, *supra* note 3, art. I.

Article II states:

Each non-nuclear-weapon State Party to the Treaty undertakes not to receive the transfer from any transferor whatsoever of nuclear weapons or other nuclear explosive devices or of control over such weapons or explosive devices directly, or indirectly; not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices; and not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices.

transfer (direct or indirect) of nuclear weapons devices to NNWS (2) NWS assistance, encouragement, or inducement by a NWS to a NNWS to manufacture, acquire, or control nuclear weapons or nuclear explosive devices; and (3) the manufacture, acquisition, and seeking or receiving assistance in the manufacture of nuclear weapons or other nuclear explosive devices.⁴⁴ Any of these activities would therefore constitute an act of proliferation. The Treaty also gives the IAEA jurisdiction to verify, through safeguards agreements with member states, the nondiversion of nuclear energy from peaceful uses to nuclear weapons or nuclear explosive devices,⁴⁵ indicating that diversion is clearly an unlawful act of proliferation under the Treaty. Noncompliance with safeguards agreements or other verification mechanisms would also raise adverse inferences relating to the legality of proliferation activities.

Proliferation concerns outlined in Articles 1 and 2 of the NPT must be counterbalanced against states' rights under Article 4(1) of the Treaty. Article 4(1) provides that nothing in the Treaty should affect the "inalienable right" of the parties "to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty."⁴⁶ Article 4(2) also confirms that states parties have a "right to participate in[] the fullest possible exchange of equipment, materials, and scientific and technological information for the peaceful uses of nuclear energy."⁴⁷ Commentators have argued that the right of states to participate in technological exchange is of a hortatory character and of less significance than the "inalienable right" under Article 4(1).⁴⁸ Rights to participate in the trade in nuclear technology, inalienable under the Treaty, are expressly granted therein, and thus dependent upon compliance with the Treaty. The conditioning of Article 4 rights on the prohibition against the manufacture of nuclear weapons in Articles 1 and 2 nonetheless leaves open the question of whether states have a right to develop proliferation-sensitive technologies. Certainly states have done so in the past under the NPT with the intent to cross the threshold and acquire a nuclear weapon. The Security Council, as well as multilateral consortia of states, has seen fit to impose restrictions of a preventative character on such activities.⁴⁹

Id. art. II.

44. *Id.*

45. *Id.* art. III.

46. *Id.* art. IV(1).

47. *Id.* art. IV(2).

48. See, e.g., Zhang Xinjun, *International Ambiguity and the Rule of Interpretation in Auto-Interpretation: The Case of "Inalienable Right" in NPT Article IV*, 52 JAP. Y.B. INT'L L. 35, 42 (2010).

49. See *infra* notes 58–60.

A recent protocol to a maritime security treaty, which criminalizes the unlawful carriage of nuclear-weapons-related materials on the high seas, provides additional insight into how to define proliferation activities. The Protocol to the Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation (SUA Protocol) was concluded in 2005 at the International Maritime Organization and entered into force on July 28, 2010.⁵⁰ In its relevant provisions, the SUA Protocol criminalizes (1) the transport of any explosive or radioactive material, knowing that is intended to be used to cause death or injury;⁵¹ (2) any biological chemical, or nuclear (BCN) weapon;⁵² (3) any source material or special fissionable material, knowing that it is intended to be used in a nuclear explosive activity or any other activity not under IAEA safeguards;⁵³ and (4) “any equipment, materials or software or related technology that significantly contributes to the design, manufacture or delivery of a BCN weapon, with the intention that it will be used for such purpose.”⁵⁴ The protocol builds on the work of the Proliferation Security Initiative (PSI) and bilateral shipboarding agreements in defining proliferation in the context of international transport.⁵⁵

Measures to prevent proliferation typically target activities related to the possibility of proliferation, also known as “proliferation-sensitive” activities. The legal treatment of such activities is not clearly outlined in the NPT, but is arguably critical to resolving potential inconsistencies between rights of peaceful use and prohibitions against weapons development. The term “sensitive nuclear activity” arose in the context of efforts in the 1970s to limit the spread of nuclear weapons.⁵⁶ It was defined in the United States Nuclear Nonproliferation Act of 1978 as “[A]ny information . . . which is not available to the public and which is important to the design, construction, fabrication, operation or maintenance of a uranium

50. See SUA Protocol, *supra* note 31; 2005 SUA Protocols to Enter into Force, IMO NEWS (Int'l Maritime Org., London, U.K.), no. 2, 2010, at 6.

51. SUA Protocol, *supra* note 31, art. 3bis(1)(b)(i).

52. *Id.* art. 3bis(1)(b)(ii).

53. *Id.* art. 3bis(1)(b)(iii).

54. *Id.* art. 3bis(1)(b)(iv).

55. The Statement of Interdiction Principles of the PSI refers to proliferation “through (1) efforts to develop or acquire chemical, biological, or nuclear weapons and associated delivery systems; or (2) transfers (either selling, receiving, or facilitating) of WMD, their delivery systems, or related materials.” *Proliferation Security Initiative: Statement of Interdiction Principles*, U.S. DEP'T ST. (Sept. 23, 2003), <http://www.state.gov/t/isn/c27726.htm>. Many bilateral ship-boarding agreements contain similar provisions in referring to “proliferation by sea.” See generally Douglas Guilfoyle, *Maritime Interdiction of Weapons of Mass Destruction*, 12 J. CONFLICT & SECURITY L. 1, 23 (2007) (defining “proliferation by sea” and describing its application).

56. For a discussion of the historical background, see Zhang Xinjun, *supra* note 48, at 40–43.

enrichment or nuclear fuel reprocessing facility or a facility for the production of heavy water.”⁵⁷

Addressing the risks posed by proliferation-sensitive activities is a principal concern of nonproliferation legal frameworks, including the IAEA, the Security Council, multilateral export groups, and states. The gravity of the risk of nuclear weapons proliferation undergirds the system of strict controls for nuclear technology and the context-dependent nature of defining proliferation. Continuing debates relating to the rights of non-nuclear-weapon states to engage in proliferation-sensitive activities have provided ample fodder for international controversies and allegations of selective targeting of developing states for the application of preventive measures.⁵⁸ Balancing rights to peaceful use with the proliferation concerns posed by sensitive activities is, in the end, a question of whether those activities are adequately safeguarded.⁵⁹

Striking a balance between rights and risks under the NPT requires recognition of the overarching norm governing the Treaty: the prevention of proliferation. According to a statement of principles issued by the UN General Assembly in the NPT drafting process, it was envisioned that the Treaty “should be void of any loop-holes which might permit nuclear or non-nuclear Powers to proliferate, directly or indirectly, nuclear weapons in any form.”⁶⁰ The IAEA, operating through its safeguards system, and related enforcement entities bear substantial responsibility for ensuring that the peaceful uses under the Treaty do not allow the exploitation of loopholes to facilitate the development of weapons.⁶¹

57. Nuclear Nonproliferation Act of 1978, Pub. L. No. 95-242, § 4(a)(6), 92 Stat. 120 (codified as amended in scattered sections of 22 and 42 U.S.C. (2006)).

58. See Jon B. Wolfstahl, *The Nuclear Third Rail: Can Fuel Cycle Capabilities Be Limited?*, ARMS CONTROL TODAY, Dec. 2004, at 11 (“[T]he third rail [of the nuclear security world] has been the nuclear fuel cycle, that is, what restrictions if any should be placed on the ability of states to produce and use fissile materials (enriched uranium and especially plutonium), which have civilian purposes but also can be used to make nuclear weapons.”).

59. As Xinjun notes, the Director of the U.S. Arms Control and Disarmament Agency in 1968 stated that items that would now be considered proliferation-sensitive would not be precluded under Article II of the NPT, so long as those activities are safeguarded from abuse. Zhang Xinjun, *supra* note 48, at 45; see also SUBCOMM. ON DISARMAMENT, S. COMM. ON FOREIGN RELATIONS, 90TH CONG., STATUS OF DEVELOPMENT OF BALLISTIC AND ANTI-BALLISTIC SYSTEMS IN U.S., AND BRIEFING ON NON-PROLIFERATION TREATY (Comm. Print 1968) (statement by John S. Foster, Jr., Dir., Defense, Research & Eng’g, Dept of Defense) (emphasizing the importance of safeguards in nuclear trade).

60. G.A. Res. 2028 (XX), ¶ 2(a), U.N. Doc. A/6014 (Nov. 19, 1965).

61. See generally IAEA SAFEGUARDS SYSTEM, *supra* note 5, ¶ 12 (discussing function of the safeguards system to ensure that nuclear materials are not diverted from peaceful uses).

III. THE IAEA SAFEGUARDS SYSTEM: A FRAMEWORK FOR PEACEFUL USES

The most basic preventive mechanism in the global nonproliferation regime is the IAEA safeguards system. The safeguards system consists of agreements and practices that enable the IAEA to gain a clear picture of a state's nuclear activities and to determine whether those activities pose risks of nuclear weapons proliferation. Under the NPT, non-nuclear-weapons states agree to accept safeguards comprehensively "on all source or special fissionable material in all peaceful nuclear activities within the territory of such State, under its jurisdiction, or carried out under its control anywhere."⁶² In the NPT context, the IAEA safeguards system constitutes both the start point and end point for the verification that a state's nuclear energy program is used for peaceful purposes.⁶³ The success of the global nonproliferation regime thus depends entirely on a functional, globally applicable, and effective monitoring and verification system.

When state cooperation with the IAEA proves less than perfect, the agency faces challenges in verifying the peaceful nature of nuclear activities. As the IAEA adapts the safeguards system to meet the challenges of a constantly changing technological and political landscape, states may challenge the applicability of new reporting and inspection requirements to their programs. States wishing to develop nuclear weapons may also seek to shield certain weaponization activities in conventional weapons programs that are not subject to safeguards. This in turn poses questions concerning access to information about those activities and what standards apply in assessing that information. Finally, gaining a clear view of a state's nuclear activities requires an analytical framework that can be utilized consistently across a broad range of circumstances.

A. *Comprehensive Safeguards Agreements*

Comprehensive safeguards agreements (CSAs) are the principal means by which the IAEA is able to provide credible assurances that

62. NPT, *supra* note 3, art. III(1).

63. It should be noted that the IAEA does not possess direct authority to address matters of compliance or noncompliance with the NPT. Primary responsibility for interpretation of the NPT rests principally with the NPT Review Conference. *See id.* art. VIII(3) (stating that the review conference will meet once every five years to assess whether the "purposes of the Preamble and the provisions of the Treaty are being realized"). However, to the extent that the IAEA has authority to determine compliance with CSAs, and to the extent those CSAs are required by the NPT, the IAEA does have legal authority to interpret whether a state is complying with safeguards aspects of its NPT obligations.

nuclear material is not diverted to military uses.⁶⁴ Article 3 of the NPT requires states to conclude safeguards agreements “in accordance with the Statute of the [IAEA] and the Agency’s safeguards system.”⁶⁵ The Agency’s statute contemplates the possibility of broad safeguards authorities, including facility design approval authority and anytime/anywhere inspections access,⁶⁶ although the safeguards agreements themselves are more limited in scope. The standard agreement for comprehensive safeguards was promulgated in 1972 under the IAEA’s INFCIRC/153.⁶⁷ Although the principal focus of INFCIRC/153 relates to verification of the nondiversion of nuclear material to nuclear weapons or other nuclear explosive devices, this authority also extends to verifying the absence of undeclared activities and facilities.⁶⁸

INFCIRC/153 requires states to maintain an accounting system for nuclear materials, share design plans of facilities, and allow on-site inspections and surveillance. Further details relating to material accountability, access specifications, reporting of nuclear facility designs, and notice periods for new facilities are specified in Subsidiary Arrangements concluded pursuant to the CSAs.⁶⁹ Under the safeguards system, IAEA inspectors verify state compliance and report instances of noncompliance to the Director General, who then reports to the Board of Governors.⁷⁰ The Board may in turn require remedial action,⁷¹ order special (nonroutine) inspections,⁷² and report noncompliance to the Security Council.⁷³ In this respect, the IAEA safeguards system provides a basic procedural framework for

64. See IAEA SAFEGUARDS SYSTEM, *supra* note 5, ¶ 1 (describing the purpose and functions of CSAs).

65. NPT, *supra* note 3, art. III.

66. IAEA Statute, *supra* note 9, art. XII(A)(1), (6).

67. IAEA, *The Structure and Content of Agreements Between the Agency and States Required in Connection with the Treaty on the Nonproliferation of Nuclear Weapons*, IAEA Doc. INFCIRC/153(Corrected) (June 1972).

68. *Id.* ¶ 2; see also GOV/OR.864, ¶ 49, cited in IAEA Dir. Gen., *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran*, ¶ 52, n.42, IAEA Doc. GOV/2011/65 (Nov. 8, 2011) (confirming that the Agency’s responsibilities for ensuring the completeness and correctness of safeguards reports under paragraph 2 of INFCIRC/153 extend to both the verification of nondiversion and the absence of undeclared facilities).

69. See, e.g., IAEA Doc. INFCIRC/153(Corrected), *supra* note 67, ¶¶ 31, 42, 46, 51, 64(b), 65, 68, 75(d)(e), 76(a), 90 (providing express legal authority for cited actions).

70. IAEA Statute, *supra* note 9, art. XII(C).

71. See IAEA Doc. INFCIRC/153(Corrected), *supra* note 67, ¶ 18 (declaring the Board’s power to “call upon the State to take the required action without delay”).

72. The Agency may request special inspections without Board approval, although the Board may request special inspections under its authority to require remedial action under paragraph 18. See *id.* ¶¶ 73, 77 (outlining the scope of inspections).

73. IAEA Statute, *supra* note 9, art. XII(C); IAEA Doc. INFCIRC/153(Corrected), *supra* note 67, ¶ 19.

Security Council nonproliferation enforcement measures. As far as IAEA authorities are concerned, the Board has authority to suspend assistance to a state, call for the return of materials and equipment, and suspend rights of membership.⁷⁴

B. *The Model Additional Protocol*

Problems in the effectiveness of the safeguards system became painfully clear in 1991, when it was revealed that Iraq had been conducting extensive clandestine nuclear weapons activities at locations immediately adjacent to safeguarded facilities.⁷⁵ In response to this revelation, the Board of Governors adopted INFCIRC/540, a "Model Additional Protocol"⁷⁶ to the safeguards agreements. The Additional Protocol provides expanded authorities aimed at the detection of undeclared activities and materials in order to verify the completeness of state declarations. The protocol extends reporting and inspection requirements to all aspects of the fuel cycle, including uranium mining, as well as research and development activities not involving nuclear material.⁷⁷ It also provides for "complementary access" by the Agency outside of the framework of routine inspections in order to verify the absence of undeclared materials or activities in the event that questions or inconsistencies arise.⁷⁸ The Additional Protocol and the CSAs are meant to operate synergistically as "integrated safeguards" in order to provide a comprehensive understanding of nuclear activities at the state level.⁷⁹ The IAEA's

74. IAEA Statute, *supra* note 9, art. XII(C).

75. See U.N. Secretary General, *Consolidated Report on the First Two IAEA Inspections Under Security Council Resolution 687 (1991) of Iraqi Nuclear Capabilities*, at 10–11, U.N. Doc. S/22788 (July 15, 1991) (describing noncompliant Iraqi nuclear facilities).

76. See IAEA, *Model Protocol Additional to the Agreement(s) Between State(s) and the International Atomic Energy Agency for the Application of Safeguards*, pmb1. para. 2, IAEA Doc. INFCIRC/540 (Sept. 1997) ("[T]he desire of the international community to further enhance nuclear non-proliferation by strengthening the effectiveness and improving the efficiency of the Agency's safeguards system.").

77. *Id.* arts. 2, 4–5.

78. *Id.* arts. 4–5; see also IAEA, VERIFYING COMPLIANCE WITH NUCLEAR NONPROLIFERATION UNDERTAKINGS 10 (2011), available at <http://www.iaea.org/Publications/Booklets/Safeguards3/safeguards0408.pdf> (describing the use of "complementary access" as a tool "to help verify the absence of undeclared nuclear material and related activities and the decommissioned status of facilities").

79. *Id.* at 7; see also Laura Rockwood, *The IAEA's Strengthened Safeguards System*, 7 J. CONFLICT & SECURITY L. 123, 135 (2002) ("The concept of 'integrated safeguards' includes, *inter alia*, a 'state-level', rather than 'facility-level', approach through which the Agency will seek to develop a comprehensive understanding of a state's nuclear activities and plans with a view to enabling it to draw safeguards conclusions about the *completeness* and *correctness* of states' declarations.").

overall analytical approach under safeguards is known as the “state-level concept.”⁸⁰

The Model Additional Protocol is intended to apply universally to both NWS and NNWS, but has not thus far been treated as mandatory under international practice.⁸¹ Insofar as the NPT requires the conclusion of safeguards in accordance with the IAEA’s safeguards system, the Agency arguably has some discretion to declare that the Additional Protocol is part of that system.⁸² Such a determination by the IAEA may be controversial in view of the inability of the NPT states parties to agree that the protocol is mandatory under the NPT, but may yet occur as the protocol gains further acceptance. It may also be argued that the Agency or the Security Council has authority to require the conclusion of an additional protocol as a corrective measure to remedy a serious case of noncompliance under INFCIRC/153 (and Article 12.C of the Statute), although the Agency has not to date advanced this position. The Security Council has called on states to ratify the Additional Protocol, yet has stopped short of considering this a requirement.⁸³ States that have either developed nuclear weapons while under safeguards or engaged in suspect activities did not agree to the enhanced safeguards under the Additional Protocol. These states include North Korea, Iraq, Iran, and Syria.⁸⁴

80. See, e.g., IAEA, SAFEGUARDS STATEMENT FOR 2010 ¶ 48 (2010), available at <http://www.iaea.org/OurWork/SV/Safeguards/es/es2010.html>; IAEA SAFEGUARDS SYSTEM, *supra* note 5, ¶ 23.

81. As of June 21, 2011, 96 of the 185 NPT parties have brought an Additional Protocol into force and another 44 have either signed or signaled approval of one. *Status List: Conclusion of Safeguards Agreements, Additional Protocols and Small Quantities Protocols*, IAEA, http://www.iaea.org/OurWork/SV/Safeguards/documents/sir_table.pdf (last updated Feb. 20, 2012). See generally Masahiko Asada, *The Treaty on the Nonproliferation of Nuclear Weapons and the Universalization of the Additional Protocol*, 16 J. CONFLICT & SECURITY L. 3 (2011) (discussing the historical background and principal legal arguments for and against the obligatory character of the Additional Protocol).

82. *But see* Asada, *supra* note 81, at 8–9 (arguing that NPT parties are not legally bound under the NPT by *sua sponte* IAEA changes to safeguards system). While the IAEA has the authority to determine what constitutes its safeguards system, the author recognizes that its authority does not generally extend to providing interpretations of the NPT.

83. See, e.g., S.C. Res. 1929, ¶ 5, U.N. Doc. S/RES/1929 (June 9, 2010) (“[C]alls upon Iran to act strictly in accordance with the provisions of the Additional Protocol to its IAEA Safeguards Agreement that it signed on 18 December 2003, calls upon Iran to ratify promptly the Additional Protocol.”); S.C. Res. 1887, U.N. Doc. S/RES/1887 (Sep. 24, 2009).

84. See *infra* Part III.

C. New Facility Notification and Code 3.1

Timely notification of new facilities is important to allow the IAEA to review design plans and to integrate those facilities into its safeguards analysis. Code 3.1 of the original Subsidiary Arrangements required notification of new facilities to the IAEA 180 days prior to the introduction of nuclear material at that facility. The Agency later modified this notice provision to require reporting as soon as the decision to construct or authorize construction of a new facility is taken.⁸⁵ The IAEA faces verification hurdles when states fail to abide by this requirement, and such a failure may raise adverse inferences about a state's intentions.

Iran contested the binding character of the modified notice requirement in 2009 after a secret enrichment facility was revealed at Qom. Iran claimed at the time that it had suspended its implementation of modified Code 3.1 in March 2007⁸⁶ because of "illegal Security Council resolutions."⁸⁷ It argued that it was legally bound only by the previous notice requirement.⁸⁸ The IAEA rejected the argument that Iran could voluntarily suspend the notice requirement, noting that Iran "remains the only State with significant nuclear activities which has a comprehensive safeguards agreement in force that is not implementing the provisions of modified Code 3.1."⁸⁹ The Security Council later endorsed the IAEA's interpretation that the modified notice requirement of Code 3.1 was legally binding and mandatory.⁹⁰ Although the modified Code 3.1 is

85. See Pierre Goldschmidt, Deputy Dir. Gen., IAEA, Statement at the JNC International Forum for Peaceful Utilization of Nuclear Energy: Present Status and Future of International Safeguards, para. 13 (Feb. 12, 2003), available at <http://www.iaea.org/newscenter/statements/ddgs/2003/goldschmidt12022003.html> ("The Agency has also strengthened its implementation of design information examination and verification. States have been asked to accept an amendment to the General Part of their Subsidiary Arrangements (Code 3.1) to more explicitly reflect the State's obligation to provide design information for new facilities at a very early stage.").

86. See IAEA, *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran: Rep. by the Director General*, ¶ 12, IAEA Doc. GOV/2007/22 (June 14, 2007).

87. IAEA, *Communication Dated 3 December 2009 Received from the Permanent Mission of the Islamic Republic of Iran to the Agency Concerning Statements Made by the Islamic Republic of Iran in the Board of Governors*, at 2, IAEA Doc. INF/CIRC/779 (Dec. 7, 2009).

88. *Id.*

89. IAEA Dir. Gen., *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran*, ¶ 30, IAEA Doc. GOV/2010/28 (June 10, 2010).

90. See S.C. Res. 1803, at 1–2, U.N. Doc. S/RES/1803 (Mar. 3, 2008) ("[E]mphasizing that in accordance with Article 39 of Iran's Safeguards Agreement Code 3.1 cannot be modified nor suspended unilaterally and that the Agency's right to verify design information provided to it is a continuing right, which is not dependent on

now well-established as an integral part of the safeguards system, failure to comply with this provision allows for more rapid movement toward threshold capacity without allowing sufficient time for Agency assessment.

D. Weaponization Activities Not Involving Nuclear Material

Another challenge for the IAEA lies in the task of applying safeguards to undeclared activities that do not involve nuclear material. Nuclear weapons development activities that do not involve the actual use of nuclear material—such as the engineering of nuclear weapons delivery systems in locations where nuclear material has not yet been introduced—present a particular concern. When such concerns arise, the IAEA has the legal authority to address those concerns on the basis of reporting requirements and special inspections. The Model Additional Protocol expands these authorities through an enhanced inspections regime.

