INTERNATIONAL LAW AND WEAPONS OF MASS DESTRUCTION: END OF THE ARMS CONTROL APPROACH?

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I. INTRODUCTION

The threat posed by weapons of mass destruction (WMD) has become one of the most important, if not the most important, issue on security and foreign policy agendas at the beginning of the twenty-first century. Iraq's alleged pursuit and possession of WMD dominated the international security agenda from President Bush's speech to the United Nations (UN) General Assembly in September 2002,[1] through UN Security Council Resolution 1441 providing Iraq one last opportunity to comply with previous Security Council Resolutions,[2] and culminating in the U.S. and British invasion of Iraq in March 2003. Through the Bush Doctrine,[3] the world's leading political and military power has made WMD a centerpiece of a new strategic doctrine designed to guide the assessment of national security threats and

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1. *See* George W. Bush, Address to the United Nations General Assembly in New York City, 38 WEEKLY COMP. PRES. DOC. 1529, 1530–32 (Sept. 12, 2002), *available at* http://www.whitehouse.gov/news/releases/2002/09/20020912-1.html (last visited Oct. 19, 2003).

2. *See* S.C. Res. 1441, U.N. SCOR, 58th Sess., 4644th mtg. at 3, U.N. Doc. S/Res/1441 (2002).

3. The Bush Doctrine, previously referred to as the "axis of evil," was first enunciated by President Bush during his State of the Union Address in January 2002. *See* George W. Bush, Address Before a Joint Session of Congress on the State of the Union, 38 WEEKLY COMP. PRES. DOC. 133, 135 (Jan. 29, 2002), *available at* http://www.whitehouse.gov/news/releases/2002/01/20020129-11.html (last visited Oct. 3, 2003) ("States like these and their terrorist allies constitute an axis of evil, arming to threaten the peace of the world. . . . I will not wait on events while dangers gather. I will not stand by as peril draws closer and closer.") [hereinafter State of the Union Address].

the application of U.S. power.[4] As illustrated by the Bush Doctrine, the WMD threat includes possession of these weapons by not only states but also terrorist groups, leading to fears about the rise of catastrophic terrorism[5]—fears exacerbated by the historic terrorist attacks against the United States on September 11, 2001. The U.S.-led military action against Iraq represented the application of the Bush Doctrine against the WMD-centered "axis of evil." Significant security concerns about WMD have also developed and grown more alarming with regard to North Korea's nuclear weapons capability[6] and Iran's possible nuclear weapons program.[7]

These recent developments involving the threat posed by WMD reflect a trend in the security area stretching back more than a decade. The end of the Cold War sparked a host of concerns regarding WMD in the hands of rogue states and terrorists, forcing policy makers, scholars, and pundits to assess the seriousness of the WMD threat and construct responses designed to address it.[8] The Bush Doctrine and the war against Iraq are the latest, and the most dramatic, policy moves by the United States to address the perceived WMD peril.

The rise in the prominence of WMD on security and foreign policy agendas in the 1990s and early 2000s raises questions about the role of international law in this area. International law has a long relationship with efforts to control WMD that began as early as the late

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4. *See* WHITE HOUSE, NATIONAL SECURITY STRATEGY OF THE UNITED STATES 14 (2002) ("We must be prepared to stop rogue states and their terrorist clients before they are able to threaten or use weapons of mass destruction against the United States and our allies and friends.") [hereinafter NATIONAL SECURITY STRATEGY]; *see also* WHITE HOUSE, NATIONAL STRATEGY TO COMBAT WEAPONS OF MASS DESTRUCTION 1 (2002) ("Weapons of mass destruction (WMD)—nuclear, biological, and chemical—in the possession of hostile states and terrorists represent one of the greatest security challenges facing the United States.") [hereinafter WEAPONS OF MASS DESTRUCTION].

5. NATIONAL SECURITY STRATEGY, *supra* note 4, at 6 ("Our immediate focus will be those terrorist organizations of global reach and any terrorist group or state sponsor of terrorism which attempts to gain or use weapons of mass destruction (WMD) or their precursors;"); WHITE HOUSE, NATIONAL STRATEGY FOR COMBATING TERRORISM 9 (2003) ("Weapons of mass destruction pose a direct and serious threat to the United States and the entire international community. The probability of a terrorist organization using a chemical, biological, radiological, or nuclear weapon . . . has increased significantly during the past decade.") [hereinafter COMBATING TERRORISM].

6. *See generally* Nuclear Threat Initiative, *North Korea Nuclear Program Overview: History and Status*, *at* http://www.nti.org/db/profiles/dprk/nuc/cap/NKN_OGO.html (last visited Dec. 1, 2003).

7. *See generally* Nuclear Threat Initiative, *Iran Profile*, *at* http://www.nti.org/e_research/profiles/Iran/index.html (last visited Dec. 1, 2003).

8. *See, e.g.*, RICHARD A. FALKENRATH ET AL., AMERICA'S ACHILLES' HEEL: NUCLEAR, BIOLOGICAL, AND CHEMICAL TERRORISM AND COVERT ATTACK (1998).

nineteenth century with the development of treaty prohibitions on the use of poisonous gas in warfare.[9] As the International Court of Justice's *Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons* illustrates,[10] three bodies of international law regulate WMD: arms control treaties, international law on the use of force, and international humanitarian law. Historically, the most prominent and direct use of international law in connection with WMD was through arms control treaties—international agreements designed to prohibit or limit the development, possession, and use of nuclear, chemical, and biological weapons by states.[11] As Table 1 shows, only arms control treaties specifically address the development and use of WMD. Through such treaties, states and international organizations crafted a body of international law dealing directly with the control of WMD.

Table 1.
International Law's Application to the Development and Use of Weapons of Mass Destruction

Area of International Law	Development of WMD	Use of WMD
International law on the use of force	Addresses the threat or use of force, not the development of weapons	Establishes legal justifications for the resort to force, not rules on what weapons states may use
International humanitarian law	Does not directly regulate the development of weapons	Disciplines generally the kinds of weapons that can be used in armed conflict (e.g., no use of weapons that cause superfluous injury or unnecessary suffering)
Arms control treaties	Specifically regulate the development of WMD	Prohibit the use of chemical and biological weapons

9. Declaration Concerning the Prohibition of the Use of Projectiles Diffusing Asphyxiating Gases, July 29, 1899, *reprinted in* A MANUAL ON INTERNATIONAL HUMANITARIAN LAW AND ARMS CONTROL AGREEMENTS 99 (M. Cherif Bassiouni ed., 2000) [hereinafter Hague Declaration].

10. Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons, 1996 I.C.J. 226, 244–47, 247–53, 256–60 (July 8) (analyzing international law on the use of force, relevant arms control treaties, and analyzing humanitarian law).

11. *See, e.g.*, Hague Declaration, *supra* note 9; Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, June 17, 1925, 26 U.S.T. 571, 94 L.N.T.S. 65 [hereinafter Geneva Protocol].

This body of international law reflects the "arms control approach" to WMD—formal agreements among states to regulate the use and development of WMD. According to Kellman, the arms control approach comprises "measures to cope with a dangerous threat to international security: vertical and horizontal weapons proliferation among national militaries, with concomitant acceleration of both the likelihood that war among nations will erupt and that, if and when war does break out, the consequences will be catastrophic."[12] The arms control approach had origins in international humanitarian law's prohibition of the use of weapons that cause superfluous injury or unnecessary suffering,[13] but the approach created an area of international law distinct from the laws of war because it developed a body of rules that applied prior to the outbreak of armed conflict.

The growth of concerns about WMD proliferation and their possible use by states and non-state actors has put the arms control approach to WMD under intense scrutiny, producing controversy about what arms control treaties on WMD contribute to national security and international peace. Bitter international controversies about the effectiveness of UN WMD inspections in Iraq and the legitimacy of preemptive self-defense against states that possess or pursue WMD suggest that the arms control approach has failed to provide an effective strategy for dealing with the contemporary WMD threat.[14]

The problems confronting the arms control approach to WMD are more extensive than references to controversies about UN inspections and preemptive self-defense indicate. Skepticism and opposition have dogged the arms control approach during its history because many experts expressed doubts about the efficacy of this strategy in controlling threats to security in international politics.[15]

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12. Barry Kellman, *An International Criminal Law Approach to Bioterrorism*, 25 HARV. J. L. & PUB. POL'Y 721, 724 (2002).

13. The Hague Declaration states that its prohibition of the diffusion of asphyxiating gases was "inspired by the sentiments which found expression in the Declaration of St. Petersburg of . . . 1868." Hague Declaration, *supra* note 9, at 99. Under the St. Petersburg Declaration, states parties renounced the use in war of explosive projectiles weighing less than 400 grams under the principle that the use of "arms which uselessly aggravate the sufferings of disabled men, or render their death inevitable . . . would . . . be contrary to the laws of humanity." Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight, Dec. 11, 1868, *reprinted in* A MANUAL ON INTERNATIONAL HUMANITARIAN LAW AND ARMS CONTROL AGREEMENTS, *supra* note 9, at 85, 85–86.

14. For analyses of the international legal implications of the use of force against Iraq, see *Agora: Future Implications of the Iraq Conflict*, 97 AM. J. INT'L L. 553 (2003).

15. *See, e.g.*, MALCOM WALLOP & ANGELO M. CODEVILLA, THE ARMS CONTROL DELUSION (1987). The arms control approach has been criticized on other grounds as well.

This article explores the controversy about the role of arms control treaties on WMD in the new security and foreign policy environment of the early twenty-first century. After presenting an analytical framework for evaluating the threat of WMD, I argue that recent developments demonstrate that we are witnessing the end of the arms control approach to the WMD problem. By the end of the arms control approach, I mean that (1) the traditional reliance on arms control treaties as a response to WMD threats is proving inadequate and (2) policy-makers are increasingly turning away from this traditional approach in crafting responses to the WMD threat.

The end of the arms control approach does not mean the end of arms control, because the relevant treaties remain part of the process of addressing the WMD threat. These treaties no longer represent, however, the dominant policy and legal approach to WMD. At the heart of this argument is the assertion that underlying political, technological, and social realities have changed so significantly that the traditional arms control approach to WMD no longer holds center stage politically or legally.

II. THE THREAT FROM WEAPONS OF MASS DESTRUCTION: AN ANALYTICAL FRAMEWORK

A. The Analytical Framework: Interdependent WMD Risk Factors

The increased attention WMD have received in the 1990s and early 2000s in policy circles prompts the question why WMD have become significant security and foreign policy concerns. Answering this question requires understanding WMD risk factors and how perceptions about these risk factors have changed in recent years. Constructing an analytical framework for assessing the gravity of the WMD threat is difficult for many reasons, including the tendency to

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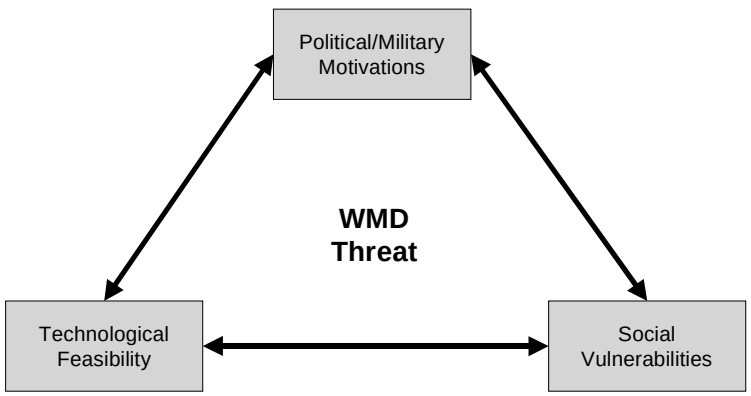
See, e.g., Richard A. Falk, *Nuclear Weapons, International Law and the World Court: A Historic Encounter*, 91 AM. J. INT'L L. 64, 65 (1997) (criticizing reliance on the arms control approach in the context of nuclear weapons as leading "to a repudiation of general and complete disarmament as a policy goal, and an unwillingness to submit or consider nuclear disarmament proposals as a basis for international negotiations"). Other experts have argued that the arms control approach is not appropriate for certain kinds of new weapons technologies. *See, e.g.*, Kellman, *supra* note 12, at 729 (arguing that the problem of bioterrorism "does not lend itself to an arms control approach"); Greg Rattray, *The Emerging Global Information Infrastructure and National Security*, FLETCHER F. WORLD AFF., Summer/Fall 1997, at 81, 90 (1997) (arguing that the arms control approaches developed during the Cold War "will not work in controlling the tools necessary for strategic information attacks").

lump together nuclear, chemical, and biological weapons—distinct technologies that pose dramatically different kinds of policy challenges—under the single moniker "weapons of mass destruction." Even with limitations, however, an analytical framework provides insight into the nature of the threat and the various policy responses attempted or proposed.

The nature of the WMD threat reflects the interdependence of three basic risk factors: (1) political and military motivations of actors for developing or using WMD; (2) the technological feasibility of developing or using WMD; and (3) the vulnerabilities WMD development or use creates for societies. The following paragraphs further elaborate on each of these risk factors and their interdependence. Figure 1 below summarizes this interplay.

The WMD Threat:
An Analytical Framework



1. *Political and Military Motivations.* Understanding the WMD threat involves comprehending why actors may or may not see WMD as politically or militarily useful. During the Cold War, the great powers believed that nuclear weapons had great political and military utility.[16] The two superpowers, the United States and the Soviet Un-

16. *See generally* Lawrence Freedman, *The First Two Generations of Nuclear Strategists*, *in* MAKERS OF MODERN STRATEGY: FROM MACHIAVELLI TO THE NUCLEAR AGE 735 (Peter Pa-

ion, diverged, however, in the early 1970s on the military utility of biological weapons because the United States terminated its offensive program while the Soviets accelerated theirs.[17] These two examples demonstrate why the political and military motivations of actors in international relations are critical to gauging the WMD threat.

The analytical framework presented in this article incorporates both state and non-state actors when considering political/military motivations for developing or using WMD. As illustrated by Bush administration policy, fears about WMD today involve both states and terrorist groups.[18] The analytical framework is not, therefore, state-centric because it applies to motivations that terrorist groups might have in developing or using WMD. The United States' *National Strategy for Combating Terrorism* argues that "[m]otivated by extreme, even apocalyptic ideologies, some terrorists' ambitions to inflict mayhem seem unlimited."[19] It further cites Osama bin Laden's proclamation that "acquisition of WMD [was] a 'religious duty.'"[20] One of the significant shifts, discussed later in the article, that contributes to the weakening of the arms control approach is, in fact, the perceived rise in the possibility of "catastrophic terrorism"—terrorism involving WMD.[21]

Political and military perspectives on the utility of any weapon are, of course, influenced by many factors—the structure and dynamics of the international political system, domestic regime types, psychology of individual leaders, state of weapons technologies, and rules of international law. Particularly important to this article's analysis are the changes witnessed in the structure of the international system as it moved from the Cold War to the post–Cold War period.[22]

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ret et al. eds., 1986) (noting that since 1945 "tens of thousands [of nuclear weapons] have been accumulated by the major powers and their destructiveness and sophistication increased immensely").

