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INTRODUCTION

A former colleague of mine worked for most of his adult life as a career military officer. Toward the end of his career, he was assigned to work as an arms control inspector. In that capacity, he personally oversaw the destruction of hundreds, perhaps thousands, of weapons. He told me that, in just a couple of years as an arms control inspector, he had successfully eliminated many times more enemy weapons than he could possibly have destroyed in his entire career as a military officer. The lesson is clear: arms control is war by other means.

But if arms control is war by other means, one could also say, to paraphrase Clausewitz, that war is arms control by other means.1 One key objective of arms control is to reduce or eliminate certain military capabilities of an adversary or a potential adversary. The same is true with respect to war. Hence, the question arises: in what circumstances is military force, or the threat of force, likely to be more effective than arms control as a mechanism for constraining the military capabilities of a potential adversary?

The Nuclear Nonproliferation Treaty ("NPT") is the principal arms control mechanism for preventing the spread of nuclear weapons.2 A key weakness of the NPT is that it permits non-nuclear-weapon states parties to

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1 Clausewitz famously stated that “war is politics by other means.” Carl von Clausewitz, On War 605 (Princeton 1976) (Michael Howard and Peter Paret, eds and trans).

2 Treaty on the Non-Proliferation of Nuclear Weapons, 21 UST 483 (1970) (hereinafter NPT). The NPT divides states into nuclear-weapon states and non-nuclear-weapon states. Under the NPT, there are five nuclear weapon states: the United States, Russia, China, France, and the United Kingdom. “Each nuclear-weapon State Party to the Treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices.” Id at art I. “Each non-nuclear-weapon State Party to the Treaty undertakes ... not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices.” Id at art II.
accumulate a stockpile of weapons-grade nuclear material, provided that the nuclear material is subject to International Atomic Energy Agency ("IAEA") safeguards.\(^3\) The vast majority of non-nuclear-weapon states parties to the NPT have not demonstrated any interest in producing a stockpile of weapons-grade nuclear material. However, there have been a few exceptions.\(^4\) Any state that has acquired a stockpile of weapons-grade nuclear material has thereby overcome the key technological hurdle on the path to production of nuclear weapons. Therefore, a non-nuclear-weapon state party to the NPT could acquire a legal stockpile of weapons-grade nuclear material under IAEA safeguards, announce its withdrawal from the NPT, and then proceed to manufacture nuclear weapons.

Given the potential for a non-nuclear-weapon state party to withdraw from the NPT after acquiring a stockpile of weapons-grade nuclear material, and given the tremendous destructive potential of nuclear weapons, the production of weapons-grade nuclear material by additional states—even under IAEA safeguards—poses a significant threat to international peace and security. Under the UN Charter, the Security Council has "primary responsibility for the maintenance of international peace and security."\(^5\) Accordingly, members of the Security Council should consider options involving the threat and/or use of military force to prevent non-nuclear-weapon states from producing weapons-grade nuclear material.

Specifically, the five permanent members of the Security Council should adopt a common declaratory policy in support of preemptive attacks against

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\(^3\) The International Atomic Energy Agency is the international organization charged with safeguarding nuclear materials to help verify non-nuclear-weapon states parties' compliance with their NPT obligations. Id at art III, ¶ 1. The IAEA was created by the Statute of the International Atomic Energy Agency, 8 UST 1093 (1957) (hereinafter IAEA Statute).

\(^4\) See David Albright, Frans Berkhout, and William Walker, *World Inventory of Plutonium and Highly Enriched Uranium*, 1992 168–90 (Oxford 1993) (providing a comprehensive accounting of global stockpiles of weapons-useable nuclear materials, as of 1992). Albright divides states' nuclear stockpiles into five categories: (1) military inventories in the five nuclear weapon states; (2) civil inventories in states with advanced civilian nuclear programs (primarily states in Western Europe, North America, East Asia, and the former Soviet Union); (3) de facto nuclear weapon states (Israel, India, and Pakistan); (4) countries of concern (Iraq, North Korea, Iran, and Algeria); (5) countries backing away from nuclear weapons (Argentina, Brazil, South Africa, and Taiwan). With the exception of Taiwan, which is not eligible to be an NPT party, the states in categories 4 and 5 are all non-nuclear-weapon states parties to the NPT. According to Albright, they have all accumulated, or tried to accumulate, weapons-grade nuclear material at some point in time. See id at 168–91. Category 2 also includes several non-nuclear-weapon states parties to the NPT that have sizeable nuclear material inventories, but the vast majority of their nuclear materials is not in a form that would be readily useable for nuclear weapons.

\(^5\) United Nations Charter, art 24(1). The Security Council consists of fifteen Member States, including five permanent members, and ten nonpermanent members. Id at art 23(1). The five permanent members are the five nuclear weapon states: the United States, Russia, China, France, and the United Kingdom.
plutonium production reactors, reprocessing plants, and uranium enrichment facilities in states that have not previously produced a stockpile of weapons-grade nuclear material. These three types of nuclear facilities are the critical production facilities that a state needs in order to produce weapons-grade nuclear material. If the Security Council authorized military intervention before a state introduced nuclear material into such a facility, a well-executed surgical strike would deal a substantial setback to a proliferant state's nuclear weapons program, while avoiding significant casualties. Moreover, if the five permanent members of the Security Council adopted a common declaratory policy in support of preemptive attacks, it might deter potential proliferators from even attempting to construct plutonium production reactors, reprocessing plants, or uranium enrichment facilities.