Reporting requirements under comprehensive safeguards agreements allow the IAEA to seek amplifications or clarifications for the purpose of verifying that nuclear material is not diverted to nuclear weapons or nuclear explosive devices.⁹¹ If the IAEA concludes that information made available by the state is inadequate to allow the IAEA to fulfill its verification responsibilities, it may order special inspections extending to locations outside of those designated for routine inspections.⁹² Under the INFCIRC/153 regime, the Board may require remedial action when doubts arise as to the diversion of nuclear material to nuclear weapons or nuclear explosive devices.⁹³ Finally, the stated objective of safeguards under INFCIRC/153 (Corr.) is the timely detection of the diversion of nuclear material from peaceful nuclear activities to the manufacture of nuclear weapons or other nuclear explosive devices.⁹⁴ Without the ability to consider evidence of weapons development activities prior to the actual completion of the process, timely detection would not be possible.

The Model Additional Protocol is more robust in permitting the IAEA to investigate potential weapons development activities not involving the use of nuclear material. The Additional Protocol

the stage of construction of, or the presence of nuclear material at, a facility"); see also S.C. Res. 1929, *supra* note 83, ¶ 5 (“[C]alls upon Iran to ratify promptly the Additional Protocol, and reaffirms that, in accordance with Articles 24 and 39 of Iran’s Safeguards Agreement, Iran’s Safeguards Agreement and its Subsidiary Arrangement, including modified Code 3.1, cannot be amended or changed unilaterally by Iran, and notes that there is no mechanism in the Agreement for the suspension of any of the provisions in the Subsidiary Arrangement”).

91. IAEA SAFEGUARDS SYSTEM, *supra* note 5, ¶¶ 2, 69.

92. *Id.* ¶ 73.

93. *Id.* ¶¶ 18–19.

94. *Id.* ¶ 28.

expressly extends reporting requirements to research and development activities that do not involve nuclear material.⁹⁵ It also provides for enhanced “complementary access” by the IAEA outside of the framework of routine inspections in the event that questions or inconsistencies arise.⁹⁶ In addition to the comprehensive safeguards model agreement documents, the item-specific safeguards regime that provided the foundation for the comprehensive regime (as well as the IAEA Statute) supports the proposition that safeguards may be applied to activities not involving the use of nuclear materials, including nuclear weapons development activities.⁹⁷ A failure to declare nuclear-weapons-related development activity cannot properly shield a state from inspections in this context, as safeguards obligations extend to materials and activities that are required to be reported, as well as those that are in fact reported.⁹⁸

E. Assessing the Credibility of Information Sources

Obtaining information relating to clandestine activities may be one of the greatest challenges facing the Agency. In doing so, it must often rely on intelligence from member states.⁹⁹ Verifying the credibility of those sources requires that the Agency maintain the capacity to analyze and corroborate intelligence. In practice, the Agency has required corroboration from multiple sources and other indicia of reliability before it raises concerns about an activity.¹⁰⁰

95. IAEA Doc. INFCIRC/540, *supra* note 76, art. 2(a)(i) (specifying that member states shall provide “[a] general description of and information specifying the location of nuclear fuel cycle-related research and development activities not involving nuclear material . . .”).

96. *Id.* arts. 4–5. See generally IAEA, *supra* note 78, at 10 (explaining complementary access may be used in “[cases of questions or inconsistencies]”).

97. See generally George Bunn, *How Far Can Inspectors Go?*, IAEA BULL., Mar. 2007, at 50 (arguing that the INFCIRC/66/Rev.2 safeguards system, in place at the time the term “safeguards system” was incorporated into the NPT, provided for the application of safeguards to activities not involving nuclear material); DeFrancia, *supra* note 7, at 37–38 (expanding on Bunn’s argument and discussing support in the IAEA Statute for the general application of safeguards to activities in which nuclear material is not present).

98. See Rockwood, *supra* note 79, at 123 (“The Agency’s obligation is not limited to nuclear material and facilities actually declared by a state; it also extends to that which is required to be declared.”).

99. Members may make available to the Agency “such information as would, the judgment of the member, be helpful to the Agency.” IAEA Statute, *supra* note 9, art. VIII(A).

100. In the case of Iran, discussed *infra* Part III, the IAEA initially expressed some frustration at its “limited means to authenticate [documentation provided by states] independently” and “constraints placed by some Member States on the availability of information,” yet based on further study and corroboration of those inputs produced was able to ascertain the credibility of the sources. See IAEA Doc. GOV/2011/65, *supra* note 68, ¶ 16; IAEA, *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737 (2006), 1747*

Tools used to assess credibility include critical analysis of the information provided, corroboration from member states, independent verification, and contact with sources.¹⁰¹ When sufficient detail exists on weapons development activities, the Director General may incorporate that information into its reports to the Board of Governors to facilitate consideration of what remedial or enforcement steps, if any, may be appropriate.¹⁰²

F. *The Analytical Framework*

The development of a consistent analytical framework for proliferation risk assessment is critical to the task of implementing safeguards in a state-specific yet nondiscriminatory fashion.¹⁰³ Factors that indicate heightened levels of proliferation risk vary from state to state, requiring variable approaches to safeguards implementation. Accommodating the need for customization in a structured framework requires a degree of consistency in the criteria that guide assessments across a broad range of circumstances. In order to facilitate customization, specific criteria may be advanced to mirror factors that have evolved through practice as potential indicators of proliferation risk. These factors may include deception, ambiguity, hedging behavior, noncooperation, suspect rhetoric, and pursuit of unnecessary dual-use technologies.¹⁰⁴ A useful model for the Agency may be found in the risk-factors approach applied under financial reporting regulations, in which lawyers and accountants work together with public corporations to provide a transparent account of fundamental risks facing those enterprises for the benefit of investors.¹⁰⁵

(2007), 1803 (2008), and 1835 (2008) in the Islamic Republic of Iran, ¶ 19, IAEA Doc. GOV/2009/55 (Aug. 28, 2009).

101. IAEA Doc. GOV/2011/65, *supra* note 68, ¶¶ 12–16.

102. *See, e.g., id.*

103. *See generally* Herman Nackaerts, *A Changing Landscape: Preparing for Future Verification Challenges, Statements of the Deputy Director General*, IAEA (Feb. 2, 2011), <http://www.iaea.org/newscenter/statements/ddgs/2011/nackaerts020211.html> (discussing the Agency's move toward a customized approach to safeguards implementation while reaffirming the need to apply safeguards in a fair and nondiscriminatory manner).

104. *See supra* Part III (discussing the IAEA Safeguards system).

105. 17 C.F.R. § 229.503(c) (2012); Directive 2003/71/EC of the European Parliament and of the Council on the Prospectus to be Published When Securities Are Offered to the Public or Admitted to Trading and Amending Directive 2001/34/EC, 2003 O.J. (L 345), 64–89; *see, e.g.,* INT'L ORG. OF SEC. COMM'NS, INTERNATIONAL DISCLOSURE STANDARDS FOR CROSS-BORDER OFFERINGS AND INITIAL LISTINGS BY FOREIGN ISSUERS (1998), *available at* http://www.sec.gov/about/offices/oia/oia_corpfin/crossborder.pdf (explaining the disclosure standards recommended by the International Organization of Securities Commissions).

Key indicators of risk already guide the practice of the IAEA in analyzing nuclear activities at the state level. The IAEA has traditionally employed technical and analytical methods based on possible "diversion paths" to assess whether nuclear material has been diverted to military uses.¹⁰⁶ In a recent report on alleged Iranian nuclear weapons development activities, the Agency disclosed that its analysis was based on "a structured and systematic approach to information analysis which the Agency uses in its evaluation of safeguards implementation."¹⁰⁷ This approach involves *inter alia*, "relevant indicators of the existence or development of processes associated with nuclear-related activities, including weaponization."¹⁰⁸ The report elaborated in detail on technical indicators of nuclear weapons development.¹⁰⁹ The Agency further noted a behavioral pattern of late or after-the-fact acknowledgement of the existence of previously undeclared components of the program that tended to increase its concerns about Iran's activities.¹¹⁰ This report signals the evolution of customizable criteria for risk analysis within a structured analytical framework that is both fair and effective. Further work in this area will serve to ensure that safeguards continue to hold promise as the principal mechanism to ensure that nuclear materials remain in peaceful uses.

G. Assessing Capabilities: Technology and Intention

An assessment of both capability and intention to acquire nuclear weapons requires distinctions of different steps in the process. The making of a nuclear weapon is said to take place in three basic stages.¹¹¹ First is the production of the nuclear (fissile) material, said to be the most difficult of the stages.¹¹² Weapons-grade fissile material may be obtained from highly enriched uranium

106. For discussion of IAEA analytical methods, see IAEA SAFEGUARDS SYSTEM, *supra* note 5, ¶ 23; IAEA, *IAEA Safeguards Implementation at Nuclear Fuel Cycle Facilities*, at 25, IAEA Doc. SG/INF/6 (Jan. 1985) (providing examples of simplified diversion paths).

107. IAEA Doc. GOV/2011/65, *supra* note 68, ¶ 41.

108. *Id.* Annex, para. 1.

109. These indicators appear to be a component of a methodology based on the "physical model" of the nuclear fuel cycle that "identifies, describes and characterizes every known technical process for converting source material to weapon usable material and identifies indicators for each process in terms of equipment, nuclear material and non-nuclear material." IAEA SAFEGUARDS SYSTEM, *supra* note 5, ¶ 25.

110. IAEA Doc. GOV/2011/65, *supra* note 68, Annex, ¶ 15.

111. RANDALL FORSBERG ET AL., NONPROLIFERATION PRIMER: PREVENTING THE SPREAD OF NUCLEAR, CHEMICAL, AND BIOLOGICAL WEAPONS 43 (1996).

112. HANNE BREIVIK, NORWEGIAN DEF. RESEARCH ESTABLISHMENT, REP. NO. 00490, HIGHLY ENRICHED URANIUM AND CRUDE NUCLEAR WEAPONS 12 (2008), available at <http://www.7ni.mfa.no/NR/rdonlyres/155F0B5A1F6147F1928224E87AF6A005/103634/FFIRreportHEUandCrudeNuclearWeapons1.PDF>.

(HEU)—uranium “enriched” to increase the ratio of U-235 to U-238¹¹³—before it is fed into reactors, or from plutonium extracted from spent fuel rods at the back end of the process. Plutonium is a byproduct of the exposure to neutrons of an isotope of uranium (U-238) in the operation of nuclear reactors, isolated in reprocessing of spent fuel rods after they have been discharged from a reactor.¹¹⁴ Low-enriched uranium (LEU), which is enriched at 3–5 percent, may be converted to HEU, which is enriched to 20 percent or more. HEU may be used for nuclear weapons (when enriched to 90 percent), as well as for certain civilian uses, including as fuel for research reactors and for the production of radioisotopes used in nuclear medicine.¹¹⁵

The second stage is the introduction of additional components, such as chemical explosives, triggers, detonators, and circuitry, in order to initiate and sustain an explosive chain reaction.¹¹⁶ The third stage is to integrate the explosive device with a delivery system, such as a ballistic missile.¹¹⁷ In the area of missile development and delivery systems, the acquisition of sovereign defensive missile capabilities is not generally prohibited under international law¹¹⁸ (although the multilateral Missile Technology Control Regime encourages export restrictions on missile technology).¹¹⁹ Potential indicators in the weapons development process are the possession of weapons-grade fissile material, and possession of weapons technologies specific to the development of a nuclear explosive.

Capability in these three arenas implies a threshold status that may allow a state to abrogate its treaty obligations in a “breakout scenario” and proceed to rapidly develop nuclear weapons.¹²⁰ The problem of threshold nuclear-weapons states is not new,¹²¹ but has not yet been solved as a legal matter. Iraq, Libya, and North Korea each operated under the safeguards system while developing nuclear

113. U-235 and U-238 are two isotopes found in uranium ore. Approximately 0.7 percent of uranium ore is U-235, while 99.3 percent is U-238. FORSBERG ET AL., *supra* note 111, at 40–43.

114. *Id.*

115. BREIVIK, *supra* note 112, at 8.

116. FORSBERG ET AL., *supra* note 111, at 43.

117. *Id.* at 44.

118. See JOYNER, *supra* note 41, at 41.

119. MISSILE TECH. CONTROL REGIME, <http://www.mtcr.info> (last visited Apr. 1, 2012).

120. The term “breakout scenario,” common in contemporary debates on proliferation, was used in the context of debates over the SALT I & II and START arms control treaties to refer to the reassembly and deployment of retired weapons. See David A. Koplow, *How Do We Get Rid of These Things?: Dismantling Excess Weapons While Protecting the Environment*, 89 NW. U. L. REV. 445, 453 n.28 (1995) (referring to SALT I & II and START for the term “breakout scenario”).

121. See, e.g., Mohamed A. Shaker, Remarks at the American Society of International Law Proceedings on Nuclear Nonproliferation—Law and Policy (Apr. 22, 1982), in 76 AM. SOC'Y INT'L L. PROC. 77, 86 (1984) (discussing the problem of “threshold states”).

weapons programs. As a state approaches threshold status, a noncooperative stance toward the IAEA may raise serious proliferation concerns, meriting enhanced study to ensure full compliance with nonproliferation obligations.

IV. PROLIFERATION QUANDARIES: PROMINENT CASE STUDIES

Notorious recent cases of alleged noncompliance with the NPT and related nonproliferation norms involve North Korea, Iran, and Syria. In each of these cases measures were imposed, through the Security Council or through multilateral and unilateral action, with varying results. Assessing what measures may be appropriate requires a consideration of the risks the activities in question pose for the proliferation of nuclear weapons or nuclear explosive devices. Assessing these risks involves a range of factors and identifiable patterns of behavior that may indicate a high risk of proliferation. These factors include deception, ambiguity (programs that could either be peaceful or military), pursuit of unnecessary technologies, noncooperation, minimalist compliance, and political statements indicative of an intention to develop weapons. Additional risk factors from the peace and security standpoint may involve political instability, hostile relations, connections to non-state terrorist groups, poor governance, and the use of threats potentially connected to the use of nuclear weapons. These factors could explain why some states that have rather sophisticated fuel cycle capabilities, such as Japan and Argentina, are not commonly considered to be a proliferation risk¹²² while others may attract significant international attention.

The following case studies illustrate the dilemmas of preventing proliferation under the NPT framework, including practices relating to prevention of proliferation, enforcement of nonproliferation obligations, and possible paths toward diplomatic solutions.

A. North Korea: Moving Beyond the Threshold

North Korea's nuclear program began in the 1960s and 1960s with Soviet assistance and fuel input.¹²³ North Korea became a

122. See *Argentina Country Profile: Overview*, NUCLEAR THREAT INITIATIVE (Dec. 1, 2011), <http://www.nti.org/country-profiles/argentina> (discussing dismantling of Argentina's military nuclear program); Peter Cuznik, *Japan's Nuclear History in Perspective: Eisenhower and Atoms for War and Peace*, BULL. ATOMIC SCIENTISTS (Apr. 13, 2011), <http://thebulletin.org/web-edition/features/japans-nuclear-history-perspective-eisenhower-and-atoms-war-and-peace> (discussing Japan's anti-nuclear weapons posture).

123. See Press Release, IAEA, Fact Sheet on DPRK Nuclear Safeguards, IAEA Media Advisory No. 2002/52 (Dec. 11, 2002) [hereinafter IAEA North Korea Factsheet], available at http://www.iaea.org/newscenter/focus/iaeadprk/fact_sheet_may2003.shtml.

member of the IAEA in 1974 (and withdrew in 1994),¹²⁴ but did not join the NPT until 1985.¹²⁵ In the 1980s, it developed indigenous fuel cycle capabilities with the construction of new reactors, reprocessing facilities, and a fuel rod fabrication plant at Nyongbyong.¹²⁶ When the IAEA conducted inspections under safeguards in the early 1990s, it was unable to verify aspects of North Korea's nuclear program, in particular its fuel reprocessing activities and the amount of plutonium that had been separated from the spent fuel.¹²⁷ The IAEA's initial inspections gave indications of a history that included several reprocessing operations, although North Korea only admitted to one.¹²⁸ North Korea refused special inspections that would have allowed the IAEA to verify whether nuclear materials had been diverted, and in 1994, it discharged the spent fuel in a manner that made a historical analysis of the reactor core impossible.¹²⁹ After many years of noncooperation and unsuccessful negotiations, North Korea eventually extracted and diverted enough plutonium from its reprocessing activities to develop nuclear weapons.¹³⁰

The relevant legal aspects of North Korea's nuclear weapons development are as follows. In 1992, North Korea and South Korea signed a Joint Declaration on the Denuclearization of the Korean Peninsula, which required the parties to forego reprocessing and enrichment.¹³¹ However, the parties failed to agree on its implementation.¹³² North Korea signed a safeguards agreement in 1992 and inspections took place that same year.¹³³ After the inspections process broke down, North Korea announced on March 12, 1993, that it intended to withdraw from the NPT, citing its "supreme state interest[]" under Article 10 of the Treaty and its

124. *Member States of the IAEA*, IAEA, <http://www.iaea.org/About/Policy/MemberStates> (last visited Apr. 1, 2012).

125. See IAEA North Korea Factsheet, *supra* note 123.

126. *Id.*; *North Korea Profile: Nuclear*, NUCLEAR THREAT INITIATIVE, <http://www.nti.org/country-profiles/north-korea> (last updated Mar. 2012).

127. IAEA Dir. Gen., *Implementation of the Safeguards Agreement Between the Agency and the Democratic People's Republic of Korea Pursuant to the Treaty on the Non-proliferation of Nuclear Weapons*, ¶ 14, IAEA Doc. GC(47)/19 (Aug. 13, 2003).

128. IAEA, THE DPRK'S VIOLATION OF ITS NPT SAFEGUARDS AGREEMENT WITH THE IAEA 1 (1997) [hereinafter IAEA NORTH KOREA HISTORY], available at <http://www.iaea.org/newscenter/focus/iaeadprk/dprk.pdf> ("[North Korea] maintained that this plutonium was all that they had separated, and that they had conducted only a single reprocessing operation, or 'campaign', in 1990. The IAEA's analyses showed, however, that there had been several reprocessing campaigns. This implied that the DPRK had separated more plutonium than it had stated in its Initial Report.")

129. *Id.* at 2.

130. See IAEA North Korea Factsheet, *supra* note 123.

131. Joint Declaration on the Denuclearization of the Korean Peninsula, N. Kor.-S. Kor., Jan. 20, 1992, available at http://www.nti.org/e_research/official_docs/inventory/pdfs/aptkoreanuc.pdf.

132. *North Korea Profile: Nuclear*, *supra* note 126.

133. IAEA NORTH KOREA HISTORY, *supra* note 128, at 1.

“unique status,” which it claimed was related to the threats it faced from South Korea and the United States.¹³⁴ In Resolution 825, responding to the withdrawal, the Security Council did not go so far as to deny North Korea’s right to withdraw, but urged it to return to the Treaty and decided to remain seized of the matter.¹³⁵ On June 11, 1993, one day before the withdrawal was to take effect, North Korea “suspended” its withdrawal in order to continue negotiations.¹³⁶

Prompted by a 1994 visit by Jimmy Carter, North Korea consented to an “Agreed Framework” with the United States as a basis for continuing negotiations.¹³⁷ Under the Agreed Framework, North Korea would remain a party to the NPT, inspections would resume, and it would take steps to implement the Joint Declaration. In turn, the United States would provide a negative security assurance, supply an alternative source of fuel (oil), and lead a consortium to build two light water reactors (LWR),¹³⁸ which are less suitable to plutonium production than the graphite-moderated reactors at Yongbyong.¹³⁹ At the request of the Security Council and pursuant to the Agreed Framework, the IAEA was tasked to monitor the freeze on enrichment and reprocessing activities, which it viewed as a subset of its activities under safeguards.¹⁴⁰

The IAEA monitored the freeze from 1994 to 2002 with some difficulties. In October 2002, North Korea revealed to a U.S. delegation that it had an ongoing program to enrich uranium for nuclear weapons.¹⁴¹ This prompted the IAEA Board of Governors to adopt a resolution urging compliance on January 6, 2003, which then led to North Korea’s announcement of withdrawal from the NPT, effective January 11, 2003.¹⁴² North Korea characterized the move as “self-defensive” and again cited its “unique status” in terms of the

134. IAEA, *Communication Dated 20 April 1994 Received from the Permanent Mission of the Democratic People’s Republic of Korea to the International Atomic Energy Agency*, at 1, IAEA Doc. INFCIRC/442 (May 9, 1994).

135. S.C. Res. 825, ¶ 5, U.N. Doc. S/RES/825 (May 11, 1993).

136. IAEA NORTH KOREA HISTORY, *supra* note 128, at 2.

137. IAEA, *Agreed Framework of 21 October 1994 Between the United States of America and the Democratic People’s Republic of Korea*, IAEA Doc. INFCIRC/457 (Nov. 2, 1994); Micahel J. Mazarr, *Going Just a Little Nuclear: Nonproliferation Lessons from North Korea*, 20 INT’L SECURITY 92, 96–97 (1995).

138. IAEA Doc. INFCIRC/457, *supra* note 137.

139. See generally *Plutonium Production*, FED’N AM. SCIENTISTS (June 20, 2000), <http://www.fas.org/nuke/intro/nuke/plutonium.htm> (“Light-water power reactors make fewer plutonium nuclei per uranium fission than graphite-moderated production reactors.”).

140. See U.N. President of the S.C., *Statement 1994/64*, U.N. Doc. S/PRST/1994/64 (Nov. 4, 1994).

141. IAEA Doc. GC(47)/19, *supra* note 127, ¶¶ 2–3.

142. North Korea was of the view that since it “suspended” its March 12, 1993 notification of withdrawal one day short of the three-month period provided for in Article X(1) of the NPT, it only needed to provide one day’s notice to withdraw. *Id.* ¶¶ 10–11.

perceived threat from the United States, and referenced the "Team Spirit" joint military exercises between the United States and South Korea.¹⁴³ After faltering negotiations and the commencement of six-party talks with North Korea, South Korea, China, Russia, Japan, and the United States, North Korea conducted its first nuclear weapons test in October 2006.¹⁴⁴ The test, as well as North Korea's withdrawal from the NPT, was condemned in Security Council Resolution 1695. Resolution 1695 required states to exercise vigilance "to prevent missile and missile-related items, materials, goods and technology being transferred" to North Korea's missile or WMD program, and further required states to prevent the procurement of missile-related items and the transfer of any financial resources involving North Korea's WMD programs.¹⁴⁵

After more faltering talks and a temporary resumption of inspections, North Korea conducted a second nuclear test on May 25, 2009. In Resolution 1874 of June 12, 2009, the Security Council reiterated its earlier resolutions and demanded that North Korea return to the NPT and IAEA safeguards.¹⁴⁶ The resolution expanded upon sanctions relating to military and nuclear equipment, luxury goods, and financial assets connected to the nuclear program. Travel restrictions were imposed on persons involved in the program, and a committee was designated to implement and make recommendations relating to the sanctions.¹⁴⁷

The case of North Korea exhibits vulnerabilities in the NPT safeguards system, while confirming the existence of legal nonproliferation norms outside of the framework of the NPT. While North Korea was initially able to signal withdrawal from the NPT without penalty in 1993, its actual withdrawal from the Treaty and swift acquisition of a nuclear weapon triggered a demand of the Security Council to return to the Treaty. These events demonstrate that exiting the Treaty does not cure noncompliance with the NPT under broader standards of nonproliferation.¹⁴⁸ Neither the negotiation framework nor the inspections system was sufficient in this case to prevent North Korea's acquisition of nuclear weapons.

