Proliferation Persuasion: Coercive Bargaining with Nuclear Technology

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I started my doctoral studies because my parents Alan and Constance raised me to value the pursuit of knowledge in service of the greater societal good. I completed this dissertation with the love and support of Manar. While they have been the primary drivers and supporters of my work, we are embedded within a larger network of family and friends. I dedicate this dissertation to my mother, father, Manar, and the excellent people in our lives that make this work worthwhile.

Abstract of Dissertation

Proliferation Persuasion: Coercive Bargaining with Nuclear Technology

Why do states wait for prolonged periods of time with the technical capacity to produce nuclear weapons? Only a handful of countries have ever acquired the sensitive nuclear fuel cycle technology needed to produce fissile material for nuclear weapons. Yet the enduring trend over the last five decades is for these states to delay or forgo exercising the nuclear weapons option provided by uranium enrichment or plutonium reprocessing capabilities. I show that states pause at this threshold stage because they use nuclear technology to bargain for concessions from both allies and adversaries. But when does nuclear latency offer bargaining benefits?

My central argument is that challengers must surmount a dilemma to make coercive diplomacy work: the more they threaten to proliferate, the harder it becomes to reassure others that compliance will be rewarded with nuclear restraint. I identify a range of mechanisms able to solve this credibility problem, from arms control over breakout capacity to third party mediation and confidence building measures. Since each step towards the bomb raises the costs of implementing these policies, a state hits a sweet spot when it first acquires enrichment and/or reprocessing (ENR) technology. Subsequent increases in proliferation capability generate diminishing returns at the bargaining table for two reasons: the state must go to greater lengths to make a credible nonproliferation promise, and nuclear programs exhibit considerable path dependency as they mature over

time. Contrary to the conventional wisdom about power in world politics, less nuclear latency thereby yields more coercive threat advantages.

I marshal new primary source evidence from archives and interviews to identify episodes in the historical record when states made clear decisions to use ENR technology as a bargaining chip, and employ this theory of proliferation persuasion to explain how Japan, North Korea, and Iran succeeded and failed to barter concessions from the United States. By clarifying when countries are able to leverage steps towards the bomb for international political gain, my work advances our understanding of proliferation and coercive diplomacy.

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Chapter 1: Introduction

The Islamic Republic of Iran began its quest for nuclear technology in the 1980s. Tehran poured scarce resources into efforts to develop a fissile material and nuclear weapons production capacity. For many years, the program suffered from poor management and an inability to procure sensitive technology. By the late 1990s, Tehran's investment paid off when the uranium gas centrifuge project started construction on fuel enrichment plants at the Natanz complex.[1] Revelation of this covert facility in August 2002 left the regime susceptible to preventive war and catalyzed punitive reactions as other states counterbalanced, contained, and punished Iran.[2] Instead of producing nuclear weapons as quickly as possible during the next decade, Tehran enhanced its uranium enrichment capacity to cast a short shadow of Persian proliferation over the region. The regime paid high costs to retain a nuclear weapons option in exchange for unclear net benefits.[3]

Why do states wait for prolonged periods of time with the technical capacity to produce nuclear weapons? Iran is just the most current example of this enduring trend. Scholars have long observed states develop uranium enrichment or plutonium reprocessing capabilities, only to then delay or forgo the acquisition of nuclear weapons.[4]

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[1] David Albright, *Peddling Peril: How the Secret Nuclear Trade Arms America's Enemies* (New York: Free Press, 2010), pp. 70–81; David Patrikarakos, *Nuclear Iran: The Birth of an Atomic State* (New York: I. B. Tauris, 2012), pp. 143–166.

[2] Dalia D. Kaye and Frederic M. Wehrey, "A Nuclear Iran: The Reactions of Neighbours," *Survival*, Vol. 49, no. 2 (2007), pp. 111–28; Kenneth Katzman, *Iran Sanctions* (Washington, D.C.: Congressional Research Service, May 7, 2014).

[3] Mohsen M. Milani, "Tehran's Take: Understanding Iran's U.S. Policy," *Foreign Affairs*, Vol. 88, No. 4 (August 2009), pp. 46–57; Ali Vaez and Karim Sadjadpour, *Iran's Nuclear Odyssey* (Washington, D.C.: Carnegie Endowment for International Peace, 2013).

[4] See George H. Quester, "Some Conceptual Problems in Nuclear Proliferation," *The American Political Science Review*, Vol. 66, No. 2 (1972), pp. 490–97; Albert J. Wohlstetter, *Swords from Plowshares: The Military Potential of Civilian Nuclear Energy* (Chicago: University of Chicago Press, 1979); Stephen M. Meyer, *The Dynamics of Nuclear Proliferation* (Chicago: University of Chicago Press, 1986); Scott D.

The ability to produce the fissile material needed for a nuclear weapon is a chokepoint because enrichment and reprocessing (ENR) technology is difficult to acquire and operate. As a result, just a few dozen states ever built the ENR facilities required to proliferate.[5] Throughout the Cold War, a handful of countries in Europe, Asia, and Latin America moved into the ENR zone, but largely abstained from nuclear weapons. More recently, North Korea, Libya, and Iran also acquired ENR capabilities yet paused at various stages of development. The decision to wait with a vulnerable nuclear program in lieu of a strategic deterrent seems odd from a national security perspective. Proliferation often signals an impeding shift in the balance of power, thereby motivating others to levy sanctions, target nuclear infrastructure, or initiate militarized conflict to resolve outstanding disputes.[6]

Scholars of nuclear proliferation offer four solid but ultimately incomplete explanations of this behavior. First, a state with the technical capacity to proliferate may not want to defect from the nonproliferation regime, leave the security umbrella of an allied patron, or incur various risks and penalties of deploying a new nuclear force.

Sagan, "The Causes of Nuclear Weapons Proliferation," *Annual Review of Political Science*, Vol. 14, No. 1 (2011), pp. 225–44.

[5] Owen R. Coté, "A Primer on Fissile Material and Nuclear Weapon Design," in Graham Allison, Owen Coté, and Steven E. Miller, eds., *Avoiding Anarchy: Containing the Threat of Loose Nuclear Weapons and Fissile Material* (Cambridge, Mass.: The MIT Press, 1996), pp. 203-228; Fred McGoldrick, *Limiting Transfers of Enrichment and Reprocessing Technology: Issues, Constraints, Options* (Cambridge, Mass.: Project on Managing the Atom, Harvard University, May 2011), pp. 7–10.

[6] On the preventive motivation for war, see James D. Fearon, "Rationalist Explanations for War," *International Organization,* Vol. 49, No. 3 (Summer 1995): 406; Muhammet A. Bas and Andrew J. Coe, "Arms Diffusion and War," *Journal of Conflict Resolution,* Vol. 56, No. 4 (Fall 2012), pp. 651–74. For explanations of why military attacks on nuclear programs are rare, see William Burr and Jeffrey T. Richelson, "Whether to 'Strangle the Baby in the Cradle': The United States and the Chinese Nuclear Program, 1960–64," *International Security,* Vol. 25, No. 3 (Winter 2000/01), pp. 54–99; Matthew Fuhrmann and Sarah E. Kreps, "Targeting Nuclear Programs in War and Peace: A Quantitative Empirical Analysis, 1941-2000," *Journal of Conflict Resolution,* Vol. 54, No. 6 (Winter 2010), pp. 831–59.

Exercising restraint may avoid these consequences.[7] Second, a nuclear aspirant can defray some of these costs by acquiring the ability to produce many nuclear weapons if the decision is made to proliferate. As a result, the state pauses to resolve outstanding technical problems and build up its breakout capacity.[8] Third, some countries seek ENR technology to harvest the energy security returns from a full nuclear fuel cycle, and go to great lengths to reveal civilian objectives. Fourth, ambivalent governments without a clear strategic plan often acquire and enhance ENR capabilities but avoid making the decision to operationalize nuclear weapons into a strategic defense posture.[9]

I contend that the existing scholarship misses an additional explanation. States often wait with a nuclear weapons option because the technology provides coercive bargaining advantages. Since nuclear weapons are the 'great equalizers' among nations, proliferation poses high costs to other states. Adversaries suffer a loss in relative power. With only a few nuclear weapons, a weak state can undercut the power projection capabilities of a superior rival by creating a new strategic calculus that "seems to make coercive success harder."[10] Within an alliance, protégé proliferation increases the risk of entrapment and restricts a patron's freedom of action. Rather than endure these costs, states prefer that others not acquire nuclear weapons. Yet this opposition to nuclear

[7] On why states forgo nuclear weapons, see Etel Solingen, "The Political Economy of Nuclear Restraint," *International Security,* Vol. 19, No. 2 (Autumn 1994): 126–69; T.V. Paul, *Power Versus Prudence : Why Nations Forgo Nuclear Weapons* (Kingston, Ontario: McGill-Queen's University Press, 2000); Philipp C. Bleek and Eric. B. Lorber, "Security Guarantees and Allied Nuclear Proliferation," *Journal of Conflict Resolution*, Vol. 58. No. 3 (2014), pp. 429-454; Nuno P. Monteiro and Alexandre Debs, "The Strategic Logic of Nuclear Proliferation," *International Security,* Vol. 39, No. 2 (Autumn 2014), pp. 7–51.

[8] This logic stems from the literature on new nuclear weapon states, see Peter D. Feaver, "Command and Control in Emerging Nuclear Nations," *International Security,* Vol. 17, No. 3 (Winter 1992/93), pp. 160–87. On technical delay, see Jacques E. C. Hymans, *Achieving Nuclear Ambitions: Scientists, Politicians, and Proliferation* (New York: Cambridge University Press, 2012).

[9] Itty Abraham, "The Ambivalence of Nuclear Histories," *Osiris,* Vol. 21, No. 1 (2006), pp. 49–65.

[10] Michael C. Horowitz, *The Diffusion of Military Power* (Princeton, N.J.: Princeton University Press, 2010), p. 106.

weapons creates an opportunity ripe for coercive diplomacy.[11] Once a state possesses ENR technology, it can issue a credible threat to proliferate if a target does not comply with demands. A targeted nation may capitulate to this type of intimidation if the challenger promises to exercise indefinite nuclear restraint.

The historical record is rife with states using nuclear programs as tools of diplomatic persuasion. In 1975, the U.S. intelligence community observed a handful of allies employ ENR technology to gain leverage over Washington. Most notably, Italy and Japan played up the prospect of going nuclear in the 1960s to coax compliance with demands for enhanced military assistance and territorial reversion of Okinawa, respectively. This behavior led the Central Intelligence Agency to conclude, "Future nuclear politics will almost certainly include states which will exploit their threshold positions, as much or more than their actual capabilities … such cases are likely to become more common."[12] The prediction proved prescient. Pakistan modulated nuclear ambitions to enhance military support from the Carter and Reagan Administrations. North Korea blackmailed the U.S. for concessions in the early 1990s. In 2003, Libya traded away its enrichment capacity for sanctions relief, while Iran began negotiating with its nuclear program to change an unfavorable status quo. Since a diverse range of states leveraged nuclear technology as a bargaining chip, a theory is needed to explain the logic and practice of coercive diplomacy with this unique type of latent power.

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[11] Scholars debate whether the spread of nuclear weapons has a negative or positive effect on international security, see Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: An Enduring Debate* (New York: W. W. Norton & Company, 2012). But optimists are in the minority among U.S. foreign policy and intelligence circles, so proliferation is often ranked as a leading security threat, see Francis J. Gavin, "Politics, History and the Ivory Tower-Policy Gap in the Nuclear Proliferation Debate," *Journal of Strategic Studies,* Vol. 35, No. 4 (2012), pp. 573–600.

[12] U.S. Central Intelligence Agency, "Managing Nuclear Proliferation: The Politics of Limited Choice," Research Study, December 1975, National Security Archive [hereafter NSA], p. 39.

When does the capacity to produce nuclear weapons offer a coercive threat advantage? Once a state acquires the ability to produce fissile material, coercive diplomacy is likely to succeed when the proliferation threat is backed with a credible promise to forgo nuclear weapons. Yet ENR technology creates a commitment dilemma. The more a challenger threatens to proliferate, the harder it becomes to convince the target that compliance will be rewarded with nuclear restraint. Drawing from the costly signaling literature, I identify a range of mechanisms able to solve this credibility problem, from arms control over breakout capacity to third party mediation and confidence building measures. Since each technical step towards the bomb raises the costs of implementing these policies, the challenger hits a sweet spot when it first acquires ENR technology. Subsequent increases in proliferation capability generate diminishing returns at the bargaining table because the challenger must go to greater lengths to make a credible nonproliferation promise. Less nuclear technology yields more net political rewards.

This dissertation builds a theory of coercive diplomacy with nuclear technology to offer three insights about the relationship between proliferation and international bargaining. First, I identify numerous episodes in Chapter 1 when states paused at technical milestones to use progress towards the bomb as a bargaining chip. The more detailed case study chapters show that countries as different as North Korea, Japan, and Iran leveraged ENR technology to gain diplomatic advantages over the United States. These findings complement scholarship on the political dynamics of nuclear technology. The work of Jacques Hymans implies that poor management of nuclear programs may

keep a proliferator stuck at various stages in the ENR zone.[13] In a similar vein, Alex Montgomery argues that nuclear scientific establishments often struggle to develop the tactic knowledge needed to operate ENR facilities.[14] While such factors impact the pace of development, my work shows that there are periods when delay or slow progress cannot be entirely attributed to technical problems.

Second, power often endows states with bargaining advantages over the weak. In contrast, the theory I construct in Chapter 2 demonstrates how states reap the most benefits when they first acquire ENR technology. Although proliferation initiates a 'step-level' shift in relative power between states, I pinpoint when and how states can leverage smaller steps towards the bomb to compel concessions. This claim exposes a wrinkle in the traditional view of power in world politics. More nuclear latency is not better from a bargaining perspective because a rapid breakout capability thwarts the art of making believable promises. The chapters on Japan in the 1960s and North Korea in 1994 show that challengers are most willing to make a nonproliferation assurance at a low level of nuclear latency. Challengers will be least willing to pay the price required for a strong promise after issuing a more severe threat of proliferation, as exemplified by Pyongyang's reluctance to disable its nuclear weapons program in 2007. But the Iran chapter shows that an advanced proliferator can assuage the target if it is willing to pay high costs upfront for modest rewards.

Third, domestic politics matter for the durability of a nonproliferation deal. More specifically, domestic coalitions and actors impact whether the challenger is willing and

[13] Hymans, *Achieving Nuclear Ambitions*.
[14] Alexander H. Montgomery, "Stop Helping Me: When Nuclear Assistance Impedes Nuclear Programs," in Adam Stulberg and Matt Fuhrmann, eds., *The Nuclear Renaissance and International Security* (Stanford, C.A.: Stanford University Press, 2013), pp. 177-200.

able to issue a strong assurance. Chapters 3 and 4 trace out the incentives the leadership of North Korea and Japan faced to uphold their respective promises despite antithetical political structures. Washington knew that regime survival in Pyongyang was briefly predicated on energy imports provided under the Agreed Framework. In Tokyo, the political longevity of legislative coalitions became dependent on remaining a nonnuclear weapon state. On the other hand, Chapter 5 explores how factional competition and outright turmoil within Tehran undermined the ability of the Iranian regime to uphold promises for many years.

My work has several implications for nonproliferation policy. As typified by the intra-alliance negotiations between Japan and the U.S. in Chapter 3, the United States should be prepared to buy out the nuclear ambitions of its allies with concessions, and lock in strong nonnuclear assurances by maintaining its extended deterrent pledges over time. The theory also recommends an equal emphasis be placed on technical constraints and political commitments during negotiations with adversaries. American diplomats should strive to lengthen an adversary's breakout timeline but also find policies to guard against future change. Offering a combination of rewards and punishments in response to demands can enhance U.S. national security if the deal averts further increases in nuclear latency. To this end, Washington must provide the stipulated benefits for the duration of the agreement to avoid creating an excuse for the challenger to cheat or renege. But if a state wants to retain ENR capabilities, then it must accept that the arms control policies built into the Nonproliferation Treaty regime do not necessarily eliminate concern over how this latency might be used in the future. A right to fissile material thus comes with the obligation to resolve the credible commitment problem during diplomacy.

The dissertation is organized as follows. Chapter 2 presents the core theory of proliferation persuasion to explain when exactly coercive diplomacy with nuclear technology is most and least likely to be successful. Chapter 3 uses this framework to argue that North Korea waited in the ENR zone to build up its nuclear breakout capacity and extort concessions from foreign governments. Yet Pyongyang only found its rent-seeking stratagem of coercive diplomacy advantageous when it hit the sweet spot of a moderate threat and adequate nonnuclear promise in 1994. Chapter 4 examines how Japan faced very different incentives to remain a nonnuclear weapon state, but also managed to leverage emerging nuclear fuel cycle capabilities during intra-alliance negotiations with the United States. Chapter 5 on Iran argues that the Islamic regime long wanted to acquire a nuclear weapons option, but recurrent shifts in its nuclear development policy and international bargaining posture made it difficult for the Iranians to assure others that the nuclear program would not be used for military purposes. Chapter 6 recaps the take-home points from the theory in light of these detailed case studies, and assesses effective policy responses for dealing with proliferation and associated diplomacy.

Chapter 2: A Theory of Proliferation Persuasion

A theory of proliferation persuasion is needed to account for an important reason states hedge with advanced nuclear technology, and explain when this unique type of coercive diplomacy is most and least likely to be successful. To preview my primary argument, bargaining success depends on the willingness and ability of the challenger to resolve a commitment problem. Less nuclear latency provides an optimal means of compellence because it becomes increasingly costly for the challenger to restrain itself close to the bomb. I build this foundational argument of the dissertation in three parts. Section 1 specifies the concept of proliferation persuasion to differentiate this behavior from similar actions in nuclear politics, and identifies a narrow set of observable cases. Section 2 advances a theory of proliferation persuasion to discern when a challenger's mix of threats and promises leads to coercive threat success and failure. Section 3 discusses case selection criteria to focus in on three dissimilar challengers seeking to compel concessions from the United States: North Korea, Japan, and Iran.

(1) What is Proliferation Persuasion?

Proliferation persuasion is a type of coercive diplomacy in which a state uses its ability to produce nuclear weapons as a form of bargaining leverage. One state (the challenger) makes an explicit demand that another country (the target) alter the status quo, backed by a threat to proliferate if the target does not comply.[1] I use this definition to specify two attributes. First, the challenger must establish an explicit link between demands placed on the negotiation table and the future of its nuclear ambitions. Second,

[1] I use the concept of compellence defined by Todd Sechser in "Militarized Compellent Threats, 1918–2001," *Conflict Management and Peace Science*, Vol. 28, No. 4 (September 2011), pp. 377–401. My use of the 'challenger' and 'target' terminology is heuristic and does not imply normative connotations.

the nuclear program needs to have surmounted the fissile material chokepoint by operating enrichment or reprocessing technology. These qualifications identify and distinguish episodes of proliferation persuasion.

(1.1) Political Requirement: Intentional Delay to Bargain (or Bargaining Once Delayed)

The first requirement is for the challenger to signal that its decision to forego nuclear weapons depends on the target's compliance with a clear set of demands. The most blatant manifestation is blackmail. A challenger demands the target pay tribute in return for immunity from future harassment. In an emblematic case, the North Koreans signaled in 1993 that they would not proliferate if the United States provided economic and political concessions. Beyond blackmail, a revisionist state may find its nuclear program or very regime survival at risk as other states undertake counter-proliferation efforts and apply various forms of punitive pressure. The emerging nuclear-capable may become delayed in such a precarious situation, but then seek to leverage its nuclear program – specifically the promise of nuclear restraint or abandonment – to bargain out of this risky spot and change an unfavorable status quo. Iran and Libya both adopted such a policy of reactive self-preservation. Tehran fluctuated nuclear progress between 2003 and 2014 to extract security guarantees from the Europeans, lift international sanctions, and pressure Washington into changing its nonproliferation objectives.[2] In 2003, Libyan officials approached the United States and Great Britain with an offer to dismantle the

[2] Emily B. Landau, *Decade of Diplomacy: Negotiations with Iran and North Korea and the Future of Nuclear Nonproliferation* (Tel Aviv, Israel: Institute for National Security Studies, 2012).

nuclear program in the hopes of preventing regime change and lifting economic sanctions.[3]

A proliferation threat also provides leverage to bargain for change within an alliance relationship. After Italy developed a civil nuclear program in the 1960s, Italian diplomats "raised and agitated the problem of atomic weapons but did not really intend to go nuclear. On the contrary, the Italian government expected to reap a large number of diplomatic benefits from its 'threshold' status," and used nuclear initiatives "as a way of pressuring the U.S. to yield to European requests."[4] During the same decade, Japanese leaders established a *quid pro quo* between Japan's nuclear future and the territorial reversion of Okinawa from the United States. To avoid damaging the alliance, Premier Sato deftly drew out subtle but discernable linkages between these issues behind closed doors.[5] Pakistan moved aggressively towards the bomb in the late 1970s, but made constraints over its emerging nuclear option dependent on enhanced economic and military assistance from Washington.[6]

The focus on coercive diplomacy excludes states that take technical steps towards a nuclear weapon without leveraging these milestones to compel concessions. Iraq provides an apt illustration. By 1987, Iraqi scientists achieved a breakthrough in the ability to produce small amounts of weapons-usable fissile material, but Saddam Hussein did not use this technology as a bargaining chip. Instead, Saddam wanted a nuclear

[3] At first, the Libyan officials offered to give up the chemical weapon and ballistic missile programs. They may not have anticipated that they would soon have to put the nuclear program on the table as well. See Robert G. Joseph, *Countering WMD: The Libyan Experience* (Fairfax, V.A.: National Institute Press, 2009).
[4] Leopoldo Nuti, "'Me Too, Please': Italy and the Politics of Nuclear Weapons, 1945-1975," *Diplomacy and Statecraft,* Vol. 4, No. 1 (1993), pp. 137, 121.
[5] For archival sources, see the case study of Japan in the third part of this article.
[6] Dennis Kux, *The United States and Pakistan, 1947-2000: Disenchanted Allies* (Washington, D.C.: Woodrow Wilson Center Press, 2001), pp. 238–261.

deterrent capability as a shield to conduct coercive military operations at the conventional level, so he ordered a crash program to produce a single nuclear weapon on the eve of war with Kuwait in 1990.[7] Countries with more ambivalent intentions, such as Argentina and Brazil, are also bracketed from analysis because the governments did not issue threats directly linked to their respective nuclear programs.[8]

(1.2) Technical Requirement: The ENR Zone

The second qualification is that the challenger's nuclear program must be advanced enough to generate a credible threat of proliferation. The concept of nuclear latency measures how quickly a state could use its technology to develop a nuclear weapon.[9] A challenger's timeline to the bomb shrinks as it passes through three technical milestones arrayed along a continuum in Figure 1. The first is operating the enrichment and/or reprocessing (ENR) technology used to produce fissile material. The enrichment route uses isotope separation techniques, such as gas centrifuges or gaseous diffusion, to increase the proportion of fissile uranium. The plutonium pathway uses a nuclear reactor to produce, and chemical reprocessing facility to separate out plutonium from spent waste fuel. The second step scales up ENR technology to produce enough highly enriched uranium (HEU) or plutonium for a nuclear weapon.[10] The final phase assembles this

[7] Målfrid Braut-Hegghammer, "Revisiting Osirak: Preventive Attacks and Nuclear Proliferation Risks," *International Security*, Vol. 36, No. 1 (Summer 2011), pp. 101–32; Hal Brands and David Palkki, "Saddam, Israel, and the Bomb: Nuclear Alarmism Justified?" *International Security*, Vol. 36, No. 1 (Summer 2011), pp. 133–66.

[8] The United States did offer incentives to bring Argentina and Brazil into the global nonproliferation regime, but these sort of quid pro quos were not coercive and played a minor role in the overall denuclearization process, see James E. Doyle, "Argentina and Brazil," in *Nuclear Safeguards, Security and Nonproliferation*, ed. James E. Doyle (Oxford, United Kingdom: Butterworth-Heinemann, 2008), pp. 307–29.

[9] For a similar but more inclusive approach to coding ENR facilities, see Matthew Fuhrmann and Benjamin Tkach, "Almost Nuclear: Introducing the Nuclear Latency Dataset," *Conflict Management and Peace Science*, (forthcoming 2015).

[10] The International Atomic Energy Agency defines this as a 'significant quantity' of fissile material, see *IAEA Safeguards Glossary* (IAEA/NVS/3, June 2002), p. 23.

fissile material into an operational nuclear weapon.[11] The credibility of a threat to proliferate depends on the challenger's ability to traverse these steps.

[11] A first-generation nuclear weapon generates effects by rapidly combining pieces of fissile material into a supercritical mass to enable a nuclear chain reaction. A gun type slams together subcritical masses of highly enriched uranium (HEU). An implosion weapon surrounds a subcritical mass of plutonium or HEU with high explosive material that is used to compress the fissile material into a denser, supercritical mass. See U.S. Department of Energy, *Restricted Data Declassification Decisions 1946 to the Present* (RDD-7, Office of Declassification, January 2001).

Figure 1 – Technical Milestones

Pre-ENR	ENR Zone			Post-ENR
Prerequisite	Step 1: Enter	Step 2: Fissile Material	Step 3: Weaponize	Exit
Initiate civil / military nuclear program; R&D on ENR technology and nuclear fuel cycle	Operate uranium enrichment facility or nuclear reactor with reprocessing capability	Produce significant quantity of fissile material; or the ability to produce an SQ quickly	Turn fissile material into a first-generation fission weapon	Nuclear Force Posture

Most states do not have enough nuclear latency to practice proliferation persuasion because the acquisition of ENR technology is a major chokepoint. Both the uranium and plutonium pathways present numerous science and engineering challenges, especially for less-developed countries unable to procure turnkey nuclear facilities, assistance, or material from foreign suppliers. After the halcyon era of civil nuclear technology transfers backfired with India's test of a nuclear device in 1974, global nonproliferation policy evolved to focus on preventing the spread of ENR technology with stricter export controls and multilateral regimes, such as the Nuclear Suppliers Group. These efforts forced subsequent nuclear aspirants onto the illicit procurement markets to acquire sensitive dual-use machinery and components in secret. Whereas it only took Japan eight years to bring its first gas centrifuge facility online with foreign assistance, the Iranians struggled for seventeen years to accomplish the same feat in a more restrictive atmosphere.[12] As a result, it can take many years to bring a fissile material production capacity to operational fruition.

The problem with issuing a threat without ENR technology is that other states will seek to inhibit further nuclear development. A nuclear program is most vulnerable to

[12] Michael D. Zentner et al, *Nuclear Proliferation Technology Trends Analysis* (Pacific Northwest National Laboratory, September 2005), pp. 20, 101.

preventive action before it operates an ENR facility. As illustrated by Israeli Air Force raids on nuclear reactors in Iraq (1981) and Syria (2007), military strikes can "achieve the most success before a program … possesses the means to produce fissile material for nuclear bombs."[13] Diplomatic efforts can also effectively stop the development of sensitive technology at an early stage. The failed attempt by South Korea to reverse the Nixon Doctrine in 1975 is a case in point. South Korea issued a premature threat based on contracts for a nuclear reactor and reprocessing plant from France. The Nixon Administration responded with "the heaviest threat ever wielded by the United States against South Korea: that the entire U.S. security relationship would be put in doubt if Seoul went through with the plan." In face of such "powerful and adamant U.S. opposition," South Korea was forced to cancel the French contract.[14] The low threat credibility and high vulnerability of pre-ENR nuclear programs makes them unsuitable instruments of coercive diplomacy.

A challenger must move into the ENR zone before it can begin to bargain with the threat of proliferation. A state enters the lower boundary of this 'ENR zone' when it successfully operates either an enrichment or reprocessing technique. For instance, North Korea entered in 1991 when construction on a large reprocessing plant at the Yongbyon nuclear reactor complex neared completion.[15] Exit from the ENR zone occurs when the government integrates nuclear weapons into a national defense posture. Pyongyang moved out in late 2007 when it became apparent that the primary goal of the nuclear

[13] Sarah E. Kreps and Matthew Fuhrmann, "Attacking the Atom: Does Bombing Nuclear Facilities Affect Proliferation?" *Journal of Strategic Studies,* Vol. 34, No. 1 (April 2011), p. 179.
[14] Don Oberdorfer, *The Two Koreas: A Contemporary History* (New York: Basic Books, 2002), p. 72.
[15] Joseph S. Bermudez, "North Korea's Nuclear Programme," *Jane's Intelligence Review* Vol. 3, No. 9 (September 1991), pp. 404–11.

program was to deter attack from the United States and shield coercive operations against the Republic of Korea.[16]

[16] On the evolution in North Korea's nuclear strategy, see Shane Smith, "Where Might North Korea Be Headed with Its Nuclear Weapons Preparations?" presentation at the NPEC Alternative Weapons Futures Workshop, June 2013. On different types of nuclear force postures, see Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton, N.J.: Princeton University Press, 2014).

Table 1 – Representative Episodes of Proliferation Persuasion

Country	Requirement 1	Requirement 2
Italy[i]	Italian diplomats used nuclear latency to back demands during NATO negotiations in the 1950s and 1960s; later delayed ratification of NPT to bargain before foreclosing weapons option	Natural uranium-fueled reactor with a small reprocessing plant (EUREX I) operational by 1966; large industrial-scale reprocessing plant (EUREX II) scheduled to come online during the 1970s
West Germany[ii]	Bonn announced a list of concessions demanded from Moscow in exchange for signing the NPT; also obtained some minor concessions from Washington	Started to operate enrichment facilities in 1969; pilot scale reprocessing facility at Karlsruhe in 1971
Japan[iii]	Officials from Tokyo linked Japan's nuclear future to favorable terms over reversion of Western Pacific islands	First indigenous natural-uranium fueled reactor goes critical in 1962; scientists conduct successful separation experiments; construction on Tokai-mura commercial fuel reprocessing plant begins in 1964
Pakistan[iv]	Pakistani officials requested enhanced military assistance from Carter and Reagan Administration officials in exchange for keeping nuclear program restrained	Tested first centrifuges in 1976 with a pilot-scale plant built the next year in Sihala; successful enrichment in 1978 and completes construction on enrichment facilities at Kahuta and Chaklala; but does not produce significant quantities of weapons-grade HEU until 1985
North Korea[v]	In 1993, North Korean diplomats offered to give up nuclear weapons program in exchange for package of political and material concessions; later made similar demands during the Six Party Talks	Yongbyon graphite moderated reactor goes critical in 1986 and large reprocessing plant operational by 1991 at the latest; enrichment program revealed in 2002
Libya[vi]	Muammar al-Qaddafi pledges in December 2003 to abandon nuclear, chemical, and missile programs in exchange for sanctions relief and political normalization	Purchased a turn-key gas centrifuge facility in the late 1990s; first successful test of a small cascade in October 2000; with three cascades assembled by April 2002; but later disassembled and packed all centrifuges into boxes
Iran[vii]	Iranian negotiators offered to freeze or limit elements of its nuclear program in exchange for policy changes and sanctions rollback; enrichment program often coordinated with coercive diplomatic moves at the bargaining table	Assembly and testing of P-1 centrifuges accelerates in the late 1990s; construction of Natanz complex with production workshops and fuel enrichment plants revealed in 2002; begins enrichment in 2006

Citations for Table 1

[i] Leopoldo Nuti, "'Me Too, Please': Italy and the Politics of Nuclear Weapons, 1945-1975," *Diplomacy and Statecraft,* Vol. 4, No. 1 (1993), p. 136.
[ii] George H. Quester, *The Politics of Nuclear Proliferation* (Baltimore: The Johns Hopkins University Press, 1973), pp. 167-187.
[iii] John E. Endicott, *Japan's Nuclear Option* (New York: Praeger, 1975), p. 114.
[iv] Feroz H. Khan, Eating Grass: The Making of the Pakistani Bomb (Stanford: Stanford University Press, 2012), p. 153-159.
[v] Jonathan D. Pollack, *No Exit: North Korea, Nuclear Weapons, and International Security* (Abingdon, United Kingdom: Routledge, 2011)
[vi] Robert G. Joseph, *Countering WMD: The Libyan Experience* (Fairfax, Virginia: National Institute Press, 2009); William H. Tobey, "A Message from Tripoli: How Libya Gave Up Its WMD," *Bulletin of the Atomic Scientists*, Online Analysis, (December 2014).
[vii] IAEA Board of Governors, *Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran* (GOV/2006/64, November 2006).

(1.3) Episodes of Proliferation Persuasion in World Politics

The high bar to enter the ENR zones narrows down the universe of cases to a select group in Table 1. These episodes satisfy both the political and technical qualifications for proliferation persuasion. Each country operated an ENR technology and explicitly used this capability to practice coercive diplomacy. As Table 1 also highlights, the United States frequently finds itself the primary focus of proliferation persuasion for two reasons.[31] First, during the Cold War, the U.S. alliance architecture sowed fertile ground for nuclear politics relative to the more restrictive Soviet system. Key U.S. allies benefited from technology transfers and economic assistance to build advanced nuclear programs. Some protégés raised the risk of entrapment to resolve outstanding issues or seek reassurances against abandonment. Second, in the contemporary unipolar world, the spread of nuclear weapons threatens to undermine the ability of U.S. forces to fight conventional wars against relatively much weaker adversaries. The track record of U.S. military operations since 1991 underscores that adversarial regimes face certain defeat unless they can employ nuclear weapons early in the conflict to sue for peace.[32] Once an adversary surmounts the fissile material chokepoint, Washington faces strong incentives to forestall such a power transition.

The existing literature lacks a full account of why or how states leverage nuclear latency for political gain.[33] Several important strands identify the strategic, domestic,

[31] In several episodes, the challenger bargains with the United States and its partners, but Washington is still the prime 'target' that must decide whether to comply with or resist the demands.
[32] Keir A. Lieber and Daryl G. Press, "The New Era of Nuclear Weapons, Deterrence, and Conflict," *Strategic Studies Quarterly*, Vol. 7, No. 1 (Spring 2013), pp. 3-12.
[33] This gap remains despite excellent country specific studies on how North Korean and Iranian diplomats negotiate security issues, and how United States should respond. See for example Scott Snyder, *Negotiating on the Edge: North Korean Negotiating Behavior* (Washington, D.C.: United States Institute of Peace Press, 1999); James K. Sebenius and Michael K. Singh, "Is a Nuclear Deal with Iran Possible? An Analytic Framework for the Iran Nuclear Negotiations," *International Security*, Vol. 37, No. 3 (Winter 2012/13), pp.

normative, and technical factors that drive a state to acquire or forgo nuclear weapons.[34] Given the costs and risks involved, countries rarely seek ENR technology "simply to accumulate negotiating chips."[35] But states pursue multiple nuclear objectives over time.[36] Construction of a reprocessing plant intended to assist industry with reactor fuel waste also provides a hedge in case of allied abandonment, while an enrichment plant initially designed for military purposes may offer more immediate bargaining benefits. Once a state enters the ENR zone, the government is primed for coercive diplomacy because it has the technical means to issue credible threats of proliferation, even if it ultimately seeks other civilian or military ends. A theory is needed to explain when nuclear latency confers a bargaining advantage in world politics.

(2) A Theory of Proliferation Persuasion

When does nuclear latency offer coercive threat advantages? I build a theory of coercive diplomacy with nuclear technology in three parts. The first (2.1) draws from the crisis bargaining literature to identify when nuclear latency might be most effective as a tool of compellence. From these insights, I focus in the second part (2.2) on how the challenger can commit itself to a nonproliferation promise after making a threat to

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52-91; Robert Jervis, "Getting to Yes With Iran," *Foreign Affairs*, Vol. 92, No. 1 (January 2013), pp. 105-120.

[34] In addition to the work cited in fn. 7, see also Matthew Fuhrmann, *Atomic Assistance: How 'Atoms for Peace' Programs Cause Nuclear Insecurity* (Ithaca, N.Y.: Cornell University Press, 2012); Matthew Kroenig, "Exporting the Bomb: Why States Provide Sensitive Nuclear Assistance," *American Political Science Review*, Vol. 103, No. 1 (2009), pp. 113-133; Scott R. Kemp, "The Nonproliferation Emperor Has No Clothes," *International Security*, Vol. 38, No. 4 (Spring 2014), pp. 39–78.

[35] Victor D. Cha, *The Impossible State: North Korea, Past and Future* (New York: Ecco, 2012), p. 300.