This Article is divided into four parts. Part I briefly describes the technology for production of weapons-grade nuclear material and the radiological effects of military attacks on nuclear production facilities. Part II offers a policy justification for using military force to prevent states from constructing plutonium production reactors, reprocessing plants, or uranium enrichment facilities. Part II also discusses the case of North Korea to illustrate the application of the proposed policy framework. Part III contends that targeted conventional strikes against nuclear production facilities, absent Security Council authorization, would violate the UN Charter. Part IV recommends that the five permanent members of the Security Council adopt a common declaratory policy in support of preemptive attacks on nuclear facilities.

I. Nuclear Materials Production Technology

A. Production of Weapons-Grade Nuclear Material

A state that seeks to acquire nuclear weapons must obtain weapons-grade nuclear material—either highly-enriched uranium ("HEU") or separated plutonium. The acquisition of weapons-grade nuclear material is the most significant technological hurdle that a state must overcome in order to obtain nuclear weapons. Neither HEU nor plutonium is a naturally occurring material; both are manmade. For the purposes of this analysis, I will assume that it is not possible to buy weapons-grade nuclear material. Therefore, a state that wants to

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6 For a more detailed discussion of nuclear materials production technologies, see Albright, Berkhout, and Walker, World Inventory of Plutonium, 1992 at 9–21 (cited in note 4).
7 There are significant proliferation concerns associated with the prospect that certain nonstate entities might acquire weapons-grade nuclear material. However, this Article focuses on the nuclear proliferation risks associated with proliferant states.
8 In fact, there is a nontrivial risk that a proliferant state might seek to purchase nuclear material suitable for use in nuclear weapons. However, the risks associated with black market sales of weapons-grade nuclear material are well beyond the scope of this Article.
acquire nuclear weapons must build facilities that are capable of producing either HEU or separated plutonium.

To manufacture HEU for nuclear weapons, a state need only construct one facility: a uranium enrichment plant. Natural uranium is a common element that is mined in many countries throughout the world. A state cannot use natural uranium to produce nuclear weapons, though, because natural uranium contains more than ninety-nine percent U-238, and less than one percent U-235. In contrast, weapons-grade HEU contains more than ninety percent U-235. Thus, to convert natural uranium into HEU it is necessary to separate the U-235 isotope from the U-238 isotope. This process is known as uranium enrichment. Aside from its role in nuclear weapons production, uranium enrichment technology is also used to produce low-enriched uranium (“LEU”) for civilian nuclear power plants. The LEU that is used in civilian nuclear reactors usually contains about three percent U-235—far too low a concentration of U-235 to be useable for nuclear weapons.9

To manufacture plutonium for nuclear weapons, a state must construct two distinct facilities: a nuclear reactor and a reprocessing plant. Plutonium is produced by irradiating uranium fuel in a nuclear reactor. Civilian nuclear power reactors produce plutonium as a byproduct, but the plutonium produced in civilian power reactors is not well suited for use in nuclear weapons.10 Similarly, there are many nuclear research reactors throughout the world that produce small amounts of plutonium, but they are not designed primarily to produce plutonium. Nuclear reactors that are designed and operated to optimize plutonium production are known as plutonium production reactors.11

The plutonium that is produced in a reactor cannot be used to make nuclear weapons until the spent fuel is removed from the reactor and the plutonium is separated from the spent fuel. To separate plutonium from spent

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9 There are almost two hundred nuclear reactors throughout the world that use HEU fuel. See Albright, Berkhout, and Walker, *World Inventory of Plutonium*, 1992 at 144 (cited in note 4). Many non-nuclear-weapon states parties to the NPT possess such reactors. See id at 235–37. A non-nuclear-weapon state that wanted to acquire a nuclear weapon could, in theory, extract HEU from reactor fuel to make a nuclear weapon. However, the quantity of HEU available from reactor fuel is generally quite small—in many states, it would not be sufficient for even one nuclear weapon.

10 The plutonium that is produced in civilian nuclear power reactors is referred to as “reactor-grade plutonium.” In contrast, the plutonium produced in a plutonium production reactor is “weapons-grade plutonium.” It is technically feasible to make a nuclear weapon with reactor-grade plutonium. However, a state that was committed to developing nuclear weapons would presumably want to use weapons-grade plutonium.

11 The technical characteristics that distinguish plutonium production reactors from research reactors and power reactors are difficult to define. At the margins, experts might disagree as to whether a particular reactor is properly classified as a plutonium production reactor. For purposes of this analysis, though, I will disregard the definitional problem.
fuel, a state must construct a reprocessing plant. The output from a reprocessing plant is known as “separated plutonium.”

In sum, any state that seeks to acquire nuclear weapons must construct either: (a) a uranium enrichment facility, or (b) both a plutonium production reactor and a spent fuel reprocessing plant.