143. *North Korea Announces Withdrawal from NPT, January 10: Statement and Reaction*, ACRONYM.ORG, <http://www.acronym.org.uk/docs/0301/doc02.htm> (last visited Apr. 1, 2012); Korean Cent. News Agency, *Detailed Report' Explains NPT Withdrawal* (Jan. 22, 2003), <http://www.fas.org/nuke/guide/dprk/nuke/dprk012203.html>.

144. *North Korea Profile: Nuclear*, *supra* note 126.

145. S.C. Res. 1695, ¶ 4, U.N. Doc. S/RES/1695 (July 15, 2006).

146. S.C. Res. 1874, ¶ 6, U.N. Doc. S/RES/1874 (June 12, 2009).

147. *Id.*; S.C. Res. 1718, ¶ 12, U.N. Doc. S/RES/1718 (Oct. 14, 2006).

148. In this regard, the NPT cannot be said to be a self-contained regime with regard to the law on proliferation. See generally Bruno Simma & Dirk Pulkowski, *Of Planets and the Universe: Self-Contained Regimes in International Law*, 17 EUR. J. INT'L L. 483 (2006).

The problem is no longer one of preventing proliferation, but one of enforcing the prohibition on North Korea's acts of proliferation.

B. Iran: The Problem of Ambiguity

Concerns relating to possible weapons development aspects of Iran's nuclear program relate principally to its enrichment activities. According to the IAEA, Iran possesses advanced capabilities in nearly all aspects of the front end of a nuclear fuel cycle, including "uranium mining and milling, conversion, enrichment, fuel fabrication, heavy water production, a light water reactor, a heavy water research reactor and associated research and development facilities."¹⁴⁹ Its decision to pursue enrichment capabilities was undertaken in 1985 at a time of heightened vulnerability during its war with Iraq (during which Iraq used chemical weapons against it).¹⁵⁰ It was later revealed that, during this time period, Iran received assistance and materials for its enrichment program from a clandestine network run out of Pakistan by A.Q. Khan and affiliates.¹⁵¹ Documentation from those early arrangements includes instructions involving weaponization techniques and other signals of possible military dimensions.¹⁵²

149. IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran: Rep. of the Director General*, ¶ 45, IAEA Doc. GOV/2003/75 (Nov. 10, 2003).

150. See Ian Black, *The Legacy of Chemical Warfare*, GUARDIAN (London) (Nov. 26, 2008), <http://www.guardian.co.uk/world/2008/nov/26/iran-iraq-war>.

151. The IAEA has publicly confirmed that the source of components of Iran's enrichment program and documents relating to weaponization came from Pakistan, but specific allegations involving the Khan network are indicated through other sources, including Khan's own statements. 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: Rep. of the Director General*, ¶ 11, IAEA Doc. GOV/2008/4 (Feb. 22, 2008); R. Jeffrey Smith & Joby Warrick, *Pakistani Scientist Khan Describes Iranian Efforts to Buy Nuclear Bombs*, WASH. POST, Mar. 14, 2010, at A14; see also MOHAMED ELBARADEI, *THE AGE OF DECEPTION: NUCLEAR DIPLOMACY IN TREACHEROUS TIMES* 167 (2011) ("The first known transaction of the Khan network occurred in 1987, when two of Khan's associates and three Iranians had agreed, in a meeting in Dubai, on the terms of a sale for centrifuge components and designs.").

152. IAEA, *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737(2006), 1747 (2007) and 1803 (2008) in the Islamic Republic of Iran: Rep. of the Director General*, ¶ 24, IAEA Doc. GOV/2008/15 (May 26, 2008) ("On 8 November 2007, the Agency received a copy of the 15-page document describing the procedures for the reduction of UF₆ to uranium metal and casting it into hemispheres. Iran has reiterated that this document was received along with the P-1 centrifuge documentation in 1987."); IAEA Doc. GOV/2008/4, *supra* note 151, ¶ 19; 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: Rep. of the Director General*, ¶ 25, IAEA Doc. GOV/2007/58 (Nov. 15, 2007).

Iran's nuclear program dates back to at least 1957, when it signed a cooperation agreement with the United States for the peaceful uses of atomic energy.¹⁵³ The agreement put a ceiling of six kilograms on the amount of HEU that could be in the custody of Iran at any time via related transfers.¹⁵⁴ In 1960, the Atomic Energy Organization of Iran (AEOI) established the Tehran Nuclear Research Centre (TNRC).¹⁵⁵ In 1967, a 5MWt research reactor was constructed at Tehran University, which was originally fueled by small amounts of 93 percent HEU, provided from the United States.¹⁵⁶ The reactor, known as the TRR (originally operated by Tehran University and later under the control of AEOI), supplied radioisotopes for nuclear medicine, among other things.¹⁵⁷ The enriched uranium required to fuel the TRR continues to serve as a basis for Iran's claim to need indigenous enrichment capabilities, and thus remains a subject of dispute in current debates.¹⁵⁸

In 1968, Iran signed the NPT. Its facilities were subjected to safeguards in 1974. During the 1970s, Iran also began construction on a nuclear power plant at Bushehr under contract with a subsidiary of Siemens,¹⁵⁹ which was temporarily abandoned after the 1979 Islamic Revolution. In 1975, Iran also commenced plans for extensive nuclear research facilities at Esfahan Nuclear Technology Center (ENTC) under contract with a French company.¹⁶⁰ This project was completed in 1994 with the assistance of the Chinese.¹⁶¹ The ENTC is

153. Agreement for Cooperation Between the Government of the United States and the Government of Iran Concerning the Civil Uses of Atomic Energy, U.S.-Iran, Mar. 5, 1957, 10 U.S.T. 733. This five-year agreement was renewed multiple times until it expired without renewal in April 1979. See Agreement Amending the Agreement of March 5, 1957, U.S.-Iran, Mar. 18, 1969, 18 U.S.T. 205.

154. Agreement for Cooperation Between the Government of the United States and the Government of Iran Concerning the Civil Uses of Atomic Energy, *supra* note 153.

155. *Research Reactor Details—Iran*, IAEA (Oct. 1, 1998), http://www-naweb.iaea.org/napc/physics/research_reactors/database/rr%20data%20base/datasets/report/Iran,%20Islamic%20Republic%20of%20%20Research%20Reactor%20Details%20-%20TRR.htm.

156. IAEA, *The Texts of the Instruments Connected with the Agency's Assistance to Iran in Establishing a Research Reactor Project*, at 2–6, IAEA Doc. INFCIRC/97 (Aug. 31, 1967).

157. Ivan Oelrich & Ivanka Barzashka, *Deconstructing the Meaning of Iran's 20 Percent Uranium Enrichment*, BULL. ATOMIC SCIENTISTS (May 19, 2010), <http://thebulletin.org/print/web-edition/features/deconstructing-the-meaning-of-irans-20-percent-uranium-enrichment>.

158. *Id.*

159. *Iran Nuclear Facilities*, NUCLEAR THREAT INITIATIVE, http://www.nti.org/e_research/profiles/Iran/Nuclear/facilities.html (last visited Apr. 1, 2012).

160. Cable 1437 from U.S. Embassy Tehran to U.S. Dep't of State, GOI/AEOI Plans for Isfahan Nuclear Technology Center, ENTEC (Feb. 14, 1977), available at <http://www.gwu.edu/~nsarchiv/nukevault/ebb268/doc25b.pdf>.

161. *Research Reactor Details—ENTC MNSR*, IAEA (Sept. 18, 2002), http://www-naweb.iaea.org/napc/physics/research_reactors/database/rr%20data%20

currently the site of three research reactors (one of which has been decommissioned), a uranium conversion facility, and related laboratories and facilities.¹⁶²

Heightened concerns of nuclear weapons proliferation resulting from India's 1974 test of a nuclear weapon triggered increased scrutiny over nuclear cooperation arrangements in the following years, affecting the United States' support of Iran's program.¹⁶³ Because India's acquisition of a nuclear weapon was achieved with plutonium acquired through reprocessing capabilities provided by the United States and Canada, the key concern in negotiating for continuing assistance to Iran's already ambitious nuclear energy plans in the 1970s was to limited reprocessing capabilities.¹⁶⁴ The United States thus pressed for the establishment of a multinational reprocessing center to meet Iran's reprocessing needs.¹⁶⁵ In part responding to information about India's manipulation of the fuel cycle to acquire the bomb,¹⁶⁶ the United States passed the Nonproliferation Act of 1978, which required that transfers of nuclear material and equipment involve strict adherence to IAEA safeguards and that exports involving HEU receive heightened scrutiny.¹⁶⁷ Due to increased political sensitivities, in 1977 the United States began to delay export license requests for HEU pending the ongoing negotiations for a new cooperation agreement.¹⁶⁸ Any exports from the United States were effectively foreclosed after the Islamic Revolution in 1979.¹⁶⁹

base/datasets/report/Iran,%20Islamic%20Republic%20of%20%20Research%20Reactor%20Details%20-%20ENTC%20MNSR.htm.

162. See IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, Annex I, IAEA Doc. GOV/2004/83 (Nov. 15, 2004).

163. Paul Leventhal, *Nuclear Deal with India: Sacrificing the NPT on an Altar of Expediency*, NUCLEAR CONTROL INST. (Dec. 8, 2006), <http://www.nci.org/06nci/12/nuc-india-deal.htm>.

164. William Burr, *A Brief History of U.S.-Iranian Nuclear Negotiations*, 65 BULL. ATOMIC SCIENTISTS 21, 24 (2009).

165. *Id.*

166. See, e.g., Leventhal, *supra* note 163 (discussing the threat to negotiations posed by India's use of "peaceful use only" contracts to produce plutonium for weapons).

167. Nuclear Nonproliferation Act of 1978, Pub. L. No. 95-242, §§ 201, 402, 92 Stat. 120, (codified as amended in various sections of 22 and 42 U.S.C. (2006)).

168. Cable 115011 from U.S. Dep't of State to Embassy Tehran, HEU Exports to Iran (May 19, 1977), available at <http://www.gwu.edu/~nsarchiv/nukevault/ebb268/doc29a.pdf>.

169. See, e.g., *Iran v. United States*, Partial Award No. 529-A15-FT, 28 Iran-U.S. Cl. Trib. Rep. 112, ¶ 60 (May 6, 1992) (discussing the impact of the Algiers Declarations, signed by the United States and the Islamic Republic of Iran, on the application of United States export control laws, including the Nuclear Nonproliferation Act of 1978).

After the Islamic Revolution, the status of Iran's contracts for nuclear development was cast into doubt.¹⁷⁰ The new Iranian government, the Islamic Republic of Iran, continued to seek fuel for the operation of the TRR.¹⁷¹ In 1987, it arranged a contract with Argentina for the reconfiguration of its reactor core to run on 20 percent HEU and for the supply of the uranium.¹⁷² Iran also sought to resume work on its declared facilities at Bushehr and Esfahan. In 1992, Iran concluded a contract with Russia to complete work on its nuclear power plant at Bushehr.¹⁷³ In the early 1990s, China assisted Iran in establishing new reactor facilities at the ENTC in Esfahan.¹⁷⁴

According to representations made by Iran to the IAEA, a decision was made in 1985 to expand Iran's nuclear capabilities, including planning facilities for enrichment.¹⁷⁵ Iran claimed that it made this decision in order to meet its growing energy needs and to build on investments already made in the nuclear industry.¹⁷⁶ Iran maintains that its inability to obtain nuclear fuel cycle facilities or technology from abroad led to its decision to seek supplies for those products on the black market.¹⁷⁷ According to the IAEA, Iran sought and obtained these materials through the 1990s from a "clandestine supply network"¹⁷⁸ (widely understood to be the proliferation

170. According to Iran, contracts amounting to approximately \$10 billion with France, Germany, the United Kingdom, and the United States went unfulfilled in the post-Revolution period. IAEA Doc. GOV/2007/58, *supra* note 152, ¶ 4. For a publicly available accounting of some of the resulting disputes, see *Nuclear Chronology: Iran, 1957–1985*, NUCLEAR THREAT INITIATIVE (Mar. 2012), http://www.nti.org/e_research/profiles/Iran/1825.html (detailing disputes over Iran's uranium enrichment program).

171. See *Iran v. United States*, 8 Iran-U.S.Cl. Trib. Rep. 63 (1985) (rejecting Iran's request for interim measures to halt the sale of nuclear fuel by General Atomic Company in the United States).

172. IAEA, *Additional Supply Agreement of 9 December 1988 Between the International Atomic Energy Agency and the Governments of the Islamic Republic of Iran and of Argentina for the Transfer of Enriched Uranium for a Research Reactor in Iran*, IAEA Doc. INFCIRC/97/Add.2 (Jan. 1990); CHRISTINA WALROND, INST. FOR SCI. & INT'L SEC., *TIMELINE 1967–1993: ARGENTINE LOW-ENRICHED URANIUM AT TEHRAN RESEARCH REACTOR* (Oct. 7, 2009), http://www.isisnucleariran.org/assets/pdf/Tehran_reactor_timeline.pdf.

173. *World News Briefs; Russia Spells out Pact with Iran for A-Plant*, N.Y. TIMES, Feb. 21, 1985, at A9.

174. *Research Reactor Details—ENTC MNSR*, *supra* note 161.

175. IAEA Doc. GOV/2007/58, *supra* note 152, ¶ 4.

176. *Id.*

177. *Id.* ¶ 5.

178. Iran and Pakistan allegedly concluded a nuclear cooperation agreement in 1986, although this has not been publicly verified. See, e.g., Farzad Bazoft, *Iran Signs Secret Atom Deal*, LONDON OBSERVER, June 12, 1988, at 1; Jack Boureston & Charles D. Ferguson, *Schooling Iran's Atom Squad*, BULL. ATOMIC SCIENTISTS, May–June 2004, at 31, 32, (discussing a 1987 deal that allegedly called for at least six Iranians to be trained in Pakistan). The IAEA confirmed that Iran and Pakistan conducted secret negotiations and equipment supply arrangements during the time period 1987–1996 in

masterminded by A.Q. Khan, the “father of Pakistan’s bomb”).¹⁷⁹ Although Iran assured the IAEA that no military institutions were involved in the decision making or implementation of the centrifuge enrichment program,¹⁸⁰ most of the workshops involved in the domestic production of Iran’s centrifuge components were owned by military industrial organizations.¹⁸¹

Iran’s centrifuge enrichment program proceeded without the knowledge of the IAEA from 1985 until late 2002, when an Iranian dissident group revealed the existence of undeclared enrichment facilities at Kalaye Electric Company in Tehran and in Natanz, as well as a heavy water construction plant in Arak.¹⁸² Responding to this information, the IAEA made numerous requests, leading to disclosures in 2003 of undeclared nuclear facilities, including radiological laboratories and waste handling facilities at the TNRC, a centrifuge enrichment research and development center at the state-owned Kalaye Electric Company in Tehran, enrichment facilities at Natanz, a dismantled pilot uranium laser enrichment plant at Lashkar Ab’ad, plans for new reactor facilities and a heavy water plant at Arak, and additional waste disposal sites.¹⁸³ On September 21, 2009, Iran declared it was building another centrifuge enrichment facility on a military base in Qom, known as the Fordow facility.¹⁸⁴ In November 2009, Iran publicly announced that it intended to build ten new enrichment facilities and had identified five potential locations.¹⁸⁵ In response to an IAEA query on the accuracy of those reports, Iran stated that it would “provide the Agency with the required information if necessary.”¹⁸⁶

November 2007. IAEA Doc. GOV/2007/58, *supra* note 152, ¶ 25. See generally ELBARADEI, *supra* note 151 (providing an overview of A.Q. Khan’s “nuclear bazaar”).

179. See, e.g., James Astill, *Nuclear Inquiry Targets Father of Pakistani Bomb*, GUARDIAN (London), Jan. 27, 2004, at 15 (describing Khan as a “prime suspect” involved in alleged sales of nuclear technology to Iran).

180. See IAEA Doc. GOV/2007/58, *supra* note 152, ¶ 10 (“In response to the Agency’s enquiry as to whether there was any military involvement in the programme, Iran has stated that no institution other than the AEOI was involved in the decision-making process or the implementation of the centrifuge enrichment programme.”).

181. *Id.* ¶ 18 (citing IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, ¶ 37, IAEA Doc. GOV/2004/11, (Feb. 24, 2004)).

182. IAEA, *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran: Rep. by the Director General*, ¶ 7, IAEA Doc. GOV/2009/74 (Nov. 16, 2009).

183. *Id.*

184. *Id.*; David E. Sanger & William J. Broad, *U.S. and Allies Warn over Iran Nuclear Deception*, N.Y. TIMES, Sept. 25, 2009, at A1.

185. David E. Sanger & William J. Broad, *A Defiant Iran Vows to Build Nuclear Plants*, N.Y. TIMES, Nov. 29, 2009, at A1.

186. IAEA, *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737 (2006), 1747 (2007), 1803 (2008) and*

In February 2010, Iran reported to the IAEA that it would begin enriching uranium to 20 percent at Natanz.¹⁸⁷ The IAEA indicated in response that Iran had given insufficient notice under its safeguards agreement for the Agency to adequately adjust its safeguards and understand the original purpose of the facility.¹⁸⁸ As of October 28, 2011, the Natanz facility was estimated to have enriched a total of approximately 79.7 kilograms of uranium at 20 percent.¹⁸⁹ Iran announced in June 2011 that it planned to triple its production of uranium-235 enriched up to 20 percent.¹⁹⁰ Iran justifies its production as necessary to provide fuel for the TRR.¹⁹¹ Although it does not currently have the technology to manufacture fuel from this enriched uranium, Iran is in the process of creating such a capability in its fuel manufacturing plant at Esfahan.¹⁹² The expansion of Iran's enrichment at 20 percent raises concerns relating to its ability to produce enough HEU for a nuclear weapon.¹⁹³ The capacity to enrich to 20 percent would also allow Iran to swiftly enrich to 90 percent, facilitating a plausible breakout scenario to acquire nuclear weapons.¹⁹⁴ As of November 1, 2011, the IAEA reported that Iran had produced a total of 4922 kilograms of LEU, from which Iran could produce roughly four bombs at a slower pace.¹⁹⁵ The International Institute for Strategic Studies has estimated that with approximately 172 kilograms of uranium enriched at 20 percent, Iran could produce in three-week period the necessary 25 kilograms of 93 percent weapons-grade uranium-235 to manufacture a nuclear explosive device.¹⁹⁶

1835 (2008) in the Islamic Republic of Iran, ¶ 33, IAEA Doc. GOV/2010/10 (Feb. 18, 2010).

187. *Id.* ¶ 8.

188. *Id.* ¶¶ 34, 48.

189. IAEA Doc. GOV/2011/65, *supra* note 68, Annex, ¶ 15.

190. IAEA *Worried over Iran Plans to Triple Uranium Production*, JERUSALEM POST (July 7, 2011), <http://www.jpost.com/IranianThreat/News/Article.aspx?id=228260>.

191. See IAEA, *Communication Dated 1 March 2010 Received from the Resident Representative of the Islamic Republic of Iran to the Agency Regarding Assurances of Nuclear Fuel Supply*, at 1–2, IAEA Doc. INFCIRC/785 (Mar. 2, 2010) (discussing Iranian historical difficulties in obtaining fuel supply for its research reactor).

192. See IAEA Doc. GOV/2011/65, *supra* note 68, ¶¶ 32, 36–37 (noting the existence of a fuel manufacturing plant at Esfahan and the start of nondestructive testing). Fitzpatrick notes that Iran's plans to fabricate fuel for the TRR will require prolonged testing, may be unsafe, and in any event the TRR may no longer have sufficient power for this testing by the time the fuel is ready for testing. See THE INT'L INST. FOR STRATEGIC STUDIES, *IRAN'S NUCLEAR, CHEMICAL AND BIOLOGICAL CAPABILITIES: A NET ASSESSMENT* 121 (Mark Fitzpatrick ed., 2011).

193. *Id.* at 72–73.

194. *Id.* In addition, Iran produced 6 kilograms of 20 percent enriched uranium in a six-week period at Natanz. IAEA Doc. GOV/2011/65, *supra* note 68, ¶ 15.

195. THE INT'L INST. FOR STRATEGIC STUDIES, *supra* note 192, at 74.

196. *Id.*

In November 2011, the IAEA released a report providing extensive detail relating to possible military dimensions of Iran's nuclear energy program. The report largely reiterated concerns previously expressed regarding possible military dimensions of Iran's nuclear energy program.¹⁹⁷ These concerns include outstanding questions relating to possession of a document from Pakistan providing instructions on the conversion of weapons-grade uranium into a hemispheric metal device suitable for use as a weapon, known as the "Project Green Salt";¹⁹⁸ evidence relating to "work alleged to have been performed to redesign the inner cone of the Shahab-3 missile reentry vehicle to accommodate a nuclear warhead";¹⁹⁹ alleged administrative interconnections between the "Green Salt" project and the "project to modify the Shahab-3 missile to carry a nuclear warhead";²⁰⁰ a letter published by the Chairman of Iran's Expediency Council in September 2006 that references possible acquisition of nuclear weapons;²⁰¹ additional information relating to the history of Iran's nuclear program, including the extent of contacts with the Khan network and the origination of those efforts at a high-level meeting in 1984 on reviving Iran's prerevolution nuclear program;²⁰² and evidence that Iran conducted experiments involving the explosive compression of uranium deuteride, another component process of weaponization.²⁰³ The Agency has also indicated that it was in possession of evidence that "some activities relevant to the development of a nuclear explosive device continued after 2003, and that some may still be ongoing."²⁰⁴

Efforts to resolve doubts about Iran's nuclear program have involved multiparty negotiations, three IAEA referrals to the Security Council,²⁰⁵ seven Security Council Resolutions, and state-authorized economic sanctions programs.²⁰⁶ The existence of a covert program

197. IAEA Doc. GOV/2011/65, *supra* note 68, Annex.

198. IAEA Doc. GOV/2008/15, *supra* note 152, ¶¶ 14, 24.

199. *Id.* ¶ 17.