17. *See* George W. Christopher et al., *Biological Warfare: A Historical Perspective*, 278 JAMA 412, 415–16 (1997).

18. *See* WEAPONS OF MASS DESTRUCTION, *supra* note 4, at 1 ("We will not permit the world's most dangerous regimes and terrorists to threaten us with the world's most destructive weapons."); *see also* State of the Union Address, *supra* note 3, at 135 ("By seeking weapons of mass destruction, these regimes pose a grave and growing danger. They could provide these arms to terrorists, giving them the means to match their hatred. They could attack our allies or attempt to blackmail the United States. In any of these cases, the price of indifference would be catastrophic.").

19. COMBATING TERRORISM, *supra* note 5, at 10.

20. *Id.*

21. *See infra* Part III.A.

22. *See infra* Part II.B.

The most important changes for purposes of this article are the collapse of the bipolar, nuclearized international system and the development of a new system marked by both a single hegemonic actor and the rising strategic threat posed by terrorist organizations of global scope.

2. *Technological Feasibility.* The second important WMD risk factor in the analytical framework is technological feasibility. This risk factor focuses on how technologically difficult WMD are to develop or use. Of the WMD, nuclear weapons are more technologically challenging to develop than chemical or biological weapons.[23] Whether the technological feasibility of a particular WMD is difficult or easy affects the assessment of the threat posed by such WMD.[24] The Bush administration declared in its *National Strategy for Homeland Security* that "[t]he knowledge, technology, and materials needed to build weapons of mass destruction are spreading. These capabilities have never been more accessible and the trends are not in our favor."[25] The U.S. *National Strategy for Combating Terrorism* asserted that "[t]he availability of critical technologies, the willingness of some scientists and others to cooperate with terrorists, and the ease of intercontinental transportation enable terrorist organizations to more easily acquire, manufacture, deploy, and initiate a WMD attack either on U.S. soil or abroad."[26] The perception that WMD development is now technologically feasible for states as well as terrorist groups contributes significantly to security and foreign policy concerns about WMD. For example, the fear that terrorist groups may

23. *See* ADVISORY PANEL TO ASSESS DOMESTIC RESPONSE CAPABILITIES FOR TERRORISM INVOLVING WEAPONS OF MASS DESTRUCTION, RAND CORPORATION, FIRST ANNUAL REPORT TO THE PRESIDENT AND THE CONGRESS: I. ASSESSING THE THREAT 21 (1999), http://www.rand.org/nsrd/terrpanel/terror.pdf (last visited Nov. 11, 2003) [hereinafter ASSESSING THE THREAT] (arguing that "[d]eveloping a nuclear weapon requires even greater skills, financial resources, and infrastructure" than chemical or biological weapons).

24. For example, in assessing the plausibility of nuclear terrorism, Jenkins argued that "the notion that some group outside of government programs can design and build a crude nuclear bomb is certainly more plausible now than it was 30 or 40 years ago. At that time, the secrets of nuclear fission were closely guarded. However, much of the requisite technical knowledge has since gradually come into the public domain." Brian M. Jenkins, *Is Nuclear Terrorism Plausible?*, *in* NUCLEAR TERRORISM: DEFINING THE THREAT 25, 27 (Paul Leventhal & Yonah Alexander eds., 1986).

25. WHITE HOUSE, NATIONAL STRATEGY FOR HOMELAND SECURITY 9 (2002) [hereinafter HOMELAND SECURITY].

26. COMBATING TERRORISM, *supra* note 5, at 9–10.

develop and use WMD capabilities significantly affects U.S. policy on national security,[27] WMD,[28] and homeland security.[29]

3. *Social Vulnerability.* The third important WMD risk factor in the analytical framework is the level of vulnerability societies face when confronted with potential or actual WMD use. Countries that are highly vulnerable to WMD attack will factor such vulnerability into their perceptions of the seriousness of the WMD threat. The attention paid to U.S. vulnerability to terrorist WMD attacks in the development of homeland security policy illustrates the importance of social vulnerability as a WMD risk factor.[30] Conversely, countries not highly vulnerable are unlikely to weigh WMD threats as seriously. Social vulnerability to WMD use is itself a multi-factored category. Key factors include the status of a country in international politics (e.g., great power versus least developed country) and the nature of its government and society (e.g., open versus closed societies). Its "lone superpower" position and its open, affluent society combine to heighten perceptions about the vulnerability of the United States to WMD attack.[31]

4. *Interdependence Among the Risk Factors.* The analytical framework stresses the interdependence among the three risk factors. None of the risk factors by itself adequately conveys the scope of the WMD threat. The technological feasibility of a weapon influences an actor's perception of that weapon's political or military utility. Similarly, strong political motivations to develop a weapon may stimulate efforts to overcome technological development challenges the weapon presents. The technological ease with which a chemical or biological weapon may be developed and deployed affects how a

27. *See* NATIONAL SECURITY STRATEGY, *supra* note 4, at 6 (noting that "[o]ur immediate focus will be those terrorist organizations of global reach and any terrorist . . . which attempts to gain or use weapons of mass destruction (WMD) or their precursors").

28. *See* WEAPONS OF MASS DESTRUCTION, *supra* note 4, at 1 (observing that "terrorist groups are seeking to acquire WMD with the stated purpose of killing large numbers of our people and those of friends and allies").

29. HOMELAND SECURITY, *supra* note 25, at 2 (noting that, in connection with homeland security's objective of defending against terrorism, the United States places special emphasis on "preventing, protecting against, and preparing for catastrophic threats," the greatest risks of which come from, among others, WMD).

30. *See id.* at 9 (analyzing U.S. vulnerability to WMD terrorism).

31. See *id.* at 7–10 for discussion of U.S. vulnerability to terrorist attack, including attacks using WMD.

country views its social vulnerability to the use of such weapon.[32] High social vulnerability to the use of such weapon and high social vulnerability of an enemy country may stimulate political and military interest in WMD or accentuate the attractiveness of certain WMD technologies. The interdependence among the risk factors does not, however, mean that each factor is equally important in every situation involving WMD. Rather, the interdependence suggests that each risk factor should be considered in assessing the scope of the threat posed by a specific WMD.

B. The Analytical Framework Applied

Applying the analytical framework described in Section II.A helps give it more specificity and explanatory power. In this section, I use the analytical framework to assess the development of the arms control approach to WMD during the pre–Cold War period and the Cold War. My main objective is not to provide a comprehensive history of the negotiation and adoption of arms control treaties on WMD prior to the end of the Cold War; rather, I employ the analytical framework to sketch why the arms control approach dominated international law on WMD in these historical periods.

1. *Pre–Cold War Arms Control on Weapons of Mass Destruction.* As the Introduction indicated, states began applying international law directly to what we now call "weapons of mass destruction" as early as the late nineteenth century. In the Hague Declaration Concerning the Prohibition of the Use of Projectiles Diffusing Asphyxiating Gases of 1899 (Hague Declaration), the contracting parties agreed "to abstain from the use of projectiles the sole object of which is the diffusion of asphyxiating or deleterious gases."[33] A prohibition on Germany's use and possession of chemical weapons appeared in

32. *See* ASSESSING THE THREAT, *supra* note 23, at 19 (noting the "comparative ease" with which low-level chemical and biological attacks could be orchestrated). For an analysis of the differences between making nuclear and biological weapons, see Jonathan B. Tucker, *Preventing the Misuse of Pathogens: The Need for Global Biosecurity Standards*, ARMS CONTROL TODAY, June 2003, *at* http://www.armscontrol.org/act/2003_06/tucker_june03.asp (last visited Nov. 10, 2003). Although easier to develop than nuclear weapons, making chemical and biological weapons confronts serious difficulties. As the National Commission on Terrorism argued, "[w]hile lethal chemicals are easy to come by, getting large quantities and weaponizing them is difficult, and only nation states have succeeded in doing so." NATIONAL COMMISSION ON TERRORISM, COUNTERING THE CHANGING THREAT OF INTERNATIONAL TERRORISM 4 (2000), http://w3.access.gpo.gov/nct/ (last visited Nov. 11, 2003).

33. Hague Declaration, *supra* note 9, at 99.

the Treaty of Versailles of 1919,[34] and a prohibition on the use of chemical weapons appeared in the Treaty in Relation to the Use of Submarines and Noxious Gases in Warfare of 1922,[35] which never entered into force.[36] States reaffirmed the Hague Declaration's prohibition on the use of chemical weapons and expanded the prohibition to include bacteriological methods of warfare in the Geneva Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare of 1925 (Geneva Protocol).[37]

Both the Hague Declaration and Geneva Protocol were, however, limited arms control agreements. First, neither instrument regulated the ability of a state to develop and stockpile chemical or biological weapons—the agreements were limited to prohibitions on the use of such weapons.[38] Second, the prohibition on use in both agree-

34. Treaty of Peace with Germany (Treaty of Versailles), June 28, 1919, art. 171, 2 Bevans 43, 119 ("The use of asphyxiating, poisonous or other gases and all analogous liquids, materials or devices being prohibited, their manufacture and importation are strictly forbidden in Germany. The same applies to materials specially intended for the manufacture, storage and use of the said products or devices.").

35. Treaty Relating to the Use of Submarines and Noxious Gases in Warfare, Feb. 6, 1922, art. 5, S. EXEC. DOC. NO. 67-2, 1922 FOREIGN REL. (1) 267, *reprinted in* 16 AM. J. INT'L L. 57 (Supp. 1922), *and in* A MANUAL ON INTERNATIONAL HUMANITARIAN LAW AND ARMS CONTROL AGREEMENTS, *supra* note 9, at 149 ("The use in war of asphyxiating, poisonous or other gases, and all analogous liquids, materials or devices, having been justly condemned by the general opinion of the civilized world and a prohibition on such use having been declared in treaties to which a majority of the civilized Powers are parties, [t]he Signatory Powers, to the end that this prohibition shall be universally accepted as part of international law binding alike the conscience and practice of nations, declare their assent to such prohibition, agree to be bound thereby as between themselves and invite all other civilized nations to adhere thereto.").

36. *See* A MANUAL ON INTERNATIONAL HUMANITARIAN LAW AND ARMS CONTROL AGREEMENTS, *supra* note 9, at 149.

37. *See* Geneva Protocol, *supra* note 11, 26 U.S.T. at 575, 94 L.N.T.S. at 69 ("That the High Contracting Parties . . . accept this prohibition [on the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials, and devices], agree to extend this prohibition to the use of bacteriological methods of warfare and agree to be bound as between themselves according to the terms of this declaration.").

38. *See generally* Hague Declaration, *supra* note 9 ("The Contracting Parties agree to abstain from the *use* of projectiles the sole object of which is the diffusion of asphyxiating or deleterious gases.") (emphasis added); Geneva Protocol, *supra* note 11, 26 U.S.T. at 575, 94 L.N.T.S. at 69 ("The High Contracting Parties . . . accept this prohibition [on the *use* in war of asphyxiating, poisonous or other gases and] agree to extend this prohibition to the *use* of bacteriological methods of warfare") (emphasis added). *See also* R.R. Baxter & Thomas Buergenthal, *Legal Aspects of the Geneva Protocol of 1925*, 64 AM. J. INT'L L. 853, 855 (1970) ("[The Geneva Protocol] does not prohibit the production, acquisition, or stockpiling of [chemical and biological] weapons . . . . This means, among other things, that the testing of these weapons is not proscribed by the Geneva Protocol; the same is true of the manufacture of equipment capable of dispersing them.").

ments was not absolute. The Hague Declaration's ban on the use of chemical weapons applied only in the case of war between contracting parties.[39] The ban was not binding if a non-contracting party joined the conflict as a belligerent.[40] Similarly, the Geneva Protocol's ban applied only in armed conflict between states parties.[41] In addition, many states parties made reservations declaring that they would not be bound by the prohibition in the event that another state party violated the ban during armed conflict.[42] The Geneva Protocol contained, in effect, a prohibition on the first-use of chemical and biological weapons.[43]

Despite this, the adoption of these two international agreements on chemical and biological weapons indicates that states during this era were sufficiently concerned about the use of such weapons in armed conflict. The analytical framework described in Section II.A helps explain the dynamic captured in these international legal documents. The prohibitions on use in both the Hague Declaration and the Geneva Protocol signal that political/military motivations and technological feasibility were sufficiently high to warrant concern about the deployment of chemical and biological weapons in armed conflict.

At the time, the technological feasibility of chemical weapons was more pronounced than that of biological weapons—as illustrated by the extensive use of chemical weapons in World War I[44]—and the legal documents reflect that reality. Still, the state parties to the Geneva Protocol were concerned enough about the potential develop-

39. Hague Declaration, *supra* note 9 ("The present Declaration is only binding on the Contracting Powers in the case of a war between two or more of them.").

40. *Id*. ("It shall cease to be binding from the time when, in a war between the Contracting Powers, one of the belligerents shall be joined by a non-Contracting Power.").

41. *See* Geneva Protocol, *supra* note 11, 26 U.S.T. at 575, 94 L.N.T.S. at 69 ("[T]he High Contracting Parties . . . agree to bound as between themselves according to the terms of this declaration."). In addition, a number of states parties made reservations providing that the Geneva Protocol was binding on the reserving state only with respect to other states parties. *See* DOCUMENTS ON THE LAWS OF WAR 144–46 (Adam Roberts & Richard Guelff eds., 2d ed. rev. 1989) (listing reservations of states parties to the Geneva Protocol).

42. For example, the reservation of France provides: "The said Protocol shall *ipso facto* cease to be binding on the Government of the French Republic in regard to any enemy State whose armed forces or whose Allies fail to respect the prohibitions laid down in the Protocol." DOCUMENTS ON THE LAWS OF WAR, *supra* note 41, at 145.

43. DOCUMENTS ON THE LAWS OF WAR, *supra* note 41, at 138 (noting that the Geneva Protocol "is regarded . . . as containing not an absolute prohibition on the use of such weapons, but only an agreement not to use such weapons first").

44. HEDLEY BULL, THE CONTROL OF THE ARMS RACE 124 (2d ed. 1965) (describing the use of chemical weapons in World War I).

ment of biological weapons to prohibit their first-use before the technological feasibility of such weapons had been clearly demonstrated.[45] The use of chemical weapons during World War I demonstrated that political and military leaders had sufficient motivations to develop, deploy, and use chemical weapons on a large scale.

Cutting against these motivations was the principle of the laws of war forbidding the use of weapons that caused superfluous injury or unnecessary suffering.[46] This principle connected to the realization that both armed forces and civilian societies were vulnerable to chemical and biological weapon attacks.

The carnage from chemical weapons on the battlefields of World War I demonstrated the military threat posed by these weapons. Additionally, the development of long-range bombardment technologies, such as long-range artillery and air power, rendered civilian populations increasingly vulnerable to the use of chemical and biological weapons as they continued to develop technologically. One of the leading air-power theorists of the interwar period, Guilio Douhet, based his theory of aggressive air warfare on the assumption that "attacks against population and industrial centers would employ three types of bombs—explosive, incendiary, and poison gas . . . ."[47] As Bull noted, "[t]he belief that gas bombs would be a major element in aerial attacks on cities underlay the movement for the prohibition of chemical warfare [during the interwar period]. It had a primacy in popular imagination as an agent of mass destruction and a product of perverted science . . . ."[48]

In the period prior to World War II, all three WMD risk factors were significantly high, which helps explain why states began to use arms control agreements to address the threat posed by chemical and biological weapons. The analytical framework also helps us understand the substantive nature of the international legal rules developed on chemical and biological weapons. As indicated above,[49] the prohi-

45. Although the use of disease as a weapon of warfare has a long history, systematic efforts by states to develop biological weapons capabilities only began in the 1930s. *See id.* at 127.