[36] Scott Sagan draws this conclusion in his assessment of why states acquire nuclear weapons, see "Why Do States Build Nuclear Weapons?: Three Models in Search of a Bomb," *International Security,* Vol. 21, No. 3 (Spring 1996), pp. 54–86. Studies on countries as dissimilar as India and North Korea detail the same evolution, see George Perkovich, *India's Nuclear Bomb: The Impact on Global Proliferation* (Berkeley, C.A.: University of California Press, 1999); Siegfried S. Hecker, "Lessons Learned from the North Korean Nuclear Crises," *Daedalus* Vol. 139, No. 1 (Winter 2010), pp. 44–56.

produce nuclear weapons. The final part (2.3) combines the threat and promise variables to explain four possible outcomes of proliferation persuasion.

(2.1) What Makes Threats and Promises Credible?

The literature on coercive diplomacy offers a valuable starting point to build a theory of bargaining with nuclear technology. Success is measured by "how closely and quickly the target conforms to one's stipulated wishes," and depends on the credibility of the challenger's threats and assurances.[37] The challenger threatens to inflict punishment that will result in a net loss for the target, but also provides an assurance to not punish if the target complies. The target is most likely to comply when he calculates that the threatened costs of punishment outweigh the costs of fulfilling the demand, and is confident the challenger will not initiate punishment after he capitulates. But what makes threats and assurances credible? Scholars debate whether nuclear weapons, the balance of power, and domestic institutions enhance credibility during bargaining situations. I survey these disputes to cull some insights about when proliferation persuasion is most likely to succeed or fail.

Nuclear weapons create a tradeoff between the credibility of deterrent and compellent threats. The ability to inflict severe and rapid punishment with nuclear forces should make the practice of deterrence more effective.[38] The challenge is how to make such threats credible. Given the risk of escalation to full nuclear war, states with nuclear arsenals can manipulate risk to signal resolve and deter aggression during a crisis. But these options prove difficult to employ if the strategy is coercive diplomacy. The 'last

[37] Robert J. Art, "To What Ends Military Power?" *International Security*, Vol. 4, No. 4 (Spring 1980), p. 8.
[38] For an overview, see Charles L. Glaser, *Analyzing Strategic Nuclear Policy* (Princeton, N.J.: Princeton University Press, 1990).

clear chance' to avoid catastrophe rests with the challenger, and it is harder to make believable threats with nuclear weapons unless the demands involve core national interests. Nuclear forces may be excellent for deterrence, but the credibility of use issue renders them less effective as a means of compellence.[39]

Nuclear latency bypasses this threat credibility problem to reverse the traditional wisdom. Since the operation of ENR facilities can be joined with diplomatic campaigns, a nuclear program provides a more passive form of compellent punishment relative to actual military power, the raw use of force, or trade embargos. When a challenger moves closer to the bomb, the 'last clear chance' to avoid disaster rests with the target. In essence, the proliferation threat rigs the situation to force the target to react. To avoid costly reactions, the challenger must convince the target that compliance will be rewarded with nuclear restraint. Challengers in the ENR zone can readily make threats, but must also be willing to offer a convincing assurance.

How much nuclear latency is optimal for issuing credible threats and assurances? The standard view is that power endows a state with the means to threaten punishment, so targets should capitulate in the face of overwhelming military capabilities.[40] If *more power is better* in the ENR zone, then proliferation threats should become increasingly effective the closer a state moves towards the bomb. However, Thomas Schelling emphasizes that the threat must be backed up with "a convincing, self-binding, promise"

[39] For the most recent iteration of this debate, see Matthew Kroenig, "Nuclear Superiority and the Balance of Resolve: Explaining Nuclear Crisis Outcomes," *International Organization*, Vol. 67, No. 1 (2013), pp. 141–71; Todd S. Sechser and Matthew Fuhrmann, "Crisis Bargaining and Nuclear Blackmail," *International Organization*, Vol. 67, No. 1 (2013), pp. 173–95.

[40] Daryl G. Press, "The Credibility of Power: Assessing Threats during the 'Appeasement' Crises of the 1930s," *International Security*, Vol. 29, No. 3 (Winter 2004), pp. 136–69. But Todd Sechser uncovers an important wrinkle in this logic. Power projection capabilities can create a commitment problem for strong states when they make compellent threats. Weaker states resist because they fear the challenger will use its overwhelming military advantage to make more threats in the future, see "Goliath's Curse: Coercive Threats and Asymmetric Power," *International Organization*, Vol. 64, No. 4 (2010), pp. 627–60.

to exercise restraint once the target capitulates; otherwise a severe threat is bound to create resistance.[41] This implies that *less power is more* advantageous when using a nuclear program as a bargaining chip. The closer a state moves towards a nuclear weapons capability, the harder it becomes to issue a believable promise not to proliferate once the target complies. As a result, proliferation persuasion may be most effective when a state first enters the ENR zone.

Below national level capabilities, a challenger's domestic institutions can also impact its bargaining credibility. Some scholars argue that democracies issue more believable threats because transparent institutions enhance resolve through audience costs.[42] But regime type is a suspect attribute since an autocratic dictator that stakes regime survival on keeping a nonproliferation promise can generate a visible stream of benefits to elite supports.[43] Others contend that the constellation of domestic factions and actors within a country lend credibility to its diplomatic maneuvers. A challenger that builds a stable coalition in support of a nonproliferation assurance may pay costs for breaking such a promise.[44] While regime type alone does not provide enough analytic traction, the presence of domestic actors who support or oppose striking a deal can reveal information about the challenger's ability to uphold a nonnuclear promise.

In short, states in the ENR zone should be able to issue believable coercive threats. However, less capacity to produce nuclear weapons may be advantageous when it

[41] Thomas C. Schelling, *Strategy of Conflict* (Cambridge, Mass.: Harvard University Press, 1960), p. 43; Thomas C. Schelling, *Arms and Influence* (New Haven, Conn.: Yale University Press, 1966), p. 76.
[42] James D. Fearon, "Domestic Political Audiences and the Escalation of International Disputes," *The American Political Science Review*, Vol. 88, No. 3 (September 1994), pp. 577–92; Kenneth A. Schultz, *Democracy and Coercive Diplomacy* (New York: Cambridge University Press, 2001).
[43] Bruce Bueno de Mesquita et al., *The Logic of Political Survival* (Cambridge University Press: The MIT Press, 2003); Jessica L. Weeks, "Autocratic Audience Costs: Regime Type and Signaling Resolve," *International Organization* Vol. 62, No. 01 (2008), pp. 35–64.
[44] Lisa L. Martin, "Credibility, Costs, and Institutions: Cooperation on Economic Sanctions," *World Politics*, Vol. 45, No. 03 (April 1993), pp. 406–32.

comes to making assurances of restraint. The literature on coercive diplomacy suggests that domestic political actors can lend credibility to such a promise, but the logic of bargaining with proliferation threats and nonproliferation promises is left underdeveloped.

(2.2) When is the Challenger Most Able and Willing to Resolve the Commitment Problem?

If the success of coercive diplomacy rests on the interaction of credible threats and assurances, then challengers in the ENR zone must solve a dilemma. The proliferation threat should put enough pressure on the target to comply, but not so much that the challenger is simply unable or unwilling to make a believable promise of nuclear restraint.

The nub of the problem is that two distinct costs grow as the nuclear program develops more capability to produce fissile material and nuclear weapons. The first cost stems from the requirements of issuing a nonproliferation promise. At high levels of nuclear latency, the target will demand significant reductions in nuclear capabilities, along with costly signals to reveal and lock-in the challenger's calculus. To be clear, the nuclear-capable state has the option to meet these assurance parameters at any stage in the ENR zone, and solve the commitment problem. But a second type of path dependent cost grows in tandem with the nuclear program. Nuclear technology generates increasing returns as a valuable commodity within the state over time, thereby making nonproliferation an unattractive option the more the program matures. The costs of cutting a deal and the path dependent costs of nuclear technology mean that the

challenger will be increasingly unable and unwilling to issue a convincing nonproliferation promise when it moves closer to the bomb.

A challenger hits a sweet spot for coercing concessions when it first enters the ENR zone. The steps needed to assure the target are not so onerous, and nuclear program has not yet become locked in to a military path. Less nuclear latency yields more benefits relative to the price the challenger must pay to foreclose its nuclear weapons option. My key argument here is that there is an optimal amount of nuclear technology for bargaining – what I term the fissile material sweet spot. I derive this central claim in three parts. First, I scope out variation in the challenger's threat of proliferation to identify the technical actions used to put pressure on the target during coercive diplomacy. This threat 'continuum' helps me specify in general terms where the 'sweet spot' is when it comes to the capability of a nuclear program. Second, I assess the range of costly signaling mechanisms available to solve the credible commitment problem. The challenger's resolution of this problem varies based on whether it incurs and creates high enough costs to breaking the nonproliferation promise. Third, I argue that the path dependent nature of sensitive nuclear fuel cycle technology makes it difficult to reverse course or implement nonproliferation constraints once the nuclear program matures into a viable nuclear weapons option.

(2.2.1) Making Proliferation Threats

The challenger's threat of proliferation is the central means of applying pressure on the target. What factors of nuclear latency distinguish the severity of a proliferation threat? How does a state in the ENR zone move, or threaten to move, closer to the bomb?

Intelligence agencies estimate threats based on a state's capability and intent to produce nuclear weapons. Capability is sometimes expressed in terms of the amount of time needed to produce and manufacture fissile material into a nuclear weapon. A state's level and type of ENR technology, along with the quantity and disposition of any fissile material on hand, constitute the main determinant of this timeline. The other factor is the state's ability to turn this material into an actual nuclear weapon. Information on political intent is collected from key decision makers, or else discerned from signposts in the development of the nuclear program. Clandestine development, military research on weaponization, and acquisition of delivery systems signal intent to produce nuclear weapons, and act as threat multipliers at any stage in the ENR zone.[45]

Figure 2 – Moderate versus Severe Proliferation Threats

<table>
<tr><th></th><th>Pre-ENR</th><th colspan="2">ENR Zone</th><th>Post-ENR</th></tr>
<tr><td>Threat Level</td><td>Low</td><td>Moderate</td><td>Severe</td><td>Acquisition</td></tr>
<tr><td>Technical Signposts</td><td>No Ability to Produce Fissile Material</td><td>Emerging capacity to produce fissile material: (1) Uranium enrichment facility; (2) Nuclear reactor and plutonium separation facility</td><td>Rapid breakout capacity: (1) SQ of HEU or ability to do so within a short time; (2) SQ of plutonium separated from spent fuel</td><td>Production of nuclear weapons systems; integration into force posture</td></tr>
<tr><td></td><td></td><td colspan="2">Work on weaponization or delivery vehicles acts as a threat multiplier at any stage</td><td></td></tr>
</table>

A challenger can use its nuclear capabilities and intentions to threaten the target during the bargaining process. At the lower boundary of the ENR zone in Figure 2, a challenger generates a *moderate* threat when it initially acquires a limited capacity to

[45] Thomas R. Fingar, *Reducing Uncertainty: Intelligence Analysis and National Security* (Stanford, C.A.: Stanford University Press, 2011), pp. 67-88.

produce fissile material. By passing the first milestone along the uranium or plutonium route, the challenger can leverage its nuclear program as a bargaining chip, even though it still needs more time and effort to proliferate. The ability to produce enough fissile material for a single nuclear weapon in a short time is a major redline dividing a moderate from a more severe threat. A rapid breakout capacity gives the challenger the means to take fewer risks and incur lower costs if it decides to produce nuclear weapons.[46] A challenger moves into this upper portion of the ENR zone in Figure 2 by either producing significant quantities of plutonium or highly enriched uranium (HEU), or building up enough enrichment capacity to produce a bomb's worth of HEU or plutonium on short order. The proliferation threat is *severe* because the challenger has the means to quickly produce and integrate nuclear weapons into a force posture.

(2.2.2) Making Nonproliferation Promises

Variation in the challenger's promise of nuclear restraint reflects whether it is willing and able to solve an underlying commitment problem. The issue is that the challenger's incentives to remain a nonnuclear weapon state may change over time, "making it unwilling to live up to its promise at a later date. The change in incentives can be anticipated and is the source of others' doubts about the promise."[47] Coercive diplomacy with ENR technology makes this problem acute because the challenger is drumming up its capability and intent to proliferate. The target will only capitulate if the

[46] The risks and costs depend on whether the target has sufficient warning time and military capabilities to mount a rapid preventive strike against the challenger's nuclear program once it decides to produce nuclear weapons.

[47] James D. Morrow, "The Strategic Setting of Choices: Signaling, Commitment, and Negotiation in International Politics," in *Strategic Choice and International Relations*, ed. David A. Lake and Robert Powell (Princeton, N.J: Princeton University Press, 1999), p. 91.

challenger agrees to eliminate this looming threat. As a result, the challenger must deter itself from making a future decision to produce nuclear weapons. A *strong* self-enforcing promise binds the challenger to restraint by raising the risks and costs of proliferation. The target believes it is in the challenger's long-term interest to avoid these penalties by remaining a nonnuclear weapon state.[48] A *weak* promise creates few barriers to proliferation. The target fears that the challenger might decide to proliferate in the future, and abandons diplomacy to prevent or contain this power transition.

How does a challenger solve this commitment problem during the process of coercive diplomacy? What sort of policies can the challenger adopt to deter itself from proliferation and reveal strong incentives to forgo nuclear weapons? Drawing from the logic of costly signaling in international relations, I identify three types of assurance policies.[49] First, an arms control agreement over the challenger's breakout timeline and probability of early detection set the future costs and hazards of going nuclear. A second set of hand-tying policies further enhances this baseline deterrence calculus. Finally, diplomatic tactics build confidence so both challenger and target can execute a high stakes quid pro quo exchange. I assess each mechanism to show how the requirements for assuring the target increase when the challenger escalates from a moderate to severe threat of proliferation.

[48] Fred C. Ikle, *How Nations Negotiate* (New York: Frederick A. Praeger, 1964), pp. 65–66.

[49] The challenger can send costly signals to reveal itself as a security seeking state. For the classic articulation, see Robert Jervis, "Cooperation Under the Security Dilemma," World Politics, Vol. 30, No. 2 (1978), pp. 167-214. Two ideal typical mechanisms exist for the challenger to signal information about is incentives to keep a promise. Hand-tying actions increase the ex post costs of reneging and boost the benefits of keeping the promise, while sunk-cost signals increase the ex ante costs of making the promise in the first place, and act as an investment that only a committed challenger would be willing to make, see James D. Fearon, "Signaling Foreign Policy Interests: Tying Hands versus Sinking Costs," *The Journal of Conflict Resolution*, Vol. 41, No. 1 (1997), pp. 69-70.

The goal of an arms control deal over the challenger's nuclear program is to create a situation whereby the target can detect, punish, and prevent future progress towards the bomb. Although deterrence depends on a number of factors, the challenger's breakout timeline establishes some observable baseline risks and costs. The longer it takes the challenger to produce one bomb's worth of fissile material, the more opportunity the target has to mount an effective and damaging response. But it is much harder to deter a challenger with a rapid breakout capacity, as the leadership may believe they can present a nuclear fait accompli before others can retaliate. This is the main reason why the United States repeatedly demanded an extensive rollback in Iran's enrichment program once it acquired enough capacity to quickly produce a bomb's worth of uranium in 2009. The target must also be able to detect cheating at the earliest possible stage to take decisive action. In general, a breakout timeline below the fissile material threshold is much easier to monitor and verify. As a result, the challenger is most likely to reassure others of its nonproliferation incentives when it limits or reduces its nuclear latency to the lower boundary of the ENR zone.

An agreement over breakout capacity and probability of detection reveals useful information about the challenger's nuclear ambitions. Since a revisionist state interested in the rapid production of nuclear weapons would not agree to incur delay, impose limits, and accept enhanced monitoring provisions, the challenger signals its benign motives to cooperate with the target.[50] More important, the challenger begins to increase the costs of reneging on its nonproliferation promise. Yet such an accord proves less useful as an

[50] On the logic of signaling motives to spiral out of the security dilemma or solve reassurance games, see Charles L. Glaser, "The Security Dilemma Revisited," *World Politics*, Vol. 50, No. 1 (1997), pp. 171–201; Andrew H. Kydd, *Trust and Mistrust in International Relations* (Princeton N.J.: Princeton University Press, 2007), chap. 7.

indefinite guarantee if the challenger's security environment or domestic politics create strong incentives to produce nuclear weapons down the road. Arms control provides the necessary technical foundation to solve the credible commitment problem, but the challenger must strengthen the deterrence calculus by making proliferation extremely costly while also boosting the benefits of indefinite nuclear restraint. There are four specific options to accomplish this task.

First, the challenger can employ the classic tactic of hostage exchange to keep or make its nuclear infrastructure vulnerable to preventive action.[51] Fuel enrichment plants, reprocessing facilities, and nuclear reactors are exposed to military strikes when built above ground. Key nodes in the civil nuclear fuel cycle often rely on contracts with foreign suppliers. Proliferation could spark an adversary to strike these soft facilities, or result in other countries cutting off critical materials and assistance. An exposed nuclear complex dependent on foreign trade stands to lose quite a lot from breaking a nonproliferation promise. On the other hand, ENR facilities can be hardened and concealed underground to make it more difficult to perform successful military missions. These sort of clandestine programs usually depend on illicit trade networks rather than aboveboard nuclear suppliers. All else being equal, a challenger with a survivable and independent nuclear infrastructure can absorb more punishment from the international community, and must enhance the target's ability to effectively intervene against a future decision to proliferate.

The second option is for the challenger to give the target added leverage to impose economic and political consequences. From the target's perspective, an ideal outcome would be if a deal created a penalty system that imposed automatic and severe

[51] Schelling, *Strategy of Conflict*, p. 43.

punishment against the challenger if it reneged at any time. There are two ways for the challenger to reassure the target by approximating this system. If the challenger is vulnerable along some dimension of national power, such as a dependence on natural resources, it can enhance the ability of other states to punish this weak point in response to proliferation. For example, once Japan ascended to the NPT, its extensive civil nuclear reactor infrastructure gave supplier states the ability to impose harsh economic costs should the mercantile state decide ever to proliferate. In a similar vein, the concessions to be gained from coercive diplomacy may be quite valuable for the challenger, so it can accept terms during the bargaining process to boost the benefits of keeping the deal. North Korea's dire need of energy assistance in the 1990s allowed the United States to hurt Pyongyang if the Kim regime reneged on its promise. A challenger that builds these costs and benefits directly into the deal makes the decision to proliferate less attractive over the lifespan of the bargain.

The third option is to bring in another state to help underwrite the challenger's promise. An ideal candidate would impose severe punishment against the challenger if it decided to produce nuclear weapons.[52] This third party guarantor plays a critical role if the target finds it difficult to dissuade or punish the challenger alone. In the presence of a credible guarantor, reneging on the nonproliferation promise generates high costs for the challenger in the form of trade restrictions, sanctions, or war. The promise becomes self-enforcing because both challenger and target anticipate the consequences of the guarantor's intervention. China's role as lead mediator of the Six Party Talks between North Korea and the United States illustrates the promises and pitfalls of a potential

[52] This logic stems from Hein E. Goemans, *War and Punishment: The Causes of War Termination and the First World War* (Princeton N.J.: Princeton University Press, 2000), p. 32.

guarantor. After the Agreed Framework collapsed in 2002, Pyongyang became dependent on Beijing for energy assistance, and Washington found itself with limited options to punish North Korean proliferation. Top U.S. officials requested the Chinese underwrite diplomacy because Beijing could turn the oil spigot off and on to punish and reward North Korea.[53] Yet China's tepid response to North Korea's first nuclear weapons test in 2006 shows that third parties may also end up playing an unproductive role if they are unwilling to live up to their role as guarantor by punishing the challenger.

The fourth option is for the challenger's leadership to reveal a stable domestic calculus in favor of upholding the nonproliferation promise. If the challenger is a democracy, party coalitions and ratification procedures for treaty agreements make it difficult for a single leader to back out of the promise in the future.[54] For this reason, a democratic challenger will prefer a large lump sum concession upfront before making irrevocable promises. In Japan, a public debate over whether to sign and later ratify the NPT coincided with the emergence of a legislative majority in the Diet that became dependent on the benefits of remaining a nonnuclear weapon state.[55] Nondemocracies must also bind the leadership or critical veto authorities to a promise. When the concessions from a deal bolster the elite constituency that makes up the regime, this selectorate will pressure the central autocratic leadership to keep the promise. Political survival becomes predicated on maintaining an observable flow of benefits from successful diplomacy.[56]

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[53] Julia Joo-A Lee, "To Fuel or Not to Fuel: China's Energy Assistance to North Korea," *Asian Security*, Vol. 5, No. 1 (2009), pp. 47-48.
[54] Ikle, *How Nations Negotiate*, pp. 66–67.
[55] For a similar argument applied to Japan, see Etel Solingen, *Nuclear Logics* (Princeton N.J.: Princeton University Press, 2007), chap. 3.
[56] Bueno de Mesquita et al., *The Logic of Political Survival*; Daniel Byman and Jennifer Lind, "Pyongyang's Survival Strategy," *International Security*, Vol. 35, No. 1 (Summer 2010), pp. 44–74.

A distinct set of diplomatic tactics makes it easier for challenger and target to execute the principles of the bargain. When allies strike a nonproliferation deal, the high level of trust facilities a front-loaded exchange. The challenger makes a commitment confident that the patron will provide concessions. In turn, the allied patron pays out a large lump sum confident the challenger will not renege on the agreement. Additional benefits from continued economic and security cooperation between the allies further enhances the longevity of the deal.

In an adversarial relationship, confidence building measures and sequencing are needed because neither side is willing to trust the other to uphold the terms of the deal. The challenger should take a series of smaller steps towards an ironclad promise never to produce nuclear weapons, while the target reciprocates by providing concessions at each stage. If challenger and target uphold the terms of these confidence building measures, "each may be willing to risk a small investment to create a tradition of trust," as a precursor to a grand bargain.[57] By back-loading concessions in this way, the target provides a stream of benefits contingent on the challenger's continued compliance.

Confidence building measures operate more in the challenger's favor when its ENR capacity is below the fissile material redline. If the challenger has not yet produced fissile material, then the target may be willing to provide a substantial package of concessions upfront in exchange for a freeze or intrusive inspection mechanisms. But once the challenger moves closer to the bomb or reneges on prior confidence building steps, the target will want to see demonstrable movement away before providing concessions.

[57] Schelling, *Strategy of Conflict*, p. 45.

A challenger can draw from these assurance mechanisms to convince the target that its promise of nuclear restraint will be upheld over time. When exactly will a challenger's mix of arms control and commitment policies resolve the credible commitment problem? "In the end, it will come down to a political judgment about what combination of factors will serve as an effective deterrent to a breakout decision."[58] The targeted government determines whether the arms control measures and commitment tactics create high enough risks and costs to deter future proliferation.

(2.2.3) Making the Bomb or Cutting a Deal? Nuclear Programs and Path Dependency

The nuclear-capable state has the option at any stage to use nonproliferation assurance policies to solve the commitment problem of nuclear technology. Of course, the requirements for striking a deal will be more onerous at a high level of nuclear latency. But in the actual practice of coercive diplomacy, the challenger may become increasingly reluctant to implement the terms specified by the target and constrain the nuclear program as it creeps closer to the bomb.

Consider two instances when challengers rejected proposed nonproliferation solutions at high levels of nuclear latency. During the Six Party Talks in February 2007, U.S. officials presented the North Korean negotiators with a viable plan for the DPRK to make a convincing nonproliferation promise by verifiably disabling the plutonium fuel cycle at Yongbyon. The terms of the agreement were even phased so that the North Koreans would receive rewards at each successive stage of dismantlement. The Kim

[58] Robert J. Einhorn, "Preventing a Nuclear-Armed Iran: Requirements for a Comprehensive Nuclear Agreement," *Brookings Arms Control and Non-Proliferation Series* (Washington, D.C.: The Brookings Institute, March 2014), p. 4

regime took some of the initial steps, but seemed to decide that, "the juice was not worth the squeeze."[59] Iran faced a similar situation when U.S. officials floated the 2009 fuel swap deal to see if Tehran was serious about constraining the enrichment program. The Iranians accepted the initial offer, but then quickly walked back on the agreement once the Supreme Leader decided he did not want to give up Iran's stock of low-enriched uranium.[60]

The North Korean and Iranian examples illustrate a subtle but important distinction between the *ability* and *willingness* of a nuclear-capable state to issue a convincing nonproliferation assurance when it moves close to the bomb. While the country may be able to solve the commitment problem, there is another type of cost beyond just the terms of the deal that grows as the nuclear program matures over time. As this cost increases, the leadership becomes increasingly *unwilling* to give up its nuclear assets or comply with the terms of a grand bargain. What exactly is this exogenous cost? Why does it increase in line with the growth of the nuclear program? And how does it constrain the challenger's nuclear decision-making?

One potential answer is that the challenger actually wants nuclear weapons. Making a credible assurance stands in the way of this military objective. Coercive diplomacy is merely a clever ruse to extract quick benefits or protect the nuclear program from attack. The costs of implementing constraints over an advanced capacity to produce fissile material outweigh the benefits to be reaped from cutting a deal, since the technical rollback and hand-tying steps would undermine the proliferator's ultimate aim of producing nuclear weapons. There is no real commitment problem to solve because the

[59] Former senior U.S. official. Interview by author. Digital recording. Cambridge, MA, May 7, 2014.
[60] For citations and more detail, see the full articulation of these episodes in Chapters 3 and 6, respectively.

challenger has no intention of trading away her nuclear capabilities. Many claim this is why the Six Party Talks failed. The North Koreans always wanted nuclear weapons, but also liked to use the plutonium program as a bargaining chip. In the proverbial words of several former U.S. officials interviewed for this project, the North Koreans "tried to have their cake and eat it too."

If a root desire for nuclear weapons is the overriding reason why a nuclear-capable state such as North Korea becomes unwilling to cut a deal once they near this prize, then my theory falls short because the challenger is not trying to trade a genuine nonproliferation promise for concessions. The process of diplomacy is just an intelligence exercise in forcing the challenger to reveal its true desire for nuclear weapons. But this explanation is not wholly satisfying because it does not cover cases such as Iran where it is not clear they always wanted to produce nuclear weapons, or even a more nuanced read of the DPRK case. Perhaps the Kim regime wanted to cut a deal during the Six Party Talks. But an influential cadre of regime elites may have become steadily vested in the success of the nuclear program over its many decades of development. Given the model of regime survival in Pyongyang, the leadership would find it hard and risky to trade away this key program.

A second explanation is needed that focuses on how the costs of making a nonproliferation promise change over time depending on the trajectory of the nuclear program within the state. When the nuclear program surpasses technical milestones, such as enriching significant quantities of uranium, new bureaucratic barriers and political costs may emerge. The executive leadership of a nuclear-capable state may then become more constrained and unwilling to convince others of its intentions, *even if it harbors no*

actual desire to produce nuclear weapons. To be clear, this is not a commitment problem because the leadership could implement the terms of the nonproliferation assurance. Instead, the challenger wants to cut a deal but cannot incur the costs required to trade away the nuclear program.

The growth of the nuclear weapons program over a long period of time increases the political costs of making a nonproliferation promise because nuclear technology exhibits positive feedback and path dependence. "Each step along a particular path produces consequences that increase the relative attractiveness of that path … As such effects begin to accumulate, they generate a power cycle of self-reinforcing activity."[61] If a technology generates increasing returns over time, then the initial choice to adopt or invest in one option over another eventually becomes dominant and 'locked-in'.[62] Economists point out that the spread of civil nuclear energy technology – specifically the dominance of light-water reactors over viable alternatives – is a prime example of this sort of path dependent process.[63] I take this logic a step further and argue that sensitive nuclear fuel cycle technology is characterized by four conditions that generate positive feedback:

(1) *Large set-up costs* – Substantial resources are required to start down either the plutonium or uranium path to fissile material, but the static nature of nuclear technology creates a high payoff for further investments. The country must educate and train highly skilled nuclear scientists, engineers, and technicians,

[61] Paul Pierson, *Politics in Time: History, Institutions, and Social Analysis* (Princeton University Press, 2004), pp. 17–18.
[62] Brian Arthur, *Increasing Returns and Path Dependence in the Economy* (Ann Arbor, MI: University of Michigan Press, 1994).
[63] Robin Cowan, "Nuclear Power Reactors: A Study in Technological Lock-in," *The Journal of Economic History,* Vol. 50, No. 3 (Sep., 1990), pp. 541-567.

who then have to procure or manufacture the numerous specialized components that constitute each relevant stage of the nuclear fuel cycle. Once all the pieces of the nuclear jigsaw are in place, the staff of the nuclear program must then wade through a series of trials and tribulations to operate the machinery, handle fissile material in various forms, and hopefully solve the puzzle. Nuclear weapons are not rendered obsolete over time in the same way as conventional military technology.[64] As a result, the state can keep investing resources into the nuclear program over a long period of time with a constant expectation of a big pay off at the end (either a full fuel cycle for civil purposes or a military option).

(2) *Learning effects* – Members of the nuclear program gain valuable knowledge as they operate the sophisticated machinery and complex facilities at each node of the nuclear fuel cycle. This steady accumulation of information leads to higher returns from continued use since "individuals learn how to use products more effectively, and their experiences are likely to spur further innovations in the product or in related activities."[65] Nuclear programs often make breakthroughs only after a long process of trial and error. Consider the Manhattan project. The most renowned group of scientists ever assembled already knew much of the physics and engineering behind the fission bomb, but ran into subsequent problems as they attempted to operationalize this concept.[66] Alex Montgomery shows that less-developed states frequently struggle for many years to turn foreign supplied design blueprints and components into working stages of a

[64] Horowitz, *The Diffusion of Military Power,* chp. 4.
[65] Pierson, *Politics in Time,* p. 24.
[66] Donald MacKenzie and Graham Spinardi, "Tacit Knowledge, Weapons Design, and the Uninvention of Nuclear Weapons," *The American Journal of Sociology*, Vol. 101, No. 1 (Jul., 1995), pp. 44-99.

nuclear weapons program.[67] The take home point is nuclear programs acquire the requisite experience with nuclear fuel cycle and related weapons technology over time, so sequential mastery of each step should 'snowball' into further technical breakthroughs.

(3) *Coordination effects* – In order to master the uranium or plutonium route to fissile material, the nuclear program must coordinate efforts to develop a series of requisite technologies on the front-end or back-end of the nuclear fuel cycle. Uranium gas centrifuges, for example, need a conversion facility to covert the milled uranium powder into a gaseous state. Coordination effects "are especially significant when a technology has to be compatible with a linked infrastructure," because increased investments in the supporting infrastructure "in turn make the technology more attractive."[68]

(4) *Adaptive expectations* – This dynamic is related to coordination effects, but stems from "the self-fulfilling character of expectations. Projections about future aggregate use patterns lead individuals to adapt their actions in ways that help make those expectations come true."[69] If a leader founds a nuclear program to produce nuclear weapons, then choices may be made at critical junctures to make this vision a reality. On the other hand, if the expectation is to build a genuine civil nuclear energy program, the scientific and industrial communities may adapt their actions to ensure this alternative goal is met.

[67] Montgomery, "Stop Helping Me."
[68] Pierson, *Politics in Time,* p. 24.
[69] Ibid.

These four characteristics of nuclear technology mean that each step a nuclear program takes down a particular pathway makes it more difficult for the government to reverse later on. The costs of switching to an alternative rise the longer the nuclear program exists and the more it progresses towards the bomb. The initial orientation of the program is quite important. If government and industry follow the Japan model and found a civil nuclear energy program first, then it should be easy to make a nonproliferation promise down the road because they do not have to switch paths. But if the program begins as Iran's did with military dimensions, then the cost of convincing others increases over time, as the leadership must make an active decision to derail the program and reorient it along a new track.

Nuclear weapons programs generate increasing returns over time as a valuable commodity within the state. The scientific nuclear complex may become entrenched in the political system and seek to retain generous budget outlays year after year. Politicians may accrue power or benefits from managing these operations. Military officers are the ultimate customer of nuclear weapons technology, and may push for tangible returns on the long-term investment. Domestic political and military coalitions may form around the nuclear program to create a cadre or cabal with strong incentives to place pressure on the executive leadership to stay the course, or at a minimum, not trade away the ENR infrastructure. But this means inversely that a nuclear program yields diminishing returns over time as a capability to be bartered away. In economic terms of path dependency, nuclear weapons programs incur negative feedback as a tool of coercive diplomacy because it becomes increasingly costly (in a political and technical sense) to switch paths.

(2.3) Explaining Four Outcomes of Proliferation Persuasion

In this final theory building section, I interact variation in the challenger's proliferation threat and nonproliferation promise to determine when exactly nuclear latency offers bargaining advantages. Table 2 shows how these variables combine into four possible outcomes of coercive diplomacy. I draw from insights developed in the prior two sections to explain each result.

Table 2 – Selected Outcomes of Proliferation Persuasion

Proliferation Threat	Promise of Nuclear Restraint: STRONG	Promise of Nuclear Restraint: WEAK
MODERATE	**(I) SWEET SPOT** LIBYA 2003 NORTH KOREA 1994 JAPAN 1972 WEST GERMANY 1969 ITALY 1960S	**(II) IMPASSE** IRAN 2005 NORTH KOREA 1993 JAPAN 1964
SEVERE	**(IV) TOUGH SPOT** IRAN 2013	**(III) RESISTANCE** NORTH KOREA 2006 IRAN 2009

(I) Sweet Spot: Proliferation persuasion tends to be most successful when the challenger issues a moderate threat backed by a strong promise of nuclear restraint. The target should comply with the challenger's demands in exchange for a nonproliferation assurance that prevents further progress towards the bomb. When the challenger is in the fissile material sweet spot, the benefits it stands to gain from coercive diplomacy should outweigh the costs of resolving the commitment problem at this early stage of ENR development. This is because the costs of cutting a deal are low, and the costs of either freezing the nuclear program in place or switching to another nonproliferation pathway are relatively low.

An agreement not to produce fissile material, for example, facilitates cutting an arms control deal by locking in the challenger well short of a severe threat. The challenger can freeze or rollback its technical capabilities to leave open a long window of vulnerability to incur punishment should it renege down the road. North Korea's promise in the 1994 Agreed Framework to give up its plutonium capacity in return for energy

subsidies is a prime case of a challenger hitting such a sweet spot. Japan's gambit for the reversion of Okinawa illustrates that a state can even go on to expand its nuclear latency once an ironclad promise is in place at an emerging technical stage.

(II) Impasse: A moderate threat with a weak nonproliferation promise is destined to stall coercive diplomacy, even if the target provides limited or temporary concessions to discern the challenger's incentives along the way. During the negotiation process, the challenger may avoid making promises as a way to increase pressure on the target. North Korea and Iran respectively took incremental steps towards the bomb, but paused to give the United States the opportunity to capitulate. In response, the target may refuse to offer concessions until the challenger exercises restraint, as typified by repeated bouts of deadlock in North Korean negotiations between April 1993 and July 1994. On the other hand, temporary concessions test whether the challenger will implement constraints over its emerging nuclear latency. After the exposure of Iran's enrichment program, the Europeans offered a security assurance in 2003 to judge whether the Iranians would freeze and eliminate their sensitive nuclear assets. But if the challenger refuses to implement assurances or walks back on prior confidence building measures, the target will abandon inducements in favor of punishment.

(III) Resistance: Proliferation persuasion generates punitive reactions when the challenger moves close to the bomb but issues a weak nonproliferation promise. If the challenger escalates to a severe threat of proliferation but does not resolve the credible commitment problem, the target is faced with a fait accompli. The challenger possesses a viable option to produce nuclear weapons, and seems unwilling or unable to exercise restraint. In contrast to an impasse, the target will shift away from diplomatic probes

towards active preventive or containment strategies. Washington levied crippling sanctions against the Kim regime in 2006 after the North Koreans produced large quantities of plutonium unabated. In a similar vein, the Obama White House championed sanctions against Tehran after the Iranians walked back on their promise to swap out enriched uranium for reactor fuel in October 2009.

(IV) Tough Spot: If the challenger backs a severe threat with a strong promise, the target should comply to prevent the looming prospect of proliferation. The problem is that the challenger will find it tough and costly to resolve the commitment problem at such a high level of nuclear latency. The assurance mechanisms must deter and deny the challenger from taking the final step out of the ENR zone. The target will demand the challenger make deep technical reductions, allow intrusive monitoring and verification, and underwrite the durability of these constraints with a guarantee from a domestic coalition or third party mediator. Taking these steps becomes even more unattractive because the executive leadership must consider the domestic-political costs of unending the mature nuclear program just as it starts to yield returns as a nuclear weapons production capability.