200. *Id.* ¶ 21.

201. *Id.* Annex B.2.

202. *Id.*

203. IAEA, *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran*, ¶ 35, IAEA Doc. GOV/2011/29 (May 24, 2011).

204. IAEA Doc. GOV/2011/65, *supra* note 68, ¶ 45.

205. See IAEA, *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions 1737 (2006), 1747 (2007), 1803 (2008) and 1835 (2008) in the Islamic Republic of Iran*, IAEA Doc. GOV/2009/82 (Nov. 27, 2009); IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, IAEA Doc. GOV/2006/15 (Feb. 27, 2006); IAEA, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran*, IAEA Doc. GOV/2005/77 (Sept. 24, 2005).

206. See IAEA Doc. GOV/2010/10, *supra* note 186; IAEA Doc. GOV/2009/82, *supra* note 204; IAEA Doc. GOV/2006/15, *supra* note 205; IAEA Doc. GOV/2005/77, *supra* note 205.

may also be presumed, considering the reports of computer malware targeting Iran's centrifuge program,²⁰⁷ industrial sabotage,²⁰⁸ and targeted killings of Iranian scientists.²⁰⁹

On the negotiation side, talks with the "EU-3" (France, Germany, and the United Kingdom) initially produced an agreement for Iran to suspend its uranium enrichment. However, the talks broke down when it was revealed that Iran was continuing its preenrichment conversion of uranium.²¹⁰ In 2004, Iran agreed to a more stringent suspension of its enrichment-related activities, and several proposals were exchanged in the 2004–2005 period on issues relating to Iran's nuclear program, regional security cooperation, and export issues.²¹¹ Iran expressed dissatisfaction with the talks in August 2005, however, and exercised its purported "inalienable right to resume its legal enrichment activities."²¹²

In June 2006, China, Russia, and the United States joined the negotiations, which became known as the "P5+1" group.²¹³ The group offered Iran the prospect of two light water reactors, fuel guarantees, and technical and agricultural cooperation, yet the talks remain stalled as Iran continued to refuse to suspend its enrichment.²¹⁴ In May 2008, as the P5+1 was revising its proposal for continuing negotiations, Iran outlined multiple steps, or "modalities" leading to full negotiations, although that proposal did not specifically address the outstanding concerns relating to Iran's nuclear program.²¹⁵ In June 2008, the P5+1 presented its revised proposal, offering the prospect of a normalization of trade relations, support for Iran to join the World Trade Organization (WTO), cooperation on Afghanistan

207. John Markoff, *Malware Aimed at Iran Hit Five Sites, Report Says*, N.Y. TIMES, Feb. 13, 2011, at A15; Shane, *supra* note 4, at A1.

208. Scott Shane & Artin Afkhami, *Allegations of Iranian and U.S. Plots Are Added to a History of Hostility*, N.Y. TIMES, Oct. 15, 2011, at A6.

209. Rick Gladstone, *Iran Tightens Its Security for Scientists After Killing*, N.Y. TIMES, Jan. 18, 2012, at A6.

210. See Peter Crail, *History of Official Proposals on the Iranian Nuclear Issue*, ARMS CONTROL ASS'N, http://www.armscontrol.org/factsheets/Iran_Nuclear_Proposals (last visited Apr. 1, 2012).

211. *Id.*

212. *Communication Dated 1 August 2005 Received from the Permanent Mission of the Islamic Republic of Iran to the Agency*, at 2–3, IAEA Doc. No. INFCIRC/648 (Aug. 1, 2005).

213. See Helene Cooper, *U.S. Is Offering Deals on Trade to Entice Iran*, N.Y. TIMES, June 6, 2006, at A1 (discussing the collaboration of Britain, China, France, Russia, United States and Germany in resolving the nuclear crisis with Iran).

214. See Permanent Representative of France to the U.N., Letter dated 13 July 2006 from the Permanent Representative of France to the United Nations addressed to the President of the Security Council, Annex, U.N. Doc. S/2006/521 (July 13, 2006).

215. Letter from Manuchehr Mottaki, Minister of Foreign Affairs of the Islamic Republic of Iran, to Ban Ki-moon, U.N. Secretary Gen. (May 13, 2008) (unofficial translation), available at <http://www.armscontrol.org/system/files/IranProposal20May2008.pdf>.

and the drug trade at the borders, and assurances regarding the nonuse of force.²¹⁶

In 2009, the P5+1 and Iran agreed to a “fuel swap” as a confidence building measure, in which Iran’s representatives in Vienna agreed that Iran would send 1,200 kilograms of its domestically produced LEU—which at the time represented most of its supply—to be enriched to 20 percent in Russia and converted to fuel in France.²¹⁷ Iranian officials sought to modify that fuel swap arrangement, leading to its effective rejection.²¹⁸ Turkey and Brazil later tried to revive the fuel swap deal, but that effort faltered in May 2010.²¹⁹ The proposal ultimately went nowhere, in part because Iran had at that point doubled its stockpile of LEU.²²⁰ The P5+1 held additional negotiations in late 2010 and early 2011, which were ultimately unproductive.²²¹ Negotiations between Iran and the P5+1 resumed in April 2012.²²²

The Security Council addressed the Iranian nuclear situation in one presidential statement (March 2003) and six subsequent Security Council resolutions.²²³ In addition to endorsing and reinforcing the negotiation framework of the EU-3 and P5+1, the resolutions authorize a wide range of measures affecting Iran’s economic interests under Article 41 of the UN Charter.²²⁴

216. *Communication Dated 25 June 2008 Received from the Resident Representative of the United Kingdom to the Agency Concerning a Letter and Offer of 12 June 2008 Delivered to the Islamic Republic of Iran*, IAEA Doc. INFCIRC/730 (July 1, 2008).

217. Steven Erlanger and Mark Landler, *Iran Agrees to Send Enriched Uranium to Russia*, N.Y. TIMES, Oct. 2, 2009, at A1.

218. See Interview with Ali Bagheri, Deputy Secretary, Iran’s Supreme Nat. Sec. Council (Apr. 18, 2010), available at http://www.tehrantimes.com/index_View.asp?code=218880.

219. David E. Sanger & Michael Slackman, *U.S. Is Skeptical on Iranian Deal for Nuclear Fuel*, N.Y. TIMES, May 18, 2010, at A1. The IAEA at that time estimated that Iran had produced 2427 kilograms of LEU since February 2007. IAEA Doc. GOV/2010/28, *supra* note 89, ¶ 5.

220. See IAEA Doc. GOV/2010/28, *supra* note 89, ¶¶ 6–13.

221. Joby Warrick, *Nuclear Talks with Iran Edge Toward Collapse*, WASH. POST, Jan. 21, 2011.

222. Steven Erlanger, *At Nuclear Talks in Turkey, Iran and Six Nations Agree to Meet Again in Iraq*, N.Y. TIMES, Apr. 15, 2012, at A13.

223. U.N. President of the S.C., *Statement*, U.N. Doc. S/PRST/2006/15 (Mar. 29, 2006); S.C. Res. 1929, *supra* note 83; S.C. Res. 1835, U.N. Doc. S/RES/1835 (Sept. 27, 2008); S.C. Res. 1747, U.N. Doc. S/RES/1747 (Mar. 24, 2007); S.C. Res. 1803, *supra* note 90; S.C. Res. 1737, U.N. Doc. S/RES/1737 (Dec. 27, 2006); S.C. Res. 1696, U.N. Doc. S/RES/1696 (July 31, 2006).

224. Article 41 states:

The Security Council may decide what measures not involving the use of armed force are to be employed to give effect to its decisions, and it may call upon the Members of the United Nations to apply such measures. These may include complete or partial interruption of economic relations and of rail, sea, air,

The most stringent measures to date are contained in Security Council Resolution 1929, which included or authorized the seizure of items relating to sanctioned activities;²²⁵ targeted financial measures against Iranian shipping lines;²²⁶ extended sanctions against Iran's Revolutionary Guards;²²⁷ and a halt to the provision of financial services, including insurance and reinsurance, related to any activities that could be proliferation sensitive.²²⁸ While earlier resolutions relating to the sale, supply, or transfer contained language restricting these measures to the territorial jurisdiction of the enforcing state, Resolution 1929 appears to lift this territorial restriction in the context of Iran's ballistic missile program. Specifically, the Council authorized member states to take "all necessary measures to prevent the transfer of technology or technical assistance to Iran related to [activities concerning ballistic missiles capable of delivering weapons]."²²⁹ Such necessary measures cannot be considered to include force, however, as all authorized action was taken under the express authority of Article 41 of the UN Charter.²³⁰

The apparent lack of a territorial restriction regarding measures addressed to Iran's ballistic missiles program appears to permit extraterritorial actions (not amounting to a use of force) to interfere with Iran's receipt of such items. The seizure provisions of the Resolution 1929 are also wide-ranging, extending to items related to enrichment activities, reprocessing, heavy water production facilities, armaments, certain dual-use technology, combat equipment, and ballistic missile technology.²³¹ Seizures under the resolution must be

postal, telegraphic, radio, and other means of communication, and the severance of diplomatic relations.

U.N. Charter art. 41.

225. S.C. Res. 1929, *supra* note 83, ¶ 16.

226. *Id.* ¶ 19.

227. *Id.* app. II.

228. *Id.* ¶ 21.

229. *Id.* ¶ 9.

230. *Id.* pmbl.

231. The seizure provisions cross-reference previous resolutions calling upon members to prevent the supply, sale or transfer "directly or indirectly from their territories or by their nationals or using their flag vessels or aircraft." The relevant provision reads as follows:

[The Security Council] *[d]*ecides to authorize all States to, and that all States shall, seize and dispose of (such as through destruction, rendering inoperable, storage or transferring to a State other than the originating or destination States for disposal) items the supply, sale, transfer, or export of which is prohibited by paragraphs 3, 4 or 7 of resolution 1737 (2006), paragraph 5 of resolution 1747 (2007), paragraph 8 of resolution 1803 (2008) or paragraphs 8 or 9 of this resolution that are identified in inspections pursuant to paragraphs 14 or 15 of this resolution, in a manner that is not inconsistent with their obligations under applicable Security Council resolutions, including resolution

made in a manner consistent with Security Council Resolution 1540, which encourages the application of domestic controls to prevent proliferation.²³²

Although Iran continues to deny an intention to build a nuclear weapon, it is fast-approaching threshold capability and has effectively asserted a right for itself to develop that capability. Iran's President recently reiterated Iran's ambiguous position that it did not intend to build a nuclear weapon, but that "[i]f we want to make a bomb, we are not afraid of anybody."²³³

Addressing concerns relating to the supply of fuel for Iran's nuclear reactors will no doubt comprise a key ingredient in resolving the current stalemate over Iran's nuclear program. One possible means of addressing issues relating to past and potential fuel supply agreements could involve the negotiation of a fuel guarantee for those reactors in exchange for Iran's agreement to scale back its enrichment program. Under such a scenario, the Iran-United States Claims Tribunal in The Hague could serve as a venue for the expedited arbitration of any disputes over new fuel supply or nuclear cooperation agreements. The existence of a mechanism for expedited arbitration of any new agreements may provide additional security that those agreements will be enforceable. Incorporating the Tribunal into such a fuel guarantee arrangement would provide an opportunity for the parties to address differences relating to prior contracts and perhaps broader issues, while restructuring that Tribunal in order to streamline its work.

The successful resolution of outstanding issues related to Iran's nuclear program will require persistent efforts at both the diplomatic level and within the IAEA safeguards system.

C. Reconciling Treatment of Non-NPT States with a Prevention Regime

The existence of nuclear-weapons states outside of the NPT framework puts strains on the already unequal system institutionalized in the NPT, complicating the business of developing consistent legal standards for preventing the spread of nuclear weapons development. There are two categories of outlier states in this regard. The first category was addressed above, and includes

1540 (2004), as well as any obligations of parties to the NPT, and decides further that all States shall cooperate in such efforts.

Id. ¶ 16.

232. *Id.*; see *infra* Part V.A.

233. *Ahmadinejad: Iran 'Not Afraid' to Produce Nuclear Weapon, but Doesn't Intend to Do So*, HUFFINGTON POST WORLD (June 23, 2011), http://www.huffingtonpost.com/2011/06/23/ahmadinejad-iran-not-afraid-nuclear-weapon-_n_882797.html.

states who ratify the NPT and either do not comply or seek to withdraw in order to cross the nuclear threshold. The second category comprises those states that have not signed the NPT but emerged as nuclear weapons powers at a later time. The principal actors in the latter group are India, Pakistan, and Israel, none of whom ever signed the NPT (although each joined the IAEA in 1957). States that have already been integrated into the global nonproliferation regime based on their consent to the NPT cannot so easily reverse the clock to qualify as non-NPT states. When states seek to withdraw from the NPT, a host of legal and political issues will complicate their efforts to do so. Non-NPT party states occupy a distinct legal status, which is in many ways a throwback to the world that existed before the NPT, where ad hoc alliances and power relationships took precedence.

The NPT outliers are not bound by the specific provisions of the NPT, but are bound by customary nonproliferation legal norms. It can be argued that the non-NPT states that chose not to join the regime were legally entitled to develop nuclear weapons, so long as they did not benefit from technology shared in violation of treaties and state practices that restrict the trade in proliferation-sensitive items. Attempts to apply nonproliferation norms to non-NPT states are complicated by the inherently unequal nature of the nonproliferation regime, which contemplates differential treatment of states that are permitted to have nuclear weapons and those that are not. The inequalities institutionalized in the NPT²³⁴ are, however, premised on a system that provisionally prioritizes the security of a world in which nuclear weapons do not proliferate,²³⁵ free trade in nuclear technology so long as it is used for peaceful purposes, and a long-term nuclear disarmament framework.

To the extent that nonproliferation law has developed based on a norm of security among nations and centered on the long-term goal of disarmament, then disarmament would be the logical soft law norm to apply in guiding policy decisions on the outlier states.²³⁶ International treaties, state practice, and Security Council pronouncements more specifically prohibit the non-NPT states from engaging in proliferation of nuclear weapons technology. Even if the

234. See, e.g., NPT, *supra* note 3, art. 1.

235. See generally Joseph Nye, *The Logic of Inequality*, 59 FOREIGN POL'Y 123, 125–26 (1985) (“Even though superpower compliance with Article VI of the NPT has been inadequate, many states will continue to adhere because they believe their security will be diminished if more states—particularly their regional rivals—obtain nuclear weapons.”).

236. For a discussion of the characteristics of “soft law,” see ALAN BOYLE & CHRISTINE CHINKIN, *THE MAKING OF INTERNATIONAL LAW* 163–64 (2007) and also Gregory C. Shaffer & Mark A. Pollack, *Hard Versus Soft Law in International Security*, 52 B.C. L. REV. 1147, 1158 (2011) (“Soft law, in this sense, represents a modern variant of the ‘law to be made,’ *lex ferenda*, which reflects the aspiration of law’s progressive development.”).

non-NPT states can be said to legally possess nuclear weapons, this does not entitle those states to distribute proliferation-sensitive items and knowledge to states that are fully integrated into the global nonproliferation regime.

The global nonproliferation regime cannot be said to be a universally applicable legal system so long as outlier states choose not to participate in that regime. The outlier states nonetheless operate in a world in which that regime dominates the international legal landscape, affecting their ability to trade in nuclear technology. Applying nonproliferation norms to outlier states without the benefit of a clearly defined legal regime may involve fact-based assessments designed to address concerns that the outlier states will serve as resources for proliferation to states that do participate in the nonproliferation legal system. Indicators that may present high levels of proliferation risk in this context could include, for example, political instability, evidence of clandestine proliferation networks, and connections to groups that may have an interest in proliferating military technologies for military purposes. Such analysis is relevant to maintenance of an effective verification system for the NPT states while further integration of the outliers into the global nonproliferation regime is pending.

V. ECONOMIC COUNTERPROLIFERATION MEASURES

The Security Council and states may institute a variety of measures to address perceived threats to international peace and security. Peace and security measures designed to affect the behavior of states may fall into one of three principal legal categories. The first category involves actions that may be taken as a function of the exercise of sovereign rights that do not violate general principles of international law (i.e., retorsion). The second category involves measures that may otherwise violate international law that could possibly be justified as countermeasures, but do not involve the use of force. The third category involves the use of force. Unilateral economic measures generally fall into the first of these categories, posing legal limitations in the area of extraterritorial effect.

Even where unilateral sanctions may apply extraterritorially, gaps in trade can be easily filled by nonparticipating entities. More effective sanctioning tools include the use of multilateral regimes or Security Council action under Article 41 of the UN Charter, which allows for the fullest legal expression of internationally coordinated economic action.²³⁷ The effect of those sanctions will also be determined by their scope, which may extend to the entirety of a

237. U.N. Charter art. 41.

state's economic activity. Current international sanctions addressing proliferation activities have targeted only selected activities and industries, far from the full scope possible under Article 41.

The term "sanction" carries a broad connotation,²³⁸ but is most often used in the context of restrictions on trade and commerce. Economic sanctions are a subset of trade controls targeted to influence the behavior of a state, and in the context of international law, to ensure compliance with international rights and obligations. They may also be considered as countermeasures under the regime of state responsibility if they qualify as a response to specific wrongful behavior.²³⁹ Legal restrictions in the context of the law of state responsibility would include a requirement of proportionality, taking into account the gravity of the targeted wrongful act.²⁴⁰ Even under the regime of state responsibility, however, economic countermeasures may cause a disproportionate economic impact when they are gauged to enforce an important legal principle.²⁴¹ Humanitarian law, human rights concerns, and due process concerns may also affect the legality of sanctions under certain circumstances.²⁴²

A. *Extraterritoriality: Jurisdictional Impediments to Effective Prevention*

Unilateral economic sanctions fall within the purview of sovereign authority and thus do not generally require specific justification under international law. The authority to regulate economic conduct within a state's jurisdiction is incident to its

238. See BLACK'S LAW DICTIONARY 1459 (9th ed. 2009) (defining sanction under international law as "[a]n economic or military coercive measure taken by one or more countries toward another to force it to comply with international law"); Georges Abi-Saab, *The Concept of Sanction in International Law*, in UNITED NATIONS SANCTIONS AND INTERNATIONAL LAW, *supra* note 38, at 29, 32 (defining sanctions in the generic sense as "coercive measures taken in execution of a decision of a competent social organ, i.e., an organ legally empowered to act in the name of the society or community or community that is governed by the legal system").

239. See *generally* Calamita, *supra* note 40 (arguing that states retain the right "to take unilateral countermeasures in response to wrongful acts").

240. Rep. of the Int'l Law Comm'n, 56th Sess., Apr 23–June 1, July 2–Aug. 10, 2001, U.N. Doc. A/56/10; GAOR, 56th Sess., Supp. No. 10 (2001) [hereinafter Draft Articles on State Responsibility]

241. Air Services Agreement of 27 March 1946 (U.S. v. Fr.), 18 R.I.A.A. 417 (Perm. Ct. Arb. 1978) (holding that suspension of all Air France flights from Los Angeles and Paris was proportional to allow an American carrier on the same route to route through London due to the importance of the issue "in the general framework of . . . air transport policy."). See *generally* Lori Fidler Damrosch, *Retaliation or Arbitration—or Both? The 1978 United States–France Aviation Dispute*, 74 AM. J. INT'L L. 785, 791 (1980) ("[I]n France's view the economic consequences of the Pan Am service and the Air France service were grossly disproportionate.").

242. See discussion *infra* Part V.B.

sovereign powers²⁴³ and is not subject to review under international law.²⁴⁴ The International Court of Justice (ICJ) confirmed in the *Nicaragua* cases that economic measures directed at other states do not violate the customary international principle of nonintervention in the internal or external affairs of a state.²⁴⁵ Economic measures are not within the ambit of Article 2(4) of the UN Charter prohibiting the use of force.²⁴⁶ In some cases, unilateral sanctions may violate trade agreements,²⁴⁷ but most such agreements permit exceptions for national security matters.²⁴⁸ The principal legal questions relating to unilateral economic sanctions relate to their extraterritorial effect, underscoring jurisdictional impediments to the effectiveness of unilateral sanctions. Recent European case law also illustrates that courts may accord due process rights to sanctioned individuals when targeted sanctions are unsubstantiated and impinge on fundamental rights, such as the right to be heard, the right to property, and the right to an effective legal remedy.²⁴⁹

243. U.S. export control is based on the premise that there are no rights to export, only privileges. See ANDREAS F. LOWENFELD, *TRADE CONTROLS FOR POLITICAL ENDS* 35 (2d ed. 1983); see also IAN BROWNLIE, *PRINCIPLES OF PUBLIC INTERNATIONAL LAW* 509 (6th ed. 2003) (“State measures, prima facie a lawful exercise of powers by government, may affect foreign interests considerably Thus foreign assets and their use may be subject to taxation, trade restrictions involving licenses and quotas, or measures of devaluation.”).

244. See *Iran v. United States*, 38 Iran-U.S. Cl. Trib. Rep. 197, 262–64 (2009) (holding that the United States’ exercise of the sovereign right to deny export of defense articles owned by Iran did not constitute interference with Iran’s ownership or property rights); *Iran v. United States*, 19 Iran-U.S. Cl. Trib. Rep. 273, 292 (1988) (“[T]he President’s exercise of the discretion conferred upon him by . . . the [Arms Export Control] Act . . . is the exercise of a sovereign right which is not subject to review by an international tribunal.”).

245. *Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.)*, 1986 I.C.J. 14, 126 (June 27) (“[T]he Court has merely to say that it is unable to regard such action on the economic plane as is here complained of as a breach of the customary-law principle of non-intervention.”); IAN BROWNLIE, *INTERNATIONAL LAW AND THE USE OF FORCE BY STATES* 362 (1963) (“[W]hilst it is correct to assume that paragraph 4 applies to force other than armed force, it is very doubtful if it applies to economic measures of a coercive nature.” (footnotes omitted)).

246. See Abram Chayes, *Nicaragua, the United States, and the World Court*, 85 COLUM. L. REV. 1445, 1463 n.89 (1985) (“The record of the San Francisco Conference is quite clear that article 2(4) was intended to refer to military rather than political or economic force.”); see also United Nations Conference on Int’l Org., Doc. 784, I/1/27, 6 U.N.C.I.O. Docs. 331, 334 (Apr. 25, 1945); United Nations Conference on Int’l Org., Doc. 215, I/1/10, 6 U.N.C.I.O. Docs. 559 (Apr. 25, 1945) (rejecting Brazilian amendment to include “the threat or use of economic measures” within the ambit of Article 2(4)).

247. See LOWENFELD, *supra* note 243, at 446 (noting that products would not be entitled to most favored nation treatment in the context of mandatory UN sanctions).