46. *See* M. Cherif Bassiouni, *Evolution of International Humanitarian Law and Arms Control Agreements*, *in* A MANUAL ON INTERNATIONAL HUMANITARIAN LAW AND ARMS CONTROL AGREEMENTS, *supra* note 9, at 1, 21–31 (discussing the prohibition in international humanitarian law against weapons that cause unnecessary pain and suffering).

47. David MacIsaac, *Voices from the Central Blue: The Air Power Theorists*, *in* THE MAKERS OF MODERN STRATEGY FROM MACHIAVELLI TO THE NUCLEAR AGE, *supra* note 16, at 624, 630.

48. BULL, *supra* note 44, at 124.

49. *See supra* notes 38–43 and accompanying text.

bitions on use were limited to the first-use of chemical and biological weapons—and the agreements did not address development, possession, stockpiling, transfer, and deployment of such weapons. States could, thus, legally develop, possess, stockpile, transfer, and deploy chemical and biological weapons because the arms control agreements did not limit their rights in those contexts. Such stockpiles of chemical and biological weapons served as a deterrent against any state's desire to use chemical and biological weapons first in armed conflict. Under these rules, an illegal first-use of chemical or biological weapons could be met legally with response in kind.

In terms of the analytical framework, political/military motivations, technological feasibility, and social vulnerability to chemical or biological attack were sufficiently high for states to be unwilling to rely solely on treaties to protect themselves from attack. In essence, the Hague Declaration and the Geneva Protocol lacked "teeth,"[50] which were provided instead by the policy of deterrence. Deterrence proves successful, however, only when states possess an actual capacity to respond in kind—hence the need to leave development, possession, stockpiling, transfer, and deployment unregulated under international law.

Overall, certain characteristics mark the arms control approach found in the Hague Declaration and Geneva Protocol. First, the approach is state-centric because the international legal instruments address only state behavior. These agreements are not concerned with the possible development and use of chemical or biological weapons by non-state actors, such as terrorist groups. Second, the dynamics of the approach reflect a high level of uncertainty and mistrust among states because they embody only a first-use prohibition and rely on deterrence to control use of chemical and biological weapons. These dynamics reflect the importance that states have placed on military power in international politics.

Third, the reliance on deterrence to uphold the prohibition on use contradicted the international legal norm against using weapons that caused superfluous injury or unnecessary suffering. The bans on chemical and biological weapons found in the Hague Declaration and the Geneva Protocol flowed from the acceptance that these weapons caused superfluous injury or unnecessary suffering in violation of the

50. Neither the Hague Declaration nor the Geneva Protocol had any provisions for the enforcement of the prohibitions they contained.

laws of war;[51] yet, states parties to these documents specifically reserved the right to use such weapons in response to a prior illegal use by another state. The deterrence strategy would not be credible if states parties threatened to use chemical or biological weapons and were also genuinely committed to complying with the prohibition on the use of such weapons in the laws of war.

Fourth, the arms control approach in this period contained a hierarchy in which states viewed chemical weapons as a greater threat than biological weapons, largely because of the more advanced state of chemical weapons technologies. As noted above, the development and use of chemical weapons were more advanced than biological weapons during this period, illustrated by the Hague Declaration's prohibition of asphyxiating gases in 1899 and the horrors of chemical warfare during World War I.

2. *Cold War Arms Control and Weapons of Mass Destruction.* The arms control approach developed in the pre–Cold War period represents the first, rather limited, attempt to regulate WMD through international law in the context of the anarchical politics of the international system. Although the subject of international legal control, the development and use of chemical and biological weapons during this period were not central to the dynamics of international politics. During the Cold War period, the arms control approach to WMD expanded significantly and became an integral feature of the structure and dynamics of international relations. Key to the growth in the importance of WMD arms control was the development of nuclear weapons, a new technology with far more destructive power than either chemical or biological weapons.

A comprehensive summary of the arms control experience of the Cold War period is beyond the scope of this article. Instead, I look at the arms control approach through the tripartite analytical framework presented above to understand the basic dynamics of WMD control in this period. The lion's share of international law relating to WMD developed in this period addressed nuclear weapons. The arms control approach to chemical weapons remained essentially unchanged,

51. Hague Declaration, *supra* note 9, at 99 (stating that the signatory powers were inspired by the sentiments in the Declaration of St. Petersburg of 1868 on limiting the use of weapons that aggravate the suffering of combatants); Geneva Protocol, *supra* note 11, 26 U.S.T. at 575, 94 L.N.T.S. at 67 (noting the condemnation of the use of asphyxiating, poisonous, or other gases "by the general opinion of the civilized world"). *See also* BULL, *supra* note 44, at 129 (arguing that "[t]he view that *chemical* and *biological* weapons are uniquely immoral is deeply entrenched in the folklore of international society").

as no new treaties on such weapons were concluded prior to the end of the Cold War. However, the arms control approach to biological weapons underwent an international legal revolution during this period.[52]

Generally speaking, arms control relating to nuclear weapons during the Cold War had two basic objectives: (1) stabilizing nuclear deterrence between the United States and the Soviet Union and (2) limiting the proliferation of nuclear weapons in the international system to prevent such proliferation from causing instability and conflict among states. Many treaties designed to advance these two objectives appeared during the Cold War, vastly increasing the body of international law directly on WMD. Table 2 provides an overview of key Cold War arms control agreements.

Table 2.
Cold War Arms Control Agreements on Nuclear Weapons

Deterrence Stabilization	Limitation on Proliferation
Nuclear Arms Control Treaties between the United States and Soviet Union	Arms Control Treaties on Proliferation of Nuclear Weapons
Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water (1963)[53] Treaty between the United States and Soviet Union on the Limitation of Anti-Ballistic Missile Systems (1972)[54] Treaty between the United States and the Soviet Union on the Limitation of Strategic Offensive Arms (SALT II)(1979)[55]	Treaty on Principles Governing the Activities of States in the Exploration of Outer Space, Including the Moon and Other Celestial Bodies (1967)[58] Treaty for the Prohibition of Nuclear Weapons in Latin America (Treaty of Tlatelolco) (1968)[59] Treaty on the Non-Proliferation of Nuclear Weapons (1968)[60]

52. *See infra* notes 76–82 and accompanying text.

53. Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water, Aug. 5, 1963, U.S.-U.S.S.R., 14 U.S.T. 1313. The United Kingdom is also a party to this treaty.

54. Treaty on the Limitation of Anti–Ballistic Missile Systems, May 26, 1972, U.S.-U.S.S.R., 23 U.S.T. 3435 [hereinafter ABM Treaty].

55. Treaty on the Limitation of Strategic Offensive Arms (SALT II), June 18, 1979, U.S.-U.S.S.R., S. EXEC. DOC. Y, 96-1 (1979), *available at* http://www.state.gov/www/global/

Treaty between the United States and the Soviet Union on Elimination of their Intermediate-Range and Shorter-Range Missiles (1987)[56] Treaty between the United States and the Soviet Union on the Limitation of Underground Nuclear Weapons Tests (1990)[57]	Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof (1971)[61] Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (1979)[62] South Pacific Nuclear-Free Zone Treaty (1985)[63] African Nuclear-Weapon-Free Zone Treaty (Treaty of Pelindaba) (1996)[64]

arms/treaties/salt2-2.html (last visited Dec. 1, 2003); *see also* Annex: Detailed Analysis of SALT II Provisions, 18 I.L.M. 1122. SALT II never actually entered into force through ratification.

56. Treaty between the United States of America and the Union of Soviet Socialist Republics on the Elimination of their Intermediate-Range and Shorter-Range Missiles, Dec. 8, 1987, U.S.-U.S.S.R., S. TREATY DOC. 100-11 (1987), *reprinted in* 27 I.L.M. 90 (entered into force June 1, 1988).

57. Treaty between the United States and the Union of Soviet Socialist Republics on the Limitation of Underground Nuclear Weapons Tests, July 3, 1974, U.S.-U.S.S.R., S. Exec. Doc. No. 94-2 (1975), *reprinted in* 13 I.L.M. 906 (entered into force Dec. 11, 1990).

58. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205.

59. Treaty for the Prohibition of Nuclear Weapons in Latin America, with Annexed Additional Protocols (I and II), Feb. 14, 1967, 22 U.S.T. 762, 634 U.N.T.S. 281 (entered into force Apr. 22, 1968) [hereinafter Treaty of Tlatelolco]; Additional Protocol I to the Treaty of Tlatelolco, Feb. 14, 1967, 22 U.S.T. 786, 634 U.N.T.S. 360 (entered into force Dec. 11, 1969); Additional Protocol II to the Treaty of Tlatelolco, Feb. 14, 1967, 22 U.S.T. 754, 634 U.N.T.S. 364 (entered into force Dec. 11, 1969).

60. 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 Nuclear Non-Proliferation Treaty].

61. Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof, Feb. 11, 1971, 23 U.S.T. 701, 955 U.N.T.S. 115 (entered into force May 18, 1972).

62. Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, Dec. 5, 1979, 1363 U.N.T.S. 3, *reprinted in* 18 I.L.M. 1434.

63. South Pacific Nuclear-Free Zone Treaty, *opened for signature* Aug. 6, 1985, 1445 U.N.T.S. 177, 24 I.L.M. 1440 (entered into force Dec. 11, 1986).

64. African Nuclear-Weapon-Free Zone Treaty, *opened for signature* Apr. 11, 1996, 35 I.L.M. 698.

Nuclear deterrence became a central feature of international relations in the Cold War period.[65] The bipolar international system, dominated by two ideologically opposed superpowers, created significant political/military motivations for the United States and the Soviet Union to develop, stockpile, and threaten to use nuclear weapons. Technological developments on nuclear weapons (e.g., multiple independently targeted re-entry vehicles (MIRVs)) reinforced these motivations[66] but also provided incentives for the two countries to try, through arms control treaties, to stabilize the effect of offensive and defensive technological advancements on nuclear deterrence.[67] One such stabilization effort—the Treaty on the Limitation of Anti-Ballistic Missile Systems of 1972 (ABM Treaty)—restricted the development of anti-ballistic missile defenses in order to strengthen nuclear deterrence by increasing each superpower's vulnerability to nuclear attack.[68]

The non-proliferation efforts undertaken through arms control treaties, such as the Nuclear Non-Proliferation Treaty,[69] represented the recognition that more and more countries were acquiring the technological means (e.g., through civilian and military nuclear programs) needed to develop nuclear weapons and that the proliferation of nuclear weapons in the international system would be destabilizing.[70] Experience managing the U.S.-Soviet nuclear threats provided motivation for many states' desire to prevent the spread of such problems throughout the international system. Proliferation would merely exacerbate countries' sense of vulnerability to nuclear blackmail or attack, producing an increasing spiral of proliferation and nuclear stalemates throughout the world. One nuclearized "security dilemma" was seen as sufficient.[71] In addition, nuclear weapons prolif-

65. For an overview, see Freedman, *supra* note 16, at 735–78.

66. *See id.* at 774 ("Developments in weapons technology also encouraged the view that more sophisticated nuclear tactics were becoming possible.").

67. *See id.* (arguing that arms control in the 1970s "was bound up with establishing parity between the two superpowers").

68. *See generally* ABM Treaty, *supra* note 54.

69. Nuclear Non-Proliferation Treaty, *supra* note 60.

70. Darryl Howlett, *Nuclear Proliferation*, *in* THE GLOBALIZATION OF WORLD POLITICS: AN INTRODUCTION TO INTERNATIONAL RELATIONS 415, 431 (John Baylis & Steve Smith eds., 2d ed. 2001) (noting that "[b]etween 1958 and 1968 there was a greater focus on the dangers posed by additional states acquiring nuclear weapons").

71. A debate emerged in the 1980s about whether nuclear proliferation was good or bad. Kenneth Waltz began the debate when he argued in 1981 that more nuclear weapons may be better for international stability and security. *See* KENNETH N. WALTZ, THE SPREAD OF NUCLEAR WEAPONS: MORE MAY BE BETTER (Int'l Institute for Strategic Stud., Adelphi Paper

eration did not serve the national security interests of either of the two superpowers engaged in their titanic bipolar standoff—to the contrary these national security interests were the impetus behind the creation of political and structural restraints on nuclear proliferation.[72]

Although the arms control approach to nuclear weapons did not involve an express first-use prohibition, it mirrored structural and substantive features seen in the arms control approach of the pre–Cold War period. Structurally, the approach in both historical contexts focused on states and their systemic interactions. Like the Hague Declaration and the Geneva Protocol, the nuclear arms control treaties of the Cold War period do not address non-state actors and the potential for nuclear terrorism.[73]

Substantively, the arms control approach in both periods relied on deterrence to prevent the use of WMD. In essence, deterrence is a self-help strategy that depends on the credibility of the threat to use WMD, which itself requires WMD capabilities and stockpiles. In the nuclear weapons context, deterrence was a more complicated strategy, as illustrated by the unique challenges posed to the United States and the Soviet Union from advancing technological capabilities in

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No. 171, 1981). The subsequent debate over the effect of nuclear proliferation is discussed in THE SPREAD OF NUCLEAR WEAPONS: A DEBATE (Scott D. Sagan & Kenneth N. Waltz eds., 1995).

72. *See* MCGEORGE BUNDY, DANGER AND SURVIVAL: CHOICES ABOUT THE BOMB IN THE FIRST FIFTY YEARS 513–14 (1988) (arguing that decisions not to develop nuclear weapons in West Germany, Japan, and communist states in Eastern Europe resulted from external pressure from the superpowers).

73. Concerns about nuclear terrorism existed during the Cold War. Leventhal and Alexander considered the issue in 1986:

> But is nuclear terrorism plausible? There is no consensus on this issue. Some observers see nuclear terrorism as implausible, others see it as possible but not imminent and others are convinced it is inevitable . . . . It is generally acknowledged that terrorists thus far have been constrained either by a lack of capability, a lack of motivation, or a combination of the two. The key issue is whether these technological and self-imposed constraints are eroding as a result of technological and political developments.