Proliferation persuasion is not preordained to fail when the challenger issues a severe threat, but three episodes analyzed in the next part of the article underscore the slim likelihood of success. After North Korea produced a large amount of plutonium and tested an implosion device in October 2006, the United States raised the requirements for an assurance and refused to offer substantial concessions until after Pyongyang disabled its nuclear program. In a similar vein, Tehran followed up its decision to walk back on a confidence building measure in October 2009 with increases in its enrichment program

that smacked of brinksmanship, leading the Obama White House to conclude that the Iranians would not resolve the commitment problem. Tehran only managed to navigate through the tough spot and strike a temporary deal in November 2013 after several years of sanctions and domestic realignment altered the regime's proliferation calculus. A challenger that decides more nuclear latency is better does so at the risk of incurring diminishing returns at the negotiation table.

(3) Proliferation Persuasion in Practice

In the following three chapters of the dissertation, I conduct focused case studies of North Korea, Japan, and Iran to demonstrate the plausibility of my theory. These three countries meet the requirements for proliferation persuasion: each challenger operated ENR technology, and then communicated that its nuclear ambitions were conditional on whether the United States complied with demands. North Korea demanded a package of concessions. Japan pushed for the reversion of islands in the Western Pacific. Iran requested security guarantees and sanctions relief. Since these episodes display full variation in proliferation threats and nonproliferation promises, I can also observe whether change in these variables leads to the predicted bargaining outcomes.

The empirical chapters are organized to first address why these three states waited for prolonged periods of time with the technical capacity to produce nuclear weapons. I trace out the evolution of each country's nuclear program to identify the key factors that drove or restrained progress towards nuclear weapons. This facilitates an in-depth examination of the two prerequisites for proliferation persuasion to show that each challenger made an intentional decision to wait and bargain in the ENR zone. North Korea is a hard case because the Kim regime long desired nuclear weapons to offset

conventional inferiority, and eventually transitioned from building up a breakout capacity to a nuclear force posture. But Chapter 3 traces out the strong incentives the Kim regime faced to practice coercive diplomacy as a type of rent-seeking stratagem for regime survival. Japan's quest for energy security and strong nonproliferation calculus pushed the country in a very different direction relative to the North Koreans. Yet Chapter 4 shows that the leadership in Tokyo delayed making a credible commitment to use emerging ENR capabilities as a bargaining chip in alliance negotiations with Washington. Chapter 5 on Iran argues that the Islamic regime wanted to acquire a nuclear weapons option, but shifts in the Iranian geopolitical situation, domestic competition, and pace of technical progress led Tehran to swing between 'pay later' and 'pay now' approaches to developing a breakout capacity. Iranian politicians and scientists moved into the ENR zone without reaching consensus over the level of costs and risks to accrue in pursue of a nuclear weapons option.

With this foundation established, each chapter then tests the plausibility of the proliferation persuasion theory by explaining when nuclear latency offered North Korea, Japan, and Iran coercive bargaining advantages. To preview the North Korea chapter, Pyongyang issued a moderate threat in the early 1990s and demanded a package of concessions in 1993. Negotiations remained at an impasse until the North Koreans hit the sweet spot by offering a strong promise of nuclear restraint with the 1994 Agreed Framework. This episode contrasts with the second nuclear crisis, when Pyongyang generated a severe threat by producing large amounts of plutonium and testing a nuclear device in 2006. Although the U.S. laid out a roadmap for North Korea to denuclearize in exchange for concessions, Pyongyang implemented a weak promise in 2008. The North

Korean episodes illustrate how diminishing returns kick in when the challenger seeks to blackmail material concessions but escalates to a severe proliferation threat.

Chapter 4 explains variation in four separate bargaining episodes between Japan and the United States over a common set of issues related to the Western Pacific islands and defense burden sharing. The first explains how Japan's underdeveloped nuclear latency led to the failure of an initial proliferation threat in 1957. The second focuses on a renewed effort by the Japanese leadership in 1964 to set the stage for negotiations by linking the prospect of proliferation to the territorial reversion of Okinawa. The third and most extensive episode details five years of negotiations to show how the Japanese leadership was able to strike a deal centered on a nonproliferation commitment in exchange for Okinawa. The fourth episode presents an epilogue on the strength of the deal through some of the worst years in the alliance relationship during the 1970s. Japan's moderate threat was successful in compelling the United States to return Okinawa when the Japanese leadership made a credible promise to remain nonnuclear. Several factors advantaged Japan's diplomatic strategy. The emerging ENR technology was being used purely for civilian applications, and Japan had already sunk costs into this civil infrastructure and tied down the nuclear program with bilateral contracts and safeguards. Japan's threat was more about the future evolution of Japan's nuclear ambitions. Japan was also a special case where joining the NPT gave other states power to hurt it for reneging on the nonnuclear promise.

Chapter 5 details three episodes of diplomacy over Iran's nuclear program to underscore the critical role that domestic political actors play for either enhancing or eroding the credibility of nonproliferation promises. From 2003 to 2005, Iran's

enrichment program created a moderate threat of proliferation, but a weak promise of restraint deadlocked negotiations. By 2009, Iran escalated to a severe threat, but another weak promise ended diplomacy and generated resistance. In 2013, however, Tehran managed to back its severe threat with a strong promise to cut a temporary deal. How did the Iranians issue a credible promise after building up a rapid breakout capacity? Why did they miss the sweet spot at much lower levels of nuclear latency? The Iranians found it hard to resolve the credible commitment problem because the regime swung between two different nuclear development policies over time. Tehran often adopted a 'pay later' approach to buildup nuclear latency at the lowest possible cost and risk, and attempted to negotiate nonproliferation guarantees in exchange for concessions. At other times, Iran was more willing to 'pay now' for a nuclear weapons option by reneging on agreements and taking further steps towards the bomb. I show how this recurrent pendulum made it difficult for the Iranians to assure others that the nuclear program would not be used for military purposes.

Chapter 3: North Korea Builds a Breakout Capacity and Bargains to Survive

North Korea's desire to acquire nuclear weapons stems back more than half a century to the atomic bombing of Japan, the devastation wrought by the Korean War, and the presence of superior American forces on the peninsula. During the 1950s and 1960s, Kim Il Sung reached out to the Soviet Union to train North Korean scientists and to found the nuclear research complex at Yongbyon. When the Republic of Korea (ROK) admitted to a secret nuclear weapons program in the 1970s, Kim set North Korea on the path to develop a full indigenous nuclear fuel cycle. Scientists and engineers at Yongbyon started to master the sensitive technology needed to reprocess plutonium from spent reactor fuel by 1989. North Korea entered the ENR zone just as the Cold War ended and it lost the critical support of the Soviet Union.

Instead of producing nuclear weapons as quickly as possible, North Korea waited in the ENR zone for the next fifteen years in exchange for concessions from the United States. During the first nuclear crisis from 1991 to 1994, Pyongyang used Washington's fear of plutonium production to successfully blackmail a package of economic and energy assistance. Several years later, North Korea used the same bargaining tactics in a failed attempt to get the United States to buy out their ballistic missile program. The second full-fledged nuclear crisis from 2002 to 2010 opened with the revelation that the DPRK was pursuing a uranium enrichment program in violation of the nonproliferation promise made in 1994. In a series of escalating attempts to pressure concessions from Washington, Pyongyang restarted the mothballed plutonium program, produced significant quantities of fissile material, and tested a nuclear device. Unlike the first nuclear crisis, however, the United States made concessions contingent on North Korea

taking active steps to give up its nuclear weapons program. Pyongyang eventually decided to forgo the package of rewards and began to integrate nuclear weapons into its national defense posture.

Although North Korean nuclear behavior from 1991 to 2010 is ripe with clear episodes of proliferation persuasion, Pyongyang's decision to wait in the ENR zone is puzzling. As the Cold War ended, Pyongyang was desperate to ensure its continued survival amid a dramatic loss of absolute and relative power. Nuclear weapons offered a robust and efficient deterrent shield for North Korea. With the collapse of Soviet extended deterrence, North Korea also entered a danger zone. The United States might start to seriously consider military options against the plutonium program. Furthermore, North Korea was isolated from the international economy and community. The material consequences and normative opprobrium associated with proliferation were of little concern for the pariah regime. Finally, North Korea invested considerable sums into its nuclear program for decades, but received relatively modest benefits from leveraging this latent capability as a bargaining chip.

Why did North Korea forego its initial nuclear weapons option to blackmail the United States? Perhaps Pyongyang stumbled onto the bargaining potential of its nuclear latency by accident. When Washington sounded the alarm in the early 1990s over North Korea's proliferation potential, the Kim regime found it had an excellent tool of compellence. Yet North Korea was well versed in coercive diplomacy, having spent four decades experimenting with various forms of conventional provocation and compellence. Pyongyang made mistakes during the Cold War, but consistently attempted to wield new capabilities and advantages to extract concessions from Washington and Seoul.

Furthermore, the first part of this chapter presents evidence suggesting the Kim regime intended to use its nuclear program as the centerpiece of a compellence strategy against the United States.

Instead, North Korea waited in the ENR zone for two complimentary reasons. First, Pyongyang wanted to solidify its nuclear breakout capacity. To field a rudimentary nuclear deterrent, North Korea needed fissile material, weapon packages, and delivery vehicles. While the plutonium reprocessing capability at Yongbyon cleared a major technological hurdle, Pyongyang could only threaten to acquire a few crude nuclear devices in the early 1990s. Coercive diplomacy was a safe delaying tactic. North Korea reached a deal with the United States over the vulnerable facilities at Yongbyon to reduce the threat of preventive military action and punitive sanctions. The 1994 Agreed Framework reaped blackmail benefits but also opened up room to push forward other aspects of nuclear latency, such as long-range ballistic missiles and uranium enrichment.

Yet blackmail was more than a tactic to buy time. The second reason North Korea waited in the ENR zone was that the Kim regime's survival depended on extorting concessions from foreign governments to sustain the military and political elite. After the collapse of the Soviet Union, Pyongyang needed fresh sources of foreign patronage. Nuclear latency provided the Kim regime with an excellent tool to compel concessions from unwilling sponsors, such as the United States. The first part of this chapter demonstrates that proliferation blackmail was part of a calculated survival strategy employed by the Kim regime after the Cold War. Since North Korea decided to blackmail the United States, it is important to explain variation in episodes of success and failure over time. When did nuclear latency confer Pyongyang with a coercive threat

advantage? I argue in the second part of this chapter that North Korea was only able to extract concessions from the United States in 1994 when it hit the sweet spot of a moderate threat and adequate nonnuclear promise. Subsequent blackmail attempts failed because North Korea was unwilling and unable to solve the credible commitment problem intrinsic to nuclear latency.

(1) Blackmail as a Survival Strategy

Mastery of the nuclear fuel cycle is a costly and sophisticated technological feat. Countries do not pursue such latent nuclear capabilities "simply to accumulate negotiating chips."[1] The concessions to be gained from proliferation persuasion are often not greater than either the national security benefits of nuclear deterrence, or the sunken investment in the nuclear fuel cycle. When a small weak country such as North Korea pours large amounts of scarce resources into its nuclear infrastructure, it is unlikely to trade away this latent capacity to proliferate for material concessions or political enticements. So why did Pyongyang forego its initial weapons option to instead practice coercive diplomacy?

The goal of this section is to demonstrate that proliferation persuasion was part of a calculated survival strategy employed by the Kim regime after the Cold War. To make this case, I trace the adaptation of North Korea's strategy and military capabilities to changing circumstances during and after the Cold War. This allows me to place the policy of proliferation blackmail in the early 1990s within the long-term context of Pyongyang's objectives and capabilities. In particular, I build a historical case to support my claim that concessions, especially energy imports, filled in critical gaps in the economy after the collapse of the Soviet Union. Blackmailing foreign governments for these concessions was more than just a tactical twist in the nuclear program. It became the centerpiece of the Kim regime's survival strategy for nearly two decades.

I present this argument in four parts. The first (1.1) analyzes the security situation North Korea faced during the Cold War. The second (1.2) section links Pyongyang's Cold War environment to its choice of strategy and means. Although nuclear deterrence

[1] Victor Cha, *The Impossible State: North Korea, Past and Future* (New York, NY: Ecco, 2012), p. 300.

appeared optimal, the structural situation drove North Korea to rely on conventional military power as a means of denial and offense. The third (1.3) section examines the radical structural changes North Korea confronted at the end of the Cold War, specifically the loss of economic patronage from the Soviet Union. The fourth (1.4) section explains why North Korea adopted a proliferation blackmail strategy to induce foreign assistance in this constrained environment.

(1.1) North Korea's Security Environment during the Cold War

North Korea confronted a precarious security situation against the United States and the Republic of Korea (ROK). The Korean War underscored the relative power imbalance between North Korea and the United States. The superpower was able to bring extensive military assets into the theater, conduct a strategic bombing campaign that left the Northern economy and infrastructure in ruins, and considered the use of atomic weapons against North Korean and Chinese troops. North Korea's position did not improve after the war. U.S. armed forces enforced the territorial status quo along the 38th parallel and defended the South with both conventional and later tactical nuclear weapons. Pyongyang still attempted to achieve revisionist goals through the limited use of force, covert special operations, assassination plots, and terrorist attacks. These provocations throughout the 1960s and 1970s prompted the U.S. to mobilize nuclear-capable naval and air forces into the Sea of Japan on three occasions.[2] This pattern of interaction created a mutual perception between the U.S. and DPRK that each side

[2] For an overview of nuclear threats against North Korea, see Roger Dingman, "Atomic Diplomacy During the Korean War," *International Security* Vol. 13, No. 3 (1988), pp. 50–91; Richard K. Betts, *Nuclear Blackmail and Nuclear Balance* (Washington, DC: Brookings Institution Press, 1987), pp. 31–48; Peter Hayes, *Pacific Powderkeg: American Nuclear Dilemmas in Korea* (Lanham, MD: Lexington Books, 1990), p. 131.

wanted to revise the armistice and unify the peninsula. The Kim regime in Pyongyang therefore believed it faced a nuclear-armed superpower with greedy motives.

Pyongyang's threat assessment of South Korea changed over time. In the few decades after the Korean War, Seoul did not pose much of a challenge to Pyongyang, as the country remained underdeveloped and much weaker than the North. But when General Park Chung-hee initiated a series of reforms and investments during the 1970s to buildup economic, industrial, and military capacity, the regional balance of power steadily shifted in the South's favor.[3] At the same time, Park founded a nuclear energy program, attempted to acquire sensitive nuclear fuel cycle technology, and hinted that he sought the capacity to produce nuclear weapons. North Korea frequently raised "the issue of South Korea's nuclear weapons ambitions in various international fora," as it constituted "a serious challenge that the DPRK could not afford to underestimate."[4] Furthermore, Park and other hardline elements of the ROK leadership were vocal about their desire to reunify the peninsula. Even though the United States kept these ambitions in check, Pyongyang perceived Seoul's nuclear and unification aspirations as evidence of a highly revisionist regional adversary.

North Korea's alliance pacts with the Soviet Union and People's Republic of China (PRC) helped Pyongyang balance against the US-ROK threat and buildup internal power. Kim Il Sung's plan to unify the peninsula through surprise attack in 1950 required him to seek military backing from Moscow and Beijing. The Korean War then galvanized

[3] Charles Wolf et al., *The Changing Balance: South and North Korean Capabilities for Long-Term Military Competition* (Santa Monica, CA: RAND, December 1985), pp. 7–11.
[4] Balazs Szalontai and Sergey Radchenko, "North Korea's Efforts to Acquire Nuclear Technology and Nuclear Weapons: Evidence from Russian and Hungarian Archives," *Cold War International History Project [hereafter CWIHP] Working Paper No. 53* (Washington, DC: Woodrow Wilson International Center for Scholars, August 2006), p. 9.

the alliance triangle. As the tide of battle turned against Kim, the Soviets provided covert air support against American pilots, while the intervention of the Chinese People's Volunteer Army across the Yalu River helped the North avoid defeat. After the war, Kim managed to assert North Korea independence from the Soviets and Chinese while drawing each ally into formal defense pacts. The official Soviet-DPRK and PRC-DPRK treaties signed separately in 1961 each stipulated that "in the event of one of the parties being the object of an armed attack … the other party would immediately render military and other assistance with all the means at its disposal."[5] This emphasis on mutual defense increased the risk that future conflict on the peninsula would escalate into general war.

The Soviets and Chinese also boosted North Korea's relative power through sustained patronage. Despite Kim Il Sung's economic policy of self-reliance (*juche*), North Korea struggled with autarky, and relied on the USSR and PRC to supply natural resources and military hardware at heavily discounted rates. Energy shortages were a chronic problem. Pyongyang often demanded free energy imports, such as a 1976 emergency request for "200,000 metric tons of oil and 150,000 metric tons of coking coal" from the Soviet Union.[6] Kim was increasingly able to extract such largesse after Sino-Soviet relations deteriorated in the mid-1960s, giving him the opportunity to play the two patrons off each other. In 1962, Kim's request for "free military aid from the Soviet Union" was roundly rejected. Once the Sino-Soviet split emerged a few years later, Kim asked for an even larger free package of military equipment. This time, however, Moscow was eager to oblige in an effort to win over Kim's support against

[5] Narushige Michishita, *North Korea's Military-Diplomatic Campaigns, 1966-2008* (London, UK: Routledge, 2009), p. 25.
[6] Szalonti and Radchenko, *CWIHP No. 53*, Document 20.

Beijing.[7] The Chinese countered by modernizing the Korean People's Army during the 1970s, and hinted that they might even transfer "tactical nuclear weapons in the future."[8] One historian concluded that Kim took the Soviets and Chinese for "cows he could usefully milk in order to keep his regime afloat."[9] As a result, the USSR and PRC transferred vast quantities of commercial goods, energy supplies, industrial technology, and military hardware to North Korea throughout the Cold War.

(1.2) Strategy and Means: Conventional Denial and Coercion

North Korea's security environment led it to pursue three core national security objectives during the Cold War. First, Pyongyang placed emphasis on dissuading Washington and Seoul from making coercive threats or using military force. North Korea wanted to deter the United States from initiating either limited retaliatory strikes or full-scale reunification. If Washington anticipated high costs from military action, Pyongyang believed they would restrain the more risk acceptant South Korean leadership. Kim Il Sung focused more on containing the South over time as its power grew and Park's nuclear ambitions came to light. Second, North Korea attempted to change the status quo. Kim's initiation of the Korean War made clear that the maximum objective of the regime was to annex the South. Below this goal, though, Pyongyang pursued more minimal aims such as attempting to alter territorial boundaries, change the regime in Seoul, and persuade Washington to withdraw its forces from the peninsula. Third, North Korea sought to maintain economic and military subsidies from the USSR and PRC.

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[7] Szalonti and Radchenko, *CWIHP No. 53*, Document 34.
[8] Szalonti and Radchenko, *CWIHP No. 53*, Document 20.
[9] Sergey S. Radchenko, "The Soviet Union and the North Korean Seizure of the USS Pueblo: Evidence from Russian Archives," *CWIHP Working Paper No. 47* (Washington, DC: Woodrow Wilson International Center for Scholars, August 2006), p. 10.

A strategy of deterrence by punishment backed with nuclear weapons was the most logical defense posture for North Korea to accomplish these core objectives. Even with a small nuclear force, Pyongyang could hold hostage military and civilian targets of value to the United States in the Japanese archipelago. The threat of regional nuclear attacks on Okinawa or Tokyo would neutralize the prospect of full-scale invasion, and severely limit the level of retaliation the US-ROK could inflict in response to North Korean provocations. The DRPK would gain an obvious advantage over the nonnuclear ROK, both in terms of military capability and scientific prestige. Nuclear weapons were therefore a highly effective means to ensure regime survival against the far superior United States, open space for more frequent and intense conventional operations designed to alter the status quo, and counter the rise of ROK power.

Nuclear weapons also promised Pyongyang greater bargaining power over Moscow and Beijing. To be clear, the Soviets and Chinese did not see a nuclear North Korea to be compatible with their national interests, and opposed proliferation on the peninsula. But if presented with a nuclear fait accompli, Moscow and Beijing would compete over Pyongyang's loyalty. The Soviets were already supplying "weapons and rubles to the states on the Chinese periphery … whose support would be critical in case of a major confrontation."[10] In such a conflict, North Korea's nuclear force would be a powerful asset for the USSR if targeted against mainland targets in China. Beijing could suppress this contingency by outbidding Moscow's subsidies to Pyongyang, and reinforce North Korea as a strategic buffer against the U.S., ROK, and Japan. As a result, Sino-Soviet competition made it likely that economic and military patronage would increase after the DRPK acquired nuclear weapons. In sum, nuclear deterrence appeared

[10] Szalonti and Radchenko, *CWIHP No. 53*, p. 4.

to be an optimal posture for North Korea to achieve its three main national security objectives.

Kim Il Sung apparently recognized these benefits, and started to pursue a nuclear weapons option by the 1970s.[11] Kim's public views on nuclear weapons revealed a clear intent to acquire this ultimate deterrent capability for the DPRK. The U.S. atomic bombing of Japan had a profound impact on Kim. Since he had suffered humiliating defeat against the Japanese, Kim came to believe that nuclear weapons had the power "to overcome even the most formidable foes swiftly."[12] Kim was later shocked to discover that the U.S. considered using these weapons against his own forces during the Korean War, and began "to have doubts about the reliability of the nuclear shield provided by his allies."[13] The revelation of General Park's clandestine weapons efforts provided "bitter proof" to Kim that "he had misjudged his southern opponents and had been effectively outflanked by them." Beset by insecurity, Kim saw nuclear weapons "as a strategic 'equalizer' and deterrent" against the US-ROK.[14]

North Korea's partners in the Communist world quickly inferred Kim Il Sung's intent to proliferate. Hungarian and East German diplomats concluded that North Korea "secretly planned to produce nuclear weapons" as early as 1979. The Soviets had long rejected numerous requests for nuclear technology because they suspected Kim would pursue a military weapons program. In a visit to Beijing in January 1977, "the North Koreans publicly hinted that they might equip themselves with nuclear weapons," while a

[11] Since Kim maintained personal and secretive control over the nuclear program, North Korea's "nuclear intentions were never written in any DPRK regulations or explicitly developed … Instead, they were 'hidden away' in Kim Il-sung's head, and he might have shared only reluctantly his thoughts and intentions with his close associates." Alexandre Y. Mansourov, "The Origins, Evolution, and Current Politics of the North Korean Nuclear Program," *The Nonproliferation Review* (Spring-Summer 1995), p. 30.
[12] Ibid., p. 28.
[13] Ibid.
[14] Ibid., p. 30.

diplomatic team in Moscow at the same time requested Soviet assistance with nuclear reactor technology. The East Germans believed the DPRK was "having talks about this issue in order to become capable of producing atomic weapons in the future."[15] Rebuffed again by the Soviets, the North Koreans then urged other COMECON countries "to provide it with equipment for nuclear power plants … to make up for its lag behind South Korea … with the hidden intention that later it may become capable of producing an atomic bomb."[16] Pyongyang's allies believed the Kim regime wanted to acquire nuclear weapons.

Despite the demand for nuclear deterrence, North Korea instead adopted a posture of conventional deterrence by denial.[17] The foundations of this posture emerged in the aftermath of the Korean War. The North Koreans determined another war was likely with the US-ROK, although this one would "be waged with nuclear weapons, rather than conventional ones. The DPRK is prepared for such a contingency: the country has been turned into a system of fortifications, important factories have been moved underground … and military facilities have been established in the subterranean cave networks."[18] The Korean People's Army (KPA) complimented these hardened defenses with a major arms buildup in 1962, and soon equipped itself with "sufficient deterrent capabilities against possible US-ROK retaliations and with defense infrastructure to guarantee its survival even if the US-ROK side actually mounted military retaliations against it."[19] By the end

[15] Szalonti and Radchenko, *CWIHP No. 53*, p. 13 and Document 29.
[16] Szalonti and Radchenko, *CWIHP No. 53*, Document 43.
[17] Narushige Michishita, "The Future of North Korean Strategy," *Korean Journal of Defense Analysis* 21, no. 1 (March 2009), p. 106. But see also Homer T. Hodge, "North Korea's Military Strategy," *Parameters* (Spring 2003), pp. 72–79.
[18] Szalonti and Radchenko, *CWIHP No. 53*, Document 28.
[19] Michishita, *North Korea's Military-Diplomatic Campaigns, 1966-2008*, p. 23.

of the 1960s, North Korea had made it difficult for the United States and South Korea to reunify the peninsula by force.

North Korea further solidified its denial posture during the 1970s by acquiring large defense-in-depth and offensive capabilities. From 1972 to 1980, Pyongyang "emphasized the commitment of scarce resources, development of industry, and military expansion" to create a military force capable of sustaining defensive operations while simultaneously launching an offensive counterattack. KPA strategists devised a 'Two Front War' plan to retake South Korea. The plan dictated that a very large force would destroy US-ROK forward forces along the DMZ to begin enveloping the peninsula. At the same time, North Korean special operation forces (SOF) would infiltrate deep into the South Korean rear to neutralize the US-ROK command, control, and communication infrastructure. To build a military able to perform such a mission, North Korea devoted "between 32 and 38 percent of central government expenditures" to defense, began a major "reorganization and modernization of its ground forces," and dramatically increased SOF personnel strength from 15,000 in 1970 to 80,000 by 1984.[20] Long after the exigencies of the Korean War had faded, North Korea continued to deploy overwhelming conventional power to deny US-ROK forces the ability to preform successful military missions.

Missiles and long-range artillery played a central role in North Korea's denial capability. Forward deployed artillery would blunt the impact of a US-ROK drive across the DMZ, and help pin down enemy forces to counterattack under the Two Front War plan. Following Soviet military doctrine, the KPA viewed missiles as a form of extended

[20] See Andrew Scobell and John M. Sanford, *North Korea's Military Threat* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, April 2007), pp. 9, 21, 32, 43; Hayes, *Pacific Powderkeg*, p. 133.

range artillery that could strike the US-ROK rear and help decapitate their command and control hub. North Korea turned to the USSR and PRC to acquire these capabilities. During the 1960s, the Soviets transferred and trained the North Koreans in numerous missile systems suitable for short-range battlefield operations, such as surface-to-air missiles, anti-ship cruise missiles, and artillery rockets.[21] China helped modernize this technology throughout the 1970s, and started to collaborate on a project to produce tactical ballistic missiles. After the Chinese project was cancelled, the DPRK partnered with Egypt to reverse engineer the Soviet R-17E (Scud B), and assembled "the industrial infrastructure required to support an indigenous ballistic missile program" by 1980. This effort culminated in the first ballistic missile (Scud C or Hwasong 5) to reach production status within the DPRK in 1986.[22] North Korea founded and expanded the indigenous missile program during the Cold War to enhance the KPA's ability to perform military missions against the South.

The rapid buildup in force under the denial strategy also provided Pyongyang with an opportunity to pursue revisionist objectives through a series of coercive military campaigns. From 1966 until 1972, North Korea attempted to pin down and preoccupy US-ROK forces, thwart U.S. intelligence collection, destabilize and assassinate South Korean leadership, and drive a wedge in US-ROK relations. To these ends, the KPA launched offensive operations and limited assaults on U.S.-ROK forces, such as

[21] The Soviets transferred the V-75 Davina (SA-2a Guidline) SAMs, S-2 Sopka (SSC-2b SAMLET) coastal-defense cruise missiles, P-20 (SS N-2 STYX) anti-ship missiles, and the 3R10 Luna-2 (FROG-5) artillery rockets. "As with the SA-2s, the Soviets provided training that allowed the DPRK to assemble, test, and maintain SS-N-2 STYX and SSC-2b SAMLETs. This training – along with experience gained in producing multiple-rocket launchers (MRL) and operating the FROG-5 and SA-2a – provided the foundation upon which the DPRK subsequently developed an indigenous missile production capability." Joseph S. Bermudez Jr., *A History of Ballistic Missile Development in the DPRK*, CNS Occasional Paper No. 2, 1999, p. 3.
[22] Bermudez, pp. 9-11.

harassment from special operations forces, artillery exchanges, numerous clashes around the Joint Security Area, and the infamous seizure of the U.S. Pueblo spy ship. Guerilla warfare, covert action, and assassination attempts inside of South Korea were also common. This level of provocation was only possible because the temporary favorable military balance of power mitigated the prospect of U.S.-ROK retaliation.[23] But since there was "little coordination between North Korea's military actions and its diplomatic moves," Pyongyang's initial revisionist strategy was one of raw coercion at this time.[24] Consequently, North Korea only achieved limited successes "at tremendous cost" to its military and economy.[25]

In the early 1970s, Pyongyang transitioned from coercion to the more political process of compellence. The DPRK continued in its attempts to change the status quo, but military actions were now carefully synchronized with political moves designed to accomplish specific goals off the battlefield and reap concrete diplomatic gains. The aims of this new compellence strategy focused on challenging U.S.-ROK territorial boundaries at sea, driving a wedge in the U.S.-ROK alliance, and persuading the U.S. to withdraw its forces from South Korea. "The intensity of the use of force diminished dramatically, and military actions were better coordinated with diplomatic moves."[26] Compellence was still difficult. Inadvertent escalation was frequent and mistakes were made, most notably the disastrous decision in 1976 to brutally murder two U.S. servicemen in the JSA. Yet North Korea's foray into compellence met with mixed success over the Northern Limit Line in

[23] Michishita, *North Korea's Military-Diplomatic Campaigns, 1966-2008*, pp. 43–44.
[24] Ibid., p. 27.
[25] These operations took a high toll in human life on the KPA. Ibid., p. 9.
[26] Ibid.

the Yellow Sea, and reaped several tactical victories at much lower cost that the pervious pursuit of pure coercive provocation.

At first cut, Pyongyang's decision to rely on conventional denial and pursue coercive campaigns seemed to be a natural byproduct of the situation the DPRK found itself in after the Korean War. Kim Il Sung wanted nuclear weapons, but neither the Soviets nor the Chinese would transfer sensitive nuclear technology. Conventional denial made sense during the 1950s and 1960s, but required North Korea to make significant and continual investments in military power throughout the 1970s and 1980s.[27] Coercion and compellence activities ran high risks for minimal benefits, and generated unintended consequences. North Korea might achieve tactical victories, but was unlikely to fundamentally alter the status quo on the peninsula. As a result, North Korea opted to deploy a costly, risky, and moderately effective force posture against its adversaries, even after the exigencies of the Korean War had long since faded.

Two factors drove Pyongyang to rely on conventional denial and compellence throughout the entire Cold War. First, the U.S.SR and PRC underwrote the DPRK's conventional force deployment, and mitigated key costs and risks. As detailed above, patronage from the Soviets and Chinese allowed the North to choose guns and butter during the Cold War. Moscow subsidized the majority of North Korean energy imports, military hardware, and consumer goods, while China provided the rest. The Soviet Union provided the KPA with much of its initial military hardware, and China helped to modernize and resupply these forces. Most important, access to subsidized and sometimes free energy imports allowed Pyongyang to invest the country's scarce

[27] Nick Beldecos and Eric Heginbotham, "The Conventional Military Balance In Korea," *Breakthroughs* IV, no. 1 (Spring 1995), pp. 2–3.

resources back into the military. Although the North swung between its two patrons to extract maximum material support, the Soviet Union remained the main source of energy assistance, and "continued to fuel North Korea's economy and military machine throughout the cold war."[28] In addition, defense treaties set some clear limits to retaliation from U.S.-ROK forces, thereby laying the foundation for limited provocation campaigns.

Second, although Kim Il Sung preferred to rely on an independent nuclear deterrent, North Korea lacked the nuclear latency needed to proliferate within a reasonable time frame. The country had to build its nuclear science and technology sector from scratch, and this endeavor required foreign assistance. North Korean scientists started to train near Moscow in the 1950s, and Soviet assistance brought a research reactor, radiochemical laboratory, and auxiliary facilities to the Yongbyon nuclear complex in the 1960s.[29] The Soviets opposed North Korean proliferation, however, and refused to transfer sensitive technology, or even a full reactor.[30] Rather than seeking to "assure Moscow that they did not wish to develop nuclear weapons," North Korean diplomats "behaved in a provocative way during bilateral negotiations" over nuclear

[28] Don Oberdorfer, *The Two Koreas: A Contemporary History* (New York, NY: Basic Books, 2002), p. 154. North Korea was not always able to extract the economic and military support it wanted from the Soviet Union. Relations cooled considerable in the mid-1970s before patronage resurged in the early-1980s. For an excellent overview, see Harry Gelman and Norman Levin, *The Future of Soviet-North Korean Relations* (Santa Monica, CA: RAND Corporation, October 1984).

[29] Alexander Zhebin, "A Political History of Soviet-North Korean Nuclear Cooperation," in *The North Korean Nuclear Program: Security, Strategy and New Perspectives from Russia*, ed. James Clay Moltz and Alexandre Y. Mansourov (London, UK: Routledge, 1999), p. 28; Georgiy Kaurov, "A Technical History of Soviet-North Korean Nuclear Relations," in *The North Korean Nuclear Program: Security, Strategy and New Perspectives from Russia*, ed. James Clay Moltz and Alexandre Y. Mansourov (London, UK: Routledge, 1999), pp. 16–17.

[30] The Soviet Union helped in the design and construction of the hot-cell facility, but did not transfer industrial scale reprocessing technology. See Zhebin, "A Political History of Soviet-North Korean Nuclear Cooperation," pp. 32–34.

technology.[31] Rebuffed by the Soviets, North Korea turned to the Chinese for support. Beijing also turned down repeated demands for nuclear technology and assistance.[32] Without foreign technology transfers, North Korea remained decades away from the bomb, and could not depend on the future acquisition of nuclear deterrence to ensure its survival in the hostile Cold War environment.[33]

Kim Il Sung opted instead to steadily buildup North Korea's own technical capacity to produce nuclear weapons. Pyongyang learned that explicit requests for nuclear weapons technology were effective only at alienating its allies. Instead, North Korea started to invest in its indigenous nuclear fuel cycle at Yongbyon, and kept a tight lid on military objectives. Work began in 1980 on a new reactor at Yongbyon well suited to the production of weapons-grade plutonium in the spent fuel. The graphite-moderated, gas-cooled reactor was a composite design of the French G-1 and the British Calder Hall models from the 1950s.[34] The U.S. detected construction of the reactor in 1982, but believed the North Koreans did not yet have "either the facilities or materials necessary to develop and test nuclear weapons."[35] One year later, the U.S. intelligence community worried that Pyongyang might want nuclear weapons to pursue a range of national security goals on the peninsula.

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[31] Szalonti and Radchenko, *CWIHP No. 53*, pp. 11-12.
[32] Oberdorfer, *The Two Koreas*, pp. 252–253. See also Michael J. Mazarr, *North Korea and the Bomb: A Case Study in Nonproliferation* (New York, NY: St. Martin's Press, 1995), pp. 28–29; Joseph S. Bermudez, "North Korea's Nuclear Programme," *Jane's Intelligence Review* 3, no. 9 (September 1991), p. 408.
[33] Hayes, *Pacific Powderkeg*, p. 162.
[34] See David Albright, "North Korean Plutonium Production," *Science and Global Security* 5, no. 1 (1994), p. 72; Mazarr, *North Korea and the Bomb*, p. 39.
[35] Upon initial detection, the U.S. intelligence community believed that the reactor was "not designed to produce the quantities of plutonium needed for a nuclear weapons program," see Central Intelligence Agency, "North Korea: Nuclear Reactor," United States, July 9, 1982, National Security Archive (NSA) Electronic Briefing Book No. 87 [hereafter NSA-EBB #87].

> [North Korea] might see nuclear weapons as a means of forcing political concessions from Seoul, as a hedge against possible South Korean development of a nuclear weapons capability, as leverage to gain a freer hand in paramilitary operations without provoking a military response, as deterring a U.S. nuclear response to an attack on the South, or as a means of carrying out offensive operations in an all-out attack.[36]

The United States concluded that North Korea was building up its latent nuclear capabilities to achieve multiple objectives.