B. RADIOLOGICAL EFFECTS OF ATTACKS ON NUCLEAR FACILITIES

All nuclear materials emit some radiation. However, there are significant differences between materials that emit low-level radiation and materials that emit high-level radiation. Experts disagree about the long-term effects of exposure to low-level radiation. However, there is no question that the biological and environmental effects of low-level radiation are not nearly as dramatic as the effects of exposure to high-level radiation. Uranium that has not been irradiated in a reactor emits only low-level radiation. Uranium enrichment facilities generally contain uranium that has not been irradiated in a reactor. Consequently, a conventional military attack on a uranium enrichment facility is likely to release fairly low levels of radiation, even if substantial quantities of uranium are present in the facility at the time of the attack.13

When uranium is irradiated in a reactor, some uranium atoms capture additional neutrons. This neutron capture results in the production of plutonium. Unlike uranium, plutonium emits high-level radiation, which is extremely hazardous to human health. Other uranium atoms, instead of capturing additional neutrons, split into two parts when they are subjected to radiation. The splitting of the atom is known as “nuclear fission.” Nuclear fission yields large amounts of energy and resultant “fission products.” Many of those fission products are highly radioactive. Iodine-131, strontium-90, and cesium-137, in particular, pose severe biological and environmental risks. Once a reactor “goes critical,” it begins to produce both plutonium and highly radioactive fission products. The plutonium and fission products remain in the fuel until the fuel undergoes reprocessing—a process that separates the plutonium from the uranium, and separates both from the fission products.

If a conventional attack against an operational nuclear power reactor is intended merely to disrupt its electrical generating capacity, it is possible to

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12 For detailed analysis of the radiological effects of attacks on nuclear facilities, see Bennett Ramberg, Destruction of Nuclear Energy Facilities in War: The Problem and the Implications (Lexington 1980).

13 Although a conventional attack on a uranium enrichment facility is likely to have limited radiological effects, such an attack might, depending on the nature of the production process, produce other significant environmental damage.
conduct the attack in a manner that avoids release of high-level radiation. However, if a conventional attack against an operational plutonium production reactor is intended to halt the production of plutonium, it would be difficult, if not impossible, to achieve the intended military objective without releasing large amounts of high-level radiation. The same is true with respect to an operational reprocessing plant. Therefore, a conventional military attack against an operational plutonium production reactor, or an operational reprocessing plant, is likely to cause catastrophic loss of life and severe radiological damage to the surrounding environment.

A nuclear reactor that is not yet operational does not contain highly radioactive materials. The same is true with respect to a reprocessing plant. Hence, a conventional military attack on a nuclear reactor or a reprocessing plant that is not yet operational is likely to cause minimal radiological damage. Thus, if the Security Council were to authorize an attack on a reactor or reprocessing plant, the optimal time would be shortly before nuclear material is first introduced into the facility. By attacking before the facility is operational, a well-executed attack could deal a significant technological setback to a state’s nuclear weapons program without causing substantial radiological contamination.

II. PREEMPTIVE ATTACKS ON NUCLEAR FACILITIES: A POLICY ANALYSIS

Part II is divided into three sections. The first section considers, in the abstract, the policy justification for preemptive attacks on nuclear facilities. The second section describes the development of North Korea’s nuclear program. The final section illustrates the application of the proposed policy framework by analyzing the application of the framework to the specific case of North Korea.

A. A PROPOSED POLICY FRAMEWORK

Imagine a graph with a vertical axis that measures the potential threat a state poses to its adversaries, and a horizontal axis that measures various military capabilities. If the horizontal axis measured conventional weapons capabilities, the graph would show a line that sloped gently upward. A graph portraying biological and/or chemical weapons capabilities would have a similar appearance, except that the line would have a steeper slope, and the transition from zero weapons to one weapon would show a significant discontinuity. But if the graph depicted a state’s nuclear weapons capability, the transition from zero to one weapon would show a much greater discontinuity. In short, the acquisition of a single nuclear weapon by a state that previously possessed no

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such weapon constitutes a quantum leap in military capacity that is unlike any other single technological development. Therefore, the international community might reasonably conclude that the acquisition of a single nuclear weapon by State P—a nuclear proliferant state that did not previously possess nuclear weapons—constitutes a "threat to the peace," or a "breach of the peace." Moreover, the international community has a substantial interest in preventing State P from acquiring its first nuclear weapon.

Hence, the question arises, at what point in the weapons development process is it too late to prevent State P from acquiring its first nuclear weapon? The short answer is this: once State P has produced enough HEU or separated plutonium for a single nuclear weapon, other states can use a combination of carrots and sticks to try to dissuade State P from manufacturing a nuclear weapon, but if State P is determined to proceed with its nuclear weapons program, there are no realistic forcible options, short of a full-scale invasion, to prevent State P from manufacturing nuclear weapons. On the other hand, if other states intervened militarily before State P produced enough HEU or separated plutonium for a nuclear weapon, a well-executed surgical strike against a nuclear reactor, reprocessing plant, and/or uranium enrichment facility would deal a substantial setback to State P's nuclear weapons program. To avoid significant casualties and widespread environmental damage, the surgical strike would have to be conducted before nuclear material is introduced into the facility.

In light of the above, there is a strong policy justification for preemptive attacks on nuclear facilities where the following factors are present:

- State P has completed, or almost completed, construction of either a uranium enrichment facility, a plutonium production reactor or a reprocessing facility;
- diplomatic efforts have failed to persuade State P to halt construction of the subject nuclear facility or facilities;
- there is evidence that State P seeks to acquire nuclear weapons; and
- there is evidence that State P will soon introduce nuclear material into the subject facility or facilities.