Paul Leventhal & Yonah Alexander, *Introduction*, *in* NUCLEAR TERRORISM: DEFINING THE THREAT, *supra* note 24, at 2. The danger of the malevolent appropriation of nuclear materials was recognized in 1979 when the Convention on the Physical Protection of Nuclear Material was opened for signature. *See* Convention on the Physical Protection of Nuclear Material, *opened for signature* Mar. 3, 1980, S. TREATY DOC. NO. 96-43 (1980), 1456 U.N.T.S. 101, *reprinted in* 18 I.L.M. 1419. The preamble of this treaty expressed the desire of the states parties "to avert the potential dangers posed by the unlawful taking and use of nuclear material" and their conviction that "offences relating to nuclear material are a matter of grave concern and that there is an urgent need to adopt appropriate and effective measures to ensure the prevention, detection and punishment of such offences." *Id.* pmbl.

both defensive and offensive weapons systems.[74] To be effective, deterrence stability ironically required increasing social vulnerability in the face of the developing nuclear threat, as seen in the ABM Treaty.[75]

The Cold War period also witnessed a major development in arms control in connection with biological weapons. The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction of 1972 (BWC) supplemented the use prohibition in the Geneva Protocol by banning the development, production, and stockpiling, acquisition, or retention of biological weapons.[76] In short, states joining the BWC agreed to disarm themselves, at least in the context of biological weapons. The BWC represented a dramatic break with the arms control approach for biological weapons that had existed from the adoption of the Geneva Protocol. In the BWC, disarmament replaced a first-use prohibition backed by deterrence. BWC States Parties did not reserve the right to develop, produce, stockpile, or use biological weapons in any circumstances, effectively eliminating deterrence as a strategy for biological weapons arms control.

Between 1925 and 1972, the technological feasibility of biological weapons improved because of scientific progress in understanding pathogenic microbes[77] and efforts made by governmental biological weapons programs.[78] The growing technological feasibility of biological weapons increased societal vulnerabilities to bioweapons attacks because civilian biodefense did not effectively advance during the

74. *See* BUNDY, *supra* note 72, at 549–52 (discussing problems posed by defensive anti-ballistic missile technologies and offensive technological developments (e.g., MIRVs)).

75. *See id.* at 549–50 (discussing development of U.S. and Soviet positions on restricting anti-ballistic missile defenses, which included the argument that "[d]efensive deployments were bound to stimulate ever larger and more sophisticated offensive systems on both sides").

76. Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, Apr. 10, 1972, art.1, 26 U.S.T. 583, 587, 1015 U.N.T.S. 163, 166 [hereinafter BWC].

77. LAURIE GARRETT, THE COMING PLAGUE: NEWLY EMERGING DISEASES IN A WORLD OUT OF BALANCE 30 (1994) (noting that during the 1950s and 1960s "[n]early every week the medical establishment declared another 'miracle breakthrough' in humanity's war with infectious disease").

78. For example, the development of U.S. efforts to develop biological weapons is detailed in EDWARD REGIS, THE BIOLOGY OF DOOM: THE HISTORY OF AMERICA'S SECRET GERM WARFARE PROJECT (1999) and JUDITH MILLER ET AL., GERMS: BIOLOGICAL WEAPONS AND AMERICA'S SECRET WAR 34–97 (2001).

Cold War.[79] The combination of increased technological feasibility and social vulnerability suggests that the threat of biological weapons was growing prior to the adoption of the BWC, which would tend to lead states to respond with further reliance on deterrence.

The key variable explaining the adoption of the BWC was the United States' conclusion, after an extensive review, that biological weapons had little, if any, military or political utility, even as a deterrent to other states' biological weapons capabilities.[80] Unilaterally, the United States terminated its offensive biological weapons program.[81] In essence, the United States concluded that possession of biological weapons by other states, including adversaries, did not pose a significant threat to U.S. national security and should be addressed through means other than an offensive biological weapons capability.

This change in political/military motivations in the United States converged with the notion, already present as early as 1925, that the use of biological weapons was "repugnant to the conscience of mankind"[82] to produce the WMD arms control breakthrough of the BWC. The breakthrough was substantive in moving the arms control strategy on biological weapons from deterrence to disarmament. Structurally, however, the focus remained state-centric because the BWC was limited state biological weapons programs.

The objective of chemical weapons disarmament also arose during the Cold War. The Preamble to the BWC stated, for example, that the BWC States Parties were "[c]onvinced of the importance and urgency of eliminating from the arsenals of States, through effective measures, such dangerous weapons of mass destruction as those using chemical or bacteriological (biological) agents."[83] Despite the hope in disarmament quarters that the development and possession of chemical weapons would be banned in the same way as biological weapons,

79. For background on early biodefense efforts stimulated by fears of Soviet biological weapons, see generally Elizabeth Fee & Theodore M. Brown, *Preemptive Biopreparedness: Can We Learn Anything from History?*, 91 AM. J. PUB. HEALTH 721 (2001). William Foege argued that the expansion and development of what became the U.S. Centers for Disease Control and Prevention began in 1946 "with the desire to improve U.S. military security." William Foege, *Memorandum to the President: Global Health and U.S. National Interests*, *in* BIOLOGICAL SECURITY & PUBLIC HEALTH: IN SEARCH OF A GLOBAL TREATMENT: A REPORT FROM THE ASPEN STRATEGY GROUP 17, 18 (Kurt M. Campbell & Philip Zelikow eds., 2003).

80. On the U.S. renunciation of its offensive biological weapons capability, see generally Jonathan B. Tucker, *A Farewell to Germs: The U.S. Renunciation of Biological and Toxin Warfare*, INT'L SECURITY, Summer 2002, at 107.

81. *Id.* at 107.

82. BWC, *supra* note 76, pmbl., 26 U.S.T. at 586, 1015 U.N.T.S. at 166.

83. *Id.*

this arms control breakthrough did not occur until after the end of the Cold War in the form of the Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on Their Destruction of 1993 (CWC).[84]

Like the BWC, the CWC seeks disarmament by banning an entire class of WMD.[85] The twenty-one year gap between the adoption of the BWC and the CWC suggests that states possessing chemical-weapons capabilities perceived that the political/military utility of chemical weapons was not as easily discounted as that of biological weapons. In addition, the critical diplomatic breakthrough following the end of the Cold War reinforced the notion that political/military motivations for developing and possessing chemical weapons remained sufficiently strong under the structure and dynamics of the Cold War international system.

III. END OF THE ARMS CONTROL APPROACH? POST–COLD WAR CHALLENGES TO THE ARMS CONTROL APPROACH TO WEAPONS OF MASS DESTRUCTION

The trajectory of the arms control approach on WMD in the early years of the post–Cold War period seemed promising. Biological weapons were already outlawed by the BWC. The CWC had been concluded successfully in 1993. The political and military strain of nuclear deterrence eased substantially with the end of superpower hostilities, as evidenced by the conclusion of the Strategic Arms Reduction Treaty of 1991 (START I)[86] and the Strategic Arms Reduction Treaty of 1993 (START II).[87]

Despite its promising post–Cold War start, the arms control approach could not sustain momentum over the following decade. Instead of receding under the influence of arms control agreements, the WMD threat has grown exponentially during the post–Cold War pe-

84. Convention on the Prohibition of the Development, Production, Stockpiling, and Use of Chemical Weapons and on Their Destruction, Jan. 13, 1993, 32 I.L.M. 800 [hereinafter CWC].

85. *See id.* art. I, 32 I.L.M at 804.

86. Treaty on the Reduction and Limitation of Strategic Offensive Arms (START I), July 31, 1991, U.S.-U.S.S.R., S. TREATY DOC. NO. 102-20 (1991), *reprinted in* [1991] 16 U.N. DISARMAMENT Y.B. app. II.

87. Treaty on Further Reduction and Limitation of Strategic Offensive Arms (START II), Jan. 3, 1993, U.S.-U.S.S.R., S. TREATY DOC. NO. 103-1 (1993).

riod.[88] This growth in the WMD threat has led to questions about the utility of the arms control approach in addressing the problem. In this part, I analyze the post–Cold War challenges to the arms control approach to WMD by focusing on radical developments affecting the risk factors of the WMD threat: political/military motivations; technological feasibility; and social vulnerability.

A. Political Revolution, Proliferation Nightmare

The post–Cold War period has seen a political revolution in world politics that has brought to light a WMD "proliferation epidemic." The political revolution has two features—as the end of the Cold War brought the bipolar, superpower international system to an end, the threat from terrorism—especially terrorism involving WMD—began to loom larger in this new world order.[89] Each of these developments fed into perceptions about the growing threat of WMD.

As indicated above, the global superpower rivalry and its attendant strategy of nuclear deterrence dominated the Cold War international system.[90] This system had a WMD logic focused on nuclear weapons, stabilization of nuclear deterrence between the United States and the Soviet Union, and non-proliferation of nuclear weapons. While chemical and biological weapons were clearly sideshows in the structure and dynamics of the Cold War international system, the end of the Cold War saw this WMD logic evaporate.

First, WMD policy was no longer dominated by stabilizing nuclear deterrence between two superpowers. The primary fear of the United States was no longer attack by an ideologically hostile nuclear adversary, but rather that the former adversary's nuclear arsenal would fall into the clutches of potential state and non-state prolifera-

88. ASSESSING THE THREAT, *supra* note 23, at 7 ("Since the end of the Cold War, and especially in the wake of the New York and Oklahoma City bombings and Aum Shinrikyo attacks in Japan . . . there has been a dramatic shift in the perceived threat of CBRN [chemical, biological, radiological, and nuclear] terrorism."); WEAPONS OF MASS DESTRUCTION, *supra* note 4, at 1 (noting in December 2002 that WMD represent one of the greatest security challenges confronting the United States); COMBATING TERRORISM, *supra* note 5, at 9 (arguing in February 2003 that "[t]he probability of a terrorist organization using a chemical, biological, radiological, or nuclear weapon . . . has increased significantly during the last decade").

89. *See, e.g.*, Ashton Carter et al., *Catastrophic Terrorism: Tackling the New Danger*, FOREIGN AFF., Nov./Dec. 1998, at 80 (analyzing the new threats perceived to be growing from terrorism conducted using WMD).

90. *See supra* Part II.B.2.

tors.[91] As stated earlier, the arms control approach supported the state-focused, rigid nuclear bipolarity of the Cold War by helping stabilize deterrence.[92] The utility of this approach dissipated as the international system moved into a fluid scenario of multipolar nuclear proliferation in which non-state actors played an increasingly visible role.

Proliferation fears overshadowed the revolution in nuclear strategy completed by the United States' withdrawal from the ABM Treaty[93] and the signing of the Strategic Offensive Reductions Treaty (Moscow Treaty) between the United States and the Russian Federation.[94] While the old bipolar order was characterized by structural and political constraints imposed by the superpowers on other states interested in developing nuclear weapons, the post–Cold War period has seen these constraints disappear, with at least three countries—India,[95] Pakistan,[96] and North Korea[97]—openly demonstrating and/or

91. Michael Jasinski, *Nonproliferation Assistance to Russia and the New Independent States*, Nuclear Threat Initiative (Aug. 2001, updated Aug. 2002), *at* http://www.nti.org/e_research/e3_4b.html (last visited Oct. 21, 2003) ("As the political and economic situation in the Soviet Union deteriorated in the late 1980s, fears arose that the Soviet government might not be able to adequately safeguard its weapons of mass destruction (WMD) arsenals, nor the associated materials and know-how. These fears were intensified by the final break-up of the Soviet Union in December 1991, which left nuclear weapons on the territories of four states, and components of the Soviet military-industrial complex scattered across the territories of the Newly Independent States (NIS). In the ensuing turmoil, the potential for the loss of weapons, theft of nuclear material, or the emigration of weapons scientists to 'rogue states' posed a new and unprecedented proliferation threat.").

92. HANS MORGENTHAU, POLITICS AMONG NATIONS 415 (5th ed. rev. 1978) (arguing that "the United States and the Soviet Union have a common interest in stabilizing the nuclear arms race by regulating it" through arms control).

93. White House, *ABM Treaty Fact Sheet* (Dec. 13, 2001), *at* http://www.whitehouse.gov/news/releases/2001/12/20011213-2.html (last visited Oct. 4, 2003) ("Given the emergence of . . . new threats to our national security and the imperative of defending against them, the United States is today providing formal notification of its withdrawal from the ABM treaty.").

94. Treaty on Strategic Offensive Reductions, May 24, 2002, U.S.-Russ., S. TREATY DOC. NO. 107-8 (2002).

95. Nuclear Threat Initiative, *India Profile*, *at* http://www.nti.org/e_research/profiles/India/index.html (last visited Oct. 4, 2003) ("According to Indian government sources, India is capable of building a range of nuclear weapon systems ranging from low yields to 200 kilotons, involving fission, boosted-fission, and two-stage thermonuclear designs.") (ellipsis and quotation marks omitted).

96. Nuclear Threat Initiative, *Pakistan Overview*, *at* http://www.nti.org/e_research/e1_pakistan_1.html (last visited Oct. 4, 2003) ("In 1998, Pakistan commissioned the Khushab research reactor, which is capable of yielding 10–15 kg of weapons-grade plutonium annually.").

97. Nuclear Threat Initiative, *North Korea Profile*, *at* http://www.nti.org/e_research/profiles/NK/index.html (last visited Oct. 4, 2003) ("In mid-2002, U.S. intelligence discovered that North Korea had been receiving materials from Pakistan for a highly enriched uranium

declaring their nuclear capabilities. The proliferation of nuclear weapons to these states focused attention on the weaknesses of the Nuclear Non-Proliferation Treaty (NPT).[98] Neither India nor Pakistan ever signed this agreement,[99] and, although North Korea is a NPT state party, it violated the rules stipulated therein before announcing its formal decision to renounce the treaty.[100] The proliferation nightmare continued as experts believed that other countries, including Iran,[101] Iraq,[102] and Libya,[103] were actively seeking to join the nuclear club. The rejection by the United States of the Comprehensive Nuclear Test-Ban Treaty[104] only added to concerns that state proliferation of nuclear weapons would continue.[105]

Proliferation fears also came to haunt the arms control approach on biological and chemical weapons in the post–Cold War period. The early 1990s witnessed revelations about the size and scale of biological and chemical weapons programs in the former Soviet Union[106] and Iraq.[107] Both states were parties to the BWC yet violated its prohibitions on a massive scale.[108] These revelations also exposed the fact

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production facility. . . . On 10 January 2003, North Korea declared its withdrawal from the NPT.").

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

99. Nuclear Threat Initiative, *India Profile*, *supra* note 95; Nuclear Threat Initiative, *Pakistan Overview*, *supra* note 96.

100. Nuclear Threat Initiative, *North Korean Nuclear Program Overview: History and Status*, *supra* note 6.

101. Nuclear Threat Initiative, *Iran Profile*, *at* http://www.nti.org/e_research/profiles/Iran/index.html (last visited Oct. 4, 2003).

102. Nuclear Threat Initiative, *Iraq Profile*, *at* http://www.nti.org/e_research/profiles/iraq/index.html (last visited Oct. 4, 2003).

103. Nuclear Threat Initiative, *Libya Profile*, *at* http://www.nti.org/e_research/profiles/libya/index.html (last visited Oct. 4, 2003) ("There remain, however, continuing allegations that Libya is indeed pursuing a nuclear weapon capability.").

104. Comprehensive Nuclear Test-Ban Treaty, Sept. 24, 1996, S. TREATY DOC. NO. 105-28, 35 I.L.M. 1439.

105. *See, e.g.*, Daryl Kimball, *What Went Wrong: Repairing the Damage to the CTBT*, ARMS CONTROL TODAY, Dec. 1999, at 3, *available at* www.armscontrol.org/act/1999_12/dkde99.asp (last visited Dec. 1, 2003) (describing the events leading up to the U.S. Senate's rejection of the Comprehensive Nuclear Test Ban Treaty and suggesting a deleterious impact on U.S. security interests).