By 1984, the reactor was nearing completion, but U.S. intelligence analysts believe the North Koreans needed Soviet assistance to finish the project.[37] U.S. intelligence analysts predicted that the Soviets would extract a pledge to the Nonproliferation Treaty (NPT) from North Korea in exchange for finishing the reactor. This would put "Moscow's prestige on the line in guaranteeing a peaceful program, with renewed economic and military aid the lever to enforce it."[38] Since the Soviets found it difficult to control Pyongyang's actions, they "were interested in creating a situation in which Kim Il Sung's hands were tied by as many international agreements as possible."[39]

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[36] Central Intelligence Agency, "A 10-Year Projection of Possible Events of Nuclear Proliferation Concern," United States: Director of Intelligence Reference Aid, May 1983, NSA-EBB #87.
[37] The CIA determined that North Korea DPRK still needed "to develop advanced engineering techniques to master the remote control operations that are necessary for handling highly radioactive materials." See Central Intelligence Agency, "North Korea: Nuclear Reactor Under Construction," United States, 20 April 1984, NSA-EBB #87, p. 2.
[38] Central Intelligence Agency, "A 10-Year Projection of Possible Events of Nuclear Proliferation Concern," United States: Director of Intelligence Reference Aid, May 1983, NSA-EBB #87.
[39] Szalonti and Radchenko, *CWIHP No. 53*, p. 21.

In 1985, Moscow induced Pyongyang to accede to the NPT, and expected to use their flow of patronage to constrain Kim's nuclear ambitions.[40]

After North Korea finished the new Yongbyon reactor, the U.S. intelligence community updated its technical estimates of North Korea's latent nuclear capability, and highlighted growing uncertainty over Pyongyang's intent to proliferate. North Korea brought its 5-MW graphite moderated reactor online, and in a 1986 reassessment, the Director of National Intelligence drew attention to the DPRK's technical advances, but stopped short of assigning a clear intent to produce nuclear weapons.

> Until 1984 the North Korean nuclear program was not viewed as a serious proliferation concern. Up to that time, available evidence had painted a picture of a rudimentary program incapable of very advanced research … Whether the current nuclear developments in North Korea reflect a nuclear weapons program, they represent a considerable developing capability.[41]

North Korea's latent capabilities continued to grow. In May 1988, the DNI started to assess the "possibility that Pyongyang is developing a reprocessing capability … We have no evidence that North Korea is pursuing a nuclear weapon options, but we cannot rule out that possibility."[42] But by the end of year, the DNI pointed towards "foot-dragging on negotiations for safeguards" over existing and new facilities at Yongbyon as

[40] Central Intelligence Agency, "North Korea's Nuclear Efforts," United States, 28 April 1987, NSA-EBB #87; Leonard S. Spector, *Nuclear Ambitions: The Spread of Nuclear Weapons* (Boulder, CO: Westview Press, 1990), p. 123; Jeffrey T. Richelson, *Spying on the Bomb: American Nuclear Intelligence from Nazi Germany to Iran and North Korea* (New York, NY: W. W. Norton, 2006), p. 333.
[41] Central Intelligence Agency, "North Korea: Potential for Nuclear Weapon Development," United States: Director of Intelligence Assessment, September 1986, NSA-EBB #87.
[42] Central Intelligence Agency, "North Korea's Expanding Nuclear Efforts," United States: Directorate of Intelligence, May 3, 1988, NSA-EBB #87.

evidence that North Korea was "developing a nuclear capability for *undetermined final use (military, civilian, or a combination of both)*."[43] By the end of the decade, Pyongyang had achieved its objective of acquiring an indigenous nuclear fuel cycle. But for the meantime, North Korea was content to build up its capacity to produce fissile material.

North Korea's choice of strategy and means during the Cold War matters in the context of proliferation blackmail for three reasons. Foremost, the posture committed North Korea to the continual buildup of conventional force capabilities as the central means to practice deterrence on the Korean peninsula. Conventional military power became the "crux of the Korean confrontation," and allowed Pyongyang to make early forays into coercion and provocation against the U.S. and ROK.[44] As a result, North Korea entrenched itself as a garrison state and "perhaps the most militarized society in the world" by the 1970s.[45] Second, North Korea's relative power asymmetry necessitated a dependence on foreign assistance from the Soviet Union and China to build the military it needed. Patronage sustained conventional military power and therefore became a central tenant of North Korean strategy. Finally, North Korea laid the foundations for its nuclear fuel cycle during this time, albeit with the intent to acquire a nuclear weapon breakout capacity.

(1.3) The Transformation of North Korea's post-Cold War Environment

[43] Central Intelligence Agency, "Nuclear Proliferation Survey: The Next Generation," United States: Director of Intelligence Reference Aid, November 1988, NSA-EBB #87.
[44] Michael O'Hanlon and Mike M. Mochizuki, *Crisis on the Korean Peninsula: How to Deal With a Nuclear North Korea* (New York, NY: McGraw-Hill, 2003), p. 57.
[45] Robert A. Scalapino and Chong-Sik Lee, *Communism in Korea: The Society* (Berkeley, CA: University of California Press, 1972), p. 919.

As the Cold War ended, North Korea's security situation changed along three dimensions. First, the collapse of the Soviet Union left the United States as the lone superpower. The international system underwent a major change, leaving Pyongyang's long-standing rival at the center. Second, South Korea's juggernaut economy grew at a rapid pace to completely eclipse North Korea.[46] South Korea's gross national product (GNP) was more than seven times that of the North by 1988. Even though North Korea spent between 20 and 25 percent of its GNP on defense, South Korea's military budget was roughly double at a mere 5 percent GNP allocation. A vibrant export market in consumer and industrial goods generated a trade surplus with double-digit growth rates for South Korea.[47] In desperate need of economic assistance, the Soviet Union reversed its policy towards South Korea to normalize diplomatic and trade relations. China followed Moscow, and trade between South Korea and North Korea's primary Cold War sponsors blossomed into a multi-billion dollar market by 1991.[48] At the international and regional level, North Korea faced a growing disparity in power with its Cold War rivals.

The third dimension concerned the loss of allied patronage from the Soviet Union and China. The end of the Cold War put North Korea's alliance relations on ice. As the Soviet Union collapsed, Moscow normalized relations with Seoul. South Korea poured economic investment and assistance into Russia. Strapped for hard currency, "Boris Yeltsin showed little interest in long-term relations with the DPRK."[49] The North Korean leadership felt betrayed and froze the alliance by declaring the 1961 treaty null and void.

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[46] Oberdorfer, *The Two Koreas*, p. 202.
[47] Andrew Mack, "North Korea and the Bomb," *Foreign Policy* no. 83 (July 1, 1991), pp. 93–94; Marcus Noland, *Avoiding the Apocalypse: The Future of the Two Koreas* (Washington, DC: Institute for International Economics, 2000), pp. 24–58.
[48] Oberdorfer, *The Two Koreas*, pp. 190–231.
[49] Jonathan D. Pollack, *No Exit: North Korea, Nuclear Weapons and International Security* (Abingdon [UK]: Routledge, 2011), p. 100.

China attempted to maintain friendly relations with the DPRK as it opened diplomatic channels to the ROK, but "Beijing and Pyongyang were heading in starkly different directions."[50] After the Cold War, neither Moscow nor Beijing "had any interest in sustaining the military rivalry between the two Koreas or in continuing to compete for Pyongyang's fleeting loyalties."[51] North Korea's alliance relationships started to unravel.

The final end to North Korea's traditional patronage came in 1991, when Moscow terminated the concessional system and demanded hard currency for its exports at market value. China subsequently followed Moscow's lead, and North Korea found itself with a devastating shortfall in energy imports that crippled the economy. In 1988, Moscow exported $1.9 billion in goods to North Korea, but only imported $0.9 billion in return. The Soviets thereby provided Pyongyang with "an increasing quantity of oil and gas, weapons, and a variety of other goods on easy credit and concessional terms," and constituted "nearly 3/5 of North Korea's total trade turnover." When the sponsorship ended in 1991, North Korea's energy imports fell *by 75 percent* from the 1990 level. China was not eager to see the Kim regime implode on its border, but refused to make up this shortfall.[52] The loss of Soviet and Chinese sponsorship pushed the DPRK into economic free fall. With no friends on the horizon willing to replace this level of patronage, the Kim regime found itself in a precarious situation.

Nuclear threats to North Korea from the United States and South Korea did not change much as the Cold War ended. South Korea remained a nonnuclear weapon state,

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[50] Ibid., p. 104.
[51] Ibid., pp. 101–102.
[52] See Oberdorfer, *The Two Koreas*, pp. 202, 233; Nicholas Eberstadt, Mark Rubin, and Albina Tretyakova, "The Collapse of Soviet and Russian Trade with the DPRK, 1989–1993," *The Korean Journal of National Unification* 4 (1995), pp. 87–104; Marcus Noland, "Why North Korea Will Muddle Through," *Foreign Affairs* 76, no. 4 (July 1, 1997), p. 106; Nicholas Eberstadt, *The End of North Korea* (Washington, DC: AEI Press, 1999), pp. 93–110.

albeit with a sophisticated civil nuclear energy sector.[53] The United States continued to maintain a robust nuclear strike capability against North Korea. As part of an international initiative, the U.S. withdrew all ground-based tactical nuclear weapons from the Korean peninsula in 1992. But the basic nuclear-nonnuclear relationship between the U.S. and North Korea endured as the Cold War came to an end. Pyongyang soon found that the potential to acquire nuclear weapons and upset this asymmetric balance generated an important threat vector against the United States.

Although North Korea's material power situation was dire, Pyongyang believed it faced more benign adversaries than during the height of the Cold War. Most important, South Korea's behavior as the Cold War ended signaled that it was most likely a security-seeker. The domestic political situation in South Korea faced a watershed moment in 1987 as the country shifted from decades of authoritarian rule to democracy. This transition had a profound impact on foreign policy. South Korea eased its traditional hardline anticommunist stance and launched historic public and secret negotiations with North Korea leaders. While South Korea's meteoric rise posed a threat to the North, the fledgling democracy valued regional stability as a key condition of continued growth and international commerce.[54] Unification of the peninsula remained important, but the costs to South Korea under any scenario were staggering.[55] South Korean leaders no long viewed the use of force to annex the North as a rational or desired option.

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[53] See Jungmin Kang et al., "South Korea's Nuclear Surprise," *Bulletin of the Atomic Scientists* 61, no. 1 (February 2005), pp. 40–49; Rebecca Hersman and Robert Peters, "Nuclear U-Turns: Learning from South Korean and Taiwanese Rollback," *The Nonproliferation Review* 13, no. 3 (2006), pp. 539–553.

[54] Oberdorfer, *The Two Koreas*, pp. 161, 186; Kyung-Ae Park, "Explaining North Korea's Negotiated Cooperation with the U.S.," *Asian Survey* 37, no. 7 (July 1, 1997), p. 629.

[55] For an overview of economic and political literature on the costs to South Korea of reunification under many potential scenarios, see Marcus Noland, Sherman Robinson, and Li-Gang Liu, *The Costs and Benefits of Korean Unification*, Working Paper (Peterson Institute for International Economics, n.d.);

North Korea's perception of United States' motives also improved. In 1988, the U.S. established the first "mutually authorized, direct channel for diplomatic business" with North Korea.[56] Yet the annual Team Spirit joint military training exercise between United States Forces Korea and the Military of South Korea continued apace, with over 200,000 personnel and nuclear-capable delivery vehicles participating in the 1988 and 1989 rounds.[57] North Korea contended that Team Spirit was preparation for an invasion of the North, and viewed the exercises "as deeply threatening."[58] Despite the continuation of Team Spirit, North Korea faced a precarious situation without allied sponsorship. "The fact that there was no socialist ally on which North Korea could rely for its security and survival pushed Pyongyang to approach the only superpower, the U.S."[59] North Korea gambled on the United States as a security-seeker.

In sum, North Korea faced rapid and significant changes in its structural situation at the end of the Cold War. The rise of South Korea and the loss of communist sponsorship created a disparity in power that threatened the state's survival. Yet Pyongyang also confronted a very different risk-averse Seoul driven by security-seeker motives and dependent on economic growth. The United States still posed a threat, but North Korea came to perceive the superpower as a potential source of foreign assistance. As the next section demonstrates, Pyongyang therefore turned towards proliferation blackmail as a way to pressure Washington into filling critical energy security gaps in the North Korean economy.

David Coghlan, *Prospects from Korean Reunification* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, April 2008), p. 6.

[56] Oberdorfer, *The Two Koreas*, p. 196.

[57] B-52 nuclear bombers and nuclear-capable Lance long-range missile systems were introduced into Team Spirit during the 1970s. See John F. Farrell, "Team Spirit: A Case Study," *Air and Space Power Journal* XXIII, no. 3 (Fall 2009).

[58] Mack, "North Korea and the Bomb," p. 101.

[59] Park, "Explaining North Korea's Negotiated Cooperation with the U.S.," p. 628.

(1.4) Pyongyang's Survival Strategy: Conventional Deterrence and Nuclear Blackmail

Pyongyang modified its Cold War strategic posture to achieve two more limited objectives in this dire security situation. First, North Korea needed to maintain its survival against external threats. Pyongyang shifted from denial towards deterrence by punishment with a conventional retaliation capability to achieve this long-standing goal. Second, Pyongyang wanted to compel changes in what had become a terrible status quo. North Korea sought territorial modifications to the Yellow Sea's Northern Limit Line (NLL), a peace agreement with the United States, and most important, new sources of foreign assistance to keep the military and economy afloat. To practice compellence, Pyongyang continued to rely on conventional provocation, but met with mixed results. This section explains why North Korea started to leverage its nuclear latency as a means of coercive diplomacy.

North Korea's first objective was to maintain the deterrent calculus on the Korean peninsula. Pyongyang believed that the radical decline in the country's relative power undermined the efficacy of traditional deterrence by denial. To maintain a denial capability, North Korea needed to achieve substantial economic growth and deploy modern military technology commensurate with US-ROK capabilities. The growing power gap made it difficult for North Korea and the KPA to meet these requirements.[60] The Sino-Soviet freeze on patronage compounded the problem to make denial an untenable strategy. North Korea was no longer able to convince its adversaries that they could not perform successful military missions. The KPA could, however, still hold

[60] Scobell and Sanford, *North Korea's Military Threat*, pp. 32–33.

hostage US-ROK assets of value. As a result, the DPRK shifted from denial to deterrence by punishment.[61]

Conventional deterrence made strategic sense because North Korea solved two important limitations with the posture. First, a weak regional state such as the DRPK often cannot perform retaliatory missions against a superpower. North Korea indeed lacked the force projection capability to threaten mainland targets in the United States.[62] Yet the operational requirements for deterrence on the Korean peninsula stipulated that the DPRK only needed military forces sufficient to absorb an attack from a combined US-ROK force, and then counterstrike value targets beyond the initial battlefield, such as civil and industrial centers in South Korea. North Korea therefore reconfigured its conventional forces to achieve a virtual assured retaliation capability against Seoul and other United States assets in East Asia.[63] In regards to Seoul, this necessitated the deployment of hardened long-range artillery and multiple-rocket launcher systems with survivable command and control. Consequently, the United States faced a high probability threat of punishment against targets it valued.

The tempo of conventional retaliation can create a second limitation. If an adversary believes it can accomplish objectives before the cost of punishment becomes

[61] Bruce E. Bechtol, *Defiant Failed State: The North Korean Threat to International Security* (Washington, D.C: Potomac Books, 2010), pp. 39–45, 186–187; Michishita, "The Future of North Korean Strategy," p. 106.
[62] See Defense Intelligence Agency, *North Korea: The Foundations for Military Strength* (Washington, D.C.: U.S. Defense Intelligence Agency, 1991); Joseph S. Bermudez, *The Armed Forces of North Korea*, Armed Forces of Asia (New York, NY: I.B. Tauris, 2001).
[63] O'Hanlon and Mochizuki, *Crisis on the Korean Peninsula*, pp. 8–10, 60–62; Kong Dan Oh and Ralph C. Hassig, *North Korea Through the Looking Glass* (Washington, DC: Brookings Institution Press, 2000), pp. 108–113.

too great over time, then deterrence is bound to fail.[64] After the Korean War, North Korea believed the South Korean leadership was willing to bear the costs associated with the use of force, and sought to convince them that an invasion would fail. Pyongyang perceived two changes to Seoul's security calculus in the post-Cold War environment. Foremost, Seoul could not escape rapid and tremendous punishment from North Korea's reconfigured forces. The prosperous capitol city and central nervous system of South Korean power lay a mere 40 kilometers from the DMZ. In the late 1980s, North Korea moved "roughly 65 percent of its total units and up to 80 percent of its estimated aggregate firepower" within 100 kilometers of the DMZ and concentrated on hardening its artillery strike force along the western front near Seoul.[65] Basic artillery assessments concluded that Seoul would accrue significant human and infrastructural damage in a very short period of time, even with sophisticated US-ROK counterstrike measures.[66] Since South Korea was now a security-seeker whose prosperity and power were tied in large part to Seoul, the threat of assured conventional punishment provided North Korea with an effective posture relative to its traditional reliance on denial.

Of course, the forward disposition of forces along the DMZ could support an offensive invasion of South Korea. Perhaps North Korea aimed to reunify the peninsula, and the concentration of military power near the border served as a means to accomplish

[64] Glenn Herald Snyder, *Deterrence and Defense: Toward a Theory of National Security* (Princeton, N.J: Princeton University Press, 1961); John J. Mearsheimer, *Conventional Deterrence* (Ithaca, N.Y: Cornell University Press, 1985).

[65] Michael O'Hanlon, "Stopping a North Korean Invasion: Why Defending South Korea Is Easier Than the Pentagon Thinks," *International Security* 22, no. 4 (April 1, 1998), p. 140; Michishita, "The Future of North Korean Strategy," 106. As a result, in 1992, "North Korea had about twice the advantage in numbers of tanks and artillery, and a 1.5-to-1 advantage in personnel over its potential adversaries, the U.S.-Republic of Korea defenses to the south." However, these weapon systems "did not include modern evolutionary advances such as computerized targeting, radar guided munitions, etc." See Scobell and Sanford, *North Korea's Military Threat*, p. 22.

[66] Beldecos and Heginbotham, "The Conventional Military Balance In Korea," pp. 1–9; O'Hanlon, "Stopping a North Korean Invasion," p. 142; James M. Minnich, *The North Korean People's Army: Origins and Current Tactics* (US Naval Institute Press, 2005), pp. 101–105.

this long-term goal.[67] While these forces generated an effective deterrent against aggression, they may have been organized and deployed to retake the South. As one military analyst concluded, "North Korea's military strategy is offensive and is designed to provide a military option to achieve reunification by force, employing surprise, overwhelming firepower, and speed."[68] Yet under most engagement scenarios, North Korea would not be able to accomplish the military missions necessary for unification.[69] Even if North Korea used a surprise attack to overwhelm South Korean defenses, it could not hold territory in the face of a combined US-ROK counterstrike, nor did it have the political and economic acumen necessary for the long-term occupation and pacification of South Korea.[70] Given the asymmetry in power that developed in the late-1980s, North Korea's end game "changed from one of hegemonic unification to basic survival."[71] The U.S. Department of State reached the same conclusion. "Although the North continues to put reunification high on its rhetorical list of goals, this issue has not been a driving force behind DPRK policy."[72] Thus, in the post-Cold War environment, reunification of the peninsula was no longer an achievable security objective.

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[67] See Defense Intelligence Agency, *North Korea*, pp. 3–4; Hodge, "North Korea's Military Strategy," pp. 68–70; Scobell and Sanford, *North Korea's Military Threat*, pp. 23–26; Minnich, *The North Korean People's Army*, p. 68.

[68] Hodge, "North Korea's Military Strategy," p. 72.

[69] The proposition that North Korea still sought to reunify the peninsula through force *after* the Cold War ended is controversial. For a good overview of the disagreement, see Andrew Scobell, *North Korea's Strategic Intentions* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, July 2005), pp. 3–13; Victor D. Cha and David C. Kang, "The Debate over North Korea," *Political Science Quarterly* 119, no. 2 (2004), pp. 229–254.

[70] See Beldecos and Heginbotham, "The Conventional Military Balance In Korea," 1–9; O'Hanlon, "Stopping a North Korean Invasion," pp. 135–170. Many analysts doubt North Korea's ability to conduct such an operation. "South Korean acquisition of military hardware (both quality and modern), significantly improved weapon and sensor technology, and urbanization - coupled with presence of U.S. forces, precision munitions, counter-battery fire, and bunker-buster bombs - has diminished North Korea's chances of a military reunification." Scobell and Sanford, *North Korea's Military Threat*, pp. 32–33.

[71] Victor Cha, "Weak but Still Threatening," in *Nuclear North Korea: A Debate on Engagement Strategies* (New York, NY: Columbia University Press, 2005), p. 21.

[72] Department of State, "Pyongyang at the Summit," United States: Memorandum to Secretary Albright, June 16, 2000, NSA-EBB #164, p. 2

The second objective for North Korea was to compel political and economic concessions from the United States and South Korea. Pyongyang wanted to alter the Northern Limit Line (NLL) in the Yellow Sea and replace the Armistice with a formal US-DPRK peace treaty. North Korea employed its old Cold War compellence playbook in a failed attempt to accomplish these political aims. The KPA started brewing trouble in the JSA, DMZ, and Yellow Sea in 1993. Over the next six years, North Korean ground and naval forces frequently conducted armed demonstrations in these areas and exchanged fire with US-ROK forces. Pyongyang linked each maneuver to its political goals. The basic pattern was to "(a) harass and provoke South Koreans; (b) argue that the tension was rising and that the situation could not be managed by the North and the South; and (c) propose talks with Americans to establish a new bilateral peace mechanism."[73] Although these provocative actions constituted "the longest and most elaborate military-diplomatic campaign" ever undertaken by the DPRK, the efforts "did not have much impact on the U.S. position or behavior."[74] North Korea found it difficult to use its waning conventional capabilities as a means of successful compellence.

Pyongyang also needed new patrons to provide economic resources in lieu of its former communist sponsors. The shift from denial to deterrence protected the regime against external threats at much less cost. Yet without foreign assistance, the DPRK could not sustain its autarkic economy or preserve the armed forces necessary to hold regional targets hostage.[75] Since no states volunteered sponsorship for the ailing regime,

[73] Michishita, *North Korea's Military-Diplomatic Campaigns, 1966-2008*, p. 14.
[74] Ibid., pp. 138, 157.
[75] North Korea also conducts overt and covert funding operations – conventional weapon sales, arms technology transfers, narcotics and counterfeit money production, etc. – to maintain a flow of hard currency to the Kim regime. Much like the foreign compellence strategy, these operations "provide essential support for the survival of North Korea as a sovereign state." See Robert D. Wallace, *Sustaining the Regime: North*

Pyongyang began to manipulate unwilling foreign governments into providing resources. North Korea did not need to compel the same level of patronage it received at the height of the Cold War. The ruling Kim regime relied a select group of political and military elites to stay in power. A small cadre ran the organs of government, the pervasive internal security services, and the armed forces. In return, the Kim family provided resources that could not be attained through indigenous sources. The military needed heavy fuel oil and energy imports from abroad, while the political elites demanded consumer goods and a quality of life superior to the general population.[76] As a result, "the health of the overall economy [was] less important than the regime's ability to bribe [these] elite supporters."[77] Pyongyang only needed enough foreign assistance to sustain the military and cultivate the political leadership.

North Korea considered several potential candidates, but ended up targeting the United States. China maintained extensive political relations with Pyongyang, and had the capacity to provide economic assistance. Yet after 1989, Beijing focused on its own domestic troubles. The Chinese kept essential resources flowing to ward off the total collapse of the Kim regime, but were unwilling to do much more at the time. South Korea and Japan could provide North Korea with "large infusions of cash and technology," but domestic and international factors in both countries constrained their behavior towards Pyongyang and posed risks to the long-term survival of the Kim regime.[78] Pyongyang

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Korea's Quest for Financial Support (Lanham, MD: University Press Of America, 2006), p. 1; Cha, *The Impossible State*, chap. 4–5.

[76] Benjamin Habib, "North Korea's Parallel Economies: Systemic Disaggregation Following the Soviet Collapse," *Communist and Post-Communist Studies* 44, no. 2 (June 2011), pp. 149–159.

[77] Daniel Byman and Jennifer Lind, "Pyongyang's Survival Strategy," *International Security* 35, no. 1 (Summer 2010), p. 64.

[78] David Fouse, "Japan's Post-Cold War North Korea Policy: Hedging toward Autonomy?," *Asian Affairs* 31, no. 2 (July 1, 2004), p. 104. For an assessment of these constraints and risks to Pyongyang, see Christopher W. Hughes, "The Political Economy of Japanese Sanctions Towards North Korea: Domestic

targeted the United States for two reasons. First, the U.S. could coordinate the behavior of its East Asian allies in response to North Korea's compellence process. South Korea and Japan still became enmeshed in the dynamic as important sources of material concessions, but North Korea always focused on the United States. As Secretary of State James Baker noted in an internal memo on negotiating with North Korea, "The U.S. remains key to orchestrating international pressures on their behalf."[79] Second, the material costs of capitulation were relatively low for the superpower. The U.S. possessed abundant capital and technology, but also the military capability to resist North Korea's demands.[80] If Pyongyang's blackmail threat did not exact physical damage against the U.S., then the costs of resistance – especially military action – would far outweigh the cost of giving up a relatively small slice of material resources. In an ironic twist, the preeminence of American power made it a ripe target for Pyongyang's compellence strategy.

Pyongyang wanted to blackmail the United States for material concessions, but conventional provocation seemed ill suited to this task. The beleaguered state did gain one key new capability as the Cold War ended. By 1991, the nuclear fuel cycle at Yongbyon had matured and was ready to produce enough plutonium for one or more nuclear weapons within a short period of time (one year or less). In 1989, the United States released intelligence indicating that North Korea was building a huge "factory-like building near the Yongbyon reactor that appeared to be a reprocessing plant," as well as a

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Coalitions and International Systemic Pressures," *Pacific Affairs* 79, no. 3 (October 1, 2006), pp. 455, 460; Denny Roy, "North Korea's Relations with Japan: The Legacy of War," *Asian Survey* 28, no. 12 (December 1, 1988), pp. 1292, 1285; Park, "Explaining North Korea's Negotiated Cooperation with the U.S.," pp. 631–633.

[79] Department of State, "Dealing with the North Korean Nuclear Problem: Impressions from My Asia Trip," United States: Cable from Secretary of State James Baker to Secretary of Defense Richard Cheney, November 18, 1991, NSA-EBB #87.

[80] Park, "Explaining North Korea's Negotiated Cooperation with the U.S.," p. 632.

two other reactors in the 50-200 MW class.[81] By 1991, "a 'steady trickle' of new intelligence suggested that several new installations at Yongbyon were nearly complete, including the reprocessing plant." [82] The United States noted "with concern the construction of an indigenous reprocessing plant which appears unrelated to civilian needs and poses the threat of contribution to a nuclear weapons capability."[83] North Korea's entry into the ENR zone provided it with the ability to threaten Washington amid an otherwise dismal set of options and deteriorating capabilities.

A strategy of coercive diplomacy held three advantages for North Korea. First, the stark disparity in power between the U.S. and DPRK actually stacked the bargaining deck in the North's favor. The acquisition of even a few crude plutonium weapons would undercut Washington's ability to project power on the Korean peninsula. For the wealthy Americans, the price of buying out Pyongyang's nuclear latency would be far less than the cost of a North Korean nuclear deterrent. Second, North Korea had already paid the investment costs necessary to acquire its nuclear fuel cycle assets during the highly subsidized Cold War era. Pyongyang could now use this capability to wring out concessions. Third, North Korea's reconfiguration of its armed forces from denial to holding Seoul hostage deterred the prospect of a preventive strike in response to proliferation blackmail. The stable logic of deterrence reduced – but did not eliminate – the risk that the U.S. was willing to incur high costs to prevent North Korea from acquiring nuclear weapons.

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[81] Construction of the reprocessing facility began sometime during late 1988 or early 1989, while construction on the 50-200 MW class reactors most likely started in 1984. See Bermudez, "North Korea's Nuclear Programme," p. 409; Richelson, *Spying on the Bomb*, pp. 348, 357.
[82] Richelson, *Spying on the Bomb*, 358; Mazarr, *North Korea and the Bomb*, p. 62.
[83] Department of State, "North Korean Nuclear Program," United States: Talking Points for Under Secretary of State Bartholomew's China Trip, May 30, 1991, NSA-EBB #87.

Pyongyang's pursuit of proliferation persuasion was a calculated response to its need for foreign assistance. North Korean leaders were remarkably adaptive at exploiting any available capability at their disposal to gain an advantage. During the Cold War, Pyongyang's propensity to make compellent threats was particularly high when an "opportunity was created by the acquisition of new military capabilities."[84] North Korean leaders could draw from nearly three decades of experience with coercive operations to devise a blackmail strategy predicated on threatening to produce plutonium and nuclear weapons. Analysts in the United States and South Korea believed that Pyongyang made a series of deliberate decisions to leverage this new nuclear capacity as bargaining chip.[85] "The North Koreans have survived," one State Department expert argued, "precisely because they have not had an ideologically rigid foreign policy. On the contrary, the policy has reacted to changing circumstances in and around the peninsula."[86] Given the adaptability of the Kim regime, it was unlikely that they stumbled into blackmail. In sum, North Korea made a strategic decision to take advantage of their recent advance in nuclear latency as a bargaining chip.

(2) Explaining Success and Failure in North Korea's Coercive Diplomacy

When does North Korea's nuclear latency confer Pyongyang with a coercive bargaining advantage? I draw from my theory of proliferation persuasion to explain variation in three separate bargaining episodes between North Korea and the United States. In the first nuclear crisis (2.1), I explore a paradigmatic case of blackmail with

[84] Michishita, *North Korea's Military-Diplomatic Campaigns, 1966-2008*, p. 2.
[85] Personal interview, ROK Ministry of Defense Senior Analyst (Seoul, ROK, February 2013).
[86] Department of State, "Pyongyang at the Summit," United States: Memorandum to Secretary Albright, June 16, 2000, NSA-EBB #164, p. 4.

nuclear fuel cycle technology, and explain how North Korea was able to compel concessions by making an adequate but limited promise to forgo nuclear weapons. The second episode (2.2) focuses on North Korea's failed attempt to leverage its ballistic missile program as a tool of extortion in the late 1990s. The final episode from 2002 until 2010 (2.3) provides a useful case to illustrate how a challenger begins to incur diminishing returns at the bargaining table after making a severe proliferation threat.

(2.1) The First Nuclear Crisis [1991-1995]

The first nuclear crisis between North Korea and the United States is a classic example of proliferation persuasion. I explain how Pyongyang was able to make an effective compellent threat with its capacity to produce plutonium by exploring the four main stages of the crisis. During the first stage from 1991 to 1993, North Korea entered the ENR zone and generated a moderate threat of proliferation with new plutonium reprocessing assets. Pyongyang set the bargaining table during the second stage, and used 'ticking clock' tactics to pressure Washington into compliance. While North Korea modulated its threat of proliferation, diplomacy deadlocked because Washington required a firm nonproliferation commitment from Pyongyang. North Korea attempted to break the deadlock during the third stage with brinksmanship tactics. The fourth and final endgame stage affirms my theory, as Pyongyang was only able to conclude a successful deal when it made a strong nonproliferation promise under the 1995 Agreed Framework.

(2.1.1) First Stage [1991-1993]: North Korea generates a moderate proliferation threat

The first stage of the nuclear crisis began in 1991 as construction on a massive plutonium reprocessing plant at the Yongbyon nuclear research complex neared completion. The United States worried that the huge plant could soon be used to produce large quantities of weapons-grade plutonium from spent reactor fuel. Washington coordinated a campaign to reward North Korea with expanded trade and security benefits if it froze and uncovered operations with this sensitive technology. North Korea subsequently allowed IAEA teams to inspect the nuclear complex in the spring of 1992. The inspectors uncovered hard evidence that North Korea lied about its past experiments with plutonium separation. Pyongyang refused to provide more information, but implied that it did have full reprocessing capabilities. In an interesting move, North Korea also kept IAEA surveillance devices in place so the Agency could track diversion of spent fuel to the reprocessing plant. By the end of 1992, North Korea generated a moderate proliferation threat poised to escalate with the production of weapons-usable fissile material.

North Korea's emerging capacity to produce plutonium pulled the United States into direct bilateral diplomacy. After the Cold War ended, the United States preferred to maintain the regional status quo on the peninsula by containing North Korea, but the prospect of weapons-usable fissile material in North Korea brought the threat into clear focus. Intelligence and policy analysts in Washington sounded the alarm in 1991 when the plutonium reprocessing plant neared completion, giving North Korea the capacity to separate enough plutonium for a few nuclear devices from fuel rods burned at the 5 MW reactor. The United States could no longer afford to passively contain North Korea as its nuclear latency matured into a potential weapons capability.

Under Secretary of State Reginald Bartholomew laid out these concerns during his trip to China in May 1991. "We do not believe that North Korea would be able to develop a nuclear weapon until mid-decade, but we must deal with this potential development as early as possible." To this end, Bartholomew identified the specific "need to eliminate the possibility of reprocessing or the potential of separated plutonium on the peninsula."[87] Kim Il Sung's regime was aware of the threat they posed to the United States. Pyongyang had studied Washington's weakest pressure points and believed the prospect of nuclear weapons in the North might provide an advantage. "The identification of the nuclear issue as a priority for the United States … provided North Korea with significant, otherwise unavailable leverage" in catalyzing diplomacy with the Americans.[88] Once Pyongyang entered the ENR zone, North Korean diplomats signaled that they were willing to reduce the threat of proliferation to the United States in exchange for economic and political concessions.

In response, the United States coordinated a campaign to reward North Korea for NPT-IAEA compliance with the promise of expanded trade and withdrawal of tactical nuclear weapons from the peninsula. Washington wanted to reduce uncertainty over its estimates of North Korea's nuclear latency. The crucial issue centered on determining if spent fuel from either of the two reactors had already been separated at the reprocessing plant. Small gram quantities from chemical separation experiments would not cause serious alarm. But if North Korea possessed enough plutonium for nuclear weapons, this fissile material would need to be eliminated as part of any deal. From January to May

[87] Department of State, "North Korean Nuclear Program," United States: Talking Points for Under Secretary of State Bartholomew's China Trip, May 30, 1991, NSA-EBB #87.
[88] Scott Snyder, *Negotiating on the Edge: North Korean Negotiating Behavior* (Washington, D.C.: United States Institute of Peace Press, 1999), p. 85.

1992, North Korea signed a safeguards agreement with the IAEA, submitted a formal declaration of the DPRK's nuclear infrastructure, and claimed to have about 90 grams of plutonium produced during a single reprocessing campaign in 1990. The United States wanted the IAEA to verify these claims about North Korea's level of nuclear latency.[89]

Although North Korea initially cooperated with the IAEA to bring inspectors onsite to the Yongbyon complex, discrepancies in its plutonium production record ended the prospect of an early diplomatic solution. Two facilities near the reprocessing plant appeared to be nuclear waste storage sites, one of which appeared capable of holding waste from the production of large quantities of fissile material. Even more alarming, IAEA teams inspected the nuclear complex and uncovered isotopic evidence suggesting that North Korea had conducted four distinct plutonium-reprocessing campaigns in 1989, 1990, 1991, and early 1992.[90] North Korea's attempt to cover up these past activities left open the possibility that they possessed a secret reserve of plutonium sufficient for one ore more nuclear weapons.[91] The two adversaries already mistrusted each other, so the subterfuge increased American skepticism over North Korea's willingness to reciprocate cooperative moves.

Diplomacy came to a halt as the United States evaluated North Korea's proliferation threat. Washington wanted to rely on technical sunk cost solutions to eliminate Pyongyang's proliferation threat by freezing and dismantling the Yongbyon complex in exchange for material concessions. For this type assurance mechanism to

[89] David Sanger, "North Korea Reveals More About Its Nuclear Sites," *New York Times*, May 7, 1992, A8; Sheryl Wu, "North Korea Site Has A-Bomb Hints," *New York Times*, May 17, 1992, A1; David Sanger, "North Korea Plan on Fueling A-Bomb May Be Confirmed," *New York Times*, June 15, 1992, A1.
[90] Mazarr, *North Korea and the Bomb*, pp. 45, 84; Oberdorfer, *The Two Koreas*, pp. 274–275.
[91] Insufficient evidence exists to parse out whether the North Koreans underestimated the technical means brought to bear on their claim or if they intended to get caught. Most analysts believe they made a mistake, but some counter that their willingness to even make the declaration in the first place belies intentional design.

work, the United States had to be relatively certain that North Korea could not draw from a clandestine plutonium stockpile to breakout in the future. As a result, Washington needed to determine whether they faced a moderate or more severe proliferation threat involving weapons-usable fissile material. With the backing of the United States, the IAEA demanded North Korea allow special inspections of the suspected waste storage sites to clear up its history of fissile material production.