248. See General Agreement on Tariffs and Trade art. XXI, Oct. 30, 1947, 61 Stat. A-11, 55 U.N.T.S. 194 (creating security exception to trade agreements). See generally, JOYNER, *supra* note 41, at 126–30.

249. See *Joined Cases C-402 & 415/05P, Kadi v. Council*, 2008 E.C.R. I-6351, para. 334; *Case T-85/09, Kadi v. Comm’n*, 2010 E.C.R. I-2729, para. 157. See generally Gráinne de Búrca, *The European Court of Justice and the International Legal Order*

States issuing unilateral sanctions do not actually regulate the conduct of the targeted state, but the conduct of those within the sanctioning state's jurisdiction that are doing business with the targeted state. International law distinguishes between primary and secondary boycotts in this regard. Under primary boycotts, a state regulates conduct in its own territory or over its own nationals.²⁵⁰ Secondary boycotts are "extraterritorial" insofar as their effect is to exercise jurisdiction over third-country foreign nationals for conduct that takes place outside of the sanctioning state's territorial jurisdiction.²⁵¹ Commonly accepted extraterritorial export controls include restrictions on the reexport of sensitive goods and know-how based on country of origin. Extraterritorial sanctions do not affect the jurisdiction of the targeted state, and thus could violate no jurisdictional obligations toward that state. Issues of legality are therefore matters to be addressed between the sanctioned state and affected third-party states.

A variety of principles have been used to justify departures from the basic norm that jurisdiction applies only on the basis of nationality or territorial control.²⁵² Scholars have disagreed as to whether extraterritorial jurisdiction is in fact a violation of international law.²⁵³ While the exercise of extraterritorial jurisdiction may or may not be considered legal, the third state whose sovereignty is allegedly impinged need not recognize the validity of such jurisdiction and may affirmatively exercise its sovereign rights to

After Kadi, 51 HARV. INT'L L.J. 1, 42 (2010) ("Arguments could have been advanced not only about customary international law as a basis for due process protection, but also about the references to protection of human rights in the U.N. Charter itself, as well as in the general principles of international law and *jus cogens* principles which were invoked by the CFI.").

250. LOWENFELD, *supra* note 243, at 314.

251. See generally Andreas F. Lowenfeld, *Congress and Cuba: The Helms-Burton Act*, 90 AM. J. INT'L L. 419, 429–30 (1996). Secondary boycotts are not new. Prominent cases include sanctions against companies doing business with the Soviet Union during the Cold War, the "Arab Boycott" against Israel, and sanctions against Iran in current disputes with the United States. See *id.* at 429.

252. These include (1) the protective principle to protect state security interests; (2) the principle of universality applicable, for example, to crimes against humanity; (3) the passive personality principle, which looks at the victim of a crime; (4) the effects doctrine relating to the effects the targeted behavior is likely to have in the originating state; and (5) the universality principle for crimes that are universally unlawful. Harvard Research in Int'l Law, *Jurisdiction with Respect to Crime*, 29 AM. J. INT'L L. 439, 445 (1935).

253. For contrasting views in the context of the Helms-Burton Act, see Lowenfeld, *supra* note 251, at 413–33 ("It would be very sad indeed if conflicts over an exorbitant and unreasonable piece of U.S. legislation were to divert attention from the deplorable events occurring in Cuba, and were even to attract sympathy for the Castro regime . . ."); Brice M. Clagett, *The Cuban Liberty and Democratic Solidarity (Libertad) Act, Continued: A Reply to Professor Lowenfeld*, 90 AM. J. INT'L L. 641, 614–44 (1996); Brice M. Clagett, *Title III of the Helms-Burton Act Is Consistent with International Law*, 90 AM. J. INT'L L. 434 (1996).

counteract extraterritorial actions. This was the case when the United States enacted antiboycott legislation to penalize any companies that complied with the Arab boycott of Israel.²⁵⁴ It was also the case in the French court decision in *Fruehauf v. Massardy*, in which American sanctions interfered with the business operations of a French company.

Fruehauf illustrates the challenges faced when interests conflict among multiple jurisdictions. The case was triggered from U.S. prohibitions on trade by U.S.-controlled foreign corporations with China and North Korea during the Cold War (under the Trading with the Enemy Act).²⁵⁵ In 1965, the U.S. Treasury Department ordered Fruehauf Detroit, the parent company of S.A. Fruehauf-France, a French company, to either cancel a contract it had executed to supply a large order of semitrailers destined for the People's Republic of China, or face criminal penalties.²⁵⁶ Facing severe economic consequences from the prospect of cancelling a major contract with a client comprising 40 percent of the company's business, the French directors of the corporation sought an order appointing a temporary administrator to manage the company and carry out the contract.²⁵⁷ The French court accepted the request and held that the management of the company could carry out its order for the semitrailers, safeguarding the interests of the corporation under French law.²⁵⁸

When faced with the declaration of the French court, the United States decided not to pursue the matter further. Respect for the principle of comity among nations prevailed in this instance, possibly

254. See LOWENFELD, *supra* note 243, at 322 ("Extraterritorial application of [the U.S. antiboycott legislation] is a side effect—albeit an important one—designed for the most part to prevent evasion of primary restraints on activity by Americans in the United States; the Arab boycott, in contrast, is in very large measure extraterritorial, in that it is designed in the first instance to affect activity carried on abroad by non-Arab persons or firms.").

255. Cour d'appel [CA] [regional court of appeal] Paris, 14e ch., May 22, 1965, Gaz. Pal. 1965, 2, 86 (Fr.), discussed in *French Court Decision on Jurisdiction over Subsidiaries of Foreign Corporations*, 5 I.L.M. 476, 476 (1966). Corporate nationality under international law tends to favor the nationality of the state of incorporation. See, e.g., *Barcelona Traction, Light & Power Co. (Belg. v. Spain)*, 1970 I.C.J. 3, 34 (Feb. 5) ("Municipal law determines the legal situation not only of such limited liability companies but also of those persons who hold shares in them. Separated from the company by numerous barriers, the shareholder cannot be identified with it."); RESTATEMENT (THIRD) OF FOREIGN RELATIONS LAW § 213 (1987) ("For purposes of international law, a corporation has the nationality of the state under the laws of which the corporation is organized."); see also Cedric Ryngaert, *Extraterritorial Export Controls (Secondary Boycotts)*, 7 CHINESE J. INT'L L. 625, 628 (2008) (discussing *Barcelona Traction* and the Trading with the Enemy Act of 1917).

256. Cour d'appel, Gaz. Pal. 1965 at 476.

257. *Id.*

258. *Id.*; see also LOWENFELD, *supra* note 243, at 91–105; Ryngaert, *supra* note 255, at 629 ("A . . . French appeals court heard the case and decided that the contract should indeed be honoured . . .").

due to a desire on the part of the United States not to directly challenge the French court's exercise of its own jurisdiction within its own territory.²⁵⁹ The *Fruehauf* case does not necessarily imply that extraterritorial measures are illegal, but serves as a reminder that there is no guarantee they will be recognized by the third country, the jurisdiction of which can be said to take priority.

Applying the *Fruehauf* approach to more recent examples, the question of competing jurisdictions comes into sharper focus. When the United States enacted sanctions affecting third-country nationals doing business with Iran and Cuba in 1996,²⁶⁰ complaints emerged regarding the extraterritorial reach of those laws.²⁶¹ The Helms-Burton Act, in addition to imposing sanctions on third-country nationals for doing business with Cuba, went so far as to create a new cause of action against those nationals to expose them to U.S. expropriation claims in the event that third-country nationals were "trafficking" in expropriated goods.²⁶² European countries similarly complained about the Iran-Libya Sanctions Act of 1996 (ILSA), which outlined penalties to be imposed on third-country nationals that invested more than \$20 million in Iran's energy sector,²⁶³ building on earlier executive orders that extraterritorially prohibited reexportation to Iran of goods and technology originating in the United States.²⁶⁴

259. See Note, *Predictability and Comity: Toward Common Principles of Extraterritorial Jurisdiction*, 98 HARV. L. REV. 1310, 1322-23 (1985) ("When the United States asserts jurisdiction over activities occurring within the territory of another sovereign, its action may well be perceived as intrusive and perhaps even unlawful. In order to allay such perceptions, extraterritoriality doctrine should respect the principle of comity among nations." (citation omitted)).

260. Cuban Liberty and Democratic Solidarity (LIBERTAD) Act of 1996 (Helms-Burton Act), 22 U.S.C. §§ 6021-6091 (2006); Iran and Libya Sanctions Act of 1996, Pub. L. No. 104-172, § 6, 110 Stat. 1541 (1996).

261. See Letter from the Permanent Representative of the Islamic Republic of Iran to the United Nations addressed to the Secretary-General, U.N. Doc. A50/857 (Dec. 29, 1995); Brian J. Welke, *GATT and NAFTA v. The Helms-Burton Act: Has the United States Violated Multilateral Agreements?*, 4 TULSA J. COMP. & INT'L L. 361, 362 (1997) ("Since its passage, Canada and Mexico, and the European Union (EU) have raised concern over whether the Act violates the North American Free Trade Agreement (NAFTA) and the General Agreement on Tariffs and Trade (GATT), respectively." (citations omitted)); Joaquín Roy, *The "Understanding" Between the European Union and the United States over Investments in Cuba*, in 10 CUBA IN TRANSITION 88 (Ass'n for the Study of the Cuban Econ. ed., 2010), available at <http://www.ascecuba.org/publications/proceedings/volume10/pdfs/roy.pdf> ("Nonetheless, as far as attitudes are concerned, European countries showed a remarkable consensus of opposition to the Helms-Burton law.").

262. Helms-Burton Act § 302.

263. See Iran and Libya Sanctions Act § 4(d)(1) (permitting an enhanced sanction in order to hinder Iran's energy programs).

264. Exec. Order No. 13,059, 62 Fed. Reg. 44,531 (Aug. 19, 1997); Exec. Order No. 12,959, 60 Fed. Reg. 24,757 (May 6, 1995); Exec. Order No. 12,957, 60 Fed. Reg. 14,615 (Mar. 17, 1995). It should be noted that Security Council Resolution 1540

As a response to the U.S. legislation, the European Council enacted "Blocking Legislation" (Council Regulation 2271/96) declaring the unenforceability of and forbidding compliance with U.S. extraterritorial laws.²⁶⁵ The European Council also filed suit with the WTO Dispute Settlement Mechanism, challenging the legality of the Helms-Burton Act under the security exemption of Article 21 of General Agreement on Tariffs and Trade (GATT).²⁶⁶ The United States and the European Union reached an "Understanding" with the European Council that the WTO case would be dropped and the United States would seek waivers under the Helms-Burton Act and ILSA.²⁶⁷ Although some domestic courts have addressed the legality of extraterritorial controls,²⁶⁸ their legality was ultimately not considered by an international body, and the United States did not undertake a legal commitment to waive the legislation.²⁶⁹

The extraterritorial provisions of the ILSA were not applied until 2010,²⁷⁰ when the Act had been revised and supplemented by the

specifically calls upon states to maintain reexport controls and restrictions, effectively putting an end to debate on their legality. S.C. Res. 1540, ¶ 3(d), U.N. Doc. S/RES/1540 (Apr. 28, 2004). Though somewhat controversial, export controls and nondiversion assurances have been a longstanding and relatively common feature of U.S. export control law. See, e.g., LOWENFELD, *supra* note 243, at 21, 30–34; Cecil Hunt, Department of Commerce Controls on Reexports and Other Activity Abroad 143, 147 (Oct. 2009) (unpublished manuscript) available at <http://www.wiltshiregrannis.com/siteFiles/News/A794B945F2CEF21FC2F93726C2D35AE1.pdf> (using the Department of Commerce's Export Administration Regulations as an example of the United States' extraterritorial control).

265. Council Regulation 2271/96, Protecting Against the Effects of the Extraterritorial Application of Legislation Adopted by a Third Country, 1996 O.J. (L 309) 39. For a more extensive analysis of Council Regulation 2271/96, see Harry Clark, *Dealing with U.S. Extraterritorial Sanctions and Foreign Countermeasures*, 20 U. PA. J. INT'L ECON. L. 61, 81–83 (1999).

266. See Clark, *supra* note 265, at 87–88 ("In October 1996, the EU initiated World Trade Organization ("WTO") dispute settlement proceedings against the Helms-Burton Act and the U.S. embargo of Cuba. The EU alleged that these measures deny EU members' rights under General Agreement on Tariffs and Trade 1994 (GATT 1994) and the General Agreement on Trade in Services (GATS) to export to Cuba and trade in Cuban origin goods."). The WTO suit expressed concerns about ILSA, but it was not formally a part of the suit. See *id.* at 88 ("The EU also articulated major concerns about the Iran and Libya Sanctions Act but did not include that statute in its WTO case.").

267. Memorandum of Understanding Concerning the U.S. Helms-Burton Act and the U.S. Iran and Libya Sanctions Act, EU-U.S., Apr. 11, 1997 [hereinafter EU-U.S. Understanding], reprinted in 36 I.L.M. 529, 530 (1997).

268. See, e.g., Rb.-Den Haag 17 september 1982 (Compagnie Européenne des Pétroles S.A./Sensor Nederland B.V.) (Neth.), *unofficial translation available in* 22 I.L.M. 66, ¶ 7.3.2 (1983) (holding that the U.S. extraterritorial regulations to discourage investment in a Soviet pipeline violated international law); see also LOWENFELD, *supra* note 243, at 296–300.

269. See EU-U.S. Understanding, *supra* note 267, at 530 ("The US takes the position that the present Understanding conveys no legal commitment that waivers will be granted under ILSA.").

270. See *Seven Companies Sanctioned Under the Amended Iran Sanctions Act: Fact Sheet*, DEP'T ST. (May 24, 2011), <http://www.state.gov/r/pa/prs/ps/2011/05/>

Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010 (CISADA).²⁷¹ CISADA institutes comprehensive sanctions by the United States that more aggressively target financial transactions and investments relating to Iran's use of refined petroleum products.²⁷² In contrast to the milder language of earlier legislation addressing Iran's proliferation activities, CISADA declares that Iran's illicit nuclear and weapons development activities "represent a threat to the security of the United States, its strong ally Israel, and other allies of the United States around the world."²⁷³ CISADA was enacted shortly after the Security Council issued Resolution 1929²⁷⁴ and was followed by European sanctions that placed restrictions on investments in Iran's energy sector and prohibit the provision of banking, financial, and insurance services to Iranian companies.²⁷⁵ Since the change in policy among European nations coincided with the objectives of U.S. laws, there has been little, if any, protest from European quarters regarding the extraterritorial reach of U.S. laws on this subject. New unilateral sanctions targeting Iranian banking and oil interests,²⁷⁶ as well as the possibility of targeting Iran's ability to conduct electronic funds transfers,²⁷⁷ could dramatically impact Iran's financial interests. Even where states protest the legality of extraterritorial sanctions, they may still be effective because corporations may nonetheless comply for business reasons.

The fundamental lesson emerging from this narrative is that parity on the level of multilateral and international action will

164132.htm (imposing bans on export privileges, Export-Import Bank financing, U.S. foreign exchange transactions, U.S. banking transactions and others transactions under the ILSA).

271. Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010, Pub. L. No. 111-195, 124 Stat. 1312.

272. *Id.* § 102.

273. *Id.* § 2(1).

274. S.C. Res. 1929, *supra* note 83.

275. Council Decision of 26 July 2010 Concerning Restrictive Measures Against Iran and Repealing Common Position 2007/140/CFSP, 2010 O.J. (L 195) 39–60. For a comparison of U.S. and EU sanctions, see Piero Molinaro & Joost Toussaint, Speech at The European Compliance Conference (TECC) Workshop 17, Living with Sanctions (Apr. 15, 2011) (on file with author) and also *Responding to Extraterritorial Legislation: The European Union and Secondary Sanctions*, 124 HARV. L. REV. 1246, 1252 (2011) ("Although member states must still resolve some implementation details, virtually no conduct by EU financial institutions or petroleum companies is prohibited under CISADA but legal under EU law.")

276. See National Defense Authorization Act for Fiscal Year 2012, Pub. L. No. 112-81, § 1245, 125 Stat. 1298, 1647 (detailing U.S. sanctions on Iranian banking and oil industries); Council Decision 2012/35/CFSP Amending Decision 2010/413/CFSP concerning restrictive measures against Iran, 2012 O.J. (L 19) 22–23 (detailing European sanctions of Iranian banking and oil industries). See generally KENNETH KATZMAN, CONG. RESEARCH SERV., RS20871, IRAN SANCTIONS (2012).

277. KATZMAN, *supra* note 276, at 58–59 (discussing Senate Banking Committee Bill).

supersede legal problems of extraterritoriality when the enforcement of sanctions is concerned.²⁷⁸ Indeed, Security Council resolutions under Article 41 provide direct enforcement authority to states to carry out those sanctions.²⁷⁹ In the context of proliferation, the resolution of jurisdictional conflicts is best effected through the advancement of international norms that oblige states to take preventive action when necessary, within a coordinated and harmonized international framework.

B. *Crippling Sanctions: Approaching a Pre-Force Maximum*

Although references to “crippling”²⁸⁰ sanctions are common in reference to proliferation-suspect states, current international sanctions against such states are targeted, as opposed to comprehensive, and have not fully targeted the most sensitive aspects of the economy. Crippling sanctions may be designed to inflict pain more broadly than sanctions targeted at regime leaders, causing the type of economic breakdown that cannot be sustained by a nation as a whole. In the context of Iran, crippling sanctions are generally meant to refer to a full embargo on imports of refined petroleum products.²⁸¹ The United States and Europe have enacted sanctions to that effect, yet those sanctions do not prevent nationals of other states from providing those products, to the extent they are willing to risk the loss of business with Western financial institutions.²⁸² International sanctions on Iran and North Korea largely relate to financial transactions and trade in areas that are broadly connected to

278. See also *id.* at 1257 (arguing that increased diplomatic power at the level of the European Union lessens the need for the EU to resort to international legal protests in the context of extraterritorial U.S. laws).

279. See, e.g., United Nations Participation Act, 22 U.S.C. § 287(d) (2006). To the extent that a state acts beyond the ambit of Security Council Resolution, it may be considered as acting under its inherent sovereign authority.

280. David E. Sanger, *U.S. Weighs Iran Sanctions If Talks Are Rejected*, N.Y. TIMES, Aug. 2, 2009, at A4 (discussing options to cut off Iran’s supply of oil and gas).

281. See *id.* Iran is said to rely on imports for approximately 40 percent of its refined petroleum needs, although it claims to be swiftly increasing its domestic refining capacities. Iran is the fourth largest crude oil exporter, and so the most severe economic measure against Iran would be to cut off its exports, thereby depriving it of 80 percent of its export revenues and 60 percent of its overall budget. See *Country Analysis Brief: Iran*, U.S. ENERGY INFO. ADMIN., <http://www.eia.gov/EMEU/cabs/Iran/pdf.pdf> (last updated Feb. 17, 2012); *Iran Oil Exports Top 844mn Barrels*, PRESTTV (June 16, 2010), <http://edition.presstv.ir/detail/130736.html> (Iran).

282. The United States has sanctioned third country national corporations under CISADA, but the effect of those sanctions on Iran’s oil imports has yet to be seen. See Jonathan S. Landay, *New U.S. Sanctions Hit Iran’s Gasoline Imports*, MCCLATCHY—TRIB. NEWS SERV. (May 24, 2011), <http://www.mcclatchydc.com/2011/05/24/v-print/114682/new-us-sanctions-hit-iran-gasoline.html>.

military-industrial needs.²⁸³ Despite the difficulties these sanctions pose to Iran and North Korea, from a historical and legal perspective they do not reach the level of the full-scope economic denial that is possible under Article 41 of the UN Charter.

Sanctions may range from a prohibition on trade in certain strategic goods, such as missile technologies, to a focus on economic sectors such as oil or finance, to a comprehensive ban on all trade. The most comprehensive international economic sanctions in modern times were applied in Rhodesia and Iraq, although the Iraq sanctions were accompanied by a humanitarian exception known as the "Oil for Food" program.²⁸⁴ Although the success of those sanctions may be a dubious proposition, as historical examples, they demonstrate the lengths to which the international community may go in imposing full-scope economic measures to prevent and restrict behavior that is considered to constitute a threat to international peace and security.

The case of Rhodesia offers a textbook example of how sanctions may incrementally target an entire economy. In 1965, the white-minority government of Southern Rhodesia, after refusing to extend voting rights to nonwhites, unilaterally declared independence from England, gaining international pariah status.²⁸⁵ The Security Council expressly invoked its authority under Chapter VII²⁸⁶ for the first time, declaring Rhodesia a threat to international peace and security and imposing an embargo on oil and gas.²⁸⁷ When the embargo was violated at the port of Beira, the Security Council authorized the United Kingdom to use force to interdict shipments at that port,²⁸⁸ allowing it to legally maintain a blockade of that port for ten subsequent years.²⁸⁹ As the situation failed to improve, the Security Council, in Resolution 253, instituted comprehensive sanctions against Rhodesia, prohibiting all trade, banning investments, and imposing a travel ban on regime members (with an exception for humanitarian aid).²⁹⁰ Resolution 253 authorized action to the full extent possible under Article 41, encouraging states to "take all possible further action under Article 41" of the UN Charter.²⁹¹ The question arose in Security Council debates as to whether a total ban

283. See, e.g., S.C. Res. 1929, *supra* note 83 (identifying sanctioned industries in Iran); S.C. Res. 1695, *supra* note 145 (identifying sanctioned industries in North Korea).

284. See S.C. Res. 825, ¶ 5, U.N. Doc. S/RES/825 (May 11, 1993).

285. See LOWENFELD, *supra* note 243, at 427-35.

286. *Id.* at 444-45.

287. S.C. Res. 217, ¶ 8, U.N. Doc. S/RES/217 (Nov. 20, 1965).

288. S.C. Res. 221, ¶ 5, U.N. Doc. S/RES/221 (Apr. 9, 1966).

289. See generally James Kraska, *Broken Taillight at Sea: The Peacetime International Law of Visit, Board, Search, and Seizure*, 16 OCEAN & COASTAL L.J. 1, 31 (2010) (discussing the economic sanctions enforced against Rhodesia).