106. *See* MILLER ET AL., *supra* note 78, at 165–82 (discussing former Soviet Union's biological weapons program).

107. *See generally* Raymond A. Zilinskas, *Iraq's Biological Weapons: The Past as Future?*, 278 JAMA 418 (1997) (analyzing the status of Iraq's WMD programs).

108. MILLER ET AL., *supra* note 78, at 167 (noting that the massive Soviet biological weapons program was created one year after the Soviet Union became a party to the Biological Weapons Convention of 1972); John R. Bolton, Under Secretary for Arms Control and Interna-

that the Soviet Union's perspective on the political/military utility of biological weapons ran counter to the conclusion the United States had reached in the late 1960s. Similarly, Iraq had been pursuing a biological weapons program for strategic or tactical reasons, again suggesting that some regimes saw value in developing and retaining an offensive biological weapons program. Such proliferation of biological weapons by states underscored the weaknesses of the BWC, especially the lack of any compliance or enforcement machinery to back up its prohibitions.[109]

Second, the arms control approach's state-centric focus began to look increasingly anachronistic as experts began to discuss more urgently the threat of WMD terrorism.[110] From 1899 until the end of the Cold War, WMD policy concentrated almost exclusively on WMD in the hands of states operating under the influence of the anarchical structure and dynamics of the international system. None of the WMD arms control agreements reviewed above mentioned, let alone addressed, the perceived threat of "catastrophic terrorism"—terrorism involving WMD, primarily carried out by non-state actors.[111] State proliferation of WMD capabilities produced a radically new environment affecting political/military motivations for pursuing WMD, but the worries about catastrophic terrorism meant that policy makers also had to assess the political/military motivations of terrorist groups in connection with WMD. Terrorist experts argued that terrorism itself was evolving into forms attracted to tactics and strategies designed to destroy and kill on a large scale.[112] Large-scale terrorist attacks and attempted attacks in the 1990s and early 2000s, capped by

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tional Security, Remarks to the Fifth Biological Weapons Convention RevCon Meeting, Geneva, Switzerland (Nov. 19, 2001), *at* http://www.state.gov/t/us/rm/janjuly/6231.htm (last visited Nov. 10, 2003) ("After signing the BWC in 1972, Iraq developed, produced, and stockpiled biological warfare agents and weapons, and continued this activity even after ratifying the BWC in 1991. Despite the obligation to fully disclose and destroy its BW [biological weapons] program which the UN Security Council required to conclude the Gulf War, Iraq denied having a BW program and pursued a policy of obstruction, denial and evasion to conceal its program.").

109. This weakness in the BWC led to negotiations in the 1990s on a verification protocol to the BWC. *See* Christopher et al., *supra* note 17, at 415–17.

110. *See, e.g.*, FALKENRATH ET AL., *supra* note 8; TOXIC TERROR: ASSESSING TERRORIST USE OF CHEMICAL AND BIOLOGICAL WEAPONS (Jonathan B. Tucker ed., 2000); Carter et al., *supra* note 89.

111. *See* Carter et al., *supra* note 89, at 80 (analyzing the threat of catastrophic terrorism).

112. On the new terrorism, see generally IAN O. LESSER ET AL., COUNTERING THE NEW TERRORISM (1999).

the events of September 11, 2001, clearly indicated that the nature of terrorism was changing—and becoming more dangerous.[113]

The WMD proliferation epidemic, both real and feared, posed an even greater crisis when policymakers considered the merging of the two proliferation vectors—certain states pursuing WMD capabilities have a history of supporting international terrorism,[114] which raised the specter of a synergy between state and non-state WMD proliferation. These fears coalesced in the Bush Doctrine's declaration that the United States would confront national security threats from repressive regimes that pursued WMD as well as those that supported international terrorism.[115]

As a result, the dominant structure of the arms control approach in the pre–Cold War and Cold War periods—agreements among the great powers backed by a strategy of deterrence—no longer seemed as relevant. The repressive regimes targeted by the Bush Doctrine (e.g., Iraq, Iran, and North Korea) are not great powers in the classical sense, and many of them either had not signed the relevant arms control treaties or had violated them. At the same time, the threat of WMD terrorism also served to dilute the significance of arms control treaties because such treaties address state rather than non-state behavior. U.S. political, economic, and military supremacy in the international system does not appear to have had sufficient deterrent effect on either state or terrorist proliferation in WMD.

B. Technological Transformations, Dual-Use Dilemmas

Post–Cold War developments signal a technological transformation that increases the feasibility of WMD development for both states and terrorist groups. In the post–Cold War period, the technological difficulties of developing WMD are diminishing as relevant technologies advance and expertise with such technologies diffuses

113. *See* ASSESSING THE THREAT, *supra* note 23, at vi ("As we stand on the threshold of the twenty-first century, the stark reality is that the face and character of terrorism are changing . . ."); NATIONAL COMMISSION ON TERRORISM, *supra* note 32, at 1 ("The terrorist threat is changing in ways that make it more dangerous and difficult to counter.").

114. *See* U.S. DEP'T OF STATE, PATTERNS OF GLOBAL TERRORISM 2001 63–68 (2002), *at* http://www.state.gov/s/ct/rls/pgtrpt/2001/pdf (last visited Dec. 15, 2003) (analyzing state sponsors of international terrorism including Iran, Iraq, North Korea, and Libya).

115. State of the Union Address, *supra* note 3, at 135 ("The United States of America will not permit the world's most dangerous regimes to threaten us with the world's most destructive weapons.").

throughout the world.[116] These technological transformations, simply put, make development and use of WMD easier than was historically possible. Biological weapons have perhaps featured the most frequently in this discourse because of the rapid developments in genomics and biotechnology taking place in science and private industry today.[117]

A central tension that these technological transformations highlight is the dual-use dilemma that confronts each WMD technology. Nuclear, chemical, and biological weapons often depend on skills, information, equipment, and access to precursor materials (e.g., biological agents, chemicals, uranium) that are widely available and used for peaceful, civilian purposes. Striking a balance between encouraging the use and dissemination of such technologies and the know-how to apply them for peaceful purposes while at the same time regulating WMD development has proven difficult both within and outside the purview of WMD arms control treaties.[118]

The dual-use nature of technologies used for WMD also complicates efforts to strengthen arms control regimes through international verification mechanisms. The NPT incorporates safeguard rules and verification procedures from the International Atomic Energy Agency to facilitate peaceful development of nuclear energy and to prevent diversion of technology for building nuclear weapons.[119] Meanwhile, the CWC has a complex international verification system operated by the Organization for the Prohibition of Chemical Weapons that tries to separate the peaceful from the malevolent in terms of

116. *See, e.g.*, HOMELAND SECURITY, *supra* note 25, at 9 (noting that the knowledge, technology, and materials required for building WMD are spreading and have never before been more accessible).

117. *See* Carter et al., *supra* note 89, at 81 (arguing that "the combination of new technology and lethal force has made biological weapons at least as deadly as chemical and nuclear alternatives").

118. The problem of the dual-use nature of WMD technologies is apparent in the BWC, CWC, and NPT. Each of these treaty regimes prohibits relevant technologies from being used to produce weapons but allows the same technologies to be employed for peaceful purposes. Article I, paragraph 1 of the BWC prohibits, for example, the development, production, stockpiling, acquisition or retention of microbial or other biological agents of types and quantities that have no justification for prophylactic, protective, or other peaceful purposes. BWC, *supra* note 76, art. I, para. 1, 1015 U.N.T.S at 166. Similar provisions appear in the CWC and NPT. See CWC, *supra* note 84, art. II, paras. 1, 9, 32 I.L.M. at 804–06 (defining chemical weapons as toxic chemicals except where intended for purposes not prohibited under the Convention and defining "purposes not prohibited under the Convention" respectively); NPT, *supra* note 98, art. IV, 729 U.N.T.S. at 172–73 (stating that nothing in the treaty shall affect the inalienable right of states parties to develop nuclear energy for peaceful purposes).

119. *See* Nuclear Non-Proliferation Treaty, *supra* note 60, art. III, 729 U.N.T.S. at 172.

chemical technologies and substances.[120] Extensive, but ultimately unsuccessful, efforts were made to negotiate a protocol to the BWC that would have added an international verification regime for biological weapons modeled on the CWC system.[121] The known and feared WMD proliferation among states and non-state actors in the post–Cold War period also raises skepticism about the effectiveness of arms control treaties in preventing proliferation. The Bush administration's *National Strategy to Combat Weapons of Mass Destruction* highlights "counterproliferation" actions that the United States can unilaterally take to address the fact that "[t]he possession and increased likelihood of use of WMD by hostile states and terrorists are realities of the contemporary security environment."[122]

The analytical framework used in this article also reminds us that the more fluid and uncertain nature of political/military motivations on WMD and the heightened technological feasibility of developing WMD are interdependent.[123] Each feeds and reinforces the other. President Bush stressed this dynamic when he argued that "[t]he gravest danger our Nation faces lies at the crossroads of radicalism and technology."[124] This argument identifies the interdependence between political/military motivations and technological feasibility in assessing the WMD threat.

This interdependent dynamic between political/military motivations and technological feasibility creates enormous problems for the arms control approach because the dynamic (1) makes it easier for states to proliferate in violation of their arms control obligations under treaties or customary international law; and (2) bypasses arms control agreements entirely in the case of terrorist organizations.

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120. *See generally* CWC, *supra* note 84, Annex on Implementation and Verification, 32 I.L.M. at 824 (establishing system of implementation and verification to ensure use of toxic chemicals is for purposes not prohibited under the CWC).

121. *See, e.g.*, Rebecca Whitehair & Seth Brugger, *BWC Protocol Talks in Geneva Collapse Following U.S. Rejection*, ARMS CONTROL TODAY, Sept. 2001, at 26, *available at* http://www.armscontrol.org/act/2001_09/bwcsept01.asp (last visited Nov. 15, 2003).

122. WEAPONS OF MASS DESTRUCTION, *supra* note 4, at 2. For a critique of the Bush administration's emphasis on counterproliferation, see John M. Spratt, Jr., *Stopping a Dangerous Drift in U.S. Arms Control Policy*, ARMS CONTROL TODAY, Mar. 2003, at 3, 3–4, *available at* http://www.armscontrol.org/act/2003_03/spratt_mar03.asp (last visited Nov. 15, 2003).

123. *See supra* Part II.A.4.

124. NATIONAL SECURITY STRATEGY, *supra* note 4, at v.

C. Vulnerability Crisis, Preparedness Challenge

The post–Cold War period has also seen developments that connect to the social vulnerability risk factor of the analytical framework. The most important development in this regard has been the heightened awareness in many countries—especially the United States—of the extent of their societies' vulnerability to WMD attack, particularly to catastrophic terrorism.[125] Historically, WMD policy, as illustrated by the arms control approach, did not address directly the vulnerability that societies face from use of WMD. The main strategy of states has been to deter the use of WMD by other states, which allowed governments to avoid focusing much attention and resources on preparing to manage the consequences of WMD attacks. None of the arms control treaties mentioned above address the challenge of domestic preparedness for WMD consequence management following WMD events.[126]

Concerns about a proliferation epidemic, especially in regard to fears about catastrophic terrorism, combined with the perceived technological feasibility of WMD development, focused governments' attention increasingly on the social vulnerability risk factor. Indeed, the interdependence of all three risk factors becomes very transparent at this stage in the analysis. The perpetration of biological terrorism in the United States in the fall of 2001 only accelerated political attention and economic resources in the direction of domestic preparedness for WMD events.[127] Efforts in the United States on national missile defense,[128] biodefense,[129] and homeland security[130] reveal

125. Carter et al., *supra* note 89, at 81 (arguing that, in the face of WMD, "society is more vulnerable"); HOMELAND SECURITY, *supra* note 25, at 7 ("Our population and way of life are the source of our Nation's great strength, but also a source of inherent vulnerability.").

126. During the Cold War, countries did implement civil defense strategies; but these strategies tended not to be accorded the same priority as arms control in connection with policies on WMD. For analysis on civil defense during the Cold War, see generally ANDREW D. GROSSMAN, NEITHER DEAD NOR RED: CIVILIAN DEFENSE AND AMERICAN POLITICAL DEVELOPMENT DURING THE EARLY COLD WAR (2001); LAURA MCENANEY, CIVIL DEFENSE BEGINS AT HOME: MILITARIZATION MEETS EVERYDAY LIFE IN THE FIFTIES (2000); GUY OAKES, THE IMAGINARY WAR: CIVIL DEFENSE AND AMERICAN COLD WAR CULTURE (1994); LAWRENCE J. VALE, THE LIMITS OF CIVIL DEFENCE IN THE USA, SWITZERLAND, BRITAIN, AND THE SOVIET UNION: THE EVOLUTION OF POLICIES SINCE 1945 (1987).

127. *See, e.g.*, HOMELAND SECURITY, *supra* note 25, at 41 ("We must prepare to minimize the damage and recover from any future terrorist attacks that may occur despite our best efforts at prevention.").

128. *See, e.g.*, U.S. Dep't of State, Bureau of Arms Control, *Fact Sheet, Missile Defense and Deterrence* (Sept. 1, 2001), *at* http://www.state.gov/t/ac/rls/fs/2001/4891.htm (last visited Oct. 4, 2003).

a sea change in political attitudes with relation to addressing social vulnerability as a risk factor in the WMD calculus.

This sea change contributes to the challenges faced by the arms control approach to WMD. Supporters of arms control agreements acknowledge that these instruments do little, if anything, about domestic preparedness for WMD consequence management. Opponents go farther, laying blame for the lack of domestic preparedness at the feet of the arms control approach. One such critic fulminated:

> The growing evidence that the U.S. disarmed, while nations that might use chemical or biological weapons against us did not, was only one of the dangerous absurdities of the arms control delusion. The expectation that such weapons had been dealt with through these bans contributed to the belief that we need not worry about protecting against such scourges. Our vulnerability to incalculably destructive smallpox is a manifestation of the sorry state of American preparedness.[131]

D. End of the Arms Control Approach to Weapons of Mass Destruction

The political revolutions, technological transformations, and vulnerability crises reviewed above have brought an end to relying predominantly on the arms control approach to address the WMD threat. This argument does not mean that the arms control approach and the WMD treaties it has generated have become unimportant or worthless.[132] However, post–Cold War developments in all the WMD risk factors render the arms control approach inadequate to effectively address the contemporary WMD threat. Since 1899, the dominant international legal strategy on WMD has been the negotiation of arms control treaties that ban or regulate the use and development of WMD by states. There is growing awareness, even among its most ardent supporters, that the arms control approach faces challenges on

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129. *See, e.g.*, Press Release, White House, President Details Project BioShield (Feb. 3, 2003), *at* http://www.whitehouse.gov/news/releases/2003/02/20030203.html (last visited Oct. 4, 2003).

130. *See, e.g.*, HOMELAND SECURITY, *supra* note 25, at 2 ("Homeland security involves a systematic, comprehensive, and strategic effort to reduce America's vulnerability to terrorist attack."); MICHAEL E. O'HANLON ET AL., PROTECTING THE AMERICAN HOMELAND: A PRELIMINARY ANALYSIS (2002) (analyzing the development of homeland security strategy in the United States).