Pyongyang refused to clarify these inconsistencies, but left IAEA surveillance devices in place.[92] The United States made it clear early on that they considered the production of fissile material to be a major advance in North Korea's nuclear latency. The North Koreans knew that the video cameras, unique seals, and other instruments at Yongbyon allowed the IAEA to monitor and verify whether fuel had been diverted to the reprocessing plant. To be clear, these capabilities did not provide the IAEA with real-time monitoring. But by keeping these sensors in place, Pyongyang signaled that it understood and accepted this redline. In fact, the clarity of the red line provided Pyongyang with leverage, as they could take observable steps towards the production of fissile material. Such moves might put pressure on the United States but did not actually entail North Korea crossing either the fissile material redline or the ultimate nuclear weapons threshold. At the outset of the nuclear crisis, Pyongyang found that it could manipulate the past (to uncover the full extent of their current capabilities) and the future (restarting the plutonium program in clear view of IAEA safeguards).

(2.1.2) Second Stage [1993-1994]: North Korea sets the stage and begins negotiations

[92] Michael Gordon, "North Korea Rebuffs Nuclear Inspectors," *New York Times*, February 1, 1993, A9. (Predates BOG decision for special inspection on February 25)

During the second stage, North Korea issued a series of ultimatums to put pressure on the United States at the bargaining table. Pyongyang announced its intent to withdraw from the NPT in 90 days on March 12th, 1993.[93] Washington believed the ultimatum started a 90-day countdown to the production of fissile material and nuclear weapons, which made negotiations with North Korea more urgent. In addition, the proliferation threat strengthened North Korea's "bargaining position with foreign governments seeking to stop it … Pyongyang could use such leverage to promote its objective of regime survival, perhaps by obtaining security assurances or other benefits."[94] Although North Korean negotiators did not yet issue a clear set of demands, officials in Washington concluded they were preparing to use nuclear latency to blackmail the United States for the largest package of concessions possible.

By initiating the NPT withdrawal countdown, North Korea used the tactics of crisis diplomacy to push the last chance to avoid disaster onto the United States. The ticking clock deadline forced the United States to react. Pyongyang set a process in motion that would only stop when Washington began negotiations. The IAEA had just inspected the facilities at Yongbyon, so the U.S. knew that the DPRK had the capacity to make good on this threat. North Korea left implicit the threat to produce fissile material at the end of the deadline, hoping this tacit signal would reduce the risk of a punitive reaction from the United States. North Korean negotiators avoided issuing any reassurances in an effort to place maximum pressure on the United States to capitulate in upcoming negotiations. Finally, the crisis allowed North Korea to shift the focus of

[93] David Sanger, "North Korea, Fighting Inspection, Renounces Nuclear Arms Treaty," *New York Times*, March 12, 1993, A1.
[94] Joel S. Wit, Daniel B. Poneman, and Robert L. Gallucci, *Going Critical: The First North Korean Nuclear Crisis* (Washington, DC: Brookings Institution Press, 2005), p. 37.

diplomacy from their past activities to the prospect of a looming plutonium separation campaign.

The United States believed that North Korea's initiation of crisis diplomacy was the opening move in an attempt to blackmail concessions. Washington concluded that North Korea was "setting the stage to negotiate with the United States on a package that would secure the greatest benefits on the easiest terms possible," and that its use of nuclear latency appeared to be "consistent with this strategy."[95] In response, the Clinton Administration devised a diplomatic game plan that focused on demanding nonproliferation assurances from Pyongyang.[96] The U.S. game plan was to buy off North Korea if they made a credible commitment via technical options. Washington would demand that Pyongyang return to the NPT, comply with the IAEA, verifiably declare all nuclear activities, and ship all plutonium and spent fuel out of the country. Although the Clinton Administration had "straightforward" objectives, Pyongyang's reluctance to reveal tangible bargaining demands or bottom line position created uncertainty in Washington over how to craft an actual agreement with the North Koreans.[97]

Negotiations with the United States began in June 1993. In the opening meeting with American chief negotiator Robert Gallucci, North Korean chief delegate Kang Sok Ju reviewed North Korea's latent nuclear capability, but also made preliminary demands linked to a vague promise to eliminate the threat of proliferation. Kang revived a request for energy assistance and modern light water nuclear reactors. Gallucci demanded a freeze on nuclear fuel cycle activities coupled with transparency mechanisms, and stressed that NPT withdrawal would generate punitive action against North Korea. In

[95] Ibid., pp. 37, 32.
[96] David Sanger, "U.S. Revising North Korea Strategy," *New York Times*, November 22, 1993, A5.
[97] Wit, Poneman, and Gallucci, *Going Critical*, p. 40.

response, Kang threatened to produce plutonium. North Korea's threat to breakout deadlocked the first round of negotiations.

At the next meeting, Kang made North Korea's demands and assurances more explicit. Kang emphasized "Pyongyang had the 'capability' to build such weapons, but going that route made little sense since the United States had a large nuclear arsenal … Kang proposed a deal. If the United States stopped threatening North Korea, his country would *commit itself never to manufacture nuclear weapons*."[98] The North Korean leadership understood that the threat of proliferation needed to be backed with a believable nonproliferation promise once compliance was forthcoming from the United States. Gallucci indicated that the United States would be willing to fulfill demands for energy imports and perhaps even nuclear reactors if North Korea made a credible commitment not to breakout. Gallucci followed Washington's game plan and pushed for Kang to take tangible steps towards such a promise.

The June 1993 meeting was important because the preliminary contours of a deal emerged that fit squarely within the parameters of my proliferation persuasion theory. North Korea made a moderate threat of proliferation that relied heavily on the prospect of fissile material production. The Americans could levy sanctions or take military action. Pyongyang increased the potential costs from either of these alternatives to keep Washington at the bargaining table. Kang bluntly told Gallucci that punitive resistance would be met with proliferation: North Korea would "proceed to extract enough plutonium from its spent fuel rods to build one or two weapons."[99] Although Kang recognized the need for a credible nonproliferation promise, the North Koreans would not

[98] Ibid., p. 53.
[99] Ibid., p. 55.

offer up such an assurance without first extracting the greatest package of concessions possible from the United States. The negotiations deadlocked because Washington refused to capitulate without a nonproliferation promise from Pyongyang. This circular negotiation pattern continued to stymie a deal over the next year.

After June 1993 meeting deadlocked, North Korea started to manipulate three issues with its nuclear latency. First, Pyongyang held hostage the historical record of plutonium production contained within the spent fuel rods at the Yongbyon reactor. If these rods were dissolved and reprocessed, then the evidence of North Korean fissile material production would be difficult to estimate. Second, North Korea informed the IAEA that the Yongbyon 5-MW reactor would be shut down at some point to remove the irradiated spent fuel. Unless North Korea allowed the IAEA onsite access to monitor this defueling process, the United States would not know if any of the spent rods were moved to the plutonium reprocessing plant. Third, the maintenance of continuity in IAEA safeguards was a major concern for Washington. If the surveillance devices at the reactor ran out of batteries or film, then North Korea could divert fuel to the reprocessing plant without this material being accounted for. Since the IAEA functioned as a credible conduit of information on nuclear fuel cycle activities at Yongbyon, North Korea used these safeguards maneuvers to both threaten and assure the United States.

Pyongyang leveraged these three issues to dampen and then increase its threat of proliferation. North Korea allowed the IAEA to perform maintenance on the monitoring equipment at Yongbyon in May 1993, and "install a new device at the reactor that would help monitor operations when the rods were unloaded."[100] Yet the United States continued to resist North Korean demands for significant concessions without a firm

[100] Ibid., p. 44.

nonproliferation commitment on the bargaining table.[101] By March 1994, however, Washington became aware of a relatively modest increase in breakout speed based on information gleaned from IAEA inspections. Inspectors discovered that North Korea had quietly been working to increase its capacity to recover plutonium at Yongbyon. Cooperation with the IAEA "smacked of a ploy to build up negotiating leverage," as the inspections indicated that North Korea "might ramp up its nuclear weapons program rapidly if diplomacy failed."[102] If the United States continued to rebuff North Korea's demands, Pyongyang signaled yet again that it was prepared to breakout and produce nuclear weapons.[103]

(2.1.3) Third Stage [1994]: North Korea resorts to brinksmanship

The third stage of the blackmail process began in the spring of 1994 when North Korea prepared to explicitly cross the fissile material redline. By this point, Washington had resisted Pyongyang's efforts to extort concessions for over a year, and refused to buyout the North Korean nuclear program without a promise to freeze and dismantle the plutonium reprocessing capabilities at Yongbyon. On April 19th, North Korea informed the U.S. that it would begin discharging spent fuel from the 5-MW reactor, a necessary step before reprocessing (after a cooling the rods for a suitable time), because Washington had no intention of giving Pyongyang anything. North Korea created two ticking-clock ultimatums: (1) the impending loss of the ability to reconstitute past history

[101] After inspectors found several broken seals on sensitive equipment, North Korea also requested a $300,000 payment before allowing them to continue the inspections.
[102] Wit, Poneman, and Gallucci, *Going Critical*, p. 144.
[103] David Sanger, "North Koreans Agree to Survey Of Atomic Sites," *New York Times*, February 16, 1994, A1; Thomas Lippman, "As N. Korea Balks, U.S. Predicts Nuclear Inspections Will Go On," *New York Times*, February 24, 1994, A28; Thomas Lippman and T.R. Reid, "N. Korea Nuclear Inspection Begins," *Washington Post*, March 4, 1994, A1; Michael Gordon, "U.S. Cancels Talks With North Korean Over Atom Inspections," *New York Times*, March 17, 1994, A10.

of reprocessing (if the rods were discharged without the IAEA present); and (2) the looming (3 to 6 months) prospect of plutonium recovery from the rods. This time, however, Pyongyang's brinksmanship forced Washington to weigh the risks of capitulation against the costs of preventive military action on the Korean peninsula.

North Korea's reactor discharge campaign represented an orchestrated brinksmanship tactic designed to increase bargaining leverage over the United States. Similar to the NPT withdrawal crisis, Pyongyang sought to reassert "control of negotiations through the creation of perceived deadlines by which [Washington] should respond."[104] Since the reactor discharge process was set to begin on May 4th, the U.S. had a few weeks to capitulate to "a package solution" and avert a major increase in North Korean nuclear latency. In this situation, the deadline to fissile material production was "combined with demands for unilateral concessions and threats of negative consequences in the event of failure to respond."[105] North Korea hoped its unsupervised defueling "would both force the [United States] to react and increase Pyongyang's bargaining leverage by presenting a fait accompli that [Washington] would need to pay a higher diplomatic price to reverse."[106]

North Korea began to unload fuel from the reactor on May 12th without IAEA inspectors present. Pyongyang claimed it was preserving the historical information of past irradiation history in the rods, and noted that the defueling process would take about two months to complete, which left "ample time for the United States and North Korea to strike a deal."[107] But when the IAEA team arrived several days later on May 19th, they

[104] Snyder, *Negotiating on the Edge*, p. 81.
[105] Ibid.
[106] Wit, Poneman, and Gallucci, *Going Critical*, p. 171.
[107] Ibid., p. 175.

"discovered that Pyongyang's unloading of the spent fuel was proceeding at twice the expected rate since it had two, not just one, machines to discharge the fuel...it looked as though the rods would be removed in a matter of weeks." The North Koreans were also unloading the rods "in a manner guaranteed to destroy the historical information needed" to measure and verify past use.[108] Pyongyang then "threatened to escalate the crisis dramatically by expelling IAEA inspectors and disabling the agency's monitoring equipment".[109] In June, while the United States considered how to respond to the crisis, the IAEA approved independent sanctions against North Korea. Pyongyang withdrew from the IAEA and expelled inspectors from Yongbyon. Yet again, in the absence of a believable nonproliferation promise, North Korea's brinkmanship failed to compel benefits.[110]

In response, the United States considered a preventive strike against North Korea. Dubbed the 'Osirak option,' President Clinton and his senior staff assessed three military missions. First, a surgical strike on the reprocessing facility posed the least risk and cost, but would be ineffective if the North Koreans had secretly produced significant quantities of plutonium and moved the fissile material away from the vulnerable Yongbyon complex. Second, an expanded strike on the entire Yongbyon complex reduced the risk of leaving fissile material in North Korean hands. However, both of these options were likely to spark retaliation from North Korea's conventional deterrent capability. The third

[108] Ibid., p. 182.
[109] Ibid., p. 185.
[110] David Sanger, "North Korea Moves to Use Fuel for Bomb," *New York Times*, April 22, 1994, A3; Joan Biskupic, "N. Korea Keeps Nuclear Inspectors at Bay," *Washington Post*, May 1, 1994, A36; David Sanger, "North Koreans Say Nuclear Fuel Rods Are Being Removed," *New York Times*, May 15, 1994, A1; R. Jeffrey Smith, "North Korea Broke Nuclear Agreement, Inspectors Conclude," *Washington Post*, May 20, 1994, A1; Michael Gordon, "Korea Speeds Nuclear Fuel Removal, Impeding Inspection," *New York Times*, May 28, 1994, A3; Sang Choe, "U.N. Inspectors Leave North Korea," *Washington Post*, May 29, 1994, A49.

mission envisioned a full-scale operation against Yongbyon, the North Korean leadership, and military assets. This option aimed to decapitate the Kim regime, degrade the KPA's command and control, and reduce damage against South Korea. Yet the potential costs of retaliation from the KPA were still deemed unacceptable. When President Bill Clinton asked General Gary Luck, the Commander of United States Forces Korea, whether the United States could successfully perform such a mission, General Luck replied, "Yes, but at the cost of a million [civilian causalities] and a trillion [dollars in economic damage to South Korea]."[111] The United States backed away from the preventive strike option, but boosted military capabilities in the region, and prepared to levy harsh sanctions against the Kim regime.

(2.1.4) Fourth Stage [1994-1995]: Endgame

The situation teetered on the brink of war until the unexpected visit of former U.S. President Jimmy Carter with Kim Il Sung provided an off ramp for North Korea to offer a credible promise of nuclear restraint. The two sides returned to the bargaining table and reached a deal. North Korea agreed to freeze operations at Yongbyon, seal the reprocessing facility for eventual dismantlement, store and ship its spent fuel out of the country, halt construction of two large reactors, and remain party to the NPT. "In short, North Korea's capacity to separate plutonium was ended," and it was "obligated to fully disclose its past nuclear activities."[112] Cooperation with the IAEA at each step provided a credible system of verification of these sunk costs for the United States. In return, the

[111] Wit, Poneman, and Gallucci, *Going Critical*, p. 181.
[112] Testimony of Secretary of State William Christopher, "North Korea Nuclear Agreement," Hearings before the Committee on Foreign Relations, United States Senate, January 24 and 25, 1995 (Washington, GPO, 1995), p. 6.

United States agreed to the phased delivery of $50 million in heavy fuel oil each year, $4 billion in modern less proliferation prone light water nuclear reactor technology, the relaxation of economic and political barriers, and a formal assurance against the threat or use of nuclear weapons against the DPRK. This package boosted the benefits of North Korea's nonproliferation promise by providing benefits to the Kim regime. The final Agreed Framework signed by North Korea and the United States on October 21st, 1994 formalized this bargain.[113]

The first nuclear crisis with North Korea affirms the proliferation persuasion theory, but raises some tough questions about the credibility of Pyongyang's promise under the Agreed Framework. The deck was stacked in favor of North Korea from the outset. The United States was sensitive to the consequences of North Korean proliferation, and was prepared to concede concessions to Pyongyang if these forestalled the acquisition of nuclear weapons on the peninsula. North Korea ratcheted up this threat in an attempt to compel maximum concessions from the United States. After the reactor discharge campaign revealed Washington's bottom line, Pyongyang looked for a way to relieve pressure before the situation escalated out of control. President Carter provided Kim Il Sung with an unofficial channel to reestablish communication with the United States and signal North Korea's willingness to strike a deal.[114]

(2.1.5) Theoretic Assessment: A Limited but Adequate Commitment[115]

[113] Alan Riding, "U.S. and North Korea Sign Pact to End Nuclear Dispute," *New York Times*, October 21, 1994, A5.
[114] Snyder, *Negotiating on the Edge*, p. 72.
[115] In exchange, the U.S. provided a limited rent stream that could be terminated if the DPRK commitment was broken.

As stipulated by the proliferation persuasion theory, Pyongyang was able to compel concessions only when it made a credible promise not to acquire nuclear weapons. After Carter's visit, North Korean negotiators hit the sweet spot mix of a moderate threat backed by a credible nonproliferation assurance. North Korea's formal promise in the Agreed Framework relied overwhelmingly on technical options to freeze the lead-time needed to produce a nuclear weapon. The promise to freeze and eventually disable the 5-MW reactor and reprocessing plant at Yongbyon entailed burning several decades of investments. Washington believed that Pyongyang was unlikely to bear these costs if it wanted nuclear weapons in the near term. Furthermore, the eventual elimination of North Korea's plutonium production capacity had the added benefit of increasing the amount of time required to field a nuclear device if Pyongyang faced incentives to proliferate down the road.

The United States also insisted upon several hand-tying mechanisms to increase the costs of reneging on the Agreed Framework while boosting the benefits of sustained cooperation. Ambassador Gallucci admitted in December 1994 that the technical options might not be enough to constrain North Korea's nuclear ambitions over the long-term. "We entered into discussions … without any uncertainty or delusions about past North Korean behavior." The Agreed Framework was "not based upon trust," but rather a tit-for-tat structure "so that we can withhold cooperation at any point that we determine that North Korea is not meeting its obligations under the agreement."[116] The American negotiators decomposed the terms of the deal into a series of smaller steps, with the burden of up-front performance falling on the North Koreans. To receive the first

[116] Testimony of Robert Gallucci, "Implications of the U.S.-North Korea Nuclear Agreement," Hearing before the Subcommittee on East Asian and Pacific Affairs, United States Senate, December 1, 1994 (Washington, GPO, 1994), p. 12.

shipment of heavy oil, for example, North Korea had to verifiably halt all its declared nuclear operations. Larger benefits would only come several years later when the United States "had an opportunity to judge [North Korea's] performance and its intentions."[117] To receive the full package of concessions, Pyongyang had to uphold its promise to forgo nuclear weapons.

The structure of the Agreed Framework gave the United States the ability to protect itself from damage and impose punishment if North Korea decided to break its promise. Secretary of State Warren Christopher laid out this logic to skeptical members of the United States Senate in January 1995:

> We designed the framework to maximize the benefits and minimize the risks to the United States … The framework accord is structured so that we are not disadvantaged in any significant way *if North Korea reneges on any of its commitments at any time*. If the North backs out of the deal in the next several years, for example, it will have gained very little except modest amounts of heavy oil and some technical help in insuring the safe storage of spent fuel … Even if this happens, we will still have benefited because the North's entire nuclear program will have been frozen for the intervening years.[118]

In addition to protecting U.S. national security, the Clinton Administration contended that this structure gave Washington some power to hurt Pyongyang. Since North Korea needed energy assistance, Kim Il Sung seemed unlikely to renege on the promise in the

[117] Testimony of Secretary of State William Christopher, p. 7.
[118] Ibid, emphasis added.

near future. Over the long term, "the U.S. administration believed than an ongoing, large nuclear power project would give the United States leverage because the project's completion would be hostage to North Korea's good behavior."[119] The deal bound the Kim regime to its nonnuclear promise for as long as they valued the energy subsidies more than acquisition of nuclear weapons.

The Agreed Framework, however, suffered from four limitations that raised real concerns about its efficacy as a nonnuclear commitment device. First, the framework focused on eliminating North Korea's plutonium production capacity, and did not curtail weaponization or delivery system programs. Secretary of State Christopher acknowledged that the deal placed "highest priority on the elements of the North Korean program that most acutely threaten the United States. This means, first and foremost, the accumulation of plutonium by North Korea."[120] North Korea was able to advance its ballistic missile program, and further efforts to design and manufacture a nuclear device, albeit without a known source of fissile material. Second, under the phased structure of the framework, North Korea was only required to come into full compliance with the IAEA and clear up the reprocessing discrepancies towards the end of deal. As a result, the emphasis on declared facilities and materials left open the possibility of clandestine fuel cycle operations or a secret cache of plutonium.

Third, the value of energy subsidies to the Kim regime relative to the acquisition of nuclear weapons was likely to change over time. Given the Kim regime's immediate need to fill gaps in the military economy with imported fuel oil, the deal seemed genuine at the time. But even if Pyongyang valued energy more than deploying a nuclear

[119] Victor Gilinsky, "Nuclear Blackmail: The 1994 US-DPRK Agreed Framework on North Korea's Nuclear Program," *Essays in Public Policy* no. 76 (1997), p. 3.
[120] Testimony of Secretary of State William Christopher, p. 7.

deterrent in 1995, it still seemed unlikely that long-standing nuclear ambitions would disappear forever. The deal therefore had a decaying half-life. The United States agreed to prop up the regime "with a substantial supply of oil and economic concessions."[121] Once the regime stabilized itself with this assistance, or diversified its supply chain, the deal would start to be worth less. Pyongyang might become very reluctant to give up its nuclear fuel cycle at that point. "The North is presumably betting that the opening to economic and political normalization will allow it to survive and plans to hang on to its mothballed nuclear program for leverage."[122] The United States was relying on assurance mechanisms that might become devalued when Pyongyang had to weigh the costs and benefits of eliminating its latent nuclear capabilities.

Fourth, the Agreed Framework therefore left the United States open to proliferation blackmail in the future. Victor Galinsky leveled this critique in 1997.[123] He argued that the agreement "leaves the United States subject to the continue threat of a restart of DPRK plutonium production."[124] North Korea was only required to give up this fissile material production capacity at the end of the deal, after it received the light water reactors and most of the heavy fuel oil. Since "nuclear power will take by far the *longest time* to bring on-line … the nuclear deal allows [the North Koreans] to stretch out *their*

[121] Chuck Downs, *Over the Line: North Korea's Negotiating Strategy* (Washington, D.C.: AEI Press, 1999), p. 248.
[122] Gilinsky, "Nuclear Blackmail: The 1994 US-DPRK Agreed Framework on North Korea's Nuclear Program," 12.
[123] Paul Wolfowitz made a similar but less salient argument earlier in 1995 that relied instead on a vague logic of resolve and credibility. "The manner in which the agreement was negotiated creates serious problems for the future … the appearance that the United States has yielded in the face of North Korean pressure will lead to more such pressure in the future." See Testimony of Paul Wolfowitz, "North Korea Nuclear Agreement," Hearings before the Committee on Foreign Relations, United States Senate, January 24 and 25, 1995 (Washington, GPO, 1995), p. 73.
[124] Gilinsky, "Nuclear Blackmail: The 1994 US-DPRK Agreed Framework on North Korea's Nuclear Program," p. 1.

performance and to maintain their threat to reopen their indigenous nuclear plants."[125] The Kim regime might even advance the country's nuclear latency during this time. "The gravest flaw of the US-DPRK deal is that it leaves intact the North's indigenous nuclear plants and materials whose reactivation it can continue to threaten."[126] By back-loading these critical steps to dismantle the Yongbyon facilities, the Agreed Framework left open the possibility of future coercive diplomacy with nuclear technology.

Given these limitations of the Agreed Framework, why did Washington not push the Kim regime for a stronger nonproliferation promise? I contend that the United States accepted the Agreed Framework for two reasons.[127] First, Washington believed the deal was imperfect but still credible. The Clinton Administration understood the problems with the agreement, and championed the commitment tactics as the best way to "attain all of our strategic objectives."[128] As the blackmail theory stipulates, a mix of arms control and commitment policies is most likely to be credible from the target's perspective. Washington believed that Pyongyang did not intend to proliferate with its plutonium program for the foreseeable future, but was well aware that it might pursue other pathways to the bomb. The Clinton Administration hoped the energy concessions would tie the Kim regime's hands to a comprehensive nonnuclear promise. If not, Washington concluded it had enough time to react. As a result, the United States was comfortable because the Agreed Framework would stall a nuclear power shift on the peninsula.

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[125] Ibid., p. 9.
[126] Ibid., p. 3.
[127] With the advantage of hindsight, one might claim that North Korea's promise was not credible at all because North Korea cheated later on. This is only valid in retrospect. The key is to analyze the signals during the actual crisis. My theory explains why the United States believed North Korea's promise was adequate based on what was going on at the time, rather than viewing the outcome through the lens of future revelations.
[128] Testimony of Secretary of State William Christopher, p. 5.

The second reason the United States accepted the agreement stems from the constraints it faced in reaching an optimal bargain with North Korea. A perfect nonproliferation promise from North Korea would have dealt with the possibility of clandestine nuclear efforts or undeclared facilities, and devised much stronger hand tying mechanisms to firmly bind the Kim regime to its nonnuclear commitment. Pyongyang refused to implement such comprehensive technical assurances. The United States could not force them to do so, and lacked the leverage needed to devise the sort of hand-tying policies that would create very high costs to breaking the Agreed Framework. During the crisis, the Clinton Administration revealed that it was unwilling to take military action on the Korean peninsula. The United States could only hurt the Kim regime so much with economic sanctions if they decided to breakout down the road. In an ideal world, Washington would have turned to Beijing to act as a third party guarantor of the Agreed Framework, since China kept the Kim regime afloat with critical lifelines. But Beijing was not interested in collusion over nonproliferation at the time. Washington had limited options available to craft assurance policies for the Agreed Framework.

In the final analysis, North Korea's nonproliferation promise suggests that it is important to consider the actual set of commitment options available during the process of coercive diplomacy. As the first US-DPRK nuclear crisis makes clear, the target may be forced to settle for a less stringent commitment, especially when continued diplomatic resistance or preventive military actions pose high costs. Even vocal critics of the Agreed Framework conceded this point during the 1990s. "No one should suggest that a perfect agreement would have been possible given the regime that we are dealing with and given

the risks and limitations of military options."[129] The key is to assess whether the target believed the challenger's promise was credible at that moment. The Kim regime walked away with a package of concessions precisely because the deal temporarily prevented North Korea's production of plutonium.

(2.2) Coercive Diplomacy with Ballistic Missiles [1998-2000]

Although North Korea froze its plutonium program for the rest of the 1990s, Pyongyang did not deviate from its strategy of coercive diplomacy. North Korea's economy continued to decline even further, and the country suffered a series of catastrophic floods and widespread famines, thereby making foreign assistance a more critical part of the Kim regime's survival. Kim Jong Il still needed to sustain the military and the upper echelons of Pyongyang's elite. By 1995, the military had consolidated its own internal economy, and soon accounted for the vast majority of North Korea's domestic economic output. The military leadership increasingly depended on the Kim regime to obtain key inputs, such as heavy oil and hard currency, which were not available indigenously. The Kim regime also needed to attain large humanitarian packages from foreign donors. Food aid and economic assistance could be funneled to the poly-military elite in Pyongyang, allowing this group to avoid to the food shortages and privation that plagued the rest of the population.[130] Coercive diplomacy remained a central survival strategy.

Against this backdrop, North Korea's missile program provided important military, economic, and diplomatic benefits for the Kim regime. This section briefly

[129] Testimony of Paul Wolfowitz, p. 69.
[130] Habib, "North Korea's Parallel Economies," pp. 153–154, 157.

reviews the evolution of these drivers and considers why ballistic missiles did not play much of a role during the first nuclear crisis. I then focus on Pyongyang's subsequent failed attempt to use its missile capabilities to compel monetary and economic concessions from Washington. The episode illustrates the difficulty of using delivery vehicles rather than the nuclear fuel cycle as a proliferation threat, and underscores the necessity of making credible promises.

(2.2.1) The Drivers and Benefits of North Korea's Missile Program

North Korea developed its missile capabilities to accomplish military missions and bring in economic benefits. The first part of this chapter showed how missile systems and long-range artillery fit within North Korea's conventional denial strategy against US-ROK forces during the Cold War. As denial shifted to deterrence, Kim Il Sung dedicated resources to develop three longer-range missile systems: the Scud C (Hwasong), No Dong, and Tapeo Dong series missiles. North Korea achieved full-scale production of the Soviet Scud series missiles by 1986, and improved the system to give the Scud C an extended range of 550 km with a payload up to 770 kg. Development of the indigenous No Dong series started in 1998. With a range of 1300 km and a larger 1000 kg payload, the No Dong was designed to hit regional targets, especially major cities in Japan. Preliminary work began in the early 1990s on the multistage Tapeo Dong ballistic missiles with the potential for much longer ranges and heavier payloads. The range and diversity of these missile systems gave North Korea the ability to deliver conventional and chemical payloads to targets throughout East Asia.[131] Since missiles played a central

[131] Defense Intelligence Agency, *North Korea*, pp. 11–12; Bermudez, *The Armed Forces of North Korea*.

role in North Korean strategy, it is important to note that subsequent flight-testing in the late 1990s helped improve this military capability as well as provide diplomatic benefits.

The export of missile systems and underlying production technology also became a principal source of hard currency for the cash strapped regime. Although there was no demand for North Korea's inferior commercial products, countries from the Middle East, North Africa, and Southeast Asia lined up to purchase North Korean missiles. Iran, Egypt, and Pakistan were the biggest customers. North Korea helped Iran set up Scud production facilities during the 1980s, and a formal DPRK-Iran agreement in 1990 paved the way for extensive technology transfers, collaboration on missile systems, and the direct sale of about 200-300 Scud missiles to Tehran. Furthermore, Iran was involved with the No Dong program "since its inception," as a means to jumpstart its own Shehab 3 missile system.[132] Pakistan also purchased No Dong missiles and the associated production technology to start its Ghauri missile program. Regimes in Libya, Syria, and Yemen were frequent importers of North Korean missile technology as well. North Korea became one of the most active missile exporters in the world by the early 1990s.[133]

The North Korean leadership may have learned an important lesson about the bargaining potential of their missile capabilities during this time. In 1992, Israeli officials approached the North Koreans with an offer. They wanted to buy out Pyongyang's missile exports to the Middle East. Israel was especially worried about the transfer of missile technology to Iran, and "would provide economic assistance to North Korea in

[132] Joseph S. Bermudez, *A History of Ballistic Missile Development in the DPRK*, Occasional Paper No. 2 (Monterey, CA: Center for Nonproliferation Studies, November 1999), pp. 13, 18, 24.
[133] Kenneth Katzman and Rinn-Sup Shinn, *North Korea: Military Relations with the Middle East* (Washington, DC: Congressional Research Service, September 27, 1994).

return for its suspension of missile sales."[134] North Korean negotiators demanded large quantities of oil and cash from the Israelis. By 1993, Israel agreed to a package of concessions apparently worth about one billion U.S. dollars, but was pressured by the United States to shelve the deal so Washington could tackle the nuclear issue. "Although no successful deal was reached, the Israel-North Korea talks on missiles might well have been a learning experience for the North Korean policymakers." [135] Threats to international security – such as the proliferation of nuclear or missile technology – provided Pyongyang with useful leverage to bargain for economic assistance.

North Korea's missile program took back stage during the first nuclear crisis with the United States. The tactical missile systems were certainly part of the deterrent calculus on the peninsula, but did not exacerbate the threat of proliferation for two reasons. First, the Scud and No Dong missiles were not capable of reaching targets in the U.S. mainland. The North Koreans needed to develop much more complex multistage rocket systems, and the Tapeo Dong was still in the early design phase. U.S. intelligence first identified a mock-up of a two-stage Tapeo Dong in 1994. The model appeared to use modified No Dong rockets for the first stage, and Scud C boosters as the second stage. At this point, Washington was not worried about the Tapeo Dong since the North Koreans were having quality control problems with the No Dongs, and had yet to demonstrate proof of concept with a flight test.[136] Second, even though the No Dong and Tapeo Dong missiles could deliver a first-generation nuclear weapon, it was unlikely that North Korean weapon designers would be able to immediately miniaturize such a device. The

[134] Michishita, *North Korea's Military-Diplomatic Campaigns, 1966-2008*, p. 117.
[135] Ibid.
[136] Bermudez, *A History of Ballistic Missile Development in the DPRK*, p. 28.

United States estimated that the North Koreans needed a significant lead-time to miniaturize a nuclear weapon and master intercontinental ballistic missile technology.

In terms of the risk matrix used by my theory, North Korea's missile program was not yet a proliferation threat multiplier. During the early 1990s, Washington was primarily concerned about Pyongyang's missile exports to unfriendly regimes in the Middle East. The development of a viable nuclear weapon delivery system was a more distant and diffuse threat, especially as the plutonium program took center stage. The reaction of the United States to a flight test of the No Dong missile system in May 1993 underscored this point. Kim Il Sung pushed the test forward hoping it would increase pressure on Washington over the nuclear issue. Instead, the Clinton Administration ignored the test and continued to focus on the plutonium program. North Korea's delivery capabilities had little impact on the bargaining process during the first nuclear blackmail crisis.

U.S.-DPRK diplomacy over the missile program started after the Agreed Framework was concluded in 1995. As North Korea started to sell No Dong technology to Iran, the United States opened negotiations in April 1996 to place limits on both "exports and indigenous development, but the North Korean side absolutely refused to discuss its indigenous missile program."[137] Pyongyang was willing to end exports if the United States compensated them for the lost revenue. Although American negotiators refused to pay hard currency to stop the exports, Washington "saw the talks as an effort to bring North Korea into the international system of nonproliferation agreements," and countered with a package of political and economic assistance. Diplomacy repeatedly deadlocked over the next two years as the North Koreans refused to abandon the demand

[137] Gary Samore, "U.S.-DPRK Missile Negotiations," *The Nonproliferation Review* (Summer 2002), p. 17.

for a cash buyout. By 1998, Washington had failed to curtail Pyongyang's global missile exports. But the diplomatic framework was in place for North Korea to revive the threat of proliferation with an unexpected evolution in their ballistic missile capabilities.

(2.2.2) Coercive Diplomacy with Nuclear Capable Ballistic Missile Technology

After several years of unsuccessful talks with the Americans over missile exports, the North Koreans revived the threat of proliferation in August 1998 with suspicious work on an underground facility somewhat near Yongbyon, as well as the first flight test of the multistage Tapeo Dong satellite launch vehicle (SLV). In contrast to the first nuclear crisis in the early 1990s, North Korea played up its growing long-range delivery capabilities – rather than actual nuclear fuel cycle assets – to threaten the United States. The coercive diplomacy process unfolded in three stages. The first began when the DPRK threatened to move towards an operational nuclear deterrent with its breakthrough in ballistic missile technology. During the second stage, Pyongyang laid out its blackmail demands and used missile flight-test preparations to increase pressure on Washington. In the final third stage, however, North Korea attempted but failed to conclude a bargain with the United States.

In early August of 1998, the United States shifted its focus from North Korea's missile exports to an underground complex in Kumchangri. Clinton Administration officials worried the site might be part of an effort by North Korea to break out of the Agreed Framework. Overhead satellite surveillance indicated the massive scope of the project, and photographed "thousands of North Korean workers … swarming around the new site, burrowing into the mountainside." There was no evidence, however, that North

Korea had started work at all on either a nuclear reactor or reprocessing plant at the site. Rather, the Clinton Administration feared "the North intended to build a new reactor and reprocessing center under the mountain," and demanded that Pyongyang allow inspections of Kumchangri as a reassurance of their intentions.[138] The preparatory activities at Kumchangri heightened Washington's fear of future increases in North Korea's nuclear latency, but did not violate the terms of the Agreed Framework with any work on actual nuclear fuel cycle facilities. Washington therefore opened a diplomatic channel in the hopes of buying access to Kumchangri.

A flight test of North Korea's indigenous three-stage rocket technology created more worry in Washington. On August 31st, North Korea launched its Tapeo Dong satellite launch vehicle (SLV) with the goal of inserting a small satellite into orbit. While the first and second stages of the SLV were successful, the third stage suffered a technical problem and failed to insert the satellite payload. Yet the launch was still an effective test of ICBM technology, and validated the ability of the two-stage Tapeo Dong to deliver a sizeable 1000 Kg payload roughly 2,500 Km. Most worrisome, if North Korean engineers fixed the issue with the third stage and reconfigured the SLV as a ballistic missile, then the Tapeo Dong "could deliver a 200-kg warhead into the central section of the United States, although with poor accuracy … If the DPRK were willing to settle for a smaller warhead, *this system has the potential to strike any large, city-sized target within the continental United States*."[139] The rapid evolution in North Korea's delivery systems started to expand the calculus of deterrence well beyond East Asia.

[138] Michishita, *North Korea's Military-Diplomatic Campaigns, 1966-2008*, p. 121.
[139] Bermudez, *A History of Ballistic Missile Development in the DPRK*, p. 30.