290. S.C. Res. 253, ¶ 3, U.N. Doc. S/RES/253 (May 29, 1968).

291. *Id.* ¶ 9.

on communications was required under Resolution 253, but states resisted the imposition of a total ban on the basis of human rights concerns.²⁹² The Security Council also authorized the United Kingdom, as the administering power of Rhodesia, to take "all effective measures" to put an end to the uprising, arguably inclusive of forcible measures.²⁹³

The Rhodesia sanctions were plagued by implementation deficiencies and did not prevent Rhodesia from achieving 6.5 percent average growth rate in its GDP from 1966 to 1975.²⁹⁴ The denial program is instructive, however, in that the Security Council authorized states to take the full range of action permissible under Article 41, and even authorized the United Kingdom to take limited forcible action to enforce the sanctions. Assuming a blanket authorization under Article 41, the question inevitably arises as to what the limit is on measures to achieve a "complete or partial interruption of economic relations."²⁹⁵ Considering that Article 41 specifically excludes measures involving the use of force, the answer to this question will depend on whether an action rises to that level.²⁹⁶ However, in the context of full-scope Article 41 action, the range of possibilities for extraterritorial action is far greater than it would be in the absence of such authorization.²⁹⁷ Whether the application of extraterritorial measures to "interrupt" economic relations is permissible within the ambit of a blanket Article 41 authorization remains unclear. None of the sanctions targeting the proliferation of weapons of mass destruction to date have provided blanket authorizations under Article 41.

The Security Council imposed comprehensive sanctions in Iraq in 1990 that endured essentially until 2003.²⁹⁸ The sanctions were modeled on the Rhodesian sanctions, prohibiting all trade, investment, and the making available of funds to Iraq for anything

292. See generally James Crawford, *The Relationship Between Sanctions and Countermeasures*, in UNITED NATIONS SANCTIONS AND INTERNATIONAL LAW, *supra* note 38, at 57.

293. See S.C. Res. 253, *supra* note 290, ¶ 9.

294. See LOWENFELD, *supra* note 243, at 441.

295. U.N. Charter art. 41.

296. See *id.*

297. There is some support for the proposition that extraterritorial enforcement of national laws that do not conflict with public international law are legal. In the *Lotus* case, for example, the Permanent Court of International Justice ruled that it was not a violation of international law for Turkey to try the French officer of a ship that collided with a Turkish ship on the high seas. See *S.S. Lotus (Fr. v. Turk.)*, 1927 P.C.I.J. (ser. A) No. 10, at 16 (Sept. 7) ("Far from laying down a general prohibition to the effect that States may not extend application of their laws and the jurisdiction of their courts to persons, property and acts outside their country, [international law] leaves them a in this respect a wide measure of discretion.").

298. See S.C. Res. 661, ¶¶ 3-4, U.N. Doc S/RES/0661 (Aug. 6, 1990) (imposing sanctions).

other than humanitarian or medical purposes.²⁹⁹ The Security Council later authorized a blockade to enforce its original sanctions resolution.³⁰⁰ The sanctions were widely understood to have had a disproportionate impact on the people of Iraq, as opposed to its rulers, but may have also served as an effective form of containment.³⁰¹

Humanitarian concerns related to the imposition of comprehensive sanctions have led to sanctions targeting specific activities and persons in order to avoid causing unneeded strife to populations.³⁰² As a legal matter, the outer limits of comprehensive sanctions are contained in what is arguably a *jus cogens*³⁰³ prohibition against denying a people basic subsistence, a prohibition contained in multiple international instruments.³⁰⁴ Indeed, a European court recently reviewed legislation implementing Security Council sanctions on the basis of *jus cogens* or peremptory norms,³⁰⁵ and ultimately nullified implementing legislation on the basis of European human rights law.³⁰⁶

UN sanctions against North Korea and Iran have authorized the inspection and seizure of banned proliferation-sensitive items and have called upon flag states to cooperate with inspections on the high seas, but they have not gone so far as to provide for extraterritorial interdiction or blockade.³⁰⁷ However, Security Council Resolution 1929, which deals with Iran, does appear to provide selective Article 41 blanket authority, insofar as it requests states to take “all necessary measures” to prevent the transfer of technology or

299. See *id.*

300. S.C. Res. 665, ¶ 1, U.N. Doc S/RES/0665 (Aug. 25, 1990).

301. See David Rieff, *Were Sanctions Right?*, N.Y. TIMES, July 27, 2003, at 41.

302. See CHRISTINE GRAY, INTERNATIONAL LAW AND THE USE OF FORCE 269–72 (3d ed. 2008); *Rep. of the Informal Working Grp. of the Security Council on General Issues of Sanctions*, U.N. Doc. S/2006/997 (Dec. 22, 2006) (discussing the design and implementation of targeted sanctions).

303. *Jus cogens* is a norm of international law from which there can be no derogation. See Vienna Convention on the Law of Treaties art. 53, May 23, 1969, 1155 U.N.T.S. 331; see also *Prinz v. Federal Republic of Germany*, 26 F.3d 1166, 1184–85 (D.C. Cir. 1994) (Wald, J., dissenting) (discussing the role of *jus cogens* in a hierarchy of international law norms, violations of which theoretically preempt the application of treaty-based immunities).

304. See International Covenant on Civil and Political Rights art. 1(2), Dec. 19, 1966, 999 U.N.T.S. 171 (“In no case may a people be deprived of its own means of subsistence.”); International Covenant on Economic, Social and Cultural Rights art. 1(2), Dec. 16, 1966, 993 U.N.T.S. 3 (same); see also Draft Articles on State Responsibility with Commentaries, *supra* note 39, at 132. Humanitarian law also prohibits starvation as a means of warfare. See, e.g., Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II) art. 14, June 8, 1977, 1125 U.N.T.S. 609.

305. See *Kadi v. Council*, 2005 E.C.R. II-3649, para. 226.

306. See *Joined Cases C-402 & 415/05P, Kadi v. Council*, 2008 E.C.R. I-6351 para. 334.

307. See S.C. Res. 1929, *supra* note 83; S.C. Res. 1874, *supra* note 145.

assistance to Iran's ballistic missile programs.³⁰⁸ The legally permissible extent of those measures will depend on whether they constitute a use of force, which could not have been authorized under Article 41.

VI. INTERFERENCE MEASURES: INTERDICTION AND CYBER ATTACKS

The advent of low-level conflict in the context of unilateral counterproliferation efforts involves the use of measures that may be said to occupy an intermediate status between nonforcible and forcible actions, including industrial sabotage and cyber attacks. Such measures, usually designed to interfere with or interrupt a nuclear program, will in most cases involve some form of intervention in the sovereign domain of the target state. The legal treatment of such activities will hinge principally on whether or not they involve the use of force, as this distinction determines whether they run afoul of the international prohibition on the use of force.

One category of such measures is the interdiction and seizure of sanctioned goods. It is not always clear whether interdictions rise to the level of use of force. Questions may arise in this context as to the proper boundaries between military force and police action on the high seas. Similarly, it is not always clear whether measures designed to interfere with or interrupt illicit proliferation activities, such as cyber attacks, constitute forcible measures or armed attacks. If they are not considered uses of force, they may be legally available as countermeasures to address internationally wrongful acts such as proliferation.³⁰⁹ If these actions do constitute uses of force, however, they will not generally be available as a function of international law without Security Council authorization.

The legal consequences of intermediate status preventive measures will depend on whether those measures are uses of force, and if so, whether they are low-gravity uses of force or whether they rise to the level of armed attack.³¹⁰ In the context of nuclear nonproliferation, the question of the legality of the activity being targeted will also play a significant role in assessing the legality of the counterproliferation measure in question. The concept of the use of force under the UN Charter is broader than that of armed attack,

308. S.C. Res. 1929, *supra* note 83, ¶ 9.

309. Draft Articles on State Responsibility, *supra* note 240 (providing supporting references for assertion that forcible countermeasures are prohibited under international law).

310. See, e.g., *Oil Platforms (Iran v. U.S.)*, 2003 I.C.J. 161, 331 (Nov. 6) (separate opinion of Judge Simma) (discussing "smaller-scale" uses of force); *Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.)*, 1986 I.C.J. 14, 126-27 (June 27) (discussing uses of force of "lesser gravity" than armed attack).

as the latter triggers the right of self-defense under Article 51 of the UN Charter.³¹¹ Low-gravity uses of force are prohibited under Article 2(4) of the Charter, yet they do not trigger a right of self-defense, leaving the targeted state without the option of using force to respond. This discrepancy creates “a large area where both a forcible response to force is forbidden, and yet the United Nations employment of force, which was intended to fill that gap, is absent.”³¹²

When interdiction and interference measures do qualify as uses of force, they will likely occupy this low-gravity use of force “gap” that prohibits the target state from responding with force.³¹³ The threshold question in any analysis of intermediate status preventive measures is therefore whether the action constitutes a use of force. The next step in the analysis is to consider the legal consequences of a resort to force. In this respect, the recognition of degrees of gravity and correspondent consequences may provide helpful incentives to states when forcible measures are concerned.³¹⁴ However, legal consequences relating to degrees of gravity in the use of force are not well developed under international law. The repercussions of low-gravity uses of force may merit additional, distinct treatment.

In the context of interdiction, the law of the sea supplies a specialized legal regime to guide behavior. The key question on interdiction, however, is whether it falls within the ambit of Article 41 nonforcible measures when such measures have been authorized. Other forms of interference or interruption, such as cyber measures,

311. See, e.g., BROWNLIE, *supra* note 245, at 365 (“It is not to be assumed, however, that every unlawful use of force will involve an armed attack in the tactical or military sense of the phrase.”).

312. *Nicaragua*, 1986 I.C.J. at 541 (dissenting opinion of Judge Jennings). On modern iterations of the impracticably restrictive juridical approach to self-defense in international law, see Theresa Reinold, *State Weakness, Irregular Warfare, and the Right to Self-Defense Post-9/11*, 105 AM. J. INT’L L. 244 (2011).

313. It should be noted that prevailing international legal doctrine on the use of force does not recognize the unlawful character of the targeted behavior as a legal justification for collective self-defense outside of the framework of the UN Charter. See *Nicaragua*, 1986 I.C.J. at 110 (“[T]he lawfulness of the use of force by a State in response to a wrongful act of which it has not itself been the victim is not admitted when this wrongful act is not an armed attack.”).

314. Abram Chayes captures this dilemma in describing the handling of the Cuban Missile Crisis:

If we ask the question what is the minimum Article 2(4) can be held to cover, the answer will be that at the very least it is a rule against aggression and surprise attack. Taken in this sense, and given the alternatives as they were presented to the responsible actors, we may fairly conclude that the rule of Article 2(4) was a significant factor in determining the decision against air strike or invasion and for the lesser measure of a quarantine.

ABRAM CHAYES, *THE CUBAN MISSILE CRISIS: INTERNATIONAL CRISIS AND THE ROLE OF LAW* 40 (1974).

do not have the benefit of a clearly defined legal regime. To the extent that Article 41 and 42 of the UN Charter guide interpretations of the legal status of these measures, these alternative measures may be said to occupy an undefined space in between the two. Under applicable legal doctrine, however, they must be categorized as either forcible or nonforcible.

A. *Interdiction: State Action and International Law*

Interdiction as a tool to prevent proliferation may arise in two distinct contexts. First, a right of interdiction in the form of a blockade may perfect enforcement of an embargo. In this context, interdiction clearly constitutes the use of force under the UN Charter, thus requiring Security Council authorization.³¹⁵ Such measures have been authorized with regard to Southern Rhodesia, Iraq, Haiti, Serbia, and Leone.³¹⁶ Second, a right of interdiction could apply specifically to proliferation-sensitive items. In this latter context, the right of visit, boarding, search, and seizure does not necessarily constitute a forcible act.³¹⁷ The question then arises whether single acts of interdiction may be considered nonforcible under Article 41. It may be argued that the law enforcement characteristics of interdiction conducted under extraterritorial domestic authority represent an applicable legal paradigm to address this question.³¹⁸ The potentially overlapping legal frameworks involved in an

315. Blockades are listed as measures involving the use of force under Article 42 of the UN Charter. U.N. Charter art. 41; *see also* BROWNLIE, *supra* note 245, at 365–66 (“[A] naval blockade involves an unlawful use of force, although the tactical posture is passive, since its actual enforcement includes the use of force against vessels of the coastal state.” (footnotes omitted)).

316. *See* S.C. Res. 1160, U.N. Doc S/RES/1160 (Mar. 31, 1998) (Haiti); S.C. Res. 841, U.N. Doc S/RES/841 (June 16, 1993) (Serbia); S.C. Res. 665, *supra* note 300 (Iraq). *See generally* Jochen Abr. Frowein & Nico Krisch, *Article 41*, in *THE CHARTER OF THE UNITED NATIONS: A COMMENTARY* 748 (Bruno Simma ed., 2d ed. 2002).

317. Under law of the sea principles, the use of force may be said to occur at a certain stage in the process of visitation of vessels, but the full process is not categorically considered forceful. *See, e.g.*, *M/V Saiga* (No. 2) (St. Vincent v. Guinea), Case No. 2, Order of Jan. 20, 1998, 2 ITLOS Rep. 4, 7.

The normal practice used to stop a ship at sea is first to give an auditory or visual signal to stop, using internationally recognized signals. Where this does not succeed, a variety of actions may be taken, including the firing of shots across the bows of the ship. It is only after the appropriate actions fail that the pursuing vessel may, as a last resort, use force. Even then, appropriate warning must be issued to the ship and all efforts should be made to ensure that life is not endangered.

Id.

318. *See generally* DOUGLAS GUILFOYLE, *SHIPPING INTERDICTION AND THE LAW OF THE SEA* 276 (2009) (“A ‘police action’ is not something other than a use of force.”).

assessment of the legal character of nonproliferation interdictions present a variety of possible approaches.

Under all relevant legal instruments, the bedrock principle of interdiction law is that the right of visit to a vessel in international waters requires the consent of the flag state under which a vessel is registered, with limited exceptions. This principle is reflected in the law of sea, under the Statement of Principles of the PSI, and in various bilateral shipboarding agreements.³¹⁹ Flag-state jurisdiction does not imply, however, that all interdictions are forcible acts, as the boarding of vessels does not generally involve a use of force. But to the extent that interdictions are not uses of force, they would still be unlawful under the law of the sea in the absence of flag-state consent. A variety of legal regimes may affect the analysis of whether interdiction violates the prohibition on the use of force. These intersecting legal regimes include the law of armed conflict, the law of interdiction, nonproliferation law, intervention law, and international and domestic criminal law. Despite the storied political history of interdiction and nuclear weapons, the proper approach to assessing the legality of interdiction of nuclear weapons or materials under the use of force law remains unclear.

1. Cuban Missile Redux

In the pre-NPT world, there was no enforceable international legal norm against proliferation, and domestic criminal laws hardly addressed the subject.³²⁰ Vessels could roam the high seas carrying nuclear materials, or even nuclear weapons, with the full protection of international law. The UN Charter was in effect, but the Security Council was largely paralyzed due to Cold War tensions and a heated U.S.–Soviet arms race in which resort to UN procedures was not feasible. This was the world of the Cuban Missile Crisis, when the best available legal argument to interdict, or “quarantine,” Soviet missiles in transit came through a thinly supported reliance on the

319. *Id.* (“[T]he correct starting point must be that the exclusive jurisdiction principle renders a vessel immune from foreign interference unless there is a permissive rule of international law allowing the interference or the flag state consents to the interdiction.”); Günther Handl, *The Nuclear Nonproliferation Regime: Legitimacy as a Function of Process*, 19 *TUL. J. INT’L & COMP. L.* 1, 32 (“[T]he specific operational language of the PSI boarding provisions is consistent with the traditional allocation of jurisdictional powers between flag, port, and coastal states, except perhaps in respect of interdiction measures in the contiguous zone.”).

320. *But see* Atomic Energy Act of 1954, 42 U.S.C. § 2011 (2006) (regulating the use of nuclear materials); Trading with the Enemy Act of 1917, 50 U.S.C. app. §§ 1–44 (2006) (giving the President the authority to restrict trade with certain countries hostile to the United States, including trade of nuclear materials); Export Administration Act of 1949, Pub. L. No. 81-11, 63 Stat. 7 (allowing restrictions on exports of nuclear nonproliferation materials to foreign nations).

authority of regional organizations under Article 53 of the UN Charter.³²¹ A modern version of this scenario more likely concerns a less symmetric environment, in which a state that does not participate in any of the relevant legal regimes carries nuclear weapons or related materials on the high seas. Nearly fifty years after the Cuban Missile Crisis and forty-five years after the enactment of the NPT, the question of whether it is a violation of international law to interdict an illicit nuclear weapon on the high seas remains a live one.

This issue was brought to a head in 2002 when a North Korean shipment of Scud missiles was tracked on an apparently stateless vessel (the *So San*) on the high seas.³²² In this particular case, the law of the sea provided the necessary legal authority to board and search the vessel, due to its apparent statelessness.³²³ Were the vessel North Korean, and had North Korea refused to cooperate, no express international authority would have permitted interdiction on the high seas, even if the vessel were carrying a nuclear weapon. Considering the importance of flag-state consent to the law on interdiction, international cooperation to procure such consent is crucial to gaining the legal authority necessary to address proliferation in international waters. An increase in bilateral shipboarding agreements through the PSI framework and the SUA Protocol has filled some of the proliferation gaps in the law of interdiction.³²⁴ Yet these cooperative arrangements leave a yawning gap that theoretically shields noncooperative rogue states that might transfer illicit weapons on the high seas.

A legal analyst confronted with the scenario of a rogue state carrying a nuclear weapon on the high seas is not in much better position today than during the Cuban Missile Crisis. The Law of the Sea Convention specifies five exceptions permitting a right of visit on a foreign vessel, as well as a general exception when acts of

321. The analysis hinged on a memorandum of the State Department Legal Advisor's Office that the authorization of the quarantine by the Organization of American States was not an "enforcement action" under Article 53 of the UN Charter because it was no mandatory upon member states. See Memorandum from the Dep't of State, Legal Basis for the Quarantine of Cuba (Oct. 23, 1962), reprinted in CHAYES, *supra* note 314, app. III, at 146-48.

322. MARY BETH NIKITIN, CONG. RESEARCH SERV., RL34327, PROLIFERATION SECURITY INITIATIVE (PSI) 1 (2011).

323. *Id.*

324. See, e.g., EMMA BELCHER, COUNCIL ON FOREIGN RELATIONS, THE PROLIFERATION SECURITY INITIATIVE LESSONS FOR USING NONBINDING AGREEMENTS 1-2 (2011), available at <https://secure.www.cfr.org/proliferation/proliferation-security-initiative/p25394> (arguing that a non-legally binding framework pledging to interdict illicit weapons of mass destruction shipments between state and non-state actors is an effective alternative to formal treaties for problems requiring immediate attention).

interference derive from powers conferred by treaty.³²⁵ The SUA Protocol, while criminalizing acts of proliferation on the high seas, did not create a right of interdiction absent flag-state consent.³²⁶ A last—though hardly ideal—line of defense for the legal analyst confronted with this issue may be through resort to Security Council Resolution 1540 and the extraterritorial application of domestic law enforcement.

2. Roving Police Authority

Acts of interdiction in non-armed-conflict situations may be usefully considered under a criminal law paradigm of police action. Although use of force principles gauged to the effect of an action may limit possibilities in this regard, explicit or implicit Security Council authorization of national criminal measures would tend to support their legality. Resolution 1540, enacted in support of the PSI initiative, did not create a right of interdiction, but it does reaffirm the call in the 1992 Security Council Presidential Statement for states to take “appropriate measures” to counter proliferation.³²⁷ It also requires states to develop effective national laws to regulate proliferation and expressly recognizes the validity of extraterritorial controls on products originating within the legislating state.³²⁸ It further calls on states to take cooperative action to prevent illicit trafficking “in accordance with their national legal authorities and legislation and consistent with international law.”³²⁹

The legal analyst might argue that interdiction is justified in the 1540 framework either because the gravity of the violation of global nonproliferation norms justifies exceptional enforcement measures as “appropriate” under the relevant Security Council Resolutions, or because interdiction is permissible on an exceptional basis³³⁰ as a valid extraterritorial enforcement of national law. An approach that treats interdictions as unlawful interventions rather than uses of force would provide more flexibility for the application of a law enforcement model as a means to excuse interdiction in exceptional cases.

In the event that the 1540 framework could be said to tolerate roving national police enforcement authority over proliferation on the

325. United Nations Convention on the Law of the Sea art. 110, Dec. 10, 1982, 1833 U.N.T.S. 397.

326. See SUA Protocol, *supra* note 31.

327. U.N. Doc. S/23500, *supra* note 27, at 4.

328. *Id.*

329. *Id.*

330. See R.R. CHURCHILL & A.V. LOWE, *THE LAW OF THE SEA* 216–18 (3d ed. 1999) (discussing exceptional measures involving interdiction on the high seas without express legal authority).

high seas, such authority would require effective domestic laws providing the necessary penal and enforcement authority. To this end, Resolution 1540 is facilitating the domestic criminalization of WMD trafficking worldwide. Several states have reported the promulgation of domestic criminal laws to cover WMD offenses, pursuant to the committee created to oversee implementation of Resolution 1540.³³¹ The United States' radiological weapons law applies a broad extraterritorial power on the basis of the offense's occurrence in "interstate or foreign commerce,"³³² while its nuclear weapons law simply states, "there is extraterritorial Federal jurisdiction over an offense under this section."³³³

Widespread criminalization of proliferation offenses facilitated through Resolution 1540 enhances the legitimacy of claiming a sovereign right to exercise extraterritorial jurisdiction in exceptional circumstances. Such a process has to some extent already occurred in the context of the global drug and sex trafficking trades,³³⁴ and in the more distant past with respect to the slave trade.³³⁵

As a matter of domestic law, the United States has traditionally reserved a unilateral right to apply its criminal laws extraterritorially, with Congress expressly granting extraterritorial interdiction authority in specific instances.³³⁶ This authority has been

331. See generally *Report of the Committee Established Pursuant to Security Council Resolution 1540* (2004), U.N. Doc. S/2008/493 (July 30, 2008) (discussing criminalization efforts required by Resolution 1540 and carried out by reporting states under domestic laws). For its part, the United States enacted two new criminal laws with extraterritorial application to criminalize radiological weapons or other devices intended to cause harm through the release of radiation or radioactivity and through participation in the nuclear weapons program of a foreign terrorist power. See Letter dated 21 December 2007 from the Permanent Representative of the United States of America to the United Nations addressed to the Chairman of the Committee, Annex, at 4, U.N. Doc. S/AC.44/2007/10 (Apr. 12, 2010) (reporting that the United States has criminally barred non-state actors from conspiring or attempting to build or obtain WMD).

332. 18 U.S.C. § 2332h (2006). This language derives from broad congressional authority "to regulate Commerce with Foreign nations" under the United States Constitution. U.S. CONST. art. I, § 8, cl. 3.

333. 18 U.S.C. § 832(b) (2006).

334. For a discussion of extraterritoriality in the context of sex trafficking, see Vicki Trapalis, *Extraterritorial Jurisdiction: A Step Towards Eradicating the Trafficking of Women into Greece for Forced Prostitution*, 32 GOLDEN GATE U. L. REV. 207, 227-37 (2002) (discussing international conventions authorizing extraterritorial jurisdiction). See generally John Reynolds, *Universal Jurisdiction to Prosecute Human Trafficking: Analyzing the Practical Impact of a Jurisdictional Change in Federal Law*, 34 HASTINGS INT'L & COMP. L. REV. 387 (2011) (discussing the Trafficking Victims Protection Act and other U.S. extraterritorial measures to address human trafficking).