131. Frank J. Gaffney, Jr., *Delusions of Arms Control*, L.A. TIMES, Nov. 20, 2002, at B13.

132. The Bush administration stresses, for example, that multilateral regimes for arms control and nonproliferation remain important elements of the overall strategy against WMD. *See* WEAPONS OF MASS DESTRUCTION, *supra* note 4, at 4.

the political, technological, and social vulnerability fronts that cannot be adequately addressed without use of other policy and legal strategies. This awareness means that we are witnessing, and shall continue to see, a diversification in how states, international organizations, and non-governmental organizations seek to use international law to deal with the WMD threat. The next part of the article explores this international legal diversification.

IV. INTERNATIONAL LAW IN THE NEW WMD ENVIRONMENT

The diversification of international legal strategies is closely linked to policies designed to address the three WMD risk factors in the analytical framework. I organize the analysis of international law's role in the new WMD environment by using the three risk factors from the analytical framework. The reader should remember that each new international legal strategy discussed connects to the interdependence of the risk factors. In other words, a legal strategy designed to reduce political/military motivations for developing or using WMD also affects, and is affected by, the strategies aimed at addressing problems associated with the technological feasibility and social vulnerability risk factors.

The diversification of international law's role in WMD matters analyzed below does not, however, represent a coherent "grand strategy" for WMD. These international legal developments have not coalesced into any discernable or integrated approach to the growing WMD threat. Further, some of the developments are intensely controversial; and others may never become subjects of diplomatic activity.

A. Political/Military Motivations

International legal diversification appears most clearly in connection with efforts to affect political/military motivations toward WMD development and use. The arms control approach on chemical and biological weapons in the post–Cold War period relied on a first-use prohibition backed by deterrence,[133] a policy that addressed political/military motivations for use but did little to address concerns about technological developments and social vulnerabilities. The arms control approach on nuclear weapons in the Cold War period

133. *See supra* notes 33–43 and accompanying text.

similarly centered on deterring political/military motivations on use.[134] This strategy involved increasing the mutual vulnerabilities of the superpowers to nuclear attack through the ABM Treaty and some efforts to limit the destabilizing effects of new offensive nuclear weapons technologies (e.g., the SALT treaties). The bans on the development and use of chemical and biological weapons rested on the assumption that political/military interest in these weapons by states would not be strong and, to the extent it remained, could be managed through arms control methods other than deterrence (e.g., prohibition and verification).

The international legal developments that connect to the political/military motivations risk factor utilize deterrence as the major strategic concept, supported by international legal principles and approaches outside the traditional arms control approach to WMD. These developments reflect a belief that the arms control approach has not adequately managed the political/military motivations that state and non-state actors have for developing and using WMD.

1. *Deterrence of State Actors: Exercising the Right of Self-Defense.* The problem of WMD proliferation among states in the post–Cold War period has raised the policy question of how to decrease state interest in WMD. The most powerful move in this regard has been away from the arms control approach toward policies and arguments supporting a more robust exercise of the right of self-defense under international law. The U.S. termination of the ABM Treaty paved the way for the United States to move ahead with plans for national missile defense.[135] This policy shift is grounded in a state's sovereign right to protect its territory and people from external attack, a right recognized by international law.[136] The policy shift also indicated that the United States does not believe that it can adequately deter potential adversaries only through WMD arms control but needs to adopt stronger measures against state actors.

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134. *See supra* notes 53–73 and accompanying text.

135. John R. Bolton, Missile Defense in a New Strategic Environment: Policy, Architecture, and International Industrial Cooperation after the ABM Treaty, Remarks to the Fourth RUSI Missile Defense Conference (Nov. 18, 2002), *at* http://www.state.gov/t/us/rm/15224.htm (last visited Oct. 4, 2003) ("In the context of our new strategic relationship with Russia, the demise of the ABM Treaty has not brought about the dire consequences predicted by many pundits; quite the contrary. The Treaty's demise instead has been liberating. It has freed us to explore the full range of technologies and architectures to defend against an increasing ballistic missile threat.").

136. U.N. CHARTER art. 51 ("Nothing in the present Charter shall impair the inherent right of individual or collective self-defense if an armed attack occurs against a Member of the United Nations . . . .").

The second development in the area of the right to self-defense and WMD has been the efforts made by the United States to argue that customary international law on self-defense provides a legitimate justification for preemptive military action against hostile countries possessing or developing WMD.[137] Such arguments were alive before September 11, 2001,[138] but became more prominent and influential after the attacks on the World Trade Center and the Pentagon.[139] The U.S. position on its use of force against Iraq in March 2003 was partly based on updating the customary doctrine of anticipatory self-defense for the threat posed by state adversaries possessing or pursuing WMD.[140] Even though the United States also defended military action against Iraq on the basis of upholding UN Security Council resolutions on Iraqi WMD disarmament,[141] the war against Iraq revealed the United States' desire to deploy a doctrine of preemptive self-

137. *See* NATIONAL SECURITY STRATEGY, *supra* note 4, at 15 ("We must adapt the concept of imminent threat to the capabilities and objectives of today's adversaries. Rogue states and terrorists do not seek to attack us using conventional means. . . . Instead, they rely on acts of terror and, potentially, the use of weapons of mass destruction—weapons that can be easily concealed, delivered covertly, and used without warning.").

138. *See, e.g.*, Guy B. Roberts, *The Counterproliferation Self-help Paradigm: A Legal Regime for Enforcing the Norm Prohibiting the Proliferation of Weapons of Mass Destruction*, 27 DENVER J. INT'L L. & POL'Y 483 (1999) (proposing a "counterproliferation self-help paradigm" to clarify when and how using force in response to the proliferation of WMD is justified).

139. *See, e.g.*, John C. Yoo, *International Law and the War in Iraq*, 97 AM. J. INT'L L. 563, 565 (2003) ("The attacks on the World Trade Center and the Pentagon, carried out by Al Qaeda operatives trained and led from their bases in Afghanistan, demonstrated the threat posed by terrorists who could seek safe haven in rogue nations with potential access to WMD.").

140. *See* NATIONAL SECURITY STRATEGY, *supra* note 4, at 15 ("The United States has long maintained the option of preemptive actions to counter a sufficient threat to our national security. The greater the threat, the greater the risk of inaction—and the more compelling the case for taking anticipatory action to defend ourselves, even if uncertainty remains as to the time and place of the enemy's attack."); Press Release, White House, President George Bush Discusses Iraq in National Press Conference, 39 WEEKLY COMP. PRES. DOC. 295, 296 (Mar. 6, 2003), *available at* http://www.whitehouse.gov/news/releases/2003/03/20030306-8.html (last visited Oct. 21, 2003) ("Saddam Hussein has a long history of reckless aggression and terrible crimes. He possesses weapons of terror. He provides funding and training and safe haven to terrorists—terrorists who would willingly use weapons of mass destruction against America and other peace-loving countries. Saddam Hussein and his weapons are a direct threat to this country, to our people, and to all free people. If the world fails to confront the threat posed by the Iraqi regime, refusing to use force, even as a last resort, free nations would assume immense and unacceptable risks. The attacks of September the 11th, 2001, showed what the enemies of America did with four airplanes. We will not wait to see what terrorists or terrorist states could do with weapons of mass destruction. We are determined to confront threats wherever they arise. I will not leave the American people at the mercy of the Iraqi dictator and his weapons.").

141. Sean D. Murphy, *Use of Military Force to Disarm Iraq*, 97 AM. J. INT'L L. 419, 427–28 (2003).

defense that would deter states from pursuing WMD and provide the United States with a course of action if deterrence failed.

The U.S. stance on preemptive self-defense under customary international law is not universally shared.[142] Australian, Spanish, and British support for military action against Iraq was premised not on an updated doctrine of self-defense under customary international law but only on the enforcement of UN Security Council Resolutions on Iraqi disarmament stretching back to 1991.[143] But the still ongoing debate about the U.S. position on preemptive self-defense in connection with WMD threats and its impact on the international law on the use of force[144] illustrates that policy and international legal thinking on WMD have moved beyond the arms control approach. Further evidence of this transition away from the arms control approach can be found in policy debates about preemptive military strikes against North Korean nuclear facilities.[145]

The third development in the self-defense context concerns the use of force in self-defense against states that harbor terrorists who might be planning or who have committed acts of violence against another state. Countries, including the United States, have long argued that state-sponsored terrorism triggers the right to respond with force in self-defense.[146] In the aftermath of the September 11, 2001 violence, the international community recognized that the United

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142. *See, e.g.*, Michael White & Patrick Wintour, *No Case for Iraq Attack Say Lawyers*, GUARDIAN, Mar. 7, 2003, at P1 ("Tony Blair last night faced fresh pressure to abandon the threat of war against Iraq when 16 eminent academic lawyers warned him that the White House doctrine of 'pre-emptive self-defence' has no justification under international law.").

143. Murphy, *supra* note 141, at 427.

144. See, e.g., Michael J. Glennon, *Why the Security Council Failed,* FOREIGN AFF., May/June 2003, at 16 (arguing that attempts to impose binding international legal obligations on the use of force by states through the UN Charter has failed). Responses to Mr. Glennon's article were published in a section of a later issue of Foreign Affairs, entitled *Staying Alive: The Rumors of the UN's Death Have Been Exaggerated*. *See* Edward C. Luck, *The End of an Illusion*, FOREIGN AFF., March/Apr. 2003, at 201 (criticizing Glennon for arguing that the Security Council is finished); Anne-Marie Slaughter, *Misreading the Record*, FOREIGN AFF., Mar./Apr. 2003, at 202 (attacking Glennon's argument that the Security Council has failed).

145. A discussion of the pros and cons of preemptive military attacks against North Korea's nuclear weapons capabilities are contained in Nuclear Threat Initiative, *Option 4: Pre-emptive Strikes Against North Korean Nuclear Facilities*, *at* http://www.nti/org/f_wmd411/f2d1_4.html (last visited Oct. 21, 2003).

146. President Ronald Reagan, Address to the Nation on the United States Air Strike Against Libya, 1 PUB. PAPERS 468, 468–69 (Apr. 14, 1986) (justifying U.S. military action against Libya for its acts of state-sponsored terrorism against the United States under the right to self-defense in international law); *see also* Gregory Francis Intoccia, *American Bombing of Libya: An International Legal Analysis,* 19 CASE W. RES. J. INT'L L. 177 (1987) (analyzing the international legality of the U.S. bombing of Libya in 1986).

States could legally use force in self-defense against Afghanistan because it was harboring the terrorist groups responsible for the attacks.[147] With support from allies, the United States destroyed the Taliban government in Afghanistan through military force. These events signaled that the right to use force in self-defense under international law could be used against states harboring terrorist groups that were planning or that had committed acts of violence. Such an interpretation of the right to self-defense should act as a deterrent for states in connection with the activities of terrorist groups. The U.S. position on preemptive self-defense links with the "harboring" doctrine in an attempt to increase deterrence for state actors in the context of WMD development and possession.

2. *Deterrence of Non-State Actors.* Part of the political revolution that created the current concerns about WMD involves the rise of terrorism as a factor in WMD policy. The arms control approach did not address the political/military motivations that terrorist groups might have to develop or use WMD, nor is this international legal mechanism well suited for such purposes. New strategies to increase deterrence against WMD terrorism involve (1) militarization of counter-terrorism efforts and (2) the law enforcement approach of creating criminal offenses and crafting a system for attribution of—and retribution against—perpetrators.

In the war on terrorism sparked by the violence of September 11, 2001, the United States has staked out the position that individuals suspected of being involved in international terrorist activity can be captured and detained as "enemy combatants" who are not entitled to the protections of either international humanitarian law or national

147. For analysis of the impact of the September 11, 2001 violence on the international law on the use of force, see generally Antonio Cassesse, *Terrorism is Also Disrupting Some Crucial Legal Categories of International Law*, 12 EUR. J. INT'L L. 993 (2001); Jonathan I. Charney, *The Use of Force Against Terrorism and International Law*, 95 AM. J. INT'L L. 835 (2001); Thomas M. Franck, *Terrorism and the Right of Self-Defense*, 95 AM. J. INT'L L. 839 (2001); Yutaka Arai-Takahashi, *Shifting Boundaries of the Right of Self-Defence—Appraising the Impact of the September 11 Attacks on Jus Ad Bellum*, 36 INT'L LAW. 1081 (2002); Michael Byers, *Terrorism, the Use of Force and International Law after 11 September*, 51 INT'L & COMP. L.Q. 401 (2002); Mark A. Drumbl, *Victimhood in Our Neighborhood: Terrorist Crime, Taliban Guilt, and the Asymmetries of the International Legal Order*, 81 N.C. L. REV. 1 (2002); Michael J. Glennon, *The Fog of Law: Self-Defense, Inherence, and Incoherence in Article 51 of the United Nations Charter*, 25 HARV. J.L. & PUB. POL'Y 539 (2002); Sean D. Murphy, *Terrorism and the Concept of "Armed Attack" in Article 51 of the U.N. Charter*, 43 HARV. INT'L L.J. 41 (2002); Steven R. Ratner, *Jus Ad Bellum and Jus in Bello After September 11*, 96 AM. J. INT'L L. 905 (2002).

criminal and constitutional law.[148] In November 2001, President Bush established military tribunals to try individuals suspected of terrorist activity who are not U.S. citizens.[149] This military order caused controversy in international legal circles.[150] The Bush administration has also labeled U.S. citizens suspected of international terrorist activity as enemy combatants not entitled to the traditional protections of the U.S. Constitution.[151] One of these U.S. citizens, Jose Padilla, was alleged to have been involved in a plot to detonate a radiological device in the United States.[152]

These moves by the Bush administration represent a militarization of counter-terrorism in response to the growing global scale and danger posed by international terrorist groups, especially those interested in WMD.[153] Behind this policy is the belief that terrorist organizations of global reach can no longer be handled in the traditional manner[154] through civilian law enforcement resources and national criminal law.[155] The utilization of military power in counter-terrorism,

148. For discussion of this development, see CURTIS A. BRADLEY & JACK L. GOLDSMITH, FOREIGN RELATIONS LAW: CASES AND MATERIALS 267–73 (2003).

149. Military Order, Detention, Treatment and Trial of Certain Non-Citizens in the War Against Terrorism, § 4, 66 Fed. Reg. 57,833, 57,834 (2001).

150. *See, e.g.*, Kenneth Anderson, *What to Do with Bin Laden and Al Qaeda Terrorists?: A Qualified Defense of Military Commissions and United States Policy on Detainees at Guantanamo Bay Naval Base*, 25 HARV. J.L. & PUB. POL'Y 591, 592 (2002); Harold Hongju Koh, *The Case Against Military Commissions*, 96 AM. J. INT'L L. 337 (2002); Daryl A. Mundis, *The Use of Military Commissions to Prosecute Individuals Accused of Terrorist Acts*, 96 AM. J. INT'L L. 320, 324–25 (2002); Diane F. Orentlicher & Robert Kogod Goldman, *When Justice Goes to War: Prosecuting Terrorists Before Military Commissions*, 25 HARV. J.L. & PUB. POL'Y 653, 659–63 (2002).