Under the UN Charter, the Security Council has the responsibility to "determine the existence of any threat to the peace, breach of the peace, or act of aggression." United Nations Charter, art 39. Such a determination by the Security Council is a necessary predicate for any subsequent collective security action under Chapter VII of the Charter.

As noted above, this statement is technically accurate with respect to plutonium production reactors and reprocessing plants, but not with respect to uranium enrichment facilities. See Part I.B. Even so, if the goal is to prevent State P from acquiring a nuclear weapon, the attack on a uranium enrichment facility would have to occur before State P produced enough HEU for one nuclear weapon. Moreover, uncertainties about the pace of production would provide a strong incentive to strike early—perhaps even before the facility is operational.
B. NORTH KOREA'S NUCLEAR PROGRAM

During the 1960s, North Korea constructed a small nuclear research facility at Nyongbyong, with assistance from the Soviet Union. In 1979, the Democratic People's Republic of Korea ("DPRK") began construction, also at Nyongbyong, of an indigenously designed 5 MW(e) graphite moderated reactor (a plutonium production reactor). The 5 MW(e) reactor became operational in 1986. By that time, North Korea had begun construction of two larger graphite-moderated reactors: a 50 MW(e) reactor and a 200 MW(e) reactor. In about 1987, North Korea began construction of a reprocessing facility at Nyongbyong. North Korea probably removed some spent fuel from the 5 MW(e) reactor in 1989 and later separated some plutonium from that spent fuel.  

On December 12, 1985, North Korea became a party to the NPT. As an NPT party, North Korea was obligated to accept IAEA safeguards with respect to all nuclear material "in all peaceful nuclear activities within the territory of such State, under its jurisdiction, or carried out under its control anywhere."19 Under the terms of the treaty, North Korea was obligated to commence negotiation of a safeguards agreement with the IAEA on or before the date on which it became a party to the treaty, and to conclude the safeguards agreement "not later than eighteen months after the date of initiation of negotiations."20 In fact, North Korea did not conclude the required safeguards agreement with the IAEA until April 10, 1992, almost five years behind schedule. While negotiations proceeded, North Korea continued to operate the 5 MW(e) plutonium production reactor—without application of IAEA safeguards. 

In accordance with the safeguards agreement, in May 1992 the DPRK submitted an initial report on all nuclear material subject to safeguards. In that report the DPRK claimed that it had conducted small-scale reprocessing in 1990, when it had separated less than one hundred grams of plutonium from spent fuel discharged from the 5 MW(e) reactor. However, the IAEA discovered discrepancies between the DPRK's initial declaration and the observations of the IAEA inspectors. The discrepancies hinted at the existence of an unknown

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19 Treaty on the Non-Proliferation of Nuclear Weapons at art III, ¶ 1 (cited in note 2). In 1977, North Korea had concluded a more limited safeguards agreement with the IAEA that covered a small research reactor supplied by the Soviet Union.  
20 Id at art III, ¶ 4.
quantity of separated plutonium that the DPRK had failed to declare in its initial report. In an effort to resolve the discrepancy, the IAEA requested a “special inspection,” as provided for in the safeguards agreement. When the DPRK refused the request, the IAEA Board of Governors determined, on April 1, 1993, that North Korea had violated the safeguards agreement.

The stand-off between North Korea and the IAEA continued throughout 1993 and into 1994. During this period, the IAEA’s main concern was to obtain an accurate inventory of the quantity of plutonium produced in the 5 MW(e) reactor, and the quantity of plutonium separated from spent fuel in the reprocessing plant. In May 1994, North Korea removed spent fuel from the 5 MW(e) reactor, without IAEA inspectors present, in a manner that made it virtually impossible for the IAEA to gain an accurate estimate of past plutonium production in the reactor.2 Meanwhile, the DPRK continued to refuse permission for a special inspection that might have enabled the IAEA to determine more precisely the quantity of separated plutonium produced in the reprocessing plant.

On October 21, 1994, representatives of the United States and the DPRK signed a document known as the “Agreed Framework.”22 Under the Agreed Framework, the United States agreed to make arrangements for the provision to the DPRK of nuclear power plants with a total generating capacity of 2,000 MW(e) by a target date of 2003, and to deliver 500,000 tons of heavy oil annually in the interim. In exchange, the DPRK agreed:

- to freeze operation of its 5 MW(e) plutonium production reactor and reprocessing plant, and to halt construction of the two larger reactors, within one month after signature of the Agreed Framework;
- to allow the IAEA to monitor the freeze;
- to complete dismantlement of the 5 MW(e) reactor, the reprocessing plant, and the two larger reactors upon completion of the nuclear power plants; and
- after construction of a significant portion of the nuclear power plants, but before delivery of key nuclear components, to take all necessary steps to enable the IAEA to verify the accuracy and completeness of the DPRK’s declared inventory of nuclear material subject to safeguards.

21 According to the Congressional Research Service, the DPRK removed about 8,000 fuel rods in May 1994, “which could be reprocessed into enough plutonium for 4–5 nuclear weapons.” CRS Issue Brief for Congress at 2 (cited in note 18).

In effect, the United States decided that it could accept continued uncertainty about past plutonium production in exchange for a verifiable commitment to halt ongoing plutonium production.