335. See, e.g., BIN CHENG, *GENERAL PRINCIPLES OF LAW AS APPLIED BY INTERNATIONAL COURTS AND TRIBUNALS* 157 (2006) (citing *Pelletier Case*, 2 INT'L ARB. 1749-805 (1885)); *infra* notes 414-15.

336. For a comprehensive review of American case law, see generally CHARLES DOYLE, CONG. RESEARCH SERV., 94-166, *EXTRATERRITORIAL APPLICATION OF AMERICAN CRIMINAL LAW* (2012).

justified legislatively and in the courts under the “protective” principle of jurisdiction, in which the nexus for enforcement is said to be the security interests of the state, “to such an extent and to so great a distance as is reasonable and necessary to protect itself and its citizens from injury.”³³⁷ Traditionally, restrictions on extraterritorial interdiction were few. In the 1804 case of *Church v. Hubbart*, the U.S. Supreme Court approved the principle of extraterritorial seizure authority of a nation in a case involving a seizure and arrest by Portuguese authorities off of the coast of Brazil.³³⁸ The Anti-Smuggling Act of 1935 defined “customs waters” to include jurisdiction over foreign vessels outside of U.S. territorial jurisdiction that are subject to a treaty or “other arrangement” with a foreign government, which enabled U.S. authorities to interdict.³³⁹ The Marijuana on the High Seas Act of 1980 similarly authorized extraterritorial jurisdiction over marijuana trafficking.³⁴⁰ The Maritime Drug Law Enforcement Act applies extraterritorially as well, and expressly asserts jurisdiction over stateless vessels.³⁴¹

In *United States v. Gonzales*, the Court of Appeals for the Eleventh Circuit upheld the application of the Marijuana on the High Seas Act to a Honduran vessel 125 miles off of the coast of Florida.³⁴² Despite the fact that Honduras consented to the seizure, the court stated that “[e]ven absent consent,” the United States could prosecute foreign nationals on the basis of the protective principle.³⁴³ In interpreting the legal principles animating the statute, the court noted legislative “ambivalence” between respect for flag-state jurisdiction and the United States’ “long history” of extraterritorial jurisdiction.³⁴⁴ Considering that the legal authority to interdict is distinct from the legal authority to prosecute, the ability to obtain domestic criminal law jurisdiction over acts taking place on the high seas leaves open the question of how domestic authorities may conduct a seizure under international law. A right to seize persons and property is nonetheless implied. The House Report on the Marijuana on the High Seas Act captures the exceptional character of extraterritorial jurisdiction when it recommends “the most

337. S. REP. NO. 74-1036, at 5 (1935).

338. *Church v. Hubbart*, 6 U.S. 187, 235 (1804) (“[O]n the coast of South America, seldom frequented by vessels but for the purpose of illicit trade, the vigilance of the government may be extended somewhat further.”).

339. 19 U.S.C. § 1709(c) (2006).

340. 46 U.S.C. §§ 70501–70507 (2006).

341. *Id.*; see also *United States v. Suerte*, 291 F.3d 366, 375 (5th Cir. 2002) (upholding the extraterritorial provisions of the Act in the face of due process challenges). For more on court treatment of the Maritime Drug Law Enforcement Act, see DOYLE, *supra* note 336, at 16–17 (discussing various court challenges).

342. *United States v. Gonzales*, 776 F.2d 931 (11th Cir. 1985).

343. *Id.* at 938.

344. *Id.* at 940.

circumspect and judicious consideration before exercising any sovereign right of unilateral action in accomplishment of national objectives.”³⁴⁵

Notwithstanding the existence of extraterritorial laws criminalizing proliferation, the U.S. legal system remains imperfect in terms of providing authority for warships to conduct interdictions on the high seas pursuant to those laws. While the armed forces have broad arrest and seizure authority in the event of armed conflict, the legal situation is less clear as a function of law enforcement. The U.S. Coast Guard possesses the statutory authority to exercise police authority within the territorial waters of the United States,³⁴⁶ but the Army and Air Force do not possess general authority to enforce the domestic criminal law of the United States under the Posse Comitatus Act; they may only act under statutory provision or under the authority of the U.S. Constitution.³⁴⁷ The U.S. Navy and Air Force are similarly subject to restrictions on cooperation with civilian law enforcement. Notwithstanding questions over whether the Posse Comitatus Act applies extraterritorially,³⁴⁸ the Defense Department applies the underlying policy extraterritorially, with exceptions under relevant directives.³⁴⁹ The Secretary or Deputy Secretary of Defense may authorize military cooperation outside the territorial jurisdiction of the United States,³⁵⁰ but this must be done on a case-by-case basis and presumably in cooperation with federal law enforcement authorities.

Statutorily, there is no direct interdiction authority for extraterritorial criminal law violations under Title 50 of the United States Code, which addresses military powers.³⁵¹ The sole statutory nuclear counterproliferation carve-out to the Posse Comitatus Act is

345. H.R. REP. NO. 96-323, at 6 (1979).

346. The Coast Guard is not subject to the Posse Comitatus Act and possesses authorities both as a domestic law enforcement agency under 14 U.S.C. § 89 (2006) and as one of the “armed forces” under 10 U.S.C. § 101 (2006).

347. See 18 U.S.C. § 1385 (2006) (“Whoever, except in cases and under circumstances expressly authorized by the Constitution or Act of Congress, willfully uses any part of the Army or the Air Force as a posse comitatus or otherwise to execute the laws shall be fined under this title or imprisoned not more than two years, or both.”).

348. Memorandum from Office of the Assistant Attorney Gen., to General Brent Scowcroft, Extraterritorial Effect of the Posse Comitatus (Nov. 1989).

349. See Dep’t of Navy, SECNAV Instruction 5820.7c, Cooperation with Civilian Law Enforcement, at 5 (Jan. 26, 2006) (describing the U.S. Navy’s policy to cooperate with civilian law enforcement to the extent possible in enforcing U.S. federal, state, and local laws); Dep’t of Def., Directive No. 5525.5, DoD Cooperation with Civilian Law Enforcement Officials, ¶ E4.3 (Jan. 16, 2009) (describing exceptions to the Posse Comitatus Act). See generally Major Winston G. McMillan, *Something More than a Three-Hour Tour: Rules for Detention and Treatment of Persons at Sea on U.S. Naval Warships*, ARMY L., Feb. 2011, at 31.

350. Dep’t of Def., Directive No. 5525.5, *supra* note 349, ¶ 8.2.

351. See generally 50 U.S.C. §§ 1–2822 (2006).

found in the Criminal Code at 18 U.S.C § 831, which authorizes the Attorney General to request the assistance of the military to execute law enforcement powers for offenses relating to unauthorized transfers or threats associated with nuclear materials.³⁵² However, this carve-out only extends to the territorial waters of the United States.³⁵³ The Defense Against Weapons of Mass Destruction Act of 1996, a Title 50 statute, addresses interdiction yet oddly contains no express authority for the military to conduct interdiction on the basis of criminal law violations.³⁵⁴ Criminal law aspects of United States export and import control laws do not provide any extraterritorial seizure authority either.³⁵⁵ Domestic legal authority for a warship to conduct an extraterritorial interdiction would have to either flow from the Attorney General, through a request to the Secretary of Defense, or directly from the President as a function of his constitutional powers to enforce the laws of the United States.³⁵⁶

Assuming a state has relevant domestic authorities in place, the extraterritorial application of those authorities to interdict nuclear weapons in exceptional circumstances would provide one avenue for overcoming the proliferation gap, albeit a somewhat controversial one were such a principle to be exercised without limitation.³⁵⁷ In the event that a state exercises roving jurisdiction on the basis of domestic penal laws, that state might then argue that under Resolution 1540, a flag state is required to cooperate if proliferation-sensitive activities are at issue. A lack of cooperation may be an additional basis for interdiction as a countermeasure to respond to a wrongful act.

3. Interdiction and Force

Even assuming a valid law enforcement framework and an acceptance that the extraterritorial exercise of police authority is admitted under international law, the question of whether the interdiction constitutes a use of force under Article 2(4) still follows. If interdiction is considered categorically as a use of force under these circumstances, the default rule would then be that interdiction is illegal under international law unless justified as self-defense,

352. 18 U.S.C. § 831(d) (2006).

353. *See id.* § 831(c)(1).

354. *See* Defense Against Weapons of Mass Destruction Act of 1996, Pub. L. No. 104-201, 110 Stat. 2714 (codified as amended at 50 U.S.C. § 2313 et seq.).

355. *See generally* U.N. Doc. S/AC.44/2007/10, *supra* note 331, at 30–31 (describing criminal sanctions under the International Emergency Economic Powers Act).

356. U.S. CONST. art. II, § 2.

357. *See* CHURCHILL & LOWE, *supra* note 330, at 218 (“[T]he absence of any other criterion of any other limiting criterion *ratione loci* or *ratione materiae* makes this principle one of enormous potential scope.”).

authorized under Chapter VII, or otherwise justified based on emerging nonproliferation norms.

Overly broad construals of the use of force present unworkable models for practical application. A recent example of this tendency is the case of *Guyana v. Suriname*,³⁵⁸ in which an ad hoc arbitral tribunal found that a relatively minor incident involving the expulsion of an oil platform from a disputed area was an unlawful use of force under Article 2(4). In that case, gunboats from the Surinamese Navy warned the supervisors of the rig that they should leave the area within twelve hours or face “consequences.”³⁵⁹ Suriname argued that its actions were lawful countermeasures in response to a wrongful act—unauthorized drilling in a disputed area of the continental shelf.³⁶⁰ The arbitrators disagreed, holding that the measures were “more akin to a threat of military action rather than a mere law enforcement activity.”³⁶¹ In reaching its finding, however, the tribunal recognized that “in international law force may be used in law enforcement activities provided that such force is unavoidable, reasonable and necessary.”³⁶² Whether any coercive police activities can meaningfully coexist with such a broadly applied prohibition on force is unclear.

The tribunal in *Guyana v. Suriname* posed such a wide conception of the use of force that it is difficult to conceive of coercive measures at sea that would not constitute force. Such a wide conception risks subsuming all acts of sovereign law enforcement into Article 2(4), widening the use of force gap significantly. Such a restrictive concept of self-defense (which diverges widely from state practice) reflects a formalistic application of Article 2(4). This approach deprives decision makers of more nuanced options that reflect prudential considerations of necessity and proportionality. That said, the province of what defines the use of force has not been thoroughly staked out, leaving the concept open to some degree of interpretation. Coercive measures that straddle the line of low-gravity uses of force might in this regard be more adequately considered under legal regimes of intervention or countermeasures, providing space for those areas of law to develop practical applications.

358. *Guyana v. Suriname*, Arbitral Tribunal Constituted pursuant to Article 287, and in Accordance with Annex VII of the United Nations Convention on the Law of the Sea (Perm. Ct. Arb. 2007), <http://www.pca-cpa.org/upload/files/Guyana-Suriname%20Award.pdf>.

359. *Id.* ¶ 433.

360. *Id.* ¶ 441.

361. *Id.* ¶ 445.

362. *Id.*

B. *The Advent of Low-Level Conflict: Cyber Attacks and Sabotage*

With political controversy surrounding Iran's nuclear energy program, reports have emerged of industrial sabotage and cyber attacks targeting Iran's nuclear industry. While attribution of responsibility for these operations may not be possible, the international legality or illegality of such operations is nonetheless relevant to the determination of appropriate responses, if any. Cyber attacks and industrial sabotage fall into a grey area as actions that may or may not constitute the use of force. If they do not constitute use of force, the legal character of the action being targeted—that is, whether it is wrongful or not—will be relevant to the legal character of the coercive measure in question.

Cyber attacks represent a new challenge for international law. As a threshold matter, cyber attacks must be distinguished from forms of cyber exploitation, which serve to gather intelligence but do not interfere with a system's operation or cause physical harm.³⁶³ The use of cyber attacks as a counterproliferation tool has come into view with reports of computer malware known as Stuxnet, which targeted industrial control systems associated with Iran's centrifuge operations, causing the centrifuges to spin out of control.³⁶⁴ The application of these tools to interfere with nuclear programs with suspected military dimensions raises novel issues of legality. Putting aside problems of attribution for such an attack,³⁶⁵ the question of the legality of preventive cyber attacks largely hinges on whether they are considered uses of force under international law.³⁶⁶ If such attacks are not uses of force, what legal consequences flow from this type of intentional destruction of property in another state?

Cyber intrusions, consisting of exploitation and attack initiated for criminal, military, or law enforcement purposes are gaining

363. NAT'L RESEARCH COUNCIL, TECHNOLOGY, POLICY, LAW, AND ETHICS REGARDING U.S. ACQUISITION AND USE OF CYBERATTACK CAPABILITIES 32 (William A. Owens, et al. eds., 2009) (warning of the dangers of conflating cyber attack and cyber exploitation); Herbert S. Lin, *Offensive Cyber Operations and the Use of Force*, 4 J. NAT'L SECURITY L. & POL'Y 63, 63–64 (2010);

364. NICOLAS FALLIERE ET AL., W32.STUXNET DOSSIER, VERSION 1.4, SYMANTEC SECURITY RESPONSE (Feb. 2011), available at http://www.symantec.com/content/en/us/enterprise/media/security_response/whitepapers/w32_stuxnet_dossier.pdf; John Markoff, *Malware Aimed at Iran Hit Five Sites, Report Says*, N.Y. TIMES, Feb. 13, 2011, at A15; William J. Broad & David E. Sanger, *Worm Was Perfect for Sabotaging Nuclear Centrifuges*, N.Y. TIMES, Nov. 19, 2010, at A1.

365. See Lin, *supra* note 363, at 77 (“No one has come close to solving the problem of technical attribution—the ability to identify the party responsible for an offensive cyber operation based only on technical indicators and information associated with that operation.”).

366. See *id.* at 74–79 (examining different scenarios to arrive at a better understanding of what constitutes “use of force”).

increased attention in international and domestic law circles. Analysts consider cyber intrusions under various legal models, including regimes of criminal law, use of force law, and the law of armed conflict.³⁶⁷ It is generally agreed that the legality of a cyber intrusion is determined by its effect.³⁶⁸ Thus, if a cyber attack has the same “effect” as an armed attack, then it will be treated as such for legal purposes.³⁶⁹ As a multiform instrument of intelligence, coercion, or force, the effect of cyber intrusions and their attendant legal regimes cannot be defined *ex ante*, although a default standard might prove useful. Furthermore, with respect to state action in the international context, international criminal law is largely nonexistent at this stage of the law’s development. While state-sponsored attacks may be a matter of concern for domestic law enforcement authorities, there are currently no international instruments addressing state-sponsored cyber intrusions.³⁷⁰ The principal legal regimes applicable to state preventive measures involving offensive cyber operations are therefore the law of force, state responsibility, and the law of intervention.

A critical threshold matter in considering the legality of cyber measures as preventive tools is whether the measures amount to a use of force. If they do not, they may be reviewed against the backdrop of state responsibility for countermeasures and principles of nonintervention. In this context, unilateral cyber measures could be legal in the absence of express Security Council authorization, as they would not fall within the ambit of the Article 2(4) prohibition on the

367. See, e.g., NORTH ATLANTIC TREATY ORGANIZATION [NATO], NATO 2020: ASSURED SECURITY; DYNAMIC ENGAGEMENT: ANALYSIS AND RECOMMENDATIONS OF THE GROUP OF EXPERTS ON A NEW STRATEGIC CONCEPT FOR NATO 20 (2010) (discussing whether cyber attacks can trigger the collective defense mechanisms of the NATO Charter); Duncan Hollis, *An e-SOS for Cyberspace*, 52 HARV. INT’L L.J. 373, 391–92 (2011) (discussing the inadequacy of domestic criminal law regimes for addressing cyberthreats); Siobhan Gorman & Julian Barnes, *Cyber Combat: Act of War*, WALL ST. J., May 31, 2011, at A1 (discussing United States’ anticipated policy changes on cyberthreats and laws of war).

368. NAT’L RESEARCH COUNCIL, *supra* note 363, at 33–34 (“The committee believes that the conceptual framework that underpins the UN Charter and today’s law of armed conflict regarding the use of force and armed attack is generally consistent with the notion that the effects of an action rather than the modality of that action are the primary measure in judging its legality under the UN Charter or LOAC.”); Michael N. Schmitt, *Computer Network Attack and the Use of Force in International Law: Thoughts on a Normative Framework*, 37 COLUM. J. TRANSNAT’L L. 885, 886 (1999) (proposing a normative framework determined by the effects of the cyber operation); Matthew C. Waxman, *Cyber-Attacks and the Use of Force: Back to the Future of Article 2(4)*, 36 YALE J. INT’L L. 421, 431–32 (2011) (discussing general acceptance of the effects-based approach).

369. NAT’L RESEARCH COUNCIL, *supra* note 363, at 33–34.

370. The only international treaty addressing the subject is not directed at states. See Convention on Cybercrime, Nov. 23, 2001, C.E.T.S. No. 185 (encouraging member states to adopt measures to prevent cybercrime by individuals or groups within their nations).

use of force. This would be the case under the law of countermeasures if they are (1) necessary, (2) proportional to address a wrongful act, and (3) instituted by a member of an especially interested group.³⁷¹ There are no bright line rules in determining whether apparent or possible misuses of sensitive nuclear technology are internationally wrongful.

On the other hand, if cyber intrusions are considered uses of force, the succeeding question will be whether the cyber attack rises to the level of an armed attack, triggering a right of self-defense, or whether the attack represents a low-gravity use of force, thus falling into the use of force gap insofar as the target has no right to use force in return. Corollary questions will arise in the context of broad-range authorizations of Article 41 nonforcible measures. Judgments relating to the forcible or nonforcible character of cyber intrusions are therefore crucial to determining whether such measures could be authorized within the scope of Article 41, or whether they require further authorization under Article 42 as uses of force.

1. Cyber Measures and the Use of Force

In the absence of an agreed definition on the use of force, arriving at a clear standard to determine the effect of an intermediate coercion tool is difficult. While the effect of the attack in terms of physical harm caused would seem a useful measure, some commentators have noted that often it will be the nonviolent consequences of the attack that have a more severe effect than the violent consequences.³⁷² States will wish to secure a broad right of response. The legality of state action in this context will depend on how restrictive international law is both on the offensive and defensive uses of force. If force is defined broadly and armed attack defined restrictively,³⁷³ a large space will result for prohibited low-gravity uses of force that only permit nonforcible countermeasures in response. There is no doubt that the dominant juristic view on the defensive use of force is restrictive under international law, defining armed attack and imminent armed attack at such a high threshold that forcible measures of prevention cannot generally qualify as acts

371. See *infra* Part VI.B.2.

372. See NAT'L RESEARCH COUNCIL, *supra* note 363, at 253–54 (“Thus, cyberattacks on the controlling information technology for a nation’s infrastructure (whether or not it caused immediate large-scale death or destruction of property) would be an armed attack”); Waxman, *supra* note 368, at 436 (“[I]n a world of heavy economic, political, military, and social dependence on information systems, the ‘nonviolent’ harms of cyber-attacks could easily dwarf the ‘violent’ ones.”).

373. See Waxman, *supra* note 368, at 438–39 (discussing the permissive U.S. position on self-defensive as a means of deterring small-scale attacks that would not trigger self-defense under a restrictive approach to self-defense).

of self-defense.³⁷⁴ In the use of force context, however, the law is largely undefined, as tools of cyber coercion were clearly not contemplated as acts of military force at the time of the drafting of the UN Charter.

The context in which Article 2(4) was conceived does not support the inclusion of measures that disrupt communication, disrupt economic activity, or even cause physical destruction in a nonmilitary environment. The overarching animus of Article 2(4) is the prevention of aggressive war; the Article was a direct successor of a provision in the Kellogg-Briand Pact that outlawed recourse to "war" generally.³⁷⁵ The expansion of the term to refer to force implies broader coverage, yet does not extend to every forcible intrusion on state sovereignty. As Albrecht Randelzhofer notes in his history of Article 2(4), "The term does not cover any possible kind of force, but is, according to the correct and prevailing view, limited to armed force."³⁷⁶ According to this view, the prohibition does not apply to all measures involving physical force, but only to "one means of coercion, namely military force."³⁷⁷ Ian Brownlie notes that Article 2(4) was not limited to armed force—but was also not as broad as argued by some of his contemporaries—in light of the "predominant view of aggression" that drove the process of the United Nations' creation and the Article's adoption.³⁷⁸ Under Brownlie's view, physical acts, such as forcible population expulsion, the release of large quantities of water down a valley, and the spread of fire across a frontier were difficult to regard as uses of force.³⁷⁹

Due to the lack of settled opinion on the breadth endowed to Article 2(4), the existence of new tools of coercion will no doubt reinvigorate this debate. Multiple commentators on the Declaration of Principles of International Law Concerning Friendly Relations Among States³⁸⁰ have pointed out that the prohibition on the use of force was treated in this declaration as distinct from other forms of coercion. This was accomplished by considering military force under the rubric of "force" and "economic, political or any other type of measures to coerce another State" under the rubric of

374. Analysis of this question typically applies to anticipatory self-defense. See, e.g., GRAY, *supra* note 302, at 160 ("The majority of states reject anticipatory self-defense.").

375. Albrecht Randelzhofer, *Article 2(4), in THE CHARTER OF THE UNITED NATIONS: A COMMENTARY*, *supra* note 316, at 116.

376. *Id.* at 117.

377. *Id.* at 119.

378. BROWNLIE, *supra* note 245, at 362.

379. *Id.* at 362–63; see also Randelzhofer, *supra* note 375, at 118–19.

380. Declaration on Principles of International Law Concerning Friendly Relations and Co-Operation Among States, G.A. Res. 2625 (XXV), U.N. Doc. A/8082 (Oct. 24, 1970).

“intervention.”³⁸¹ As Gaetano Arangio-Ruiz notes, the declaration itself does not distinguish differing legal consequences of these acts³⁸² and does not necessarily constitute a statement of law in any event.³⁸³ Moreover, the confusion surrounding the term “intervention,” often used to refer to armed intervention,³⁸⁴ does not provide a clear basis to distinguish the legal regimes in play. The existence of a distinction between force and intervention does, however, tend to reinforce the view that force is limited to military force, or its equivalent, and that intervention is a broader concept.