151. *See, e.g.*, Hamdi v. Rumsfeld, 316 F.3d 450 (4th Cir. 2003); Padilla *ex rel.* Newman v. Bush, 233 F. Supp. 2d 564 (S.D.N.Y. 2002).

152. *Padilla ex rel. Newman*, 233 F. Supp. 2d at 572–73.

153. *See* COMBATING TERRORISM, *supra* note 5, at 15 ("Preventing terrorist groups from gaining access to technology, particularly that which supports WMD, will be one of our highest priorities.").

154. Walter Gary Sharp, Sr., *The Use of Armed Force Against Terrorism: American Hegemony or Impotence?*, 1 CHI. J. INT'L L. 37, 39 (2000) (observing that "the international community has taken a piecemeal approach and addressed the problem of international terrorism by identifying particular criminal acts inherently terrorist in nature to be prevented and punished by domestic law. The result has been the adoption of a number of global treaties, regional conventions, and bilateral agreements which are relevant to the suppression of international terrorism, and corresponding domestic laws which implement those arrangements.").

155. Abraham D. Sofaer, *Playing Games with Terrorists*, 36 NEW ENG. L. REV. 903, 903 (2002) ("For many years, between 1988 and September 11, 2001, presidents denounced terrorist attacks on Americans and promised to 'pursue' attackers until they were 'brought to justice.' These turned out to be empty words. Rather than use the military to put an end to the groups we knew were responsible, presidents used the FBI to investigate, to develop evidence, and then to pursue through the criminal process those low-level operatives that we were fortunate

under robust notions of the right to use force in self-defense,[156] is part of the Bush administration's strategy to contain and then roll-back terrorism so that eventually it will again be a problem manageable in the traditional domain of law enforcement.[157] The militarization of counter-terrorism has brought areas of international law into WMD policy that previously were not an issue, such as the treatment of enemy combatants under international humanitarian law.

Although the traditional law enforcement approach to terrorism is, in the opinion of the United States, inadequate, it has not been abandoned in the development of strategies to counter WMD. Rather, the law enforcement approach to WMD terrorism builds on a body of international law on terrorism crafted over the course of thirty years.[158] Antiterrorism treaties did not specifically begin to incorporate WMD terrorism until the 1990s, which reflects the growth of concern about the possibility of catastrophic terrorism. In 1998, WMD terrorism featured in the adoption of the UN Convention on the Suppression of Terrorist Bombings[159] and the proposed draft UN Convention for the Suppression of Acts of Nuclear Terrorism.[160]

The UN Convention on the Suppression of Terrorist Bombings broadly defines "explosive or other lethal device" to include "[a] weapon or device that is designed, or has the capability, to cause death, serious bodily injury or substantial material damage through the release, dissemination or impact of toxic chemicals, biological agents or toxins or similar substances or radiation or radioactive material."[161] This convention then follows the standard law enforcement approach found in previous antiterrorism treaties: states parties criminalize certain offenses,[162] take jurisdiction over the commission

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enough to arrest. This policy of dealing with the terrorist threat allowed Osama bin Laden and his leadership, and the Taliban Government that gave them sanctuary, time to plan, prepare, and implement new attacks of increasing seriousness, with impunity.").

156. *See supra* notes 137–145 and accompanying text.

157. *See* COMBATING TERRORISM, *supra* note 5, at 2.

158. *See generally* TERRORISM AND INTERNATIONAL LAW (Rosalyn Higgins & Maurice Flory eds., 1997). For treaties on international terrorism, see INTERNATIONAL TERRORISM: MULTILATERAL CONVENTIONS (1937–2001) (M. Cherif Bassiouni ed., 2001).

159. *International Convention for the Suppression of Terrorist Bombings*, G.A. Res. 52/164, U.N. GAOR, 52d Sess., 72d mtg., U.N. Doc. A/RES/52/164 (1997).

160. *Draft International Convention for the Suppression of Acts of Nuclear Terrorism*, U.N. GAOR 6th Comm., 53d Sess., Annex 1, Agenda Item 155, at 4, U.N. Doc. A/C.6/53/L.4 (1998).

161. United Nations International Convention for the Suppression of Terrorist Bombings, *supra* note 159, art. 1.3(b).

162. *Id.* arts. 2, 4.

of such acts,[163] agree to prosecute or extradite alleged perpetrators,[164] and participate in law enforcement cooperation and assistance.[165] The objective is to increase the potential that terrorist acts will be punished and thus deter terrorist activity.

A second development involving the law enforcement approach is the U.S. policy of building on existing counter-terrorism treaties to create "new, strict standards for all states to meet in the global war against terrorism."[166] The United States points to UN Security Council Resolution 1373 of September 28, 2001, as creating international legal obligations on all UN members in connection with the global fight against terrorism.[167] Enacted pursuant to Chapter VII of the UN Charter, UN Security Council Resolution 1373 contains numerous obligations on UN member states relating to combating terrorism.[168] Experts on national security and arms control referred to Resolution 1373 as making "instant global law" that will be monitored by a Committee Concerning Counter-Terrorism.[169] By combining the standards that exist in counter-terrorism treaties and the duties contained in UN Security Council Resolution 1373, the United States hopes to establish a baseline level of international legal responsibility for states in the fight against terrorism.[170]

A third development involving the law enforcement approach involves proposals to criminalize the development, possession, and use of biological and chemical weapons. The most well-known proposal in this area is the Harvard/Sussex Draft Convention on the Prevention and Punishment of the Crime of Developing, Producing, Acquiring, Stockpiling, Retaining, Transferring or Using Biological or Chemical Weapons.[171] This proposal seeks to make developing, pro-

163. *Id.* art. 6.

164. *Id.* art. 8.

165. *Id.* art. 10.

166. COMBATING TERRORISM, *supra* note 5, at 18.

167. *Id.*

168. *See* S.C. Res. 1373, U.N. SCOR, 58th Sess., 4385th mtg., U.N. Doc. S/RES/1373 (2001); COMBATING TERRORISM, *supra* note 5, at 18–19 ("The resolution calls upon all member states to cooperate to prevent terrorist attacks through a spectrum of activities, including suppression and freezing terrorist financing, prohibiting their nationals from financially supporting terrorists, denying safe haven, and taking steps to prevent the movement of terrorists.").

169. John R. Burroughs et al., *Arms Control and National Security*, 36 INT'L LAW. 471, 487 (2002).

170. COMBATING TERRORISM, *supra* note 5, at 18–19.

171. Matthew Meselson & Julian Robinson, Harvard/Sussex Program on CBW Armament and Arms Limitation, *Draft Convention on the Prevention and Punishment of the Crime of Developing, Producing, Acquiring, Stockpiling, Retaining, Transferring or using Biological or*

ducing, acquiring, stockpiling, retaining, or transferring any chemical or biological weapon a criminal offense.[172] The draft convention then requires states parties to take jurisdiction over such offenses,[173] either prosecute or extradite people alleged to have committed such crimes,[174] and engage in law enforcement cooperation and assistance.[175] This proposal seeks to transform the ban on chemical and biological weapons applicable to governments into a criminal process that seeks to deter and punish individuals who participate in chemical or biological weaponeering. Such a criminal process would apply to individuals who are government officials or terrorists.[176] Targeting individuals in the manner the Harvard/Sussex proposal envisions reveals the differences between the law enforcement approach and the traditional arms control approach.

Barry Kellman has also prominently advocated using an international criminal law approach to address the threat of bioterrorism. Kellman argues that, although the arms control approach and an approach based on criminal law enforcement are not inherently contradictory or mutually exclusive, their paths diverge substantially.[177] Kellman asserts that the problem of bioterrorism "shares more characteristics with illicit smuggling operations than with state weapons development programs," meaning that "anti-bioterrorism efforts should be directed at denying necessary materials and equipment to bioterrorists and at interdicting their networks before there is an attack."[178] Kellman's international criminal law approach to bioterrorism contains four categories of initiatives:

> (1) criminalization of both the use of biological agents and unauthorized possession of pathogenic agents; (2) regulation of possession and transfer of pathogenic agents, including oversight of basic bio-research and tracking of sophisticated weaponization equipment; (3) anti-smuggling initiatives, including authority to undertake investigations; and (4) empowerment of an institution capable of directing the entire set of efforts.[179]

Chemical Weapons (Nov. 1, 2001), *at* http://fas-www.harvard.edu/~hsp/crim01.pdf (last visited Oct. 21, 2003).

172. *See id.* art. I.

173. *See id.* art. V.

174. *See id.* art. VII.

175. *See id.* art. IX.

176. *See id*. art. I, para. 1 (stating that "*any person* commits an offence" who engages in activity prohibited by the Convention) (emphasis added).

177. Kellman, *supra* note 12, at 721–22.

178. *Id.* at 730.

179. *Id*.

B. Technological Feasibility

The perceived increase in the technological feasibility of WMD development has contributed to the growth of concerns about WMD proliferation by state and non-state actors.[180] The arms control approach to nuclear weapons included limitations on the superpowers developing defensive anti-ballistic missile technologies[181] and controls on the deployment of certain offensive nuclear weapons technologies.[182] The bans on biological and chemical weapons rested on the assumption that governments would not turn to these WMD even though science made such weapons easier to develop and deploy. The technological feasibility risk factor has become more important in WMD policy because of the fluidity and uncertainty of WMD politics after the end of the Cold War and the rise of "new terrorism."

The most prominent response developed to address the growing technological feasibility risk involves national efforts to tighten controls on access to and transfer of matériel necessary to make WMD.[183] Existing examples of this policy response do not involve the direct use of international law, such as the negotiation of treaties. The United States has, for example, worked bilaterally with Russia to secure former Soviet nuclear, chemical, and biological weapons facilities to ensure that Soviet WMD technologies do not proliferate.[184] The Group of Eight Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, established in June 2002, seeks to enhance the security of WMD technologies in the former Soviet Union through securing WMD matériel, employing former Soviet weaponeers, enhancing export controls, and strengthening border security.[185]

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180. *See supra* notes 116–124 and accompanying text.

181. *See, e.g.*, ABM Treaty, *supra* note 54.

182. *See, e.g.*, SALT II, *supra* note 55.

183. *See, e.g.*, Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA PATRIOT) Act of 2001, Pub. L. 107-56, 115 Stat. 272 (2001); Public Health Security and Bioterrorism Preparedness and Response Act of 2002, Pub. L. 107-188, 116 Stat. 594, Title II.

184. *See* Jasinski, *supra* note 91.

185. *See generally* Press Release, White House, Fact Sheet: G-8 Summit—Preventing the Proliferation of Weapons of Mass Destruction (June 27, 2002), *at* http://www.whitehouse.gov/news/releases/2002/06/20020627-7.html (last visited Oct. 21, 2003); *see also* ROBERT J. EINHORN & MICHÈLE A. FLOURNOY, CENTER FOR STRATEGIC & INTERNATIONAL STUDIES (CSIS), PROTECTING AGAINST THE SPREAD OF NUCLEAR, BIOLOGICAL, AND CHEMICAL WEAPONS: AN ACTION AGENDA FOR THE GLOBAL PARTNERSHIP (2003) (making recommendations to take the Group of Eight Global Partnership Against Weapons and Materials of Mass Destruction from financial commitments to implementation of projects).

The members of the Australia Group have tightened export control measures on items that could be used to produce WMD.[186]

The United States and other countries have undertaken to strengthen their national laws on security of WMD items, such as biological agents.[187] These policy initiatives connect with international law through proposals made by governments and non-governmental experts for international legal action on biosecurity. As alternatives to the rejected Protocol to the BWC, the Bush administration advocated that BWC States Parties should (1) establish sound national oversight mechanisms for the security and genetic engineering of pathogenic organisms; (2) devise a solid framework for bioscientists in the form of a code of ethical conduct that would have universal recognition; and (3) promote responsible conduct in the study, use, modification, and shipment of pathogenic organisms.[188] The British government connected these ideas to international law by proposing a Convention on Physical Protection of Dangerous Pathogens.[189] Non-governmental experts also called for a Biosecurity Convention to improve the safety and security of pathogenic microbes in the face of WMD proliferation and terrorism.[190] Steinbruner and Harris have argued for an international oversight arrangement to ensure that advanced biological research does not contribute intentionally or unintentionally to the development of dangerous pathogens.[191]

Although the likelihood of a new biosecurity treaty or other new international legal arrangements is uncertain, international cooperation on biosecurity as part of the future BWC process was an outcome

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186. *See* U.S. Dep't of State, *Fact Sheet: U.S. Efforts to Combat the Biological Weapons Threat*, Nov. 14, 2002, *at* http://www.state.gov/t/ac/rls/fs/15150.htm (last visited Nov. 15, 2003).

187. *See id.*

188. *See* Press Release, U.S. Dep't of State, President's Statement on Biological Weapons: Strengthening the International Regime against Biological Weapons (Nov. 1, 2001), *at* http://www.state.gov/t/ac/rls/rm/2001/7907.htm (last visited Oct. 5, 2003).

189. *See* SECRETARY OF STATE FOR FOREIGN AND COMMONWEALTH AFFAIRS, STRENGTHENING THE BIOLOGICAL AND TOXIN WEAPONS CONVENTION: COUNTERING THE THREAT FROM BIOLOGICAL WEAPONS, Apr. 2002, at 3, *at* http://www.bradford.ac.uk/acad/sbtwc/other/fcobw.pdf (last visited Nov. 15, 2003).

190. *See* Jonathan B. Tucker & Raymond A. Zilinskas, *Assessing U.S. Proposals to Strengthen the Biological Weapons Convention*, ARMS CONTROL TODAY, Apr. 2002, at 10, 11, *available at* http://www.armscontrol.org/act/2002_04/tuczilapril02.asp (arguing that "the United States should propose that the UN General Assembly adopt a 'Biosecurity Convention' requiring countries to follow uniform guidelines for who is given access to dangerous pathogens, as well as universal standards of physical security for those institutions authorized to work with them").

191. *See generally* John D. Steinbruner & Elisa D. Harris, *Controlling Dangerous Pathogens*, ISSUES SCI. & TECH., Spring 2003, at 47.

of the Fifth Review Conference in November 2002.[192] In August 2003, BWC States Parties discussed national mechanisms to strengthen security and oversight of pathogenic agents to prevent them from falling into the wrong hands.[193] In this respect, BWC States Parties are adapting the arms control approach for the new political and technological realities of biological weapons. As the United Nations indicated in a press release before the Fifth BWC Review Conference, the BWC process has to recognize the "rapid progress being made in the bio-sciences, progress which as well as developing important benefits also makes it potentially easier to develop biological weapons."[194] Whether international cooperation on biosecurity through the BWC process agreed upon at the Fifth Review Conference leads to new treaty law remains to be seen.