For several years, it appeared that the Agreed Framework was working. Construction of the nuclear power plants was behind schedule, but oil deliveries continued. Meanwhile, North Korea had halted its plutonium production program. Then, on October 16, 2002, the United States announced that the DPRK had been conducting a secret program to enrich uranium for nuclear weapons. In response to this revelation, the United States, Japan, and South Korea decided to suspend deliveries of heavy oil. On December 12, 2002, the DPRK retaliated by notifying the IAEA that it had decided to lift the freeze on its nuclear facilities. Ten days later, the North Koreans escalated the confrontation by removing IAEA monitoring equipment from the reprocessing plant, thereby enabling them to reprocess the spent fuel and produce separated plutonium in the absence of IAEA safeguards. On December 27, 2002, the DPRK ordered IAEA inspectors to leave the country, and in January 2003 North Korea announced its withdrawal from the NPT. The IAEA Board of Governors subsequently referred the matter to the UN Security Council. As of this writing, it is unclear whether the international community will be able to persuade North Korea either to refreeze its plutonium production program, or to halt its uranium enrichment program.

C. ATTACKING NORTH KOREAN NUCLEAR FACILITIES

The recent revelations about North Korea's secret uranium enrichment program, and its decision to lift the freeze on plutonium production, have prompted renewed calls for military attacks on nuclear facilities to terminate North Korea's nuclear weapons program. However, the policy framework outlined above suggests that the military option should have been pursued in 1986, before North Korea's plutonium production reactor was operational. At present, there are three sets of reasons why a military option is no longer viable.

First, and most importantly, North Korea now has a nuclear deterrent. Defense Secretary Donald Rumsfeld stated publicly in August 2001 that "North Korea possess[e] enough plutonium to produce two to three, maybe even four to five nuclear warheads." Thus, any proposal for a conventional attack on the DPRK's nuclear facilities must account for the possibility that North Korea

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23 Of course, the Cold War had not ended in 1986. Accordingly, unilateral military action by the United States would have risked confrontation with the Soviet Union. Moreover, under then-prevailing geopolitical conditions, collective action by the Security Council would not have been politically feasible. In short, North Korea's nuclear weapons program was fueled, in part, by political paralysis among the permanent members of the Security Council.

24 CRS Issue Brief for Congress at 6 (cited in note 18).
might launch a nuclear counterattack on Seoul, or on a US military base in South Korea. Even if Secretary Rumsfeld has overestimated the DPRK's nuclear capability, and notwithstanding the United States' overwhelming military superiority, the fear of a North Korean nuclear reprisal is a very powerful deterrent.

Second, the risk of causing severe radiological damage also provides a strong disincentive against certain possible attack scenarios. As noted above, a surgical strike against North Korea's uranium enrichment facility is unlikely to cause significant radiological damage. The same is true with respect to the 50 MW(e) and 200 MW(e) graphite-moderated reactors, which have never been operational. However, an attack directed at the 5 MW(e) reactor and/or the reprocessing plant would probably cause substantial civilian casualties and widespread environmental damage. Indeed, the resultant loss of life and environmental damage might be sufficiently grave that an attack could be considered a violation of the laws of war. Even assuming that such an attack was legal, humanitarian considerations weigh heavily against any attack that would cause severe radiological damage. Finally, the expected negative political repercussions might be sufficient to deter such an attack.

Third, South Korea recently elected a new President, Mr. Roh Moo Hyun, who favors a more conciliatory approach to North Korea. Mr. Roh would probably oppose any proposal for military action against North Korea. The Security Council is unlikely to approve military action over South Korean objections, and the United States would be reluctant to undertake unilateral action in the face of South Korean opposition. Thus, in the current political climate, proposals for a conventional attack on North Korean nuclear facilities are unrealistic.

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25 See notes 11–13 and accompanying text. If there was no nuclear material present in the 5 MW(e) reactor or the reprocessing plant during the eight year "freeze"—which was in effect from November 1994 until December 2002—and if those facilities were attacked before nuclear material was reintroduced, the radiological effects of an attack would be mitigated to some extent. Absent access to detailed technical information, it is not possible to determine the extent of mitigation.

26 Protocol No I to the Geneva Conventions, 1125 UNTS 3 (1977), prohibits "[a]n attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated." Id at art 51, ¶ 5. Moreover, those who plan an attack are obligated to "[t]ake all feasible precautions in the choice of means and methods of attack with a view to avoiding, and in any event to minimizing, incidental loss of civilian life, injury to civilians and damage to civilian objects." Id at art 57, ¶ 2(a). Finally, "[i]t is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment." Id at art 35, ¶ 3. The United States is not a party to Protocol I. However, some of its provisions may be reflective of customary international law. See Legality of the Threat or Use of Nuclear Weapons, 1996 ICJ 226, 241–43 (July 8).

III. PREEMPTIVE ATTACKS ON NUCLEAR FACILITIES: A LEGAL ANALYSIS

Before initiating a military strike against a proliferant state's nuclear facilities, policymakers would have to consider the international legal ramifications of such an attack. Absent authorization by the UN Security Council, there are two plausible legal justifications for a preemptive attack. One possible justification relies on a narrow interpretation of the legal prohibition against the use of force, which is embodied in Article 2(4) of the UN Charter. The second possible justification relies on a broad reading of the right to self-defense under Article 51 of the Charter. Part III discusses both possible justifications. Part IV considers possible collective action by the Security Council.