The United States was caught off guard by North Korea's breakthrough in ICBM development. Until the August 31st test, Washington believed the Tapeo Dong program was still in its infancy. The successful two-stage flight test along with the solid fueled third stage therefore "came as a surprise."[140] North Korea's ICBM program was "much more advanced than the U.S. intelligence community had previously estimated."[141] After the U.S. detected the Tapeo Dong mock-up in 1994, Pyongyang went to great lengths "to mask its missile development activities" with "expanded camouflage and deception operations," and other efforts to degrade intelligence collection.[142] Once the August 31st flight test exposed how far North Korean missile efforts had progressed from 1994 to 1998, Pyongyang removed the veil from Tapeo Dong program. In fact, after negotiations began with the United States, North Korea made no effort at all to conceal preparations for further No Dong and Tapeo Dong launch tests. Pyongyang wanted to keep Washington's attention focused on the threat of a rocket system capable of reaching the U.S. mainland.

With the unexpected prospect of an emerging North Korean ICBM capability, the United States started to fear that Pyongyang might be able to make a field an operational nuclear force. Since the Tapeo Dong SLV could only carry a small payload, North Korean weapon designers needed to accomplish the difficult task of miniaturizing a nuclear warhead, as well as develop a longer-range ICBM rocket. Many aspects of weapons design work could have continued undetected after the Agreed Framework came into effect. If North Korea already had a clandestine nuclear fuel cycle or hidden stockpile of plutonium, then it could present the United States with a fait accompli over

[140] Ibid.
[141] Michishita, *North Korea's Military-Diplomatic Campaigns, 1966-2008*, p. 121.
[142] Bermudez, *A History of Ballistic Missile Development in the DPRK*, p. 28.

the three most important components of a nuclear deterrent: the fissile material, the weapons package, and the ability to deliver a warhead payload against U.S. mainland targets. There was little the United States could do to mitigate these uncertainties without hard evidence of clandestine operations. Even the work at Kumchangri was merely suspect and only raised concern about future construction plans. As a result, Washington focused on the breakthrough in ICBM technology as the most tangible and acute advance in North Korea's nuclear latency since 1995.

(2.2.3) Pyongyang's Blackmail Demands and Pressure Tactics

Serious diplomacy with Pyongyang restarted soon after the August 31st test. Washington wanted to curtail North Korea's indigenous Tapeo Dong program, clear up ambiguity over Kumchangri, and end the destabilizing missile export industry. North Korean diplomats responded with a classic series of blackmail demands. They refused to halt further advances in their missile program, and demanded $US 500 million a year to halt the missile export industry, along with another sizeable cash payment to let inspectors into Kumchangri. Washington refused to pay monetary concessions, but made an unusually large transfer of food aid on humanitarian grounds in September, and offered to loosen economic sanctions and improve political relations.

In response, North Korea started to carefully coordinate its missile activities with ongoing diplomatic efforts to bargain for cash concessions from the United States. Flight tests and missile preparations were kept as visible as possible, and Pyongyang synched these efforts with ongoing negotiations. North Korea began to prepare for another Tapeo Dong missile test in November 1998 by constructing new launch facilities and storage

bunkers. By December, Pyongyang announced that it might launch another Tapeo Dong SLV at any point as it started to move missile parts to a launch pad. Washington believed a flight test was imminent, but the threat was not enough to convince them to cave.

Pyongyang had played every card short of violating the terms of the Agreed Framework, and decided to drop its monetary demands over Kumchangri. In December 1998, North Korea pushed for large food aid packages in return for allowing the Americans to inspect Kumchangri. The United States agreed to provide humanitarian assistance. In May 1999, the U.S. was able to inspect Kumchangri. They found no nuclear fuel cycle technology, and verified that the site was not suitable for future construction of a nuclear reactor or reprocessing plant.[143] In sum, the North Koreans found it difficult to use their ballistic missile program to apply pressure on Washington. The reactor discharge campaigns in 1993 and 1994 created a ticking clock crisis, whereas the prospect of additional missile flight tests caused the Americans to protest.

(2.2.4) Weak Assurances and Failed Diplomacy

With the Kumchangri issue mostly cleared up, the missile threat continued to fester. In March 1999, North Korea had increased its demand to $US 1 billion for each year it halted missile exports. The indigenous program was still off the negotiating table. The United States again refused to pay out cash concessions, and initiated a comprehensive review of its policy towards North Korea's latent nuclear and missile capabilities. Former Secretary of Defense William Perry led the reevaluation, and recommended a "comprehensive and integrated approach" towards nuclear latency. Perry concluded that Washington should bargain with Pyongyang to end the development,

[143] Michishita, *North Korea's Military-Diplomatic Campaigns, 1966-2008*, p. 125.

production, and deployment of long-range ballistic missiles, and secure a reassurance that they had not restarted their nuclear efforts.

North Korea moved to enhance its position after the Perry Report. In May 1999, preparations resumed for a flight test of the Tapeo Dong 2 missile, with numerous engine-burning and fueling tests. While these activities were going on, Pyongyang proposed to enact a moratorium on missile flight tests as a sign of good faith for US-DPRK talks in June. "By then, missile issues had become a major agenda item … In other words, North Korea succeeded in enhancing the utility of the missile issue as an important diplomatic bargaining chip."[144] After the June talks ended without much progress, Pyongyang restarted test preparations. At the end of the summer, a launch pad with an assembled Tapeo Dong 2 missile appeared ready for flight. North Korean then agreed to another unilateral freeze on missile tests as diplomacy continued in September 1999. To postpone the looming missile flight test, Washington responded with a moderate easement of sanctions.[145]

North Korea then sought a grand missile bargain towards the end of the Clinton administration. In July 2000, Pyongyang made a proposition. North Korea was prepared to accept severe limits over their missile program and exports in exchange for barter compensation, humanitarian assistance, and political normalization. Specifically, the DPRK promised not to produce, test, deploy, or export long-range missiles if Washington provided 1 US billion dollars worth of non-monetary assistance such as food and coal. The proposal, however, offered no assurance mechanisms or even verification procedures, and remained notably silent over the issue of existing missile stockpiles in

[144] Ibid., pp. 126–127.
[145] Calvin Sims, "North Korea, Ignoring Warnings, Proceeds With Plans to Test-Fire Missile," *New York Times*, July 22, 1999; "DPRK Not to Launch Missile," *KCNA*, September 24, 1999.

the DPRK. The United States therefore demanded that North Korea accept verification measures, "including a declaration of the numbers and types of missiles in its inventory, and make a commitment to destroy its existing stocks."[146] North Korea balked at the request, and the State Department shelved diplomacy as the Bush Administration entered office. Pyongyang failed to extract any blackmail benefits because they refused to send a costly signal of their intent to rollback the missile program.[147]

(2.3) Second Nuclear Crisis [2002-2008]

The second nuclear crisis provides a prime illustration of how nuclear programs generate increasing returns over time as a military capability but diminishing returns as a bargaining chip to coerce concessions. To preview the episode, the United States requested China underwrite the diplomatic process after it found North Korea building a uranium enrichment facility. Although Beijing tried to influence North Korea's nuclear behavior, Washington refused to pay blackmail ransom unless the DPRK accepted strong binding commitments over its nuclear capabilities. North Korea attempted to pressure Washington by producing large amounts of plutonium and testing a nuclear device in 2006. The acquisition of nuclear weapons, however, shifted the basic bargaining parameters from nonproliferation to the disablement of an operational nuclear force complex. Although the U.S. laid out a roadmap for North Korea to denuclearize in exchange for concessions, the leadership in Pyongyang eventually refused to take those steps towards a credible promise. By the fall of 2008, the DPRK seem to have decided

[146] Michishita, *North Korea's Military-Diplomatic Campaigns, 1966-2008*, p. 128.
[147] Michael R. Gordon, "How Politics Sank Accord on Missiles With North Korea: How, in Clinton's Last Days, Politics Sank a Missile Accord With the North Koreans," *New York Times*, March 6, 2001.

that previously sufficient concessions were no longer good enough to outweigh giving up its nuclear forces.

(2.3.1) Breaking Promises and Making Threats

The second nuclear crisis began in the fall of 2002 when the United States claimed the North Koreans had reneged on the 1994 nonproliferation promise. On October 3rd, a U.S. delegation to Pyongyang led by Jim Kelly claimed they had "irrefutable information and intelligence" that North Korea was "involved in a covert program to develop weapons through uranium enrichment."[148] This revelation was problematic, as the North Koreans would have preferred to keep the Agreed Framework in place while they secretly acquired a stockpile of enriched uranium.

In reaction, the DPRK returned to concession-seeking diplomacy. At first, the surprised North Korean team denied the allegation. Unlike the development of ballistic missiles, the pursuit of uranium enrichment violated the spirit of the 1994 Agreed Framework. Within a few hours, though, the North Koreans changed course. Vice Foreign Minister Kang Sok Ku claimed North Korea was entitled to possess nuclear weapons, and neither confirmed nor denied the existence of a uranium enrichment program. Kang went on to admit that, "for the DPRK to engage in dialogue with the United States, it needed leverage – either from uranium enrichment or nuclear weapons."[149] By referring to North Korea's nuclear latency as a bargaining chip, Kang sent "a strong signal that if Washington were willing to engage in a broad negotiation

[148] Mike Chinoy, *Meltdown: The Inside Story of the North Korean Nuclear Crisis* (New York, NY: St. Martin's Griffin, 2009), p. 117.
[149] Charles L. Pritchard, *Failed Diplomacy: The Tragic Story of How North Korea Got the Bomb* (Brookings Institution Press, 2007), p. 39.

aimed at resolving the full range of issues dividing the two countries … then the North was ready to address U.S. worries about the uranium program."[150] The DPRK was in a difficult position, so Kang attempted to spur diplomacy with the United States.

The Bush Administration adopted a tough stance towards diplomacy with the DPRK. Kelly and the U.S. team interpreted Kang's remarks as an implicit confession that North Korea was "pursuing a uranium enrichment program as part of their broader nuclear weapons program."[151] They abruptly walked out of the reception with Kang and left Pyongyang the next day. Much to the ire of Pyongyang, Washington soon thereafter announced to the public that North Korea had admitted to cheating on the Agreed Framework with a uranium enrichment program, and refused to start bilateral negotiations. Instead, the U.S. referred the issue to KEDO to suspend the terms of the Agreed Framework, and cancelled the shipment of heavy fuel oil to North Korea.

North Korea responded with a total restart of the dormant plutonium program in December 2002. Once the United States cut off the flow of heavy fuel oil, Pyongyang declared the Agreed Framework void, and announced the resumption of operations at Yongbyon. North Korea removed or disabled IAEA seals and monitoring equipment on all the mothballed facilities, and expelled IAEA inspectors at the end of the month. On December 27th, Pyongyang informed the IAEA that it planned to reprocess the old stock of spent fuel that had been sitting in the cooling pond next to the reactor since 1994.[152] The 5-MW reactor was also restarted, but "did not present an immediate threat because the facility could not produce a significant amount of additional plutonium for at least a

[150] Chinoy, *Meltdown*, p. 122.
[151] Ibid.
[152] The IAEA and U.S. provided storage casks to help keep the fuel safely stored in the pond. Under the terms of the Agreed Framework, North Korea was supposed to eventually ship the fuel out of the country.

year."[153] A few weeks later, North Korea announced its "automatic and immediate" withdrawal from the Nonproliferation Treaty (NPT) on January 10, 2003.[154] Emulating and exceeding tactics from the first nuclear crisis, Pyongyang initiated a plutonium production campaign "to increase political pressure on Washington."[155] The United States remained obdurate during the winter and pushed North Korea to the backburner as the invasion of Iraq started to monopolize the foreign policy agenda.

Pyongyang was following its old diplomatic playbook, but the situation had changed since the early 1990s. Washington faced the possibility of North Korea deploying a nuclear force within a short time frame, and the credibility of Pyongyang's nonproliferation promise had just evaporated. The clandestine enrichment program signaled the expiration of the Agreed Framework. After 1995, North Korea let its investment in Yongbyon lay fallow while it funneled scarce national resources into the missile and enrichment programs. The projected loss of energy assistance from the U.S. was not high enough to bind the Kim regime to nuclear restraint. The Agreed Framework yielded a freeze on plutonium operations for many years, but was not enough to constrain North Korea's nuclear program indefinitely.

[153] Gary S. Samore, *North Korea's Weapons Programmes: A Net Assessment* (London, UK: International Institute for Strategic Studies, 2004).
[154] Seth Mydans, "North Korea Says It Is Withdrawing From Arms Treaty: Nonproliferation Pact," *New York Times*, January 10, 2003.
[155] Samore, *North Korea's Weapons Programmes*.

(2.3.2) Bringing China into the Situation

The other key difference was the Bush Administration's request that China play a central role in multilateral diplomacy with the North Koreans. The collapse of the Agreed Framework underscored that Washington lacked the ability to create a binding agreement with Pyongyang on its own. The U.S. was unwilling to sustain heavy fuel oil shipments, and the DPRK believed the benefits of pursuing uranium enrichment outweighed the costs of losing this modest level of material support. "The United States at the time no longer wanted to deal with the North Koreans on a bilateral basis," but did want to find a diplomatic solution.[156] To do so, a third party mediator was needed that could punish North Korean intransigence while guaranteeing a flow of benefits to the Kim regime should it decide to exercise nuclear restraint. If North Korea and the United States anticipated the consequences of intervention by China, then it might be possible to reach a deal centered on a self-enforcing nonproliferation promise.

Beijing had the motives and capacity to act as a third party guarantor in nuclear diplomacy between Washington and Pyongyang. China's foreign policy interests in Northeast Asia were shifting away from the era when Beijing and Pyongyang were 'as close as lips and teeth' in their antagonism of Washington. Rather, "China's interest in preventing North Korea from developing nuclear weapons [was] fundamentally not different from Japan and the United States … a North Korea with nuclear weapons [was] unacceptable to China."[157] Beijing considered the DPRK to be "far less of a vital strategic 'buffer zone'," and more of a serious liability.[158] Pyongyang's provocative behavior and nuclear ambitions drove Washington, Tokyo, and Seoul to buildup their military

[156] Bechtol, *Defiant Failed State*, p. 80.
[157] Zhu Feng, "Shifting Tides: China and North Korea," *China Security* (Autumn 2006), p. 41.
[158] Ibid., p. 44.

capabilities in response, thereby undercutting Beijing's regional projection of power.[159] Collapse of the unstable Kim regime would create a political vacuum and massive refugee crisis on the Chinese border. As the second nuclear crisis came to a boil, China was interested in mediating a solution to stabilize the situation.

Beijing could back up its interests in a nonnuclear DPRK with several means of influence and punishment. China held political leverage over North Korea by providing umbrella cover in the United Nations against harsh sanctions from the Security Council. Beijing retained extensive diplomatic contacts and relations with Pyongyang, giving them unique access to the upper echelons of the Kim regime. On the military front, North Korea's experience during the Korean War created the belief that China might use the People's Liberation Army (PLA) to bail it out in the future. Beijing could manipulate this dependency by offering or withdrawing military support and assistance. In general terms, any political or military move that distanced China from North Korea would "no doubt have implications for the survival of the Kim government." While Beijing could send signals to Pyongyang, these did not automatically translate into preferred outcomes.[160]

The most important lever of influence, however, came from North Korea's near total dependence on China for energy assistance. Energy problems in the DPRK steadily worsened throughout the 1990s as the country suffered a severe "shortage of fuel oil, becoming increasingly dependent upon foreign oil supplies, *with nearly total supply coming from China since 2003*."[161] To maintain its military and economy, North Korea

[159] Beijing was particularly worried about the deployment of extensive antiballistic missile defense batteries in the region, and the more remote possibility of a nuclear proliferation chain reaction by ROK and Japan in reaction to DPRK acquisition of nuclear weapons.
[160] Feng, "Shifting Tides: China and North Korea," p. 40.
[161] Julia Joo-A Lee, "To Fuel or Not to Fuel: China's Energy Assistance to North Korea," *Asian Security* 5, no. 1 (2009), pp. 47–48.

needed to increase its supply of energy beyond the fixed imports under the Agreed Framework. China filled this critical energy gap to enhance its influence over North Korean behavior. "By strategically increasing North Korea's dependence on China, Beijing could increase its political influence to force North Korea to comply with Chinese demands … Beijing would want Pyongyang to be more dependent on Chinese influence in order to be capable of inducing the North's compliance by *threatening Pyongyang with the bargaining card of 'absence of assistance'*."[162] Beijing was only willing to turn the fuel oil spigot on and off within limits, though, "since a large-scale intensive disruption of energy supply could result in catastrophe in North Korea."[163] China therefore acquired the capacity to act as a third party mediator of nuclear negotiations between the United States and North Korea.

Although Washington put bilateral talks with Pyongyang on ice, the Bush Administration opened diplomatic channels to Beijing and requested Chinese intervention in the nuclear issue. From the outset of the crisis, President Bush insisted that China's involvement was essential.[164] Bush himself made "numerous calls to China's leadership to discuss North Korea's escalatory maneuvers on the nuclear front," placed "pressure on China to use its leverage to bound North Korea's nuclear efforts," and "actively sought coordination with and assistance from Beijing" to persuade Pyongyang to engage in multilateral diplomacy.[165] In response, "Beijing's intensive efforts during the spring and summer to coax North Korea into multilateral talks and its parallel communication with Washington were without precedent in the history of Chinese

[162] Ibid., p. 50.
[163] Ibid., p. 62.
[164] Chinoy, *Meltdown*, p. 146.
[165] Scott Snyder, "China-Korea Relations: Regime Change and Another Nuclear Crisis," *Comparative Connections* 5, no. 1 (April 1, 2003), pp. 1, 3.

diplomacy."[166] The top levels of Chinese leadership publically chastised North Korean behavior, voted for the February 2003 IAEA resolution referring the DPRK to the UN Security Council, turned down requests for military hardware from Pyongyang, and cut off oil supplies to the North for three days in March "to remind North Korea of its economic dependence on Beijing."[167] Diplomacy between the U.S. and DPRK now included an active third party willing and able to intervene.

Unfortunately, China's efforts throughout 2003 ultimately failed to stop the North Koreans from reprocessing the spent fuel and restarting the Yongbyon reactor. Beijing offered to host a three-party summit on April 23rd, 2003. The North Koreans reluctantly agreed to attend, but opened the discussions with a hardline stance, telling the American and Chinese diplomats that the DPRK "already possessed nuclear weapons and had begun making bomb-grade plutonium." The talks immediately stalled, and the next day, President Bush admonished North Korea for moving "back to the old blackmail game," and insisted that the U.S. "would not be intimidated."[168] On the last day of the meeting, the Americans remained adamant that they "would not 'reward' North Korea's behavior," while Pyongyang threatened "a 'physical demonstration' of its nuclear capabilities."[169] China succeeded in getting the North Koreans to a trilateral forum, but Washington dug in to resist Pyongyang's coercive threats.

The opening round of the Six Party Talks in August 2003 fared little better. China and the United States worked through the summer with South Korea, Japan, and Russia

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[166] Pollack, *No Exit*, p. 144.
[167] Jonathan Watts, "China Cuts Oil Supply to North Korea," *The Guardian*, March 31, 2003
[168] David E. Sanger, "North Korea Says it Now Possesses Nuclear Arsenal," *New York Times*, April 25, 2003, A1.
[169] *China and North Korea: Comrades Forever?*, Asia Report No. 112 (Washington, DC: International Crisis Group, February 1, 2006), p. 5.

"to secure North Korea's agreement for a new round of multilateral talks."[170] The North Korean delegation proposed a deal similar to the Agreed Framework with an emphasis on reciprocal action over a series of U.S. concessions matched by DPRK nonnuclear promises. Lead DPRK diplomat Kim Yong Il demanded the United States resume increased shipments of heavy fuel oil and food aid, compensate them for the loss of electricity under the collapsed Agreed Framework, conclude a nonaggression treaty, and open normal diplomatic relations. In return, Pyongyang promised to refreeze operations at Yongbyon, invite the IAEA back, resolve the ballistic missile issue, and dismantle its declared nuclear facilities. The North Korean team denied having a uranium enrichment program. Head U.S. diplomat Jim Kelly "made clear Washington's opposition to the kind of give-and-take process the North Koreans were looking for. Instead, he repeated the administration's demand that North Korea must 'completely, verifiably, and irreversibly dismantle' [CVID] its nuclear program before there could be any discussion of diplomatic, political, or economic incentives."[171] Kim Yong Il made it clear that North Korea would escalate the nuclear threat further. "We have no choice but to declare our possession of nuclear weapons and demonstrate our nuclear deterrent."[172] Yet again, Washington and Pyongyang refused to bargain towards a deal.

(2.3.3) Crossing Redlines and Expanding Nuclear Capabilities

During the winter of 2004, North Korea ratcheted up the pressure on Washington by dramatizing its possession of plutonium. In January 2004, Pyongyang received a U.S. Track II delegation that included Dr. Siegfried Hecker, the former director of Los Alamos

[170] Ibid.
[171] Chinoy, *Meltdown*, p. 184.
[172] Ibid., p. 186.

National Laboratory and expert in plutonium metallurgy. The Americans were able to visit the reprocessing plant at Yongbyon, where the North Koreans demonstrated – to no surprise – that they had unloaded all 8,000 spent fuel rods. Hecker asked to view a sample product from the reprocessing campaign, and the Yongbyon scientists obliged, bringing him a glass jar filled with a warm radioactive metallic powder purported to be plutonium. As true masters of political theater, the North Koreans told their visitors, "Now we have shown you our nuclear deterrent."[173] It was clear that the purpose of the trip had been to communicate that the North Koreans "had reprocessed the fuel rods, were capable of producing weapons-grade plutonium and a viable nuclear device, and were not bluffing."[174] North Korea explicitly signaled that the nuclear program posed an imminent threat of proliferation.

Pyongyang's attempt to pressure Washington backfired, and the Six Party Talks drifted into the doldrums for next sixteen-months. The United States became even more strident in its demands for North Korea to 'completely, verifiably, and irreversibly dismantle' (CVID) the nuclear program before they would even consider concessions. In essence, Washington asked Pyongyang to give up its strongest bargaining chip without receiving anything in return. By February 2005, North Korea decided to up the ante again in an attempt to break the Bush Administration's resistance. Pyongyang refused to offer any CVID assurances and claimed to have manufactured nuclear weapons. To put a fine point on this purported advance, the lead North Korean diplomat made a dramatic statement:

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[173] This account draws from the Testimony of Siegfried S. Hecker, "Visit to the Yongbyon Nuclear Scientific Research Center in North Korea," Hearings before the Committee on Foreign Relations, United States Senate, January 21, 2004 (Washington, GPO, 2004).
[174] Chinoy, *Meltdown*, p. 201.

> The time for discussing give and take type issues, such as freeze and reward, at the Six-Party Talks has passed. Now that we have become a dignified *nuclear weapons possessing state*, the Six-Party Talks must naturally become *arms reduction talks*.[175]

North Korea would now only consider proposals for bilateral US-DPRK arms control negotiations. As the Americans remained steadfast, North Korea claimed to have already acquired nuclear weapons.

Pyongyang maintained course with a series of provocations designed to leverage the threat of advancing to a larger nuclear capability. In April 2005, Pyongyang announced a new reprocessing campaign to produce more plutonium at Yongbyon. A senior North Korean official admitted that the DPRK was planning "to unload its nuclear reactor in order to force Bush to negotiate on terms more favorable to North Korea."[176] At the beginning of May, North Korea fired multiple short-range ballistic missile tests into the Sea of Japan, accelerated preparations at a suspected nuclear weapon test site near Kilchu, finished unloading 8,000 spent fuel rods from the 5-MW reactor for reprocessing, and announced resumed construction on the 50-MW reactor.[177] At the same time, Pyongyang expressed its willingness to reengage in diplomacy with the United States.

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[175] Statements of the DPRK Ministry of Foreign Affairs, February 10 and March 31, 2005, emphasis added. Quoted in Pollack, *No Exit*, p. 148.
[176] Michishita, *North Korea's Military-Diplomatic Campaigns, 1966-2008*, p. 168.
[177] "Spent Fuel Rods Unloaded from Pilot Nuclear Plant," *KCNA*, May 11, 2005; David Sanger, "Steps at Reactor in North Korea Raise Concerns in U.S.," *New York Times*, April 18, 2005; Brian Knowlton, "U.S. Denounces North Korea After Reports Of Missile Test," *New York Times*, May 2, 2005.

A second visit from the Track II delegation with Dr. Hecker in August 2005 provided an opportunity for the Americans to be told about increases in North Korea's nuclear latency. Upon arrival, Yongbyon's Director of Nuclear Facilities Ri Hon Sop informed the American delegation that they were not allowed to visit the site because of the elevated radiation levels from ongoing reprocessing activities. To substitute, the director provided technical information on the campaign. He claimed that the 5-MW reactor had been burning fuel rods for the last two years since the restart in January 2003. The rods were unloaded in April 2005, and the reactor was reloaded with the last batch of fresh fuel rods. They had begun to reprocess all 8,000 fuel rods, and would soon be finished. Several members of the delegation left with the impression that the North Koreans "were playing a game of coercion with the Americans."[178] Jack Pritchard noted, "It became clear in our discussions … that Pyongyang was using the recess to harden its negotiating position."[179]

(2.3.4) Enhancing Resistance and Blackmail Failure

As North Korea escalated its proliferation threats, Washington initiated a comprehensive review of its policy towards North Korea. In an attempt to energize "its flagging North Korea efforts," the Bush Administration adopted a two-track policy that mixed diplomacy with punitive pressure.[180] The diplomatic strategy leaned even more on getting Beijing to censure and influence Pyongyang, while opening the door to bilateral negotiations with the North Koreans. Beijing remained "proactive and serious about keeping the negotiations on track," but "its ability to force concessions from the North

[178] Michishita, *North Korea's Military-Diplomatic Campaigns, 1966-2008*, p. 169.
[179] Pritchard, *Failed Diplomacy*, p. 117.
[180] Philip Zelikow, "The Plan That Moved Pyongyang," *The Washington Post*, February 20, 2007.

[was] limited." The Chinese leadership was not yet ready to support punitive sanctions or seriously punish the Kim regime. In May 2005, Chinese officials rebuffed requests from the U.S. to support sanctions or more overt coercion against North Korea.[181] With minimal help coming from Beijing, the Bush Administration turned towards the punitive track. The U.S. Treasury Department devised a set of financial sanctions to freeze the Kim regime's international assets and illicit activities. The aim was to cripple the North Korean elite to gain more bargaining leverage if diplomacy stalled again.[182]

The dual-track approach required the Bush Administration to carefully coordinate diplomatic moves with the application of financial pressure. In the spring, Washington initiated diplomacy by signaling it was ready to consider the contours of a credible blackmail deal with Pyongyang. By July 2005, North Korea agreed to return to the Six-Party Talks. Official negotiations reconvened again in September. Bush walked back from his prior refusal to engage in 'blackmail' discussions, and gave the U.S. diplomatic team the leeway to compromise and bargain with their North Korean counterparts. The talks produced a joint statement laying out a common set of US-DPRK objectives centered around the "'the verifiable denuclearization of the Korean peninsula in a peaceful matter.' North Korea also pledged that it was 'committed to abandoning all nuclear weapons and existing nuclear programs and returning, at an early date, to the NPT and IAEA safeguards.'"[183] After several years of stubborn resistance to no avail, Washington's decision to engage Pyongyang started to produce tentative results.

[181] Joseph Kahn, "China Rules Out Using Sanctions on North Korea: Undercuts U.S. Strategy," *New York Times*, May 11, 2005, A1.
[182] Zelikow, "The Plan That Moved Pyongyang."
[183] Pollack, *No Exit*, p. 146.

Despite these initial gains, the bottom fell out of the diplomatic process when the Bush Administration suddenly activated the punitive pressure track by imposing financial sanctions on the Kim regime. On September 15th, the U.S. Treasury Department designated Banco Delta Asia (BDA) as a "primary money laundering concern" for North Korean assets and illicit activity. Whether by intentional design to enhance U.S. bargaining power or the inadvertent result of bureaucratic machinations in Washington, the sanctions hit the Kim regime hard and threw a wrench in the Six-Party Talks. The crackdown on BDA "had devastating economic ramifications on North Korea's ability to generate badly needed hard currency." Since illicit activity "provided a large-scale benefit for North Korea's elite, Kim Jong Il's slush fund, and even the military, the suppression of their illicit activities actually began to squeeze them where it hurt the most."[184] The North Koreans demanded the frozen BDA funds be released and the sanctions ended against their illicit shell companies. Having finally found a way to hurt the Kim regime, Washington rebuffed the request. Pyongyang ordered its diplomats to walk out and boycott the talks indefinitely.

China scrambled in the wake of the BDA sanctions to induce North Korea's return to the Six-Party Talks.[185] Beijing turned first to positive incentives. In October 2005, President Hu Jintaeo made his first visit to the DPRK. He urged the leadership in Pyongyang to uphold their commitment to nuclear diplomacy, and offered $US 100 million in aid as an implicit reward. The North Koreans refused to return until the U.S. lifted the BDA sanctions. Several months later, Kim Jong Il himself paid a return visit to China in January 2006, where he proposed "a major expansion of economic collaboration

[184] Bechtol, *Defiant Failed State*, p. 85.
[185] Pollack, *No Exit*, p. 147.

with China, encompassing natural resources and energy, infrastructural development, tourism, telecommunications, agriculture, and labor-intense industries. With the imposition of sanctions on North Korea's bank accounts in Macaeo, its financial and economic needs had grown even more acute. But Kim returned home largely empty handed."[186] China was not ready to impose negative sanctions on North Korea, but made it clear that positive rewards were now contingent on participation in the Six-Party Talks.

(2.3.5) The 2006 Nuclear Test

As China's support waned and U.S. financial sanctions placed increasing pressure on the Kim regime, North Korea resorted once again to brinksmanship. On July 5, 2006, the DPRK fired the most extensive battery of ballistic missile tests in its history. The Ministry of Foreign Affairs promised "to take stronger physical actions of other forms" if the U.S. or China "put pressure upon it."[187] Six Scud and No Dong missiles, along with a Tapeo-Dong 2 SLV were fired in rapid succession, with a final seventh test nine hours later.[188] Washington denounced the missile tests and moved to take action against North Korea in the United Nations, but refused to lift sanctions. China signaled its growing discontent with Pyongyang's behavior by supporting a resolution against the DPRK in the Security Council (UNSCR 1695). Even though Beijing stopped short of supporting sanctions, the official censure was an extraordinary step away from Pyongyang in support of Washington.

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[186] Ibid.
[187] "DPRK Foreign Ministry Spokesman on Its Missile Launches," *KCNA*, July 6, 2006.
[188] The Tapeo Dong 2 SLV failed less than minute after launch. See Norimitsu Onishi and David Sanger, "6 Missiles Fired By North Korea: Tests Protested," *New York Times*, July 5, 2006, sec. A1; Dana Priest and Anthony Faiola, "North Korea Tests Long-Range Missile," *The Washington Post*, July 5, 2006, sec. World.

After the missile tests failed to elicit a change in U.S. behavior, North Korea tested a nuclear weapon on October 9, 2006.[189] The U.S. Director of National Intelligence issued a statement confirming a nuclear test in North Korea with a yield under 1-kiloton.[190] DPRK's Ministry of Foreign Affairs was quick to attribute the nuclear test "to the U.S. nuclear threat, sanctions, and pressure," but reiterated "its will to denuclearize the peninsula through dialogue and negotiations."[191] The MFA statement underscored that Pyongyang's decision to test at that specific point in time was designed to put diplomatic pressure on the United States and, to a lesser degree, China.[192] Chinese officials concluded in the wake of the test that the Kim regime sought a "nuclear trump card to intimidate China as much as the United States."[193] North Korea hoped the test would enhance its security, while also providing leverage to compel Washington and Beijing into a deal over the nuclear issue.

The nuclear test was a watershed moment for Pyongyang's nuclear policy. The leadership had to consider three basic paths forward. The first option was to continue down the breakout pathway by growing nuclear weapons capabilities. The DPRK would move firmly out of the ENR zone by adopting what Vipin Narang refers to as an 'asymmetric escalation' posture: a threat to use nuclear weapons early in a crisis to deter

[189] "DPRK Successfully Conducts Underground Nuclear Test," *KCNA*, October 9, 2006; David Sanger, "North Korea Says It Tested a Nuclear Device Underground: Blast Comes After U.N. Warning," *New York Times*, October 9, 2006.
[190] *Statement on North Korean Nuclear Test By Ambassador Joseph DeTrani* (Washington, DC: Office of the Director of National Intelligence, October 13, 2006).
[191] "DPRK Foreign Ministry Spokesman on U.S. Moves Concerning Its Nuclear Test," *KCNA*, October 11, 2006; "DPRK's Readiness to Boost Ties of Cooperation with International Community Reiterated," *KCNA*, October 10, 2006.
[192] For a strong argument that by 2013, North Korea's nuclear test efforts were less about sending political signals and more "an attempt to master the technical capabilities that are vital to its nuclear deterrent," see Jennifer Lind, Keir A. Lieber, and Daryl G. Press, "Pyongyang's Nuclear Logic," *Foreign Affairs*, February 13, 2013.
[193] Joseph Kahn, "North's Test Seen as Failure For Korea Policy China Followed," *New York Times*, October 9, 2006; Joseph Kahn, "China May Press North Koreans: Could Cut Oil If They Shun Talks or Test 2nd Bomb," *New York Times*, October 20, 2006.

aggression from the far superior US-ROK forces.[194] But this posture was quite risky and made it more difficult to use underlying nuclear technology as a bargaining chip. The second option was for the DPRK to simply give up its nuclear weapons program in exchange for a substantial package of concessions to be negotiated during future Six Party talks. The obvious downside was that the Kim regime would have to rely exclusively on its deteriorating conventional military forces for deterrence. In the end, it appears as though Pyongyang went with a third option to have its cake and eat it too. The DPRK would retain its 2006 nuclear force capability, but negotiators were authorized to bargain over how much the force would grow from this point. This way, the Kim regime could retain the nuclear program as a bargaining chip without forgoing the security benefits of nuclear deterrence. Pyongyang shifted its blackmail threat from proliferation to further increases in its nuclear capabilities.

The problem with this strategy was that Washington would only provide concessions if Pyongyang made a credible promise to disable its nuclear forces. The United States would want to verifiably eliminate the three core components of the DPRK's demonstrated nuclear deterrent: nuclear fuel cycle assets and fissile material, ballistic missile delivery vehicles, and nuclear weapon devices. This would require an unprecedented level of transparency into nuclear operations beyond Yongbyon from a regime that thrived on ambiguity. Furthermore, given the value of this latent and actual nuclear capability, the Kim regime would now seek a grand package of concessions greater than the benefits of nuclear deterrence. As a result, the nuclear test magnified the desired endgame outcome for each party in the blackmail process.

[194] Vipin Narang, "Nuclear Strategies of Emerging Nuclear Powers: North Korea and Iran," *The Washington Quarterly*, Vol. 38, No. 1 (2015), pp. 81-85

In addition, the nuclear test made clear that the leadership in Pyongyang was willing to bear high costs from the overt acquisition of nuclear weapons. The prospect of further international isolation, Beijing's wrath, and extreme responses from hawks in the Bush Administration were not enough to constrain North Korea's nuclear weapons ambitions. If these consequences were inadequate, then the regime would need to voluntarily accept some sort of serious punishment for breaking its word in the future. In other words, Pyongyang raised the bar on the strength of hand tying mechanisms needed to make a credible promise. The nuclear test did put pressure on the Bush Administration to negotiate North Korea's reentry into nuclear limbo, but Washington was not going to provide significant concessions without the DRPK taking steps to degrade its nuclear capabilities and the Kim regime tying its hands to such a commitment. As a result, after October 2006, North Korea would most likely need to incorporate a severe and automatic punishment from China into the framework of a future nuclear deal.

North Korea's nuclear test also forced the Chinese to reveal how much they were willing to punish the Kim regime. Zhu Feng, a leading Chinese security analyst at Peking University, claimed that the nuclear test "was no less than a slap in China's face."[195] As "ire turned into fury," the Chinese leadership "began to initiate coercive diplomatic measures towards Pyongyang."[196] China reconfigured its armed forces along the northeast border with North Korea to signal that the PLA would not provide a military rescue for Pyongyang.[197] At the United Nations, Beijing rapidly supported another Security Council resolution against North Korea (UNSCR 1718), this time with biting

[195] Feng, "Shifting Tides: China and North Korea," p. 40.
[196] Ibid., p. 46.
[197] Christopher Twomey, "Explaining Chinese Foreign Policy toward North Korea: Navigating between the Scylla and Charybdis of Proliferation and Instability," *Journal of Contemporary China* 17, no. 56 (2008), p. 416.

sanctions under Chapter VII of the UN Charter.[198] The resolution "was unprecedented in the speed of its reaction and in the lengths to which China was willing to go to punish North Korea," and marked a "significant change of China's policy toward North Korea."[199] In an about face from the previous year, Beijing collaborated with Washington to impose "stringent and wide reaching sanctions" after the nuclear test, "further restricting North Korea's ability to conduct international economic activity."[200] China opposed the use of military force to resolve the nuclear issue, but was now willing to penalize Pyongyang's intransigence.