C. Social Vulnerability

As analyzed in Part III, the growing awareness of the social vulnerability to WMD attacks has contributed to mounting concerns about WMD proliferation. The arms control approach contains little, if anything, that addresses the social vulnerability risk factor. Historically, addressing such vulnerability has remained predominantly at the national level, as illustrated by various national civil defense programs created to deal with the effects of nuclear attack.[195] Contemporary policy appears to be following the same pattern because national policy and law dominate the growing movement toward domestic preparedness for WMD attacks. The United States is, for example, mounting a significant homeland security effort that includes large-

192. On the Fifth Review Conference, see Marie Isabelle Chevrier, *Waiting for Godot or Saving the Show? The BWC Review Conference Reaches Modest Agreement,* DISARMAMENT DIPLOMACY, Dec. 2002–Jan. 2003, at 11, *available at* http://www.acronym.org.uk/dd/dd68/68bwc.htm (last visited Nov. 10, 2003); Graham S. Pearson, *Report from Geneva: The Biological and Toxin Weapons Convention Review Conference*, CBW CONVENTIONS BULLETIN, No. 58, Dec. 2002, at 19, http://fas-www.harvard.edu/~hsp/bulletin/cbwcb58.pdf (last visited Nov. 10, 2003).

193. *See* Report of the Meeting of Experts (Part I), Fifth Review Conference of the States Parties of the BWC, BWC/CONF. Doc. BWC/MSP.2003/MX/4 (Part I) (Sept. 18, 2003), *available at* http://www.opbw.org/new_process/mx4_I.pdf (last visited Nov. 15, 2003) (reporting on the Meeting of Experts held from Aug. 18–29, 2003, on consideration of the adoption of necessary national measures to implement BWC prohibitions).

194. Press Release, United Nations, Fifth Review Conference of Biological Weapons Convention to Resume in Geneva from 11–22 November (Nov. 6, 2002), U.N. Doc. DC/2847, *at* www.un.org/news/Press/docs/2002/dc2847.doc.htm (last visited Oct. 21, 2003).

195. *See supra* note 126.

scale efforts to prepare the United States homeland for WMD terrorism.[196]

International cooperation on reducing social vulnerabilities is, however, emerging. The United States is proposing to support the strengthening of the international community's capacity for WMD defense and preparedness by improving mechanisms for early detection, diagnosis, and the mitigation of health threats posed by chemical and biological terrorism.[197] Multilateral forums in which preparedness for chemical and biological terrorism has been discussed include, for example, NATO, the World Health Organization, the Ottawa Group, the World Customs Organization, and the International Maritime Organization.[198] Some of the ideas discussed in these groups, such as the creation of a global smallpox vaccine reserve[199] and regulations to enhance ship and port security against possible WMD terrorism,[200] may require formal international legal activities, leading to the crafting of new international law specially directed toward reducing social vulnerability to WMD attacks. Such international legal developments would be further evidence that international policy and law on WMD have moved beyond the arms control approach.

D. From the Arms Control Approach to a Trifurcated Strategy

The international legal developments, proposals, and ideas analyzed above suggest that WMD policy is moving from a dominant role for the arms control approach to a three-part strategy. Figure 2 provides an overview of this trifurcated strategy. The first part involves international law that addresses WMD threats presented by states. This "international security" framework includes not only the arms control treaties but also the moves to draw on the right of self-defense to address WMD threats from state actors.

The second part comprises international law that attempts to address WMD threats posed by non-state actors, namely terrorists. This "global security" framework is integrated into the anti-WMD effort the law enforcement model developed in antiterrorism treaties. Multilateral antiterrorism treaties, specifically including WMD threats and bilateral extradition treaties, form the heart of this

196. *See* HOMELAND SECURITY, *supra* note 25, at 41–45.

197. *See* U.S. Dep't of State, *Fact Sheet: U.S. Efforts to Combat the Biological Weapons Threat*, *supra* note 186.

198. *See id.*

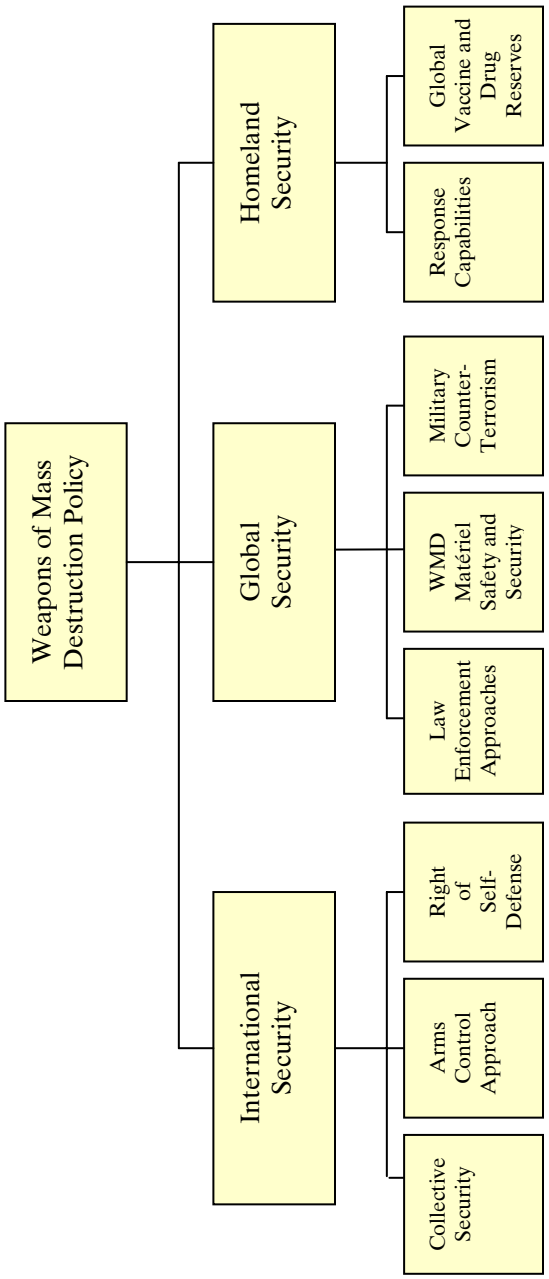
199. *See id.*

200. *See id.*

framework. The "global security" framework also includes efforts to use international law to improve the safety and security of WMD agents and equipment to ensure that state or non-state proliferators do not gain access to them. Finally, the framework incorporates military responses to terrorist threats.

The third part of the trifurcated strategy focuses on domestic defense against and preparedness for WMD events. This "homeland security" framework is taking shape through international cooperative efforts on improving domestic readiness for WMD attacks against vulnerable societies. Whether the source of such attacks is a state or non-state actor is less relevant in this framework than preparing societies for the consequences of WMD events. International law in the homeland security framework is less developed than the other two pieces of the trifurcated strategy, but developments indicate that this area may be one of growth in the future.

From the Arms Control Approach to a Trifurcated Strategy



V. CONCLUSION: THE END OF THE ARMS CONTROL APPROACH AND ITS IMPLICATIONS FOR INTERNATIONAL LAW ON WEAPONS OF MASS DESTRUCTION

The end of the arms control approach as the leading international legal strategy against WMD carries deeper implications for international law than the process of diversification and the trifurcated strategy reviewed in Part IV. One such implication involves questions about the future of the arms control approach. The focus in the context of nuclear weapons has shifted from the stabilization of bipolar deterrence to the problem of multipolar proliferation of nuclear weapons technologies and ambitions among states and non-state actors. The proliferation concern has exposed the two basic weaknesses of the Nuclear Non-Proliferation Treaty: (1) state proliferators either are not bound by the treaty or they violate it without fear of sanction under the treaty regime; and (2) the treaty does not directly address the threat of nuclear terrorism carried out by non-state actors.

The continuing crisis over North Korea's pursuit of nuclear weapons reflects well the argument that the arms control approach's dominance in WMD policy is over. Neither the NPT nor the 1994 Agreed Framework[201] between the United States and North Korea has deterred Pyongyang from pursuing a nuclear weapons capability. The United States was on the brink of war with North Korea in 1994 over Pyongyang's push for nuclear weapons,[202] and it is not yet clear how the current crisis will be resolved—through multilateral diplomacy or preemptive military action by the United States.

In August 2003, North Korea agreed to participate in multilateral talks with the United States, China, Japan, South Korea, and Russia.[203] Prior to the talks, China was not holding out much hope for significant progress,[204] leaving the option of preemptive military action

201. Under the Agreed Framework concluded in October 1994, "North Korea agreed to shut down its plutonium-based nuclear reactor and related facilities, and the United States agreed to provide two proliferation-resistant reactors and supply North Korea with heating oil while the reactors were under construction." *Nuclear Weapons on the Korean Peninsula*, ARMS CONTROL TODAY, May 2003, at 3, *available at* http://www.armscontrol.org/act/2003_05/nkoreaintro_may03.asp (last visited Nov. 15, 2003).

202. *See* James T. Laney & Jason T. Shaplen, *How to Deal with North Korea*, FOREIGN AFF., Mar./Apr. 2003, at 16, 23 (2003).

203. *Let's All Six of Us Talk About It*, ECONOMIST, Aug. 9, 2003, at 33, *available at* 2003 WL 58583522.

204. *See id.*

on the table.[205] According to the U.S. State Department, these multilateral talks did not go well.[206] In October 2003, North Korea agreed to return to the negotiating table two weeks after President Bush indicated a willingness to "extend a written, multilateral security agreement to North Korea in exchange for a complete dismantling of its nuclear weapons program."[207] The same volatile mixture of multilateral approaches and potential military action has characterized the crisis over Iran's alleged pursuit of nuclear weapons.[208]

Concerns about the future of the arms control approach in the context of chemical and biological weapons also abound. Although the CWC regime is functioning, many problems—including a lack of resources, failure of CWC States Parties to comply, and leadership controversies—cloud the implementation of the CWC's prohibitions and verification system.[209] New threats to the CWC's main normative objective of banning chemical weapons have appeared in the form of so-called "non-lethal" chemical weapons.[210] The first few years of the CWC's implementation have not sufficiently alleviated concerns about the proliferation of chemical weapons among states and non-

205. *North Korea Capitulates: Hardline Pressure Works*, FAR E. ECON. REV., Aug. 14, 2003, at 6, *available at* 2003 WL-FEER 59146994 (noting the U.S. position that it would not let the nuclear situation in North Korea stand, indicating "a willingness to make military strikes just short of outright war").

206. *See* John R. Bolton, Under Secretary for Arms Control and International Security, Remarks to the Bruges Group, London, United Kingdom (Oct. 30, 2003), *at* http://www.state.gov/t/us/rm/25752.htm (last visited Nov. 10, 2003) ("During the August six-party talks in Beijing, the United States, China, Russia, Japan, and South Korea emphasized that the Korean Peninsula must be free of nuclear weapons. North Korea further isolated itself by threatening provocative actions such as nuclear tests—adding to threats it made in April that it might build more nuclear weapons and perhaps even transfer nuclear material or weapons to third parties.").

207. *See* Anthony Faiola, *N. Korea Agrees to Resume Nuclear Talks; U.S. Reacts Coolly to Demand for 'Simultaneous Actions'*, WASH. POST, Oct. 31, 2003, at A18.

208. *See* Douglas Frantz, *Iran Closes in on Ability to Build a Nuclear Bomb,* L.A. TIMES, Aug. 4, 2003, at A1. In late October 2003, Iran reached an agreement with France, Germany, and the United Kingdom to stop enriching uranium and to provide documents to the International Atomic Energy Agency, thus easing tensions over U.S. allegations that Iran is secretly developing nuclear weapons. *See* Joby Warrick, *Iran Still Has Nuclear Deadline, U.S. Says*, WASH. POST, Oct. 23, 2003, at A18.

209. On the challenges facing the CWC, see Ian R. Kenyon, *The Chemical Weapons Convention and the OPCW: The Challenges of the 21st Century*, CBW CONVENTIONS BULLETIN, No. 56, June 2002, at 1, http://www.fas.harvard.edu/~hsp/bulletin/cbwcb56.pdf (last visited Nov. 10, 2003).

210. *See, e.g.*, WORKING GROUP ON BIOLOGICAL WEAPONS, FEDERATION OF AMERICAN SCIENTISTS, NON-LETHAL CHEMICAL AND BIOLOGICAL WEAPONS (Nov. 2002), http://www.fas.org/bwc/papers/nonlethalCBW.pdf (last visited Nov. 10, 2003).

state actors, forcing the development of new policies and legal strategies on chemical weapons and chemical terrorism.

The arms control approach also suffered a beating in the context of the BWC, in the form of the United States' rejection in 2001 of a verification protocol that had been years in the making.[211] The death of the verification protocol left the arms control approach with only a weak treaty to confront perhaps the most difficult WMD proliferation and terrorism challenge.[212] Although the BWC Fifth Review Conference did not end in disaster,[213] the arms control approach on biological weapons remains in serious trouble.

The political, technological, and vulnerability challenges to the arms control approach have created a crisis of confidence in its utility. The arms control approach and the treaties it has generated remain necessary but are no longer sufficient (or even in some respects relevant) to address the threat currently posed by WMD proliferation and terrorism. Arms control supporters favor new international legal strategies and global civil society action to address the political, technological, and vulnerability problems that WMD create today. Arms control skeptics see the crisis of confidence in the arms control approach as evidence that the approach itself is a flawed sideshow, at best, and a dangerous delusion, at worst.

Beneath the controversy surrounding the arms control approach to WMD stirs a larger debate about the role of international law in world politics. Does the end of the arms control approach signal a loss of faith in the utility of international law in international politics? Is the diversification of international legal strategies and ideas on dealing with WMD merely, to paraphrase Bull, "anything more than [a] heightened protest against the facts of international politics?"[214] This international legal debate has an analogue in international relations theory in disagreements between realists and institutionalists about the contributions institutions and regimes, such as arms control treaties, make to national security and the prevention of conflict.[215]

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211. *See* Whitehair & Brugger, *supra* note 121.

212. Burroughs et al., *supra* note 169, at 505 ("The utter breakdown of the Biological Weapons Convention does not bode well for international controls over these weapons.").

213. *See* Chevrier, *supra* note 192; Pearson, *supra* note 192, at 19.

214. HEDLEY BULL, THE ANARCHICAL SOCIETY: A STUDY OF ORDER IN WORLD POLITICS 151 (1977).

215. *See* John J. Mearsheimer, *The False Promise of International Institutions*, INT'L SECURITY, Vol. 19, No. 3, Winter 1994–95, at 5, 16 (1994) (arguing that institutionalism pays "little attention to the security realm, where questions about war and peace are of central importance"). *But see* Robert O. Keohane & Lisa L. Martin, *The Promise of Institutionalist The-*

Pursuing these larger theoretical controversies in international law and international relations is beyond the scope of this article, but I mention them because the political, technological, and vulnerability challenges currently undermining the arms control approach connect to deeper concerns about the nature of international politics and international law's role therein. On the one hand, the emerging trifurcated strategy suggests that international law's role in the effort to control WMD remains critical, even with the end of the arms control approach. On the other hand, the same strategy perhaps indicates that the WMD threat may be pushing past the point at which states, international organizations, and non-governmental actors can effectively use international law to deter, defend, or disarm. The need for international law in the WMD context may be higher now than in previous historical periods. The dangers and uncertainties confronting the use of international law in this new WMD environment may also be historically unprecedented, casting ominous shadows over international legal endeavors against WMD for the foreseeable future.

ory, INT'L SECURITY, Vol. 20, No. 1, Summer 1995, at 39, 43 (1995) (arguing that institutionalist theory is relevant to the study of security affairs).