A. ARTICLE 2(4) AND PREEMPTIVE ATTACKS ON NUCLEAR FACILITIES

On June 7, 1981, Israel launched an aerial attack that destroyed an Iraqi nuclear reactor located near Baghdad. The UN Security Council strongly condemned the attack as a "clear violation of the Charter of the United Nations and the norms of international conduct." The Security Council resolution invoked Article 2(4) of the Charter, which prohibits the use of force "against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations." Generally speaking, academic commentary on Article 2(4) is divided between those who support a broad interpretation, and others who support a narrow interpretation. The majority view is that Article 2(4) prohibits any transboundary use of armed force, unless that use of force can be justified as an act of self-defense or is authorized by the Security Council (the "broad

28 There are two other possible legal justifications for preemptive attacks, which will not be discussed in detail. One leading scholar has argued that the UN Charter's prohibition against the use of force has been so greatly eroded by inconsistent state practice that it is no longer binding law. See 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 Poly 539 (2002). Another recent article contends that the best rationale for preemptive attacks is that states have an inherent "Right to Life," which "prevents the random annihilation of their populations from weapons of mass destruction in the hands of unstable regimes." Major Michael Lacey, Self-Defense or Self-Denial: The Proliferation of Weapons of Mass Destruction, 10 Ind Int'l & Comp L Rev 293, 294 (2000).


30 United Nations Charter, art 2(4) ("All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any state, or in any other manner inconsistent with the Purposes of the United Nations.").
interpretaion”). Advocates of the broad interpretation rely, in part, on the negotiating history of the UN Charter, which suggests that the phrase “against the territorial integrity or political independence of any state” was not intended to restrict the Charter’s broad prohibition against the transboundary use of force. Key decisions by the International Court of Justice also support the broad interpretation of Article 2(4). For those who adhere to the broad interpretation, the Israeli attack on the Iraqi reactor was a clear violation of Article 2(4).

In an article published shortly after the Israeli attack, Professor Anthony D’Amato challenged that view; his analysis illustrates the narrow interpretation of Article 2(4). Professor D’Amato argued that the Israeli attack was not directed against Iraq’s “territorial integrity” because Israel did not attempt to alter Iraq’s territorial boundaries. Nor did the Israeli attack threaten Iraq’s “political independence” because Israel’s only purpose was to destroy the reactor. Therefore, under a plain meaning approach to interpretation of Article 2(4), the only serious question is whether the attack was “inconsistent with the Purposes of the United Nations.” Professor D’Amato contended that “[t]he destructive potential of nuclear weapons is so enormous as to call into question any and all received rules of international law regarding the trans-boundary use of force.” Thus, even though the Israeli attack would otherwise be inconsistent with the purposes of the United Nations, the attack might be justified as a means of preventing Iraq from acquiring nuclear weapons.

The central difficulty with this argument is that it views Article 2(4) in isolation from Article 51, which provides that the Charter shall not “impair the inherent right of individual or collective self-defence if an armed attack occurs against a Member of the United Nations.” There is no doubt that the Israeli attack on the Iraqi reactor was an “armed attack” within the meaning of Article 51. Therefore, the Israeli attack triggered Iraq’s right to respond in self-defense.

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31 See, for example, Yoram Dinstein, War, Aggression and Self-Defence 80–86 (Cambridge 3d ed 2001).
33 See Military and Paramilitary Activities (Nicar v US), 1986 ICJ 14, 98–106, 118–123 (June 27); Corfu Channel (UK v Alb), 1949 ICJ 4, 32–35 (Apr 9).
35 Id at 588.
Customary international law requires that steps taken in self-defense be necessary and proportionate to the initial attack. If Iraq had responded by using conventional weapons to attack a single military target in Israel, that would certainly have been a proportionate response, assuming that Iraq took steps to minimize civilian casualties. Of course, an Iraqi attack against a target in Israel would also be an armed attack, which would trigger Israel’s right of self-defense, and so on \textit{ad infinitum}. In short, Professor D’Amato’s logic collapses of its own weight because it provides justification for an endless cycle of legal attacks and counterattacks. That is directly contrary to the central purpose of the UN Charter: “[t]o maintain international peace and security, and … to bring about by peaceful means … settlement of international disputes or situations which might lead to a breach of the peace.”

Advocates of the narrow interpretation might advance one of two arguments. One approach would be to adopt a narrow interpretation of the phrase “armed attack” in Article 51, such that any use of force that is legal under Article 2(4) is, by definition, not an “armed attack.” A second approach would hold that whenever State X launches an armed attack against State Y that is justified under a narrow interpretation of Article 2(4), and State Y exercises its right of self-defense by launching an armed attack against State X, State X has no further right to respond in self-defense because State X effectively exercised its right of self-defense in advance. Neither argument is entirely without merit. However, the practical reality is that it is exceedingly difficult to check the escalation of violence once it has been initiated. That is why the drafters of the UN Charter attempted to draw a legal line to prevent the initiation of violence, rather than attempting to prevent the escalation of violence. An interpretive approach that authorizes the first use of armed force, and then prohibits the subsequent use of armed force, is doomed to fail because political leaders will heed generals, not lawyers, when responding to an armed attack.