The exclusion of economic and political coercion from the term “force” is clear from the drafting history of the UN Charter. These forms of coercion are generally incident to the lawful exercise of sovereign rights. Measures to interrupt or interfere with computer systems were not familiar to the drafters of the Charter or the various committees addressing the law of force, and the definition considered applied principally to military force. An appropriate default analysis would treat cyber measures as “other type of measures to coerce” under the rubric of intervention, unless they are clearly calculated to bring about the type of destruction associated with military force. Shoehorning cyber attacks—attacks that do not cause or are not associated with extensive physical harm—into a prohibition that was originally designed to prevent aggressive war would represent an undue expansion of Article 2(4). Cyber measures do not fit neatly into a classification of political, economic, or military coercion measures, and thus belong by default to the category of

381. *Id.* at 122–23. See generally GAETANO ARANGIO-RUIZ, THE UN DECLARATION ON FRIENDLY RELATIONS AND THE SYSTEM OF SOURCES IN INTERNATIONAL LAW 99 (1979); Frowein & Krisch, *supra* note 316, at 137–38 (discussing the unique qualities of military force when discussing coercion); Randelzhozer, *supra* note 375, at 118 (explaining when “force” should be understood as military force). Frowein and Kirsch note that the historical confusion on this point, however, as this distinction was rolled back in the Declaration on the Enhancement of the Effectiveness of the Principle of Refraining from the Threat or Use of Force in International Relations, G.A. Res. 42/22, Annex, U.N. Doc. A/Res/42/22 (Nov. 18, 1987). See Frowein & Krisch, *supra* 316, at 136–38 (discussing understandings of assistance mandates in different situations).

382. ARANGIO-RUIZ, *supra* note 381, at 99–100 (noting that separate legal consequences for force and intervention are not delineated in the Charter or the declaration).

383. *Id.* at 93 (“There can hardly be any doubt, in conclusion, that the declaration embodied in resolution 2625 (XXV)—the ‘Friendly Relations’ declaration—is to be considered, from the legal point of view, as an instrument of purely hortatory value.”).

384. *Id.* at 106, 127. On the overlap of intervention and force, see Military and Paramilitary Activities in and Against Nicaragua (Nicar. v. U.S.), 1986 I.C.J. 14, 108 (June 27) (“The element of coercion, which defines, and indeed forms the very essence of, prohibited intervention, is particularly obvious in the case of an intervention which uses force.”).

“other.”³⁸⁵ They are by default nonforcible, and in this context should be viewed primarily as a disruption to communications systems, as described below.

Computer malware such as Stuxnet implants itself into a computerized network, commandeering or disrupting communication between components in an industrial control system via a reprogramming of network communications systems.³⁸⁶ Such malware is, in this regard, a form of interference with a communications network. Analysis of the effects of the virus therefore begins from the fact that it acts as a form of communications interference that may or may not have effects equivalent to military force. The intrusion itself is not a physical intrusion in the traditional sense; rather, it is a form of communication disruption. From this default position, a determination of a forceful effect would depend upon whether the interference in the communication system triggered significant harm equivalent to an act of force in terms of physical destruction. Causing a system to malfunction is itself not an act of force, unless that malfunction resulted in excessive physical damage or loss of life. Damage caused by cyber attacks is more likely to be economic. Moreover, proceeding from the legal model of communications interference, Article 41 of the UN Charter specifically contemplates that measures involving the “interruption” of *all* means of communication are nonforcible measures.³⁸⁷ Just as the inclusion of blockades within the ambit of forcible Article 42 measures provides *prima facie* evidence that blockades are acts of force,³⁸⁸ the inclusion of communications interruption in Article 41 would imply that communications disruptions are by default nonforcible.

Whether cyber attacks trigger a right of self-defense justifying a forcible response has been the principal concern of commentators addressing the broader question of how to respond to cyber attacks. As prevention tools to interrupt proliferation activities, it is unlikely that cyber attacks would rise to the level of armed attack. However, if a cyber attack were to cause the demolition of a uranium enrichment site, use of force rules would come into play, and possibly questions of whether the intrusion constituted an armed attack, thus triggering a right of self-defense. No special legal status would attach to the fact that an attack was carried out through a computerized channel,

385. See ARANGIO-RUIZ, *supra* note 381, at 128 (“The ‘forms of interference’ referred to [in the Declaration of Friendly Relations] are indeed very hard to define in positive terms. As our personal effort has not been successful we leave this matter for more ingenious lawyers to resolve.”).

386. See FALLIERE ET AL., *supra* note 364, at 2, 17–18, 25 (describing technical aspects of malware propagation and consequences).

387. U.N. Charter art. 41.

388. *Id.* art. 42.

however. Because cyber measures are ill-defined in terms of their effects and have not received thorough consideration in any international venue, caution should be exercised in concluding that cyber measures constitute the use of force when they do not cause significant physical destruction.

2. Cyber Measures, Intervention Law, and State Responsibility

Principles of nonintervention, while largely undeveloped as a matter of law,³⁸⁹ may provide useful guidance through the assessment of cyber measures in terms of their intrusive effect on state sovereignty. Although the content of the rule of nonintervention has historically been ambiguous,³⁹⁰ its basic parameters are fairly clear. Intervention is a broad term that covers both military force and nonmilitary forms of coercion.³⁹¹ For an action to constitute intervention as a matter of law, the interference must intrude on the sovereignty of the target in some way, affecting “matters which each State is permitted, by the principle of State sovereignty, to decide freely.”³⁹² As Michael Wood notes, “The principle of non-intervention is the mirror image of the sovereignty of States.”³⁹³ Not all forms of interference will constitute intervention, however, as the action must be “forcible or dictatorial, or otherwise coercive, in effect depriving the state intervened against of control over the matter in question.”³⁹⁴

389. See ARANGIO-RUIZ, *supra* note 381, at 130 (“[T]oo many jurists, while rightly acknowledging the state of confusion that characterizes the concept of non-intervention, seem not to believe in the possibility of at least reducing that confusion.”); BROWNIE, *supra* note 243, at 44 (“The term and the use made of it by governments and writers have been a very considerable source of confusion.”); Lori Fisler Damrosch, *Politics Across Borders: Nonintervention and Nonforcible Influence over Domestic Affairs*, 83 AM. J. INT’L L. 1, 1 (“[H]ow the norm [of nonintervention] applies to nonforcible conduct is inadequately understood.”).

390. See, e.g., ARANGIO-RUIZ, *supra* note 381, at 2 (“The attempt to prove the content of a presumed rule of nonintervention by testing tentative hypotheses against states’ known behavior turns out to be as difficult as trying to confirm theories about New York City’s jaywalking laws by observing pedestrian traffic patterns in midtown Manhattan.”).

391. The principle of nonintervention is not expressly articulated in the UN Charter, but flows from the recognition of sovereign equality of states contained in Article 2(1) and from customary international law. See Michael Wood, Former Legal Adviser, Foreign & Commonwealth Office, Speech to the Meeting of the Chatham House International Law Discussion Group, *The Principle of Non-Intervention in Contemporary International Law: Non-Interference in a State’s Internal Affairs Used to Be a Rule of International Law: Is It Still?* 3 (Feb. 28, 2007), available at <http://www.chathamhouse.org/sites/default/files/public/Research/International%20Law/il280207.pdf> (discussing the implied source of the nonintervention principle).

392. *Military and Paramilitary Activities in and Against Nicaragua* (Nicar. v. U.S.), 1986 I.C.J. 14, 108 (June 27).

393. Wood, *supra* note 391, at 2.

394. OPPENHEIM’S INTERNATIONAL LAW 432 (Robert Jennings & Arthur Watts eds., 1996); see also THOMAS G. WEISS & DON HUBERT, *Non-Intervention*, in THE

The principle finds unique relevance in the context of intrusions that do no rise to the level of the use of force.

An intrusion on industrial control systems operated by and within a state would clearly constitute interference in the sovereign domain of that state. While the regime of nonintervention has been largely irrelevant in regard to economic measures—which are generally legal exercises of sovereign rights—cyber intrusions provide a clear example of unlawful interventions that fail to rise to the level of the use of force. The law of intervention here finds a useful application outside of the context of Article 2(4).

Under the legal regime of nonintervention, cyber attacks would not be considered legal simply because they do not involve the use of force. As a prohibited act of intervention, a cyber attack might be illegal insofar as it targets a lawful activity and legal insofar as it targets an internationally wrongful activity. This is an important distinction. A cyber attack that shuts down a stock exchange will be unlawful because it is directed at a lawful activity, while a cyber attack that shuts down a banned centrifuge program could be lawful if it is directed at an internationally wrongful activity. It is perfectly conceivable that states could conduct “cyber wars” without ever triggering the Article 2(4) prohibition.

The law of state responsibility provides a well-developed legal framework of “secondary rules” to assess the legal consequences of nonforcible interventions such as cyber measures. Nonforcible acts that would otherwise be unlawful may be excused either on the basis of necessity or as countermeasures addressing unlawful behavior. Under the Draft Articles on State Responsibility, necessity may provide a basis to preclude wrongfulness if the action is the only means for a state to safeguard “an essential interest against a grave and imminent peril,” and it does not impair an essential interest of the targeted state or the international community.³⁹⁵ This doctrine is fairly restrictive, however, and can be invoked if the measure in question is the “only way” to bring about a cessation of the targeted state’s unlawful act.³⁹⁶

Countermeasures apply when actions that would otherwise be unlawful are initiated to achieve a cessation of, or reparation for,

RESPONSIBILITY TO PROTECT: SUPPLEMENTARY VOLUME TO THE REPORT OF THE INTERNATIONAL COMMISSION ON INTERVENTION AND STATE SOVEREIGNTY 16 (2001) (“Forms of interference that fall short of coercion in the internal affairs of a state also do not amount to intervention. In fact, a central purpose of foreign policy is to persuade other states, friend and foe alike, to enact changes in behaviour that are consistent with foreign policy objectives.”).

395. Draft Articles on State Responsibility with Commentaries, *supra* note 39, art. 25.

396. *Id.*; see also Gabčíkovo-Nagymaros Project (Hung. v. Slov.) 1997 I.C.J. 7, ¶ 55 (Sept. 25) (“Hungary had means available to it, other than the suspension and abandonment of the works, of responding . . .”).

internationally wrongful behavior. A state may take such action unilaterally if it is (1) "injured" by the unlawful behavior,³⁹⁷ (2) "specially affected" by the injury,³⁹⁸ or (3) part of a collective to which an obligation to cease the unlawful behavior runs.³⁹⁹ As discussed in Part II, nonproliferation obligations may be considered *erga omnes* legal obligations, running to all states insofar as those norms have achieved high-order status through the NPT, state practice, and multiple Security Council resolutions. When the Security Council has expressly prohibited proliferation activities, the compliance obligations of the targeted state may be said to run to all members of the United Nations. Countermeasures must be proportional—that is, commensurate to addressing the unlawful behavior targeted—and may be calibrated to effectively address the gravity of that unlawful act.⁴⁰⁰ Cyber measures could therefore be legally used when the targeted behavior is internationally wrongful. The targeting of an illicit nuclear weapons program may fit this model of analysis, although actions targeting the peaceful uses of nuclear energy present a more problematic scenario.

VII. PREVENTIVE FORCE AND NONPROLIFERATION LAW

International law is highly restrictive on the use of force by states without Security Council authorization. The scope of self-defense to justify unilateral action on a preemptive basis has been thoroughly vetted through debates relating to the Iraq War, which have done little to produce consensus.⁴⁰¹ In the meantime, jurists continue to facilitate an ever-widening gap by promoting impracticably broad offensive restrictions and narrow defensive permissions for the use of force. In the defensive context, as Theresa Reinold notes, a divergence has already resulted between state practice and international law doctrine.⁴⁰² Where preventive force is

397. Draft Articles on State Responsibility with Commentaries, *supra* note 39, art. 42.

398. *Id.*

399. *Id.* art. 48.

400. *Id.* art. 51. See generally Thomas M. Franck, *On Proportionality of Countermeasures in International Law*, 102 AM. J. INT'L L. 715, 715–16 (2008) ("[A]n otherwise lawful response to an unlawful act, if it crosses the threshold of proportionality, may become unlawful.").

401. See, e.g., Sean D. Murphy, *The Doctrine of Preemptive Self-Defense*, 50 VILL. L. REV. 699, 706–19 (2005) (summarizing different schools of thought in related debates).

402. Reinold, *supra* note 312, at 246 ("[T]he question arises as to what balance can be struck between the traditional, restrictive interpretation of self-defense (which is widely viewed as inadequate for dealing with the security challenges of the twenty-first century) and what might amount to a relegitimation of war as the continuation of politics by other means.").

concerned, the doctrine of anticipatory self-defense has gained little traction as a basis for justifying unilateral force.⁴⁰³ The concept of an “imminent” attack remains confined in nineteenth century conceptions, as articulated in the *Caroline* case.⁴⁰⁴ Notwithstanding Ian Brownlie’s early 1963 recognition that, due to the advent of long-range missiles in a state of readiness, “the difference between attack and imminent attack may now be negligible,”⁴⁰⁵ carving out a doctrine of anticipatory self-defense that does not eviscerate the prohibition on the use of force has historically been an unworkable proposition. Thus, unilateral preventive force does not occupy a sound position under the current scheme of international law.

In the context of low-level conflict, numerous quandaries on the law of force surface. It is unclear, for example, whether targeted killings of Iranian nuclear scientists should be a matter of Iranian domestic law or a question of international humanitarian law. In the absence of an attribution of responsibility for such acts, it is difficult to prove a nexus to international conflict, inviting the question—similarly posed in the context of terrorism—of whether such isolated acts should be considered primarily a criminal law matter. Moreover, under prevailing standards on the use of force, isolated killings would likely not be considered an armed attack meriting the invocation of self-defense under Article 51 of the UN Charter.⁴⁰⁶ Forcible reprisals for such targeted killings would therefore be problematic under international law. The absence of clear-cut legal standards in the context of low-level conflict suggests that international law is ill-equipped to deal with such situations.

Assuming that a state suspected of developing nuclear weapons is the victim of an unlawful use of force targeting the cessation of that activity, the suspect state may face the grim reality of having no effective remedy. Although international law does not excuse the unlawful use of force in the context of a counterproliferation strategy, a state that has been isolated as a result of its alleged interests in developing a nuclear weapon may be in the awkward situation of

403. *Id.* at 247 (commenting that “[t]he Webster formula from the *Caroline* case of 1837 continues to be the authoritative statement on the right to anticipatory self-defense in customary international law” and then discussing ambiguities and legal criticisms surrounding this approach).

404. J.B. MOORE, *Destruction of the “Caroline,”* in A DIGEST OF INTERNATIONAL LAW 409, 409–12 (1906) (reproducing Secretary of State Webster’s comment that “[u]ndoubtedly it is just that, while it is admitted that exceptions growing out of the great law of self-defence do exist, those exceptions should be confined to cases in which the ‘necessity of that self-defence is instant, overwhelming, and leaving no choice of means, and no moment for deliberation’”).

405. BROWNLIE, *supra* note 245, at 368.

406. *See, e.g.,* Eritrea v. Ethiopia, Jus Ad Bellum, Ethiopia’s Claims 1–8, 45 I.L.M. 430, ¶ 11 (Perm. Ct. Arb. 2005) (“Localized border encounters between small infantry units, even those involving the loss of life, do not constitute an armed attack for purposes of the Charter.”).

having little support in the collective security apparatus for addressing low-level uses of force. One prominent example is the attack on the Dair Alzour/Ali Kibar nuclear site in Syria in 2007 and the ensuing silence of the international community. At the time of the attack, both the attacker and the nature of the facility attacked remained unclear, though it later became clear that Israel launched the attack.⁴⁰⁷

The international response to the attack at Dair Alzour was relatively muted,⁴⁰⁸ with no Security Council condemnation (in contrast with Israel's 1982 attack on the Iraqi Osirak reactor, which was condemned by the Security Council in Resolution 487).⁴⁰⁹ On May 24, 2011, the IAEA concluded on the basis of environmental samples, satellite imagery, photographs, and other assessments that the facility was likely a nuclear reactor that should have been declared to the Agency.⁴¹⁰ The IAEA Board of Governors referred the matter to the Security Council on June 9, 2011.⁴¹¹

Although it is widely understood that the airstrikes on Dair Alzour were an unlawful use of force, it is also undisputed that the muted reaction signals an increasing lack of global political concern regarding the legality of such low-level uses of force when the target state is outside of international norms regarding nuclear policy.⁴¹² The closest corollary in legal doctrine that captures the international community's muted response to the Dair Alzour strikes is found in the doctrine of "clean hands,"⁴¹³ or the principle that "an unlawful act cannot serve as the basis of an action in law."

407. See David E. Sanger & Mark Mazzetti, *Israel Struck Syrian Nuclear Project, Analysts Say*, N.Y. TIMES, Oct. 14, 2007, at A1.

408. See DAVID ALBRIGHT & PAUL BRANNAN, INST. FOR SCI. & INT'L SEC., THE AL KIBAR REACTOR: EXTRAORDINARY CAMOUFLAGE, TROUBLING IMPLICATIONS 2-4 (2008), available at http://www.isis-online.org/publications/syria/SyriaReactorReport_12May2008.pdf; David E. Sanger, *Pre-emptive Caution: The Case of Syria*, N.Y. TIMES, Oct. 15, 2007, at A8 ("The silence of the Middle Eastern countries that would normally condemn an Israeli attack suggested that they, too, were worried about what was happening in the Syrian desert.").

409. S.C. Res. 487, U.N. Doc S/RES/487 (June 19, 1981); see generally Christine Gray, *The Use of Force to Prevent the Proliferation of Nuclear Weapons*, 52 JAP. Y.B. INT'L L. 101, 110-12 (2009).

410. IAEA, *Implementation of the NPT Safeguards Agreement in the Syrian Arab Republic: Rep. by the Director General*, ¶ 33, IAEA Doc. GOV/2011/30 (May 24, 2011).

411. IAEA, *Implementation of the NPT Safeguards Agreement in the Syrian Arab Republic: Resolution adopted by the Board of Governors on 9 June 2011*, at 2, IAEA Doc. GOV/2011/41 (June 9, 2011).

412. Andrew Garwood-Gowers, *Israel's Airstrikes on Syria's Al-Kibar Facility*, 16 J. CONFLICT & SECURITY L. 263, 290 (2011) ("Israel's failure to offer any legal justification for its airstrike, and the muted international reaction to the Al-Kibar episode, appear to be part of a recent trend in state practice indicating a broader lack of concern over the legality of relatively minor uses of force.").

413. See *Military and Paramilitary Activities in and Against Nicaragua* (Nicar. V. U.S.), 1986 I.C.J. 14, 392-94 (June 27) (dissenting opinion of Judge Schwebel).

A prime historical example of the clean hands doctrine is the *Pelletier* case (1885),⁴¹⁴ in which the United States took the position that an arbitral award against Haiti for the seizure of the vessel of an American claimant should not be enforced because the claimant was engaged in slave trading.⁴¹⁵ Judge Anzilotti most succinctly summed up the doctrine in *The Legal Status of Eastern Greenland* when he stated, "[A]n unlawful act cannot serve as the basis of an action at law."⁴¹⁶ This is essentially an adaptation of the Latin maxim *ex injuria jus non oritur*, or "no legal right can spring from a wrong."⁴¹⁷ In the *Nicaragua* case, the doctrine was considered and rejected, as evidenced by Judge Schwebel's elaborate dissent on the matter.⁴¹⁸ The doctrine of clean hands currently has no force in law and does not excuse an unlawful act of force. But the doctrine may be operative in the political context, rendering international law somewhat ineffective as a method to secure a remedy against counterproliferation attacks.

VIII. CONCLUSION: ALL ROADS LEAD BACK TO EFFECTIVE MONITORING IN A COOPERATIVE POLITICAL ENVIRONMENT

The nuclear nonproliferation regime comprises cooperative and coercive elements, each of which play a role in the development of prevention and enforcement norms. On the cooperative side, the principal prevention mechanism is found in the institutional and legal framework of the IAEA, operating under the NPT comprehensive safeguards system. The IAEA serves to monitor and verify the peaceful uses of atomic energy, as well as offer technical assistance in an environment in which nations can freely trade in nuclear technology for peaceful uses. On the coercive side, the IAEA defers to the collective security apparatus of the Security Council and individual states for the enforcement of nonproliferation obligations. Inherent in the global nonproliferation framework is a tension between the deterrence value of coercive action and the fact that the regime cannot exist without the cooperation of all states. The risk in imposing aggressive prevention and enforcement measures is that the cooperative framework will break down, and enforcement measures

414. See CHENG, *supra* note 335 (citing *Pelletier Case*, 2 INT'L ARB., 1749-805(1885)).

415. FOREIGN RELATIONS OF THE UNITED STATES 607 (1887).

416. *Legal Status of Eastern Greenland* (Den. v. Nor.), 1933 P.C.I.J. (ser. A/B) No. 53, at 95 (Sept. 5).

417. See generally BIN CHENG, *supra* note 414; H. Lauterpacht, *The Limits of the Operation of the Law of War*, 30 BRIT. Y.B. INT'L L. 206, 217 (1953).

418. See *Nicaragua*, 1986 I.C.J. at 392-94 (dissenting opinion of Judge Schwebel).

will devolve into a proxy for interstate rivalries. Prevention and enforcement norms are important in this context. A norm involving coercive action in the nonproliferation context should remain fixed on a singular overriding objective: creating conditions for a return to good faith participation in the international monitoring system.

The spread of nuclear weapons poses great risks for international peace and security. State and non-state groups may face great temptations to remedy asymmetries in international relations by acquiring and even deploying nuclear weapons. Yet injecting more nuclear weapons into unstable and hostile environments creates a greater likelihood that the weapons will be used in either state or non-state conflicts. The law on nonproliferation reflects these dangers in norms that are developed through the IAEA, the Security Council, and state action. Throughout this evolution, nonproliferation has come to occupy binding legal status as an obligation *erga omnes*, that extends to all members of the international community. The absence of a clear-cut definition of proliferation makes enforcing the regime a challenge, underscoring the importance of developing clear and consistent standards that can be adapted across a range of circumstances to prevent the misuse of potentially dangerous nuclear technologies.

Because nonproliferation is ultimately a question of threats to peace and security, the task of devising appropriate measures necessarily relies on mixed questions of law and policy. Decisions on what constitutes a threat to international peace and security and what constitutes appropriate responsive action are largely political decisions, although nonproliferation law provides the basic framework for the exercise of such decisions. Arriving at legal standards that allow for consistency in the development of nonproliferation norms requires a full accounting of factors that signal heightened levels of risk and a reconciliation of those factors with legal obligations. The development of consistent standards to assess proliferation risk—and hence to provide the raw materials to judge what additional measures of prevention and enforcement may be necessary—starts and ends with the IAEA safeguards system. Cooperative action within the framework of that system should be the top priority of any prevention and enforcement efforts under the nuclear nonproliferation regime.