Beijing ordered a steep reduction in its supply of oil to North Korea in the fall of 2006.[201] While these efforts sent "clear signals of China's firm resolve in changing North Korea's behavior," they also revealed to Pyongyang the maximum punishment they could expect from Beijing.[202] China was reluctant to take actions that might imperil the regime's survival, and turned the oil spigot back on by November 2006. So while China would continue to play its role as third party mediator of the Six Party Talks, they were not prepared to enact severe punishment against Pyongyang. Just as in the first nuclear crisis, the United States was left again on its own to devise a deal with the North Koreans.

(2.3.6) Diplomacy Breaks Down over Denuclearization

[198] Warren Hoge, "Security Council Supports Sanctions on North Korea: China and Russia Back Economic Measures After the Threat of Force Is Ruled Out," *New York Times*, October 15, 2006; Twomey, "Explaining Chinese Foreign Policy toward North Korea," p. 414.
[199] Feng, "Shifting Tides: China and North Korea," p. 39; Scott Snyder, *China-Korea Relations: Political Fallout from North Korea's Nuclear Test*, Comparative Connections (Washington, DC: Center for Strategic and International Studies, 2007).
[200] Twomey, "Explaining Chinese Foreign Policy toward North Korea," p. 417.
[201] Joseph Kahn, "China May Be Using Oil to Press North Korea," *New York Times*, October 31, 2006, A12.
[202] Lee, "To Fuel or Not to Fuel," pp. 59–60.

Pyongyang's gambit worked to bring U.S. officials back the bargaining table. On October 31, 2006, U.S. officials attended a trilateral meeting with the DPRK hosted in Beijing. Lead U.S. diplomat Christopher Hill raised the issue of the BDA sanctions, and "signaled a willingness to explore ways to bring the episode to a close."[203] In response, the North Koreans agreed to return to the Six-Party Talks in November.[204] Although China had clearly put pressure on the Kim regime to resume the talks, "the U.S. willingness to undertake direct negotiations vindicated [Pyongyang's] decision to test."[205] Yet while Washington was open to diplomacy, it soon became apparent that North Korea would have to give up its nuclear weapons to cut a successful bargain.

When diplomacy restarted in November 2006, Hill floated a deal to his North Korean counterpart, Kim Gye Gwan. The U.S. demanded a freeze on operations at Yongbyon, the return of IAEA inspectors, a complete declaration of all nuclear facilities and efforts in the DPRK, and an end to nuclear testing. North Korea would receive food and energy aid if it fulfilled these requirements, along with discussions to end the sanctions against BDA, normalize diplomatic relations, and conclude a peace treaty.[206] Hill's deal spelled out "in greater specificity than any previous U.S. envoy, what Washington was prepared to offer" in exchange for North Korea taking tangible steps to give up its nuclear weapons program.[207] Kim refused to budge until the BDA sanctions issue was addressed.[208] As the Six-Party Talks recessed in December without progress,

[203] Chinoy, *Meltdown*, p. 307.
[204] "Spokesman for DPRK Foreign Ministry on Resumption of Six-Party Talks," *KCNA*, November 2, 2006.
[205] Pollack, *No Exit*, p. 151.
[206] Michishita, *North Korea's Military-Diplomatic Campaigns, 1966-2008*, p. 173.
[207] Chinoy, *Meltdown*, p. 310.
[208] Pritchard, *Failed Diplomacy*, pp. 157–158.

Kim threatened to stage a second nuclear test, and U.S. intelligence detected renewed activity at the North Korean nuclear test site.[209]

In response, the United States shifted its bargaining posture, and reached several tentative agreements with the North Koreans. Washington decided in February 2007 to seek "tangible and verifiable steps in nuclear disablement that would limit North Korea's plutonium production, without insisting on an immediate and unconditional dismantlement of Pyongyang's nuclear weapons infrastructure."[210] To accomplish this end, the Bush Administration agreed to lift the BDA financial sanctions in March 2007 if Pyongyang promised to shutdown its plutonium reactor, reprocessing plant, and fuel fabrication plant at Yongbyon.[211] North Korea would get 50,000 tons of heavy fuel oil (HFO) to be delivered as soon as the facilities were shut down. Washington also offered to supply 450,000 tons of HFO once North Korea's entire nuclear infrastructure nuclear programs had been declared to the IAEA, and another 500,000 tons of oil once all existing nuclear facilities had been disabled.[212] "The idea was to avoid 'front-loading' all of the North's benefits before Pyongyang had taken concrete steps to disarm."[213] Washington was ready to provide benefits conditional on a promise to disarm from North Korea.

The North Koreans agreed to this general pathway forward and started to shut down and disable the Yongbyon facilities once BDA international funds were unfrozen in June 2007. IAEA returned to verify the shutdown of the affected facilities and to place

[209] Chinoy, *Meltdown*, p. 316.
[210] Pollack, *No Exit*, p. 151.
[211] Pritchard, *Failed Diplomacy*, p. 159.
[212] Some of the disablement steps were reversible but would create a longer lead time between initiation of a decision to breakout and the operational readiness of the facility.
[213] Chinoy, *Meltdown*, p. 325.

seals and cameras to allow verification of continued non-operation. On July 18th, the IAEA announced that the reactor had been shut down, and instituted a daily presence at the site. Several Track I and II delegations visited North Korea and the Yongbyon complex during the late summer "because the North Koreans wanted to demonstrate that they were moving to shut the facility down."[214] After this progress over the summer, the technical details were ironed out in October over what the February deal would mean in practice for disablement of the agreed facilities (that is, what disablement steps they would take at each facility). Furthermore, the North Koreans were required to provide a "complete and correct declaration of all its nuclear programs" by the end of 2007.[215] As North Korea undertook these disablement measures, Washington would start supplying large heavy fuel oil shipments.[216]

The steps specified under the February 2007 agreement were sequenced and back-loaded to protect the United States and force Pyongyang to demonstrate its true intentions. After the reactor shutdown in the summer, the U.S. in return paid the North Koreans a small amount of heavy fuel oil to not produce further plutonium. But the U.S. would not provide the large (950,000 barrels) payments of heavy fuel oil until North Korea declared and disabled the Yongbyon nuclear facilities.[217] If the Kim regime reached such an agreement, the United States offered the same basic elements it put on the table during the first nuclear crisis: "economic and energy assistance, security assurances, and the promise of political normalization."[218] In many ways, the 2007 agreement was remarkably similar to the 1995 Agreed Framework. The key difference, of

[214] Ibid., p. 340.
[215] Ibid., p. 345.
[216] Pollack, *No Exit*, p. 152.
[217] Chinoy, *Meltdown*, p. 359.
[218] Cha, *The Impossible State*, p. 293.

course, was that North Korea's nuclear capabilities had increased significantly, requiring it to take disablement steps first before Washington would provide ongoing major benefits.

Although North Korea started to fulfill numerous obligations, it soon became clear that the Kim regime wanted to do as little as possible at each step. Over the next year, the North Koreans provided a declaration of their plutonium inventory, transferred 18,000 pages of documentation on operations at Yongbyon, completed most but not all of the agreed disablement actions, and destroyed the reactor's cooling tower. By February 2008, the U.S. and its partners were slow in providing assistance, and then a major controversy regarding verification boiled over. During the final session of the Six Party Talks in December 2008, the North Koreans balked "at any commitment to written, binding pledges on verification."[219] At this point, the process had reached the point where the United States required the North to stipulate how they were going to increase transparency and verify disablement before providing concessions. Pyongyang refused to move forward even though this request was not difficult if they actually wanted to trade away the program. The North Koreans abandoned coercive diplomacy even though they were presented with a clear path towards constraining the nuclear weapons program. The cost of resolving the commitment problem appeared to outweigh the benefits of economic concessions from the United States. Instead, North Korea transitioned out of the ENR zone towards a nuclear weapons force posture.

The Obama Administration entered office and made several serious overtures to resolve the issues that deadlocked the December 2008 Six Party Talks. North Korea

[219] Ibid., p. 155. More specifically, there was disagreement over whether the North Koreans had already agreed to a plan for verification in February 2007.

retorted with a second nuclear test in May 2009 and deadly provocations against ROK forces in March and November 2010. In response, Obama initiated a new policy of 'strategic patience.' The United States remained committed to diplomacy and the road map stipulated under the 2005 and 2007 agreements, but would wait until Pyongyang demonstrated positive and constructive behavior. North Korea had to signal a willingness to negotiate in earnest over its nuclear program. "Strategic patience would not reward the regime and thereby devalued Pyongyang's attempts to use provocations as a means to attract attention."[220] In effect, Obama froze diplomatic engagement over nuclear blackmail with North Korea.

North Korea had the option to use nonproliferation assurance policies to solve the commitment problem of nuclear technology. During the Six Party Talks in February 2007, U.S. officials presented the North Korean negotiators with a viable plan for the DPRK to make a convincing nonproliferation promise by dismantling much of the nuclear infrastructure at Yongbyon. The terms of the agreement were phased so that the North Koreans would receive rewards at each successive stage of dismantlement. The Kim regime took some of the initial steps, but seemed to eventually decide that, "the juice was not worth the squeeze."[221] North Korea became increasingly reluctant to implement the terms specified by the U.S. and constrain the nuclear program as it matured into an operational capability.

The North Korean case illustrates a subtle but important distinction between the *ability* and *willingness* of a nuclear-capable state to issue a convincing nonproliferation assurance when it moves close to the bomb. While the country may be able to solve the

[220] Cha, *The Impossible State*, p. 296.
[221] Former senior U.S. official. Interview by author. Digital recording. Cambridge, MA, May 7, 2014.

commitment problem, there is another path dependent cost beyond the terms of the deal that grows as the nuclear program matures over time. As the nuclear program generates positive feedback and increasing returns, the leadership becomes increasingly *unwilling* to give up its nuclear assets or comply with the terms of a grand bargain.

(2.4) Conclusion

North Korea's mixed record of blackmail success and failure over time underscores several take-home points. Nuclear latency conferred Pyongyang with more coercive bargaining advantage when its nuclear fuel cycle capabilities were just starting to emerge. North Korea was able to leverage the threat of fissile material production quite effectively during the first nuclear crisis, but found it harder to use its ballistic missile program or the prospect of nuclear breakout in the second crisis to induce Washington's compliance. In other words, less latency yielded more bargaining power for Pyongyang. The closer North Korea moved towards the acquisition of a nuclear deterrent, the costlier it became to credibly return to acceptably low level of nuclear latency. Once Pyongyang started to renege on its nonproliferation promises, it had to send a very costly signal to reach a successful blackmail deal with the United States. North Korea was able to hit the sweet spot mix of moderate threats and adequate promises in 1994, but found itself unwilling to give up a viable nuclear force capability after it tested a nuclear weapon in 2006.

North Korea's failure to practice coercive diplomacy during the second nuclear crisis also revealed a long-standing tension in its nuclear policy. Did North Korea really just want nuclear weapons? Or was the Kim regime ready to trade away its nuclear capability for a package of economic and political concession? In 1998, Joseph Nye

claimed the U.S. intelligence community remained "deeply divided on the question of whether the North wanted a bomb or was simply playing for aid.[222] After the nuclear test in October 2006, the Kim regime had to resolve this quandary by either maintaining and improving its nuclear deterrent, or giving up the entire nuclear infrastructure to reap a grand blackmail bargain with the United States. In the end, Pyongyang refused to make deep cuts into their nuclear capabilities, and signaled that the blackmail strategy had run its course. After 2010, North Korea seemed to be increasingly motivated by the desire to improve and expand its nuclear deterrent, and attempted to restart negotiations over the disposition of these nuclear forces.

[222] Quoted in David E. Sanger, "North Korea Site an A-Bomb Plant," *New York Times*, August 17, 1998, A1.

Chapter 4: Japan's Gambit for Okinawa

Japan occupies a unique position in the enrichment and reprocessing zone. Despite possessing the most advanced capability to proliferate out of all nonnuclear weapon states today, the government remains committed to a strong promise of nuclear restraint. With a full nuclear fuel cycle and substantial quantities of fissile material, Japan could produce a few nuclear devices on short order, though a longer lead-time would be needed to field an operational nuclear force.[1] Yet Japan faces a mix of strategic, domestic, and normative factors that create strong incentives not to proliferate: the Japanese archipelago lacks strategic depth, the political economy depends on foreign trade, the U.S.-Japan security pact provides a nuclear umbrella, and the public retains an aversion to atomic weaponry. As a champion of global nonproliferation efforts, the government also pursues policies that credibly reveal its robust incentives to remain nonnuclear. As a result, Japan is unlikely to proliferate in the current environment.[2]

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[1] Japan has an extensive civil nuclear energy program with 55 nuclear reactors. After the Fukushima accident in March 2011, 52 reactors were shutdown and currently lay fallow. More important, Japan retains a substantial amount of plutonium from reprocessing spent reactor fuel over several decades. Japan also has the capability to enrich uranium. The majority of its uranium is low-enriched for use in light-water reactors, but again Japan has the technology to further process this stock into highly-enriched uranium. Finally, Japan has the engineering capacity to construct nuclear devices and delivery systems, albeit with a significant lead-time needed to produce a workable, miniaturized nuclear warhead that could be mounted atop an accurate cruise or ballistic missile. For good technical overviews of Japan's modern nuclear latency, see Kenneth A. Oye, Tatsujiro Suzuki, and Eugene Skolnikoff, "International Responses to Japanese Plutonium Programs," A Working Paper from the Center for International Studies (Massachusetts Institute of Technology, August 1995); *Country Nuclear Fuel Cycle Profiles* (Vienna: International Atomic Energy Agency, 2005); Tetsua Endo, *How Realistic Is a Nuclear-Armed Japan?* (Tokyo [JP]: The Association of Japanese Institutes of Strategic Studies, July 20, 2007).

[2] T.V. Paul, *Power Versus Prudence : Why Nations Forgo Nuclear Weapons* (McGill-Queen's University Press, 2000), chap. 3; Avery Goldstein, *Deterrence and Security in the 21st Century: China, Britain, France, and the Enduring Legacy of the Nuclear Revolution* (Stanford University Press, 2000), pp. 269–274; Llewelyn Hughes, "Why Japan Will Not Go Nuclear (Yet): International and Domestic Constraints on the Nuclearization of Japan," *International Security* 31, no. 4 (2007), pp. 67–96; Etel Solingen, *Nuclear Logics* (Princeton University Press, 2007), chap. 7; Mike M. Mochizuki, "Japan Tests the Nuclear Taboo," *The Nonproliferation Review* 14, no. 2 (2007), p. 303.

Japan's nuclear latency still causes perennial worry about what situations might motivate Tokyo to proliferate in the future.[3] Since Japan faces a rough neighborhood, two worst-case scenarios concern some combination of an acute security threat and collapse in the U.S.-Japan alliance pact. In a low level conflict with Beijing or Pyongyang, for example, Tokyo might decide to go nuclear if Washington decoupled itself from the crisis. While the magnitude of such an event might catalyze proliferation, less severe changes to the regional landscape are more indeterminate. China's growth as a naval power or an American conventional drawdown from East Asia would have a significant impact on Japan, but leave the government with a number of alternative options more attractive than proliferation.[4]

The enduring effort to forecast whether Japan will go nuclear overlooks a key point. Japan's underlying nuclear latency confers it with a strong bargaining advantage. Against adversaries, leaders in Tokyo may be able to use the threat of proliferation to compel limited concessions or end a crisis. Japan's distinctive technical status is likely to play an even more potent role in the alliance relationship with the United States. If Washington remains sensitive to proliferation in East Asia, then an opportunity exists for

[3] Motoya Kitamura, "Japan's Plutonium Program: A Proliferation Threat?," *The Nonproliferation Review* 3, no. 2 (1996), pp. 1–16; Clifton W. Sherrill, "The Need for a Japanese Nuclear Deterrent," *Comparative Strategy* 20, no. 3 (2001), pp. 259–270; Kurt M Campbell and Tsuyoshi Sunohara, "Japan: Thinking the Unthinkable," in *The Nuclear Tipping Point: Why States Reconsider Their Nuclear Choices*, ed. Kurt M. Campbell, Robert J. Einhorn, and Mitchell B. Reiss (Washington, DC: Brookings Institution Press, 2004), pp. 218–253; Hajime Izumi and Katsuhisa Furukawa, *Not Going Nuclear: Japan's Response to North Korea's Nuclear Test* (Washington, D.C.: Arms Control Today, June 2007); Toshi Yoshihara and James R. Holmes, "Thinking About the Unthinkable," *Naval War College Review* 62, no. 3 (Summer 2009), pp. 60–78; Emma Chanlett-Avery and Mary Beth Nikitin, *Japan's Nuclear Future: Policy Debate, Prospects, and U.S. Interests* (Washington, D.C.: Congressional Research Service, February 19, 2009).

[4] For more on these scenarios in the context of U.S. extended deterrence in East Asia, see *Military and Security Developments Involving the People's Republic of China 2013* (Washington, D.C.: U.S. Department of Defense, 2013); James L. Schoff, *Realigning Priorities: The U.S.-Japan Alliance and the Future of Extended Deterrence* (Cambridge, MA: Institute for Foreign Policy Analysis, March 2009); Brad Roberts, *Extended Deterrence and Strategic Stability in Northeast Asia*, Visiting Scholar Paper Series (Tokyo [JP]: The National Institute for Defense Studies, August 9, 2013).

Tokyo to make understated or backchannel threats to proliferate unless U.S. management of the alliance changes. The specter of Japanese proliferation could be quite effective at forestalling reductions in U.S. military capabilities from the region, or resolving other conflicts of interest on terms favorable to Tokyo. Understanding Japan's nuclear future therefore requires shifting the analytic lens to consider whether and how Tokyo might leverage its proliferation potential as a bargaining instrument.

My dissertation on proliferation persuasion facilitates such a pivot in two ways. The first part of this chapter focuses on Japan's entry into the ENR zone during the 1960s, and argues that the leadership used the civil energy program to enhance its bargaining power with the United States. More precisely, Prime Minister Eisaku Sato led an effort to drum up concern about Japan's future nuclear intent, and delayed committing to nonproliferation until several issues in the alliance were resolved. The second part of the chapter draws from my theory of coercive diplomacy to explain the failure and success of four distinct intra-alliance bargaining episodes from 1957 until 1976. I marshal evidence from the archival record to support my claim that nuclear latency only offered Japan an advantage when the threat of proliferation was backed with a credible promise to remain nonnuclear. By explaining variation in Japan's proliferation diplomacy, this chapter confirms that my logic of compellence with nuclear latency travels well to bargaining situations between allies.

(1) Why Did Japan Delay Making a Credible Commitment?

In the first part of the chapter, I review two standard explanations of Japan's decision to enter but not exit the ENR zone. Japan acquired sensitive nuclear fuel cycle technology to pursue energy security objectives. As the civil nuclear program matured,

Japanese leaders decided not to produce nuclear weapons because the strategic calculus weighed heavily against proliferation. These two factors account for why Japan developed technical latency but ultimately made the political decision to foreclose the nuclear weapons option. Yet the common logics leave unexplained a critical period of Japanese nuclear behavior from 1964 until 1976. During this time, government leaders delayed making credible nonnuclear commitments and even signaled potential intent to proliferate in the future. The concept of proliferation persuasion at the core of my dissertation fills this gap. I demonstrate that Japan waited to use its nuclear latency as an intra-alliance bargaining chip with the United States. This sets the foundation to explore when exactly Japan effectively leveraged nuclear latency to reap diplomatic benefits.

Energy security drove Japan's acquisition of nuclear fuel cycle technology. As an island nation with chronic shortages of oil and coal, Japan was highly dependent on foreign sources of energy. Japan's quest for natural resources and territorial expansion drew it into several military campaigns in the early twentieth-century, which culminated in its destructive defeat in the Second World War. In the post-war era, Japanese leaders reconstructed the country as a world-class merchant state focused on a vibrant export sector, and needed a less vulnerable means of energy.[5] The burgeoning industrial and technology sectors placed a heavy baseload demand on the national electric grid and consumed large quantities of petroleum.[6] Sustained economic growth required a secure source of energy. Fuel supply disruptions to gas or coal powered generators could undermine Japanese industry, and risk the vitality of its post-war economic strategy.

[5] Saburō Ōkita, *Post-war Reconstruction of the Japanese Economy* (Tokyo: University of Tokyo Press, 1992).
[6] G. C Allen, *A Short Economic History of Modern Japan* (New York, NY: St. Martin's Press, 1981), p. 200.

Nuclear energy promised a solution to Japan's energy security woes. In particular, government leaders were attracted to the promise of sustainable electricity that came from mastery of the full nuclear fuel cycle. In 1954, Japan received support from the United States to build a nuclear reactor infrastructure. Nuclear reactors could provide a stable supply of electricity to Japan's grid to meet the increased baseload demand from industry. But Japan would still be dependent on foreign suppliers because the islands had limited reserves of natural uranium to fuel the reactors. In 1956, the Japan Atomic Energy Commission (JAEC) proposed the acquisition of breeder reactors with plutonium reprocessing capabilities to insulate Japan from shocks in the uranium fuel supply chain. Breeder reactors purportedly could produce more fissile material than they consumed, while the back end of the nuclear fuel cycle held the allure of an inexhaustible supply of reactor fuel through spent waste reprocessing technology. In the halcyon era of nuclear energy in the 1950s, Japanese leaders saw the nuclear fuel cycle as a means to achieve energy independence and sustain economic growth.[7]

Japan's government set out to build the foundations of its nuclear program with the clear and coherent intent to reduce energy dependence. A United States intelligence review of Japanese nuclear efforts in 1962 concluded that Japan had adopted "a national policy for the development of peaceful uses of nuclear energy. The Government has established an extensive nuclear research and development program. Industry has made at least an equal effort in applied fields, and both are cooperating in programs for nuclear power."[8] With no evidence at this early stage that Japan was developing the plutonium

[7] Victor Gilinsky and Paul Fritz Langer, *The Japanese Civilian Nuclear Program* (Santa Monica, CA: Rand Corporation, 1967).
[8] Central Intelligence Agency, "Japanese Nuclear Energy Program," United States: Scientific Intelligence Report, November 18, 1964, National Security Archives (henceforth NSA) #JU00365, p. 2.

program to enhance its ability to build nuclear weapons, the United States and a few other suppliers readily provided nuclear materials and technology. The U.S.-Japan Nuclear Agreement allowed Japan to conduct research on plutonium extraction in 1956, and incorporated formal safeguards on Japanese facilities following the creation of the International Atomic Energy Agency (IAEA). Similar supply contracts were established with Australia, Great Britain, and France. As a result, key pieces of the nuclear fuel cycle started to fall into place by the early 1960s. Driven by benign energy security motives, Japan would nonetheless soon have the ability to produce weapons usable fissile material.

Once Japan acquired sensitive nuclear fuel cycle technology in the 1960s, Japanese leaders were confronted with the decision to maintain the civil nuclear energy program or exercise the emerging nuclear weapons option. In several oft-cited reports from the era, public analysts and government leaders weighed the costs and benefits of proliferation to Japan's economy and security.[9] The potential impact on Japan's economy was closely related to its dependence on foreign trade and natural resources. Japan could absorb the programmatic costs of fielding a nuclear arsenal, but proliferation might threaten other states. Sanctions on essential imports to Japan or the loss of consumer markets abroad would hurt Japan's export oriented economy. The power of foreign states to punish Tokyo only increased over time as Japan's economy grew into an international trade juggernaut that stood to loose quite a lot from sanctions and embargoes.

[9] The *1968/70 Report* is most prominent and widely cited cost-benefit analysis conducted in secret by the Japanese government to be released to the public, see Yuri Kase, "The Costs and Benefits of Japan's Nuclearization: An Insight into the 1968/70 Internal Report," *The Nonproliferation Review* 8, no. 2 (2001), pp. 55–68. For good public sphere assessments of the proliferation calculus conducted by Japanese analysts during this time, see Masataka Kosaka, "Japan's Nuclear Options," in *The Superpowers in a Multinuclear World*, ed. Geoffrey Kemp, Pfaltzgraff, and Ra'anan (Lexington, MA: Lexington Books, 1974), pp. 91–106; Ryukichi Imai, "The Non-Proliferation Treaty and Japan," *Bulletin of the Atomic Scientists*, May 1969; Daniel I. Okimoto, "Japan's Non-Nuclear Policy: The Problem of the NPT," *Asian Survey* 15, no. 4 (April 1975), pp. 313–327.

The alliance relationship with the United States created political and security costs to fielding an independent nuclear force. Washington had a strong strategic interest in Tokyo during the Cold War, and was unlikely to abandon its ally. Japanese proliferation could create a rift in the alliance, leading the Americans to block access to their lucrative consumer market, freeze advanced technology transfers, or cut off the uranium fuel supply. Furthermore, Washington might sever its security and deterrent commitments, thereby requiring Tokyo to invest in its own military defense. Establishing a secure second-strike nuclear deterrent capability for an island nation with a concentrated urban population base would not be simple, especially since the government preferred to focus on economic rather than military development. As long as the U.S.-Japan security pact remained firm, the limited benefits of fielding an indigenous Japanese deterrent paled in comparison to the costs.

While the strategic calculus weighed against proliferation, Japan faced a credible commitment problem because its nuclear latency provided the technical capacity to produce nuclear weapons. Japan's incentives not to proliferate could change in the future. If Japan faced a situation where proliferation outweighed the economic costs to foreign trade or the security risks of leaving the American nuclear umbrella, the government could readily field a nuclear force. American and Japanese analysts and politicians attuned to the proliferation potential of Japan's emerging nuclear fuel cycle capabilities recognized this problem at the time. The United States worried that Japan might decide at some point to exercise its nuclear weapons option, while hardline elements in the Japanese diet advocated for a hedge strategy that would maintain their ability to breakout

at any time.[10] As Japan acquired the full nuclear fuel cycle, it had to choose whether to keep the weapons option open or to solve the credible commitment problem.

Energy security and the proliferation calculus go a long way in explaining why Japanese leaders eventually decided to foreclose the nuclear weapons option. As Japan's economy became increasingly dependent on foreign trade, the political survival of government leaders was linked to their ability to maintain the flow of resources into the country and penetrate new consumer markets abroad. The genesis of the Nonproliferation Treaty (NPT) regime in 1968 placed pressure on these elites to further commit to nonproliferation or risk endangering critical uranium fuel supply contracts and trade opportunities. After stalling, Japan signed the NPT in 1970, and made a series of nonproliferation promises backed by a powerful mix of commitment mechanisms. From tying hands with democratic institutions to making large investments in the nuclear reactor infrastructure, these actions created self-enforcing penalties on a future Japanese decision to proliferate, and sunk costs into maintaining the civil nature of the nuclear energy program. By the end of the 1970s, Japan had credibly committed itself not to exercise its nuclear weapons hedge option.

Yet these standard explanations of Japan's nuclear restraint cannot account for the period between 1964 and 1976 when government leaders delayed committing the country to its nonnuclear path. This deferral was most visible when Japan took almost two years to sign the NPT in 1970, and waited another six to ratify in 1976, but also manifested itself in the general reluctance of the government to make firm nonnuclear promises

[10] The second part of the chapter presents evidence to support these claims.

throughout the 1960s.[11] Since the strategic calculus that militated against proliferation had already solidified, it seemed natural for Japan to solve the credible commitment problem as quickly as possible. Indeed, Japan's desire for energy security, mercantile political economy, and the U.S. security pact were already strong, and should have over-determined an early promise not to proliferate by at least the time the NPT originated in 1968.

Furthermore, the lapse cannot be excused by domestic political paralysis or nuclear ambivalence because the Japanese leadership actually signaled future intent to proliferate during this time.[12] Under the leadership of Prime Minister Eisaku Sato from 1964 until 1971, government elites made a series of explicit statements in support of pursuing Japan's nuclear weapons option. The most infamous remarks came from Sato himself. In 1964, the Premier urged a "crash program to develop nuclear weapons" because China's nuclear test made it "only common sense for Japan to have nuclear weapons," and later told a stunned room of American diplomats in 1969 that an initial nonnuclear rhetorical pledge to the Japanese public was "nonsense."[13] Yet despite Sato's pro-nuclear signaling, "it was during his tenure that Japan formalized its non-nuclear

[11] George H. Quester, "Japan and the Nuclear Non-Proliferation Treaty," *Asian Survey* 10, no. 9 (September 1, 1970), pp. 765–778; Monte R. Bullard, "Japan's Nuclear Choice," *Asian Survey* 14, no. 9 (September 1, 1974), pp. 845–853; John E Endicott, *Japan's Nuclear Option: Political, Technical, and Strategic Factors* (New York: Praeger, 1975).

[12] A blow to the LDP's coalition in the Diet did stall ratification of the NPT for a year in 1975, but Japanese leaders had already concluded intra-alliance bargaining and committed the country to its nonnuclear course by this point. For a detailed analysis of these domestic political factors, see John E. Endicott, "The 1975-76 Debate Over Ratification of the NPT in Japan," *Asian Survey* 17, no. 3 (March 1977), pp. 275–292. On nuclear ambivalence, see Itty Abraham, "The Ambivalence of Nuclear Histories," *Osiris* 21 (January 1, 2006), pp. 49–65.

[13] These specific comments by Sato are widely cited and employed in the political science and policy literature to reach a wide spectrum of conclusions about Japan's nuclear program. As the next part of this chapter demonstrates, these remarks must be placed within the proper intra-alliance bargaining context. For full archival citations on Sato's remarks, see the footnotes in the second part of the chapter.

position."[14] Sato highlighted Japan's proliferation potential and intent throughout the 1960s, but then put Japan on the path to become the emblematic nonnuclear weapon state it is today. Why did Japan drum up the latent nuclear weapons threat from its plutonium program only to become a global nonproliferation champion a few years later?

The proliferation persuasion argument at the core of my dissertation provides an answer. Japan waited to commit because nuclear latency enhanced its bargaining power over the United States in the alliance relationship. Three factors drove the Japanese to use proliferation potential as an instrument of diplomatic leverage. First, several outstanding conflicts of interest created a watershed moment during the 1960s for the management of the alliance. Japan wanted to resolve the territorial status of the Bonin and Ryukyu island chains in the Western Pacific, where an important American military base sat on Okinawa. As Japan's economy grew at a rapid rate, leaders in Washington pushed the government in Tokyo to make greater economic and military contributions to the alliance, much to the chagrin of the Japanese.

Second, Japan had already failed twice to get these issued resolved. As the next part of the chapter presents in detail, Japan negotiated with the United States for the return of the Western Pacific islands in 1951 and 1957 to no avail. Japan's relative bargaining power was quite limited in the alliance relationship during the 1950s. A high degree of dependence on the United States for economic assistance and military defense constrained the ability of Japanese leaders to reach deals in their favor. Washington saw little reason to voluntarily change the status quo as long as these issues did not fester and unravel the alliance. Therein lay a key vulnerability for the Americans. Since they had a strong strategic interest in maintaining the alliance, Japan could strengthen its bargaining

[14] Campbell and Sunohara, "Japan: Thinking the Unthinkable," p. 225.

power by threatening the longevity of the relationship. Yet given Tokyo's dependence on Washington, such a threat lacked credibility. Japan needed a believable means to challenge the alliance without sabotaging the strong mutual interests at its core.

Third, Japan started to acquire such a bargaining instrument as it developed key nodes of the nuclear fuel cycle in the 1960s. Nuclear latency gave Japanese leaders several points of leverage over the United States. The potential to proliferate provided a credible exit option from the U.S. extended deterrent. Japan was no longer involuntarily dependent on the American nuclear umbrella. Even if Tokyo decided to field its own nuclear deterrent, the United States might still be forced to defend Japan if a conflict emerged with the Soviet Union or the Chinese Communists. A more independent nuclear Japan could thereby entrap the United States in an unwanted and dangerous crisis.[15] "While it is true that Japan would gain little from the acquisition of her own nuclear weapons, and might even lose greatly," nuclear latency gave Japan bargaining power precisely because the United States "would also be affected adversely, and would, therefore, have an interest in preventing Japan from developing a nuclear program."[16] As a result, Japan had the ability in the 1960s to use nuclear latency as a bargaining chip to resolve conflicts of interest in the alliance.

Yet success was not predetermined. Japanese leaders needed to hit a delicate sweet spot. If Japan did not play up its capability and possible intent to produce weapons, then the proliferation threat would be too weak to compel concessions. On the other hand, a strong explicit threat to proliferate unless Washington returned the Western Pacific

[15] Glenn H. Snyder, "The Security Dilemma in Alliance Politics," *World Politics* 36, no. 4 (July 1, 1984), pp. 461–495; Timothy Crawford, "The Endurance of Extended Deterrence: Continuity, Change, and Complexity in Theory and Policy," in *Complex Deterrence: Strategy in the Global Age*, ed. T. V. Paul, Patrick M. Morgan, and James J. Wirtz (University Of Chicago Press, 2009).
[16] Kosaka, "Japan's Nuclear Options," p. 103.

Islands might damage the alliance and render nonnuclear promises worthless. Effective intra-alliance bargaining required subtle but believable proliferation threats linked tacitly to Tokyo's demands. The United States also needed a credible promise from Japan that they would not use their nuclear fuel cycle infrastructure to jump-start a military weapons program in the future. The next part of the chapter explains the failure and success of several attempts by Japanese leaders to use nuclear latency as a bargaining tool.

(2) Explaining Proliferation Persuasion between Allies

When did Japan's nuclear latency offer intra-alliance bargaining leverage? My theory of coercive diplomacy with nuclear technology claims this capability only confers an advantage when the proliferation threat is backed with a credible nonproliferation promise. The leadership in Tokyo had to make proliferation threats without unraveling the alliance, and promise Washington that compliance would be rewarded with nuclear restraint. In other words, Japan had to solve the credible commitment problem intrinsic to nuclear latency.

When it came to making believable nonproliferation promises, Japanese leaders benefited from a major advantage identified by my theory. Japan's nuclear fuel cycle had just started to mature during the 1960s, and did not produce significant quantities of fissile material until the late 1970s. I argue that challengers in general are most willing and able to implement a strong mix of nonnuclear commitment tactics when the proliferation threat is relatively moderate. At a low level of nuclear latency, Japan could more readily sink costs into the civil nuclear infrastructure as it expanded. The long lead-time needed to produce fissile material and craft a nuclear device at this stage also enhanced the punishment costs Japan would bear from breaking a promise and attempting

to breakout over several years. The nascent stage of sensitive nuclear fuel cycle assets thereby increased both the range and efficacy of tactics needed to make a credible nonnuclear promise.

This part of the chapter argues that nuclear latency did indeed offer Japan the most coercive political leverage at an emerging stage of technical development. To support this claim, I collect evidence from two types of primary source archival documents. Declassified and released reports from the United States intelligence community (often with redactions) provide insight into how Washington assessed the threat of proliferation from Japan's nuclear program, as well as the strength of various constraints and promises to remain nonnuclear. Declassified summaries of secret closed door summit meetings between Japanese and American leaders shed light on the actual practice of proliferation persuasion within the alliance. As these records indicate, threats to go nuclear were sometimes subtle and linkages to demands often came with a diplomatic wink, but the basic logic of coercive diplomacy was still at play.

I explain variation in four separate bargaining episodes between Japan and the United States over a common set of issues related to the Western Pacific islands and defense burden sharing. The first (2.1) explains how Japan's underdeveloped nuclear latency led to the failure of an initial proliferation threat in 1957. The second (2.2) focuses on a renewed effort by the Japanese leadership in 1964 to set the stage for negotiations by linking the prospect of proliferation to the territorial reversion of Okinawa. The third (2.3) and most extensive episode details five years of negotiations to show how the Japanese leadership was able to strike a deal centered around a nonproliferation commitment in exchange for Okinawa. The fourth (2.3) episode presents

an epilogue on the strength of the deal through some of the worst years in the alliance relationship during the 1970s.