In sum, although there is merit to the argument for a narrow interpretation, Article 2(4) cannot be construed so narrowly as to exclude from its scope a use of military force that would constitute an “armed attack” under Article 51 because that would justify an endless cycle of attack and counterattack.\footnote{Id at art 1(1).} Moreover, any use of military force by one state to destroy a
nuclear facility on the territory of another state necessarily qualifies as an "armed attack" under Article 51. Therefore, absent Security Council authorization, Article 2(4) prohibits the use of military force by one state to destroy a nuclear facility on the territory of another state, unless the attacking state can legitimately claim to be acting in self-defense.

B. ARTICLE 51 AND THE INHERENT RIGHT OF SELF-DEFENSE

As with Article 2(4), academic commentary on Article 51 tends to be split between broad and narrow interpretations. The narrow interpretation of Article 51 is based upon the text of the Charter, which refers to the right of self-defense "if an armed attack occurs against a Member of the United Nations." Based on this language, advocates of the narrow interpretation contend that the Charter prohibits the use of force in self-defense until after an armed attack has already occurred. Under the narrow interpretation, preemptive attacks against nuclear facilities can never be justified as acts of self-defense. Rather, a state that fears its adversary's emerging nuclear capability must wait for the adversary to attack before exercising its right of self-defense.

Advocates of the broad interpretation contend that Article 51 was not intended to limit the preexisting customary right of self-defense. In support of this view, they note that the Charter refers to "the inherent right of individual or collective self-defence." Pre-Charter customary law condoned acts of anticipatory self-defense in cases where "the necessity of that self-defence is instant, overwhelming, and leaving no choice of means, and no moment for deliberation." Thus, under pre-Charter customary law, a state could exercise its right of self-defense before its enemy attacked if the threat of an attack was imminent. However, the imminence requirement, as traditionally understood, would preclude launching preemptive attacks on nuclear facilities at the optimal time—that is, before nuclear material is introduced into a facility—because pre-Charter customary law authorized acts of anticipatory self-defense only to address the imminent threat of an attack, not to address the development of a new military capability. Moreover, for the reasons discussed above, if a state

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40 United Nations Charter, art 51 ("Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security.").

41 John Bassett Moore, 2 A Digest of International Law § 217, at 412 (GPO 1906) (quoting correspondence between Mr. Webster, the US Secretary of State, and Lord Ashburton, the British plenipotentiary, in relation to the famous Caroline incident).

42 See, for example, Brownlie, International Law and the Use of Force by States at 231-50 (cited in note 32).
waits until the threat of a nuclear attack is imminent, a preemptive attack against the adversary’s nuclear facilities is unlikely to be an attractive military option.

Recognizing this dilemma, some commentators have argued that the traditional imminence requirement must be relaxed in order to account for the unique threat posed by nuclear weapons. Given the tremendous destructive potential of nuclear weapons, one could argue, the production of HEU or separated plutonium by an adversary is itself a significant threat. Therefore, when it becomes clear that an adversary will soon commence production of HEU or separated plutonium, the threat is sufficiently imminent that a preemptive attack can be justified as an act of anticipatory self-defense.\(^4\)

In this author’s judgment, the preceding argument provides a compelling justification for preemptive action by the UN Security Council. However, if framed as a legal rationale for unilateral acts of anticipatory self-defense, the argument suffers from one serious flaw: it fails to account for the fact that the UN Charter embodies a strong preference for collective action under Security Council auspices, rather than individual (or even collective) self-defense that is not authorized by the Security Council. There is wisdom underlying this approach. The Charter imposes strict legal constraints on the unilateral use of force because the drafters recognized that acts of violence usually beget further violence. By insisting on the requirement of Security Council authorization before initiating armed conflict, the drafters incorporated a significant political safeguard into the legal regime governing the use of force. Given the structure and composition of the Security Council, it is politically difficult to obtain Security Council authorization for the use of armed force. That political difficulty is deliberate—it is meant to ensure that states do not initiate armed conflict without strong justification.

Critics contend that the Charter framework is flawed because it prohibits states from using armed force unilaterally even in cases where the use of force is both necessary and morally justified. There are two responses to this argument. First, in cases where political leaders believe that unilateral military action is both necessary and morally justified, they will authorize the use of armed force regardless of whether it is legally prohibited. Even so, the legal prohibition is valuable because it encourages political leaders to consider other potential options before initiating unilateral military action.\(^4\) Second, with respect to the


\(^4\) Consider the analogy to highway speed limits. Drivers routinely violate the law by driving faster than the speed limit. Even so, speed limits are useful because they reduce the number
specific problem at issue here—the production of HEU and/or separated plutonium by a state that has not previously acquired a stockpile of weapons-grade nuclear materials—unilateral action is neither necessary nor justified because the Security Council can address the threat. Part IV discusses Security Council action under Chapter VII of the UN Charter.

**IV. A POLICY PRESCRIPTION**

Three points emerge from the preceding discussion. First, there is a strong policy argument in favor of a preemptive attack against a plutonium production reactor, reprocessing plant, and/or uranium enrichment facility in a state that has not previously produced a stockpile of weapons-grade nuclear material. Second, the optimal time for a preemptive attack is shortly before nuclear material is introduced into the facility. Third, under the UN Charter, any such preemptive attack would be a violation of international law unless authorized by the Security Council.

In light of the above, the five permanent members of the Security Council should issue a joint policy declaration along the following lines:

*Whereas* the Nuclear Nonproliferation Treaty accords the United States, Russia, China, France and the United Kingdom the legal status of “nuclear weapon states”;

*Whereas* Israel, India, and Pakistan are widely assumed to be “de facto” nuclear weapon states;

*Whereas* North Korea also appears to be close to acquiring a nuclear weapons capability;

*Whereas* the acquisition of nuclear weapons by additional states would pose a substantial threat to international peace and security;

*Whereas* the five permanent members of the Security Council have a special responsibility under the UN Charter for the maintenance of international peace and security;

The undersigned governments hereby declare as follows:

1. We will work together to persuade states (other than those named above) to refrain from building, or attempting to build, plutonium production reactors, reprocessing plants, and/or uranium enrichment facilities, unless the

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45 The question of how best to handle North Korea is the most politically delicate problem raised by the proposed declaration. Different approaches are possible, but if the declaration is to have any chance of success it will have to treat North Korea as a special case.
Security Council determines that a particular state with an advanced civilian nuclear power program has a demonstrated need for an enrichment or reprocessing capability;⁴⁶

2. If we are unable to persuade a particular state to refrain from building, or attempting to build, a plutonium production reactor, reprocessing plant, or uranium enrichment facility, we will work together to obtain Security Council authorization for a preemptive attack against such a facility, unless that state can persuade us that the subject facility is not a threat to the peace;⁴⁷

3. To allow the maximum possible time for peaceful resolution of disputes, we will not support an attack against such a facility unless or until construction of the facility is nearing completion;

4. To avoid the serious radiological damage that would likely result from an attack against an operational facility, we will support preemptive attacks before nuclear material is introduced into such a facility.

The primary targets of the proposed declaration are potential future nuclear proliferators, including states such as Iran, Libya, and Algeria. Current nonproliferation strategy with respect to those states relies on export controls on the supply side and diplomacy on the demand side. The proposed declaration would add a third prong to the strategy. Hopefully, the threat of a preemptive attack would dissuade states from attempting to produce nuclear weapons. But if states ignored the threat, a well-executed strike against nuclear material production facilities would prevent a potential proliferator from producing weapons-grade nuclear material.

It bears emphasis that the proposed declaration does not address the nuclear proliferation risks associated with the Israeli, Indian, Pakistani, or North Korean nuclear programs. The option of launching a preemptive attack against Israel, India, or Pakistan does not even merit serious discussion. Some believe that a preemptive attack against North Korea is still a viable option. The proposed declaration would not preclude the possibility of a preemptive attack against North Korean facilities, but the declaration recognizes that North Korea is a unique case that requires special treatment.

Ten or fifteen years ago, this type of joint policy declaration would have been unthinkable. But recent political developments suggest that such a joint declaration may now be politically feasible. In one sense, the proposed declaration builds on recent experience with Iraq, where the Security Council, in response to strong US leadership, has adopted a muscular approach to

⁴⁶ The final clause is necessary because there are some states, such as Japan and Germany, that have a legitimate reason for developing enrichment and/or reprocessing capabilities in the context of their civilian nuclear power programs.

⁴⁷ This formulation is intended to secure agreement on the general principle, while still preserving flexibility for the Security Council and its permanent members to make case-by-case determinations as particular situations develop.
enforcement of nonproliferation norms. More directly on point, though, are the parallel unilateral declarations issued by the five nuclear weapon states in 1995, in the context of extending the NPT. At that time, each of the five nuclear weapon states announced (with slight variations in wording) that it would work through the Security Council to provide immediate assistance to any non-nuclear-weapon state party to the NPT that was threatened with a nuclear attack. The Security Council, in turn, welcomed “the intention expressed by certain States that they will provide or support immediate assistance, in accordance with the Charter, to any non-nuclear-weapon State Party to the Treaty on the Non-Proliferation of Nuclear Weapons that is a victim of an act of, or an object of a threat of, aggression in which nuclear weapons are used.”

Of course, the proposed declaration goes further in that it promises a definite, forceful response to a specific type of nuclear threat, whereas the parallel statements issued in 1995 merely offered a vague promise of assistance in addressing nuclear threats generally. Even so, there is sufficient diplomatic precedent that, with strong US leadership, it should be possible to reach agreement on something like the proposed joint policy declaration. If China ultimately refuses to cooperate, it would still be helpful to reach agreement among the United States, Russia, France, and the United Kingdom.

V. CONCLUSION

In December 2002, President Bush announced a national strategy to combat weapons of mass destruction (“WMD”). The Bush strategy states that US military forces “must have the capability to defend against WMD–armed adversaries, including in appropriate cases through preemptive measures.” This Article suggests that preemptive attacks against nuclear facilities may be appropriate in some cases. However, President Bush’s emphasis on unilateral action, rather than multilateral action, may prove self-defeating in the long run, because unilateral action is likely to foster additional anti-American sentiment. In contrast to the President’s unilateralism, this Article has proposed a joint policy declaration by the five permanent members of the Security Council threatening preemptive attacks against certain types of nuclear facilities. If adopted, the proposed declaration would not be a panacea, but it would provide an additional tool to help combat the threat of nuclear proliferation.

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48 See Security Council Res No 1441, UN Doc No S/RES/1441 (2002) (requiring Iraq to provide international inspectors “immediate, unconditional, and unrestricted access to any and all, including underground, areas, facilities, buildings, equipment, records, and means of transport which they wish to inspect, as well as immediate, unimpeded, unrestricted, and private access to all officials and other persons” whom the inspectors choose to interview).