(2.1) An Empty Proliferation Threat during the Treaty Renewal Crisis [1957-1960]

From 1957 to 1960, Japan and the United States endured the first major crisis in the alliance over the territorial reversion of Okinawa, as well as the strength of American security commitments and burden sharing. This section reviews the genesis of the alliance in 1945 to identify a set of common and conflicting interests that brought together leaders in Tokyo and Washington while creating several fault lines in the relationship. I then turn to focus on the intra-alliance crisis that emerged in 1957 over these outstanding issues. In the midst of negotiations, Japanese leaders made a veiled threat to acquire an independent nuclear deterrent. This warning had no impact on the Eisenhower administration because Japan lacked the nuclear fuel cycle technology sufficient to pose a credible risk of proliferation. The United States resisted until the Japanese were forced to capitulate and maintain the status quo. This episode sets a baseline to explore how Japan's subsequent entry into the ENR zone conferred a bargaining advantage over the same set of issues less than five years later.

The alliance pact between Japan and the United States originated as a means for former combatants to pursue a common set of security, economic, and political interests. A defeated Japan lay under occupied administration by the United States from 1945 until 1951. The terms of surrender required Japan to disband its military forces, and rely on the United States to counter threats from the Soviet Union, Communist China, and North Korea. During this time, Japan needed extensive assistance from the United States to rebuild its devastated economic and political systems. Here again Washington and Tokyo

had common political interests in liberal democracy and a shared economic vision of reconstituting Japan as a powerful mercantile hub in East Asia. As the Cold War heated up, John Foster Dulles worried that if Japan's "ability to produce modern types of precision weapons" should ever fall into the Soviet sphere, then Stalin would be "invincible," thereby making the U.S.-Japan relationship central to the "free world's very survival."[17] Despite Tokyo's considerable dependence on Washington after World War II, a common set of interests and the strategic value of Japan created a strong foundation for the alliance relationship with the United States.

Beyond this shared ground lay several conflicting issues that came to the fore during discussions over the official terms of the post-occupation treaty alliance in the summer of 1951. When Prime Minister Shigeru Yoshida sat down with Dulles to finalize the return of sovereign administration, both sides agreed that a tight nexus between the American security umbrella and Japanese economic growth constituted the core of the alliance. Japan would remain dependent on U.S. forces for its defense, "but this same dependence was to be used to free up resources Japan needed to become economically autonomous."[18] But Dulles insisted on retaining territorial control over the Ryukyu and Bonin islands in the Western Pacific, while Yoshida demanded their return to Japan. The U.S. had acquired these islands at great cost during the war, and a critical military base now sat on Okinawa. Dulles ended up giving "an important sop to Yoshida by holding the bases but recognizing Japan's 'residual sovereignty' in the islands."[19] This symbolic but vague phrase allowed the United States to maintain control over the islands

[17] Quoted in Walter LaFeber, *The Clash: U.S.-Japanese Relations Throughout History* (New York: W.W. Norton, 1998), p. 298.
[18] Ibid., p. 289.
[19] Ibid., p. 290.

indefinitely. Yoshida also preferred Washington continue to shoulder the defense burden, while Dulles signaled that Japan needed to rearm and contribute to its defense at some point in the future. Although Yoshida and Dulles were able to reach a compromise and sign a formal treaty in September 1951, territorial control of the Western Pacific islands and defense burden sharing became fault lines in what was otherwise a strong allied partnership.

The first crisis in the alliance emerged over these issues several years later. According to the provisions laid out by Yoshida and Dulles, the U.S.-Japan security treaty had to be renewed by 1960. Trouble started to brew in 1957 when Prime Minister Kishi Nobusuke assumed office and passed the American ambassador in Tokyo a list of Japanese stipulations for renewal. The Premier requested the return of Okinawa and the Bonin Islands to Japanese control, sought greater independence from American foreign policy, and "wanted a new understanding of the entire issue of security."[20] These demands stemmed from two problems. First, vocal segments of the Japanese public and political elite viewed the occupation of the Western Pacific islands as intolerable subordination. Second, Eisenhower's New Look defense policy raised the prospect that Tokyo might be entrapped in a nuclear conflict with the Soviet Union. Under the New Look reorientation, the U.S. reduced its troop footprint in Japan, and left behind an overwhelming contingent of Air Force personnel. If a conflict escalated to nuclear exchange, this force ratio signaled to the Japanese that the United States would use their local bases to wage such a war against the Soviet Eastern flank. Kishi set out in 1957 to solve these problems by renegotiating terms of the alliance.

[20] Ibid., p. 316.

With support from former Premier Yoshida, Kishi attempted to back up his bargaining position by suggesting that Japan might pursue an independent nuclear deterrent capability. In January 1957, Yoshida laid out the case for Japan to acquire nuclear weapons as an option to counter entrapment scenarios from the American New Look defense reorientation.[21] Kishi then told his cabinet, "There would be nothing against using nuclear weapons if they were within the limits of self-defense."[22] This signaled that proliferation was legal under Article IX of Japan's Constitution, which permitted the buildup of military force only for defensive purposes. Rather than make an explicit proliferation threat, Yoshida and Kishi worked more subtly within the parameters of the alliance to suggest that Japan might soon be able to pursue a more independent foreign policy.

Diplomatic maneuvering over Japan's proliferation intent rested on an empty technical foundation, however, as the country had no nuclear fuel cycle technology at all. Japan started its nuclear energy program in 1956 with the backing of the United States, and was almost entirely dependent on foreign assistance when Yoshida and Kishi attempted to strengthen their position. Washington exerted too much control through technology transfers and uranium fuel supply at this stage. If the U.S. cut off assistance and pressured other foreign suppliers to follow suit, Japan would be left with a stillborn nuclear energy project.[23] In this sense, during the 1950s, the United States could essentially *prevent* Japan from proliferating for a long period of time. As a result, Japan did not have the nuclear latency necessary to send credible signals over proliferation

[21] John Welfield, *An Empire in Eclipse: Japan in the Postwar American Alliance System* (Atlantic Highlands, NJ: Athlone Press, 1988), pp. 110–111, 157.
[22] LaFeber, *The Clash*, p. 316.
[23] Gilinsky and Langer, *The Japanese Civilian Nuclear Program*, pp. 1–4, 15–26.

intent. Yoshida and Kishi made the untimely decision to engage in proliferation diplomacy when other states could still deny Japan the ability to realize this option.[24]

The Yoshida-Kishi proliferation threat therefore had little impact on the political leadership in Washington. Premier Kishi visited the White House in June 1957 to formally present his demands and bargain over the renewal of the security pact with President Eisenhower and his cabinet staff. No evidence exists in the public domain that the Eisenhower Administration considered Japanese proliferation to be a concern when negotiations began. Eisenhower stonewalled Kishi, who then started to lose domestic support and faced electoral challenges in the Japanese Diet. Eisenhower's cabinet seized on this weakness in October 1958 and gave Kishi "a new draft treaty little changed from the 1952 pact. The draft did explicitly promise the U.S. defense of Japan … In return, Americans were to be able to use bases in Japan to defend the Pacific region."[25] The Japanese public responded to this retrenchment of the status quo over Okinawa with a series of riots and vociferous protests over the next few years. By January 1960, Kishi capitulated to domestic unrest and allied pressure, and flew to Washington to sign the treaty. "The 1960 treaty, unlike the old, explicitly committed the United States to defend Japan, and to consult with the Japanese before putting forces into action under the pact's provisions."[26] However, Kishi had not obtained any concessions over the Western Pacific islands or the future of economic contributions to the alliance. As U.S. Assistant Secretary of State Graham Parsons privately bragged to the British, the 1960 treaty "gave

[24] As detailed in subsequent sections, the ability of other states to deny Japan the ability to proliferate in the 1950s is distinct from giving other states the power to punish Japanese proliferation later on in the 1970s.
[25] LaFeber, *The Clash*, p. 318.
[26] Ibid., pp. 319–320.

Washington everything it wanted."[27] Premier Kishi's inability to bargain with the United States for a more equitable alliance treaty and the ensuing domestic unrest in Japan ended his political career.

The first alliance crisis between Japan and the United States provides a useful baseline for a number of reasons. The allies negotiated over a set of issues – Okinawa and defense burden sharing – that would reemerge in successive bargaining episodes. Furthermore, the basic asymmetric nature of the alliance relationship established at this time also carried into the next decade. Japan's economy grew at a rapid clip during the 1960s, but this did little to reduce its dependence on the United States. Finally, Yoshida and Kishi made a hallow proliferation threat in the midst of this initial crisis that failed to confer any negotiation leverage. This episode therefore sets a good foundation to explore continuity and change in the factors that increased Japan's relative bargaining power over a decade later, and hone in on the advantage bestowed by its subsequent acquisition of nuclear fuel cycle technology.

(2.2) Japan's Emerging Nuclear Latency and Sato's Proliferation Gambit [1964-1965]

After Kishi's departure, the fault lines in the alliance lay fallow under the subsequent Premiership of Hayato Ikeda for four years until Eisaku Sato became Prime Minister in November 1964. Under Sato's tenure, Japan bargained with the United States on multiple occasions to revise key elements of the alliance treaty. The conflicts of interest remained the same. Sato wanted Okinawa back, but the island was now of greater

[27] Ibid., p. 320.

strategic value for the American military engaged in Southeast Asian operations.[28] President Lyndon Johnson and later Richard Nixon pushed Sato to take on more defense responsibilities at home and in the region, but "it was virtually impossible to galvanize Japan into any substantial upgrading of its military forces."[29] Instead, Sato wrangled with the Americans for retrenched deterrent commitments to Tokyo, especially in the face of the Chinese nuclear threat.

Unlike his predecessors Yoshida and Kishi, Sato succeeded in these intra-alliance bargaining endeavors because he used Japan's nuclear fuel cycle technology to hit the sweet spot of a moderate proliferation threat backed by a strong promise of nuclear restraint. I break up Sato's diplomacy with the United States into two distinct episodes. In this section of the chapter, I focus on the period between 1964 and 1965 when Sato set the bargaining table by establishing a credible threat of proliferation linked to outstanding conflicts in the alliance. The subsequent section (T_3) explores in detail how Sato weaved together both proliferation threats and credible nonnuclear promises to reach a deal over the return of the Western Pacific islands.

In January 1965, Premier Sato met with President Johnson and Secretary of State Dean Rusk at the White House to begin the first negotiations over Okinawa since the 1957 crisis. At the summit, Sato made a veiled but clear threat of proliferation linked to the return of the Western Pacific islands. The Premier offered no promises to reward compliance by foreclosing Japan's nuclear weapons option, and did not gain any concessions from Johnson. Although not immediately successful, this episode illuminates the bargaining tactics employed by Sato to leverage Japan's budding nuclear fuel cycle

[28] Roger Buckley, *U.S.-Japan Alliance Diplomacy 1945-1990* (Cambridge [Eng.]: Cambridge University Press, 1995), p. 115.
[29] Ibid., p. 109.

technology. I show how Sato used the specter of a nuclear-armed China to enhance concern over Japanese intent to proliferate, and initiated a nuanced diplomatic variant of proliferation persuasion well suited to allied rather than adversarial relations.

(2.2.1) Sato Sets the Stage: Japan's Capability and Alarming Intent to Proliferate

Sato came into office just as Japan's nuclear industry started to mature. From November 1961 through March 1965, "no less than eight research reactors went critical," including the first indigenous Japanese reactor in 1962.[30] The knowledge gained from operating these and previous facilities spurred large nuclear reactor projects to handle the baseload of Japan's electricity production.[31] By 1964, thousands of nuclear physicists and engineers were trained with the technical expertise necessary to run and expand the civil nuclear energy infrastructure. To deal with the spent fuel from the growing reactor base, government and industry decided in June 1964 to acquire Japan's first commercial fuel reprocessing plant for the separation of plutonium at Tokai-mura.[32] Japanese scientists had already conducted a series of experiments in smaller facilities, and procured the design for a chemical plutonium separation plant from the French. Japan therefore acquired sensitive nuclear fuel cycle technology by the mid-1960s, and planned to scale up these civil latent nuclear capabilities within the next decade.

The proficiency and progress of these efforts led American intelligence analysts to reach two conclusions about Japan's capacity to produce nuclear weapons in 1964.

[30] Endicott, *Japan's Nuclear Option*, p. 114. The reactor was a natural-uranium fuel supplied heavy-water moderated reactor. Canada and the United States supplied the heavy-water for the reactor under safeguards.
[31] Japan Atomic Energy Commission (JAEC), "Long Term Program for Development and Utilization of Atomic Energy," – see Ibid., p. 115.
[32] To be clear, construction started in 1971. The facility was physically complete in 1974, and started operations in 1977. Japan is coded as being in the ENR zone during the mid-1960s because it was an industrialized state pursuing ENR with a highly plausible prospect of success given the aboveboard transfer of design information and assistance from the French. In other words, the Japanese possessed most of the pieces needed to reprocess plutonium, and were on the cusp of successfully operating this technology.

First, the Japanese nuclear infrastructure would soon start producing large quantities of plutonium, albeit for civilian purposes.[33] Small amounts of fissile material had already been separated on a laboratory scale, and the new plant at Tokai-mura would give them the ability to recover roughly a ton of plutonium a year. Furthermore, the indigenous Japanese research reactor was a natural-uranium fueled heavy-water moderated design well suited to the production of plutonium.[34] Second, as a result, Japan had "the industrial plant, technological capacity, and economic base to create a deliverable nuclear *force*, probably comparable to any in the world except those of the United States and the Soviet Union."[35] Sato assumed the Premiership just as Japan obtained the capability to become a formidable nuclear weapon state.

Despite Japan's strong technical foundation, foreign nuclear cooperation and economic trade dependence decreased the likelihood of proliferation. Both of these factors gave other states the ability to impose costs on Japan for using its civil nuclear energy program to acquire nuclear weapons. Japan's nuclear infrastructure continued in the 1960s to use foreign sources of technology and material. The United States was the dominant supplier of nuclear reactors and uranium enrichment services, while Great Britain and France helped build additional power plants and the plutonium reprocessing facility at Tokai-mura. Australia and Canada supplied natural uranium fuel and heavy water.[36] A mix of bilateral contracts and IAEA safeguards stipulated that these foreign suppliers would punish Japan for military use of this technology by cutting off resources

[33] Central Intelligence Agency, "Japanese Nuclear Energy Program," United States: Scientific Intelligence Report, November 18, 1964, NSA #JU00365, pp. 4-5.
[34] But since it was a 10 MW reactor, it could only make a bomb's worth every 3 years or so.
[35] Department of State, "Background Paper on Factors Which Could Influence National Decisions Concerning Acquisition of Nuclear Weapons," United States: Background Paper, December 12, 1964, NSA #NP01079, p. 10 (emphasis in original).
[36] Oye, Suzuki, and Skolnikoff, "International Responses to Japanese Plutonium Programs," p. 7.

and assistance.[37] The key difference from the 1950s was these countries could no longer directly *deny* Japan from acquiring nuclear weapons, as it had now started to master the nuclear fuel cycle. If Japanese leaders were willing to incur the penalties and supply chain disruptions, they now had the technical ability to produce nuclear weapons. The shift from proliferation denial to punishment during the 1960s was a critical change that facilitated Sato's use of nuclear latency as a bargaining chip.

At the same time, Japan's meteoric rise as a leading mercantile state made a nuclear weapons program increasingly unattractive and costly. Sato's tenure as Premier coincided with the rapid growth of Japan's economy and increased dependence on foreign trade. A substantial rise in the production of steel, automobiles, commercial ships, and electronic goods fueled an impressive ten percent average annual economic growth rate throughout the 1960s.[38] Trade imbalances emerged in Japan's favor with major consumer markets in the United States and Asia, and this prosperity ushered in an era of political dominance for Sato and his LDP party.[39] However, Japanese business needed to maintain a steady flow of exports to extant consumers and break into new markets. Japan also needed a stable supply of raw materials, energy, and food from abroad to fuel this industrial production. Any disruption to Japanese exports or imports would therefore threaten the political economic foundation of the country.

The larger Japan's economy became during the 1960s, the more Sato and the political leadership stood to lose from international missteps that engendered sanctions or

[37] Department of State, "Japan's Prospects in the Nuclear Weapons Field – Annex A: Technological Factors," United States: President's Task Force on Preventing the Spread of Nuclear Weapons, June 15, 1965, NSA #JU00485, p. 4.
[38] Okita Saburo, *Japan in the World Economy* (Kasumigaseki, Chiyoda-ku: The Japan Foundation, 1975), 12, 25.
[39] Buckley, *U.S.-Japan Alliance Diplomacy 1945-1990*, pp. 106–107. For example, in 1966, the United States sold Japan 2.4 billion worth of goods but purchased 2.9 billion in Japanese imports.

embargoes. Japanese grand strategy therefore strived to "avoid becoming a danger to any other country in the world."[40] The acquisition of nuclear weapons seemed antithetical to this 'economy first' foreign policy. "If Japan started to build up military strength then at least some other countries would interpret this as a dangerous sign and in turn fortify themselves militarily vis-à-vis Japan."[41] Nuclear proliferation held the risk of creating such a military spiral that would spillover into Japan's economy, and undermine the political power of the LDP party. So as the Japanese economy grew each year, it progressively constrained Sato's ability to exercise the nuclear weapons option.

Technical cooperation and foreign trade created exogenous costs to proliferation that limited Sato's freedom of action in the nuclear realm. The United States believed "it highly unlikely that Japan will choose to violate its safeguards commitments" because this move would "jeopardize future shipments of fuels and … technical assistance necessary for further advances in the nuclear field."[42] Instead, Sato was "more likely to launch an indigenous 'peaceful' nuclear power reactor program, which would facilitate a military program at a later date."[43] Some analysts even concluded that Japan's "dependence on trade … provides the United States with very considerable leverage in Japan."[44] Although Japan had rapidly expanding sensitive nuclear fuel cycle technology, its integration with the international economy and close relations with foreign suppliers produced strong political incentives not to proliferate.

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[40] Saburo Okita, "Natural Resource Dependency and Japanese Foreign Policy," *Foreign Affairs* 52, no. 4 (July 1974), p. 723.
[41] Ibid., p. 724.
[42] Department of State, "Japan's Prospects in the Nuclear Weapons Field: Proposed U.S. Courses of Action," United States: President's Task Force on Preventing the Spread of Nuclear Weapons, June 15, 1965, NSA #JU00485, p. 1.
[43] Arms Control and Disarmament Agency, "Comments on Non-Proliferation Background Papers of December 12, 1964. Secret," United States: Memorandum, December 31, 1964, NSA #JU00402, p. 4.
[44] Department of State, "Japan. Department of State Guidelines for Policy and Operations … March 1962," NSA #74095, quoted in LaFeber, *The Clash*, p. 334.

Sato faced a dilemma. To use Japan's nuclear latency as a bargaining chip, he needed to convince government leaders in Washington that Japan might be willing to pay the costs associated with proliferation if issues such as Okinawa were not resolved. But Sato could not make a public threat or take overt moves toward the bomb, because these actions would trigger the same costs he was trying to avoid. Sato needed the flexibility to modulate Japan's proliferation intent as negotiations progressed with the United States, and ultimately to recommit Japan firmly to nonproliferation once an acceptable deal was reached. China's test of a nuclear device in October 1964 provided a solution to this particular problem. While hardly welcomed by Japan, Sato could use the Chinese nuclear threat to emphasize the importance of the U.S.-Japan security pact while suggesting that Japan might need to field a nuclear force of its own over the long-term.[45]

The United States intelligence community already worried that the Chinese nuclear test might have a catalytic impact on Japanese nuclear incentives. A report from December 12th, 1964 cited China's proliferation as the key reason that Japanese leaders should be "closely watched" for signs they intended to use the "formidable potential" of Japan's nuclear energy program to produce weapons.[46] The first signals were detected by the end of the month. On December 29th, Sato told U.S. Ambassador Reischauer in confidence that "Japan could easily build [nuclear] weapons, and that the Japanese public would have to be educated to accept them."[47] Intelligence sources reported that Sato and other political leaders "have been privately urging that Japan soon undertake a crash

[45] Ibid., p. 340.
[46] Department of State, "Background Paper on Factors Which Could Influence National Decisions Concerning Acquisition of Nuclear Weapons," United States: Background Paper, December 12, 1964, #NP01079, p. 10 (emphasis in original).
[47] "Comments on Non-Proliferation Background Paper," p. 4.

program to develop nuclear weapons."[48] Sato reiterated this position in another private meeting with Reischauer on January 4th, 1965, noting that the Chinese nuclear threat made it "only common sense for Japan to have nuclear weapons."[49] By signaling a possible change in nuclear weapons policy, Japan's leadership set the stage to introduce nuclear latency as a diplomatic bargaining chip.

(2.2.2) Proliferation Diplomacy in Washington

Prime Minister Sato timed these actions to generate the greatest concern about Japanese nuclear intent, and then made his opening move at a summit meeting in Washington D.C. on January 9th, 1965. President Johnson and Secretary of State Dean Rusk were well aware of the intelligence reports on Japanese nuclear policy debates, and expected the proliferation issue to come up during a private meeting with Premier Sato. Sato had to walk a fine line at the meeting. While his private nuclear musings in Japan were effective, Sato could not risk making such blatant proliferation threats over alliance issues directly to the President. Instead, Sato employed a more nuanced tactic by subtly linking together Chinese proliferation, Japan's nuclear latency, and the reversion of Okinawa.

The declassified record indicates that the summit began as the Americans expected, with Sato raising the specter of a nuclear-armed China in a private meeting with the President. In return, Johnson offered a reconfirmation of the American deterrent commitment. "Since Japan possesses no nuclear weapons, and we do have them, if Japan needs our nuclear deterrent for its defense, the United States would stand by its

[48] Ibid.
[49] Secretary of State Dean Rusk, "Your Meeting with Prime Minister Sato," United States: Presidential Memorandum, January 9, 1965, NSA #JU00430, p. 3.

commitments and provide that defense."[50] After the two heads of state joined Secretary Rusk, Sato again worried that "Japan's lack of nuclear weapons" made them vulnerable to the Chinese. Johnson reiterated the extended deterrent pledge, and added that the United States did not want "to increase the number of nuclear powers."[51] The President made this request joined with the nuclear deterrent assurance in an attempt to quell Sato's purported nuclear ambitions.

With Johnson's nonproliferation request on the table, Sato immediately pivoted to the issue of Okinawa and the Bonins islands. The Premier acknowledged "the importance and necessity of the U.S. military installations on Okinawa," but then interjected a reference to Chinese proliferation. "Due to U.S. commitments under the U.S.-Japan Security Treaty, the Chinese Communist nuclear explosion had not had great impact in Japan." Without explaining this comment, Sato swung back to demand the return of Okinawa and the Bonins to Japanese control. The Japanese people, Sato explained, "ardently aspire" to regain sovereignty over the islands, as "it had been twenty years since the U.S. assumed control there. He was sure that the President understood what the feelings of the people of Okinawa and Japan on this matter are."[52] Sato deftly linked the future of the Western Pacific Islands to Chinese-Japanese nuclear ambitions.

Before President Johnson could respond, a flummoxed Dean Rusk asked Premier Sato to clarify the link between Chinese proliferation and Okinawa. "To what extent," Rusk inquired, had the Chinese nuclear test "changed reservations among the Japanese people concerning the U.S.-Japan Security Treaty and concerning the U.S. military

[50] Department of State, "Current U.S.-Japanese and World Problems [Part 1]," United States: Memorandum of Conversation, January 12, 1965, NSA #JU00436, p. 5.
[51] Department of State, "Current U.S.-Japanese and World Problems [Part 2]," United States: Memorandum of Conversation, January 12, 1965, NSA #JU00437, p. 1-2.
[52] "Current U.S.-Japanese and World Problems [Part 2]," p. 3.

presence in Okinawa?" Sato drove his point home. "It might be argued that if China has nuclear weapons, Japan should also." He quickly underscored that "this was not Japan's policy."[53] The threat was on the table, though. If the Americans agreed to return the Pacific islands to the Japanese, then the renewed strength of the alliance would obviate any need for Japan to acquire nuclear weapons and confront China. On the other hand, a failure to resolve the status of the islands in Japan's favor would endanger the alliance, collapse the nuclear umbrella, and hence risk Japanese proliferation.

In sum, Premier Sato set the stage for nuclear diplomacy with President Johnson by hinting at possible changes in proliferation intent. At the summit, Sato used China to link Japan's nuclear future to the territorial reversion of Okinawa. This opening move protected the alliance by eschewing the use of overt proliferation threats conditional on American behavior. Sato's nuclear diplomacy nonetheless set the basic process of compellence in motion. Japan would leave its nuclear weapons option open to ostensibly counter China until the United States strengthened the alliance by returning the Western Pacific islands. To reach a deal, Sato needed to back the proliferation threat with a strong promise to nuclear restraint.

(2.3) Islands for Nonproliferation [1965-1970]

With the bargaining table set, five years of negotiations began between Japan and the United States over the reversion of the Western Pacific islands. During the remainder of President Johnson's tenure, Sato advanced a deal to further commit Japan to a nonnuclear stance once the United States returned Okinawa. Just as this strategy started to yield benefits, the Nixon Administration entered office. Despite holding widely

[53] "Current U.S.-Japanese and World Problems [Part 2]," p. 4.

different views on global proliferation, Nixon maintained the same bargaining position with Japan set by his predecessor. Sato then led his diplomatic team in November 1969 to secure a final deal over Okinawa in exchange for ascension to the Nonproliferation Treaty. This section details the threats and promises made by Sato throughout negotiations with the Johnson and Nixon Administrations, and shows how Japanese leaders solved the credible commitment problem intrinsic to nuclear latency.

(2.3.1) Early Contours of a Package Deal Emerge

Although Sato's nuclear diplomacy in the winter of 1965 only set the stage to negotiate with the United States, this section shows how the basic parameters of a bargain emerged by the summer in three steps. First, the Johnson Administration responded to the Sato summit by updating their nonproliferation strategy towards Japan. The new objective was to seek additional nonnuclear promises from the Japanese leadership. Second, the emerging Nonproliferation Treaty regime provided an effective means for Japan to make such a credible commitment. Third, Japan's rejection of the NPT illuminated a conditional path forward based largely on resolving outstanding conflicts within the alliance. Thus, by the summer of 1965, the United States started to consider how to return the Western Pacific islands to the Japanese in exchange for ascension to the NPT.

Washington Updates its Nonproliferation Strategy Towards Japan

After the summit in Washington, work continued in Japan on plans for the plutonium reprocessing plant and a large reactor project with the British. The progress led

the U.S. intelligence community to estimate that Japan "could test its first nuclear device as early as 1971 without violating existing reactor safeguard provisions," and then produce ten to thirty weapons a year.[54] In addition, Japan had founded a "relatively sophisticated space program" with U.S. assistance that would have to capability to produce "as many as 100 nuclear-equipped MRBM's by 1975."[55] These rapid advances painted a stark picture. "A realistic assessment of Japan's prospects in the nuclear weapons field must thus recognize Japan's *capacity* to build its own nuclear force as a *near-certainty*."[56] The "important question" for the United States now became "whether the decision to develop this potential is likely to be made."[57] Japan was building a latent nuclear option, but uncertainty remained over the proliferation intent of the leadership in Tokyo.

The key problem for the Johnson Administration at this juncture was that Sato's nuclear diplomacy in the winter of 1965 created the perception that Japan's nuclear incentives were in flux. After the January summit, the U.S. intelligence community repeated the conclusion that Japan did not want to incur the international costs to its economy associated with proliferation, but now doubted whether these consequences would be enough to constrain proliferation over the long-term.[58] Sato suggested at the January 1965 meeting that China might force Japan to at least keep the nuclear option open indefinitely, especially if the U.S.-Japan alliance weakened over conflicting issues such as Okinawa. Sato's gambit at the summit worked so well because it introduced

[54] Department of State, "Japan's Prospects in the Nuclear Weapons Field: Proposed U.S. Courses of Action," United States: Memorandum, June 15, 1965, NSA #JU00485, p. 9.
[55] "Japan's Prospects in the Nuclear Weapons Field," p. 1.
[56] "Japan's Prospects in the Nuclear Weapons Field," p. 2.
[57] "Japan's Prospects in the Nuclear Weapons Field," p. 2.
[58] "Japan's Prospects in the Nuclear Weapons Field," p. 3.

uncertainty over whether Japan's dependence on trade alone would prevent the government from going nuclear in the future.

In response, Washington pursued a two-pillar strategy after the summer of 1965 to dissuade the Japanese leadership from exercising the nuclear option. The alliance relationship constituted the first pillar. The United States moved to strengthen the alliance because leaders in Washington believed it was the central bulwark that restrained Japanese nuclear ambitions. "Whether Japan undertakes to develop a nuclear weapons capability," an intelligence reported argued, will be determined by "the maintenance or weakening … of the U.S.-Japan security relationship as a whole."[59] Fortunately, the "extraordinary mutuality and complementarity of U.S.-Japan economic, political, and security interests" would likely keep the alliance together. Yet outstanding conflicts of interest, notably the issue of Okinawa and the Western Pacific Islands, needed to be resolved to keep the alliance strong.

The second pillar centered on seeking additional commitments from Japanese leaders that they would not proliferate in the future. The costs of proliferation to Japan's political economy were already high, but as Sato implied, these consequences might not be enough to bind Japan over the long run. To this end, Washington focused its efforts on convincing leaders in Tokyo to champion the forthcoming Nonproliferation Treaty (NPT). If Japan joined the vanguard to "limit the proliferation of nuclear weapons world-wide … its involvement would tend to *commit Japan more firmly to a non-nuclear role*."[60] As this U.S. policy recommendation made explicit, the NPT regime provided a

[59] "Japan's Prospects in the Nuclear Weapons Field," p. 3.
[60] "Japan's Prospects in the Nuclear Weapons Field," p. 14 (emphasis added).

means for Japanese leaders to make stronger nonproliferation promises to the United States and the international community.

The Nonproliferation Treaty as a Credible Commitment Device for Japan

International institutions do not always provide a credible means for states to signal incentives and make firm promises. For Japan, however, joining the NPT in the late 1960s would have interacted with the country's natural resource vulnerability and dependence on international trade to create four self-enforcing commitment mechanisms. Since ascension to the NPT became the primary tactic used by Sato to make a strong nonproliferation promise, this section reviews how exactly the treaty would act as a costly signal of Japan's nonnuclear incentives by enhancing punishments, locking in rewards, and sinking costs.

First, compliance with the treaty required Japan to sink an investment into making a promise of nuclear restraint at the outset. Once Japan signed and ratified the NPT, *all* nuclear facilities, activities, materials had to be placed under full scope IAEA safeguards. The web of existing bilateral nuclear cooperation agreements (NCAs) with foreign suppliers would also need to comport with IAEA standards. This required Japan spend scientific, industrial, and political capital on bringing the entire nuclear infrastructure into the new IAEA monitoring regime without damaging the economic bottom-line of electric power generation. Over time, these investments would continue to grow in tandem with the expanding plutonium program. By sinking costs into nonproliferation institutions, Japan could credibly reveal a firm incentive not to acquire nuclear weapons because a

committed state would be more likely to make this type of nonnuclear infrastructural investment.

Second, joining the NPT would further increase the potential range and intensity of punishment from other states. The expanded scope of IAEA safeguards to all nuclear activities and materials in Japan was the central cost enhancement. Japan's bilateral NCAs already restricted foreign supplied technology and material to peaceful applications. But Japan was starting to build its own nuclear fuel cycle capabilities *outside of existing NCAs*. If the decision was made to proliferate, Japan could avoid violating these NCAs by building a parallel military program with indigenous technology and a lax supplier of natural uranium fuel. However, once Japan joined the NPT, this sort of military activity would be in clear violation of their pledge to the regime, and risked sanctions and embargoes from other states.

The NPT-IAEA regime also gave other states a framework within the United Nations Security Council (UNSC) to levy more severe punishment. If Japan remained a nonmember of the NPT and acquired nuclear weapons, the onus rested on individual countries to decide whether and how to respond, especially if NCAs were not violated. As a member of the NPT, though, violation of safeguards or noncompliance with the IAEA could result in referral to the UNSC and eventual multilateral sanctions. Of course, the United States might ultimately veto harsh punitive measures against its strongest East Asian ally. But a decision to defect from the NPT down the road was likely to incur greater costs than if Japan remained outside the regime and kept open its option to build a parallel military program.

Third, the NPT promised to enhance and lock in several major benefits for Japan. The foremost advantage was an assured right to access foreign sources of nuclear technology and fuel under IAEA safeguards. The grand bargain of the NPT would facilitate Japan's efforts to diversify its uranium fuel supply chain. IAEA safeguards also provided a credible and transparent window into Japan's nuclear fuel cycle operations. Concerns about industrial espionage aside, joining the NPT thereby allowed Japan to demonstrate that it had not broken its nonnuclear promise. As Japan's plutonium program and nuclear latency continued to increase, Japan stood to benefit from reducing proliferation uncertainty and maintaining good relations with trading partners.

Fourth, Japan's domestic institutions further augmented the costs of defection and the benefits of remaining nonnuclear. This mechanism stemmed again from the close relationship between Japan's economic growth and the political survival of government leaders. The opportunity to join the NPT coincided with the legislative dominance of the LDP Party under Premier Sato's tenure during the 1960s. To hold onto this majority in the Diet, the LDP had to ensure conditions remained ripe for business. A decision to proliferate might jeopardize this foundation, especially if Japan incurred greater costs after the Diet signed and ratified the NPT. Defection from the NPT could automatically punish Japanese politicians in the Diet if enhanced sanctions and embargoes created an economic recession.

In sum, Japan represented a case where joining the NPT regime would give other states much more power to hurt it for reneging on a nonnuclear promise. Joining the NPT could also act as a sunk-cost multiplier of Japan's civil nuclear energy investment. By tying its hands and sinking costs into this new nonproliferation institution, Japan could

credibly reveal a firm incentive not to acquire nuclear weapons because only a committed state would implement these sorts of barriers and investments.

Japan Rebuffs Early Adoption of NPT

The United States circulated an early draft of the Nonproliferation Treaty to Japan in 1966 with the hope of attaining Tokyo's support. The Japanese government rejected the treaty on a number of grounds. The main objection came from the nuclear energy industry, which opposed the economic uncertainty and costs of compliance associated with more rigorous safeguards verification.[61] A large contingent of Japanese politicians backed the industrialists to demand assurances that the NPT would not restrict access to fissile materials or the full range of nuclear fuel cycle technologies. In essence, industry and government stipulated that Japan would only sink costs into the nonproliferation treaty if they received something in return. Other Japanese leaders made this point more explicit by arguing Japan's nuclear latency bestowed them with the leverage to negotiate for a better deal. Japan's Ambassador to the United States summed up this position. "Countries which have the capacity to produce nuclear weapons but do not want to do so should have more weight accorded their views."[62] These objections echoed the sentiments of other nonnuclear weapon states with burgeoning civil nuclear energy programs, such as West Germany, and were typical to negotiations over the NPT at the time.

The more unique factor was that Japan's opposition to the NPT became nested within the larger structure of the U.S.-Japan alliance relationship, and the ongoing quest

[61] Quester, "Japan and the Nuclear Non-Proliferation Treaty," p. 766.
[62] Department of State, "Position of Japan regarding Non-proliferation," United States: Secret Cable, February 24, 1966, NSA #JU00552, p. 2.

for the return of Okinawa.[63] The industrial objections were neither onerous nor exceptional, and could be readily resolved through negotiations with the IAEA over safeguards implementation. Rather, the core barrier to Japanese ascension lay outside the bounds of the actual treaty in the unresolved territorial status of the Western Pacific islands. Foreign Minister Takeo Miki made this issue linkage apparent when Japan formally rejected the draft NPT treaty in March 1967. He noted that Japan would not further commit itself to nonproliferation until the United States relinquished control of the Bonin and Ryuku islands.[64]

The Johnson Administration recognized the contours of the bargain being offered by the Japanese leadership. In response, they took the unprecedented step of figuring out how to return the Western Pacific islands on mutually acceptable terms. After Japan rejected the NPT, an April 1967 report from the embassy in Japan noted that, "U.S. policy towards the Ryukyu Islands appears to be nearing the limits of its current viability."[65] By August, the Office of the Secretary of Defense concurred. "We are confronted by a clear cut Japanese request to resolve the Ryukyu and Bonins question." The key was to retain "the most important U.S. military base in the Western Pacific" on Okinawa.[66] The military utility of these bases and facilities, especially in support of Vietnam operations, led the Joint Chiefs of Staff to oppose any change to the status quo. "For reasons of military security, it is important that the United States retain its present

[63] Selig Harrison, "Japan and Nuclear Weapons," in *Japan's Nuclear Future: The Plutonium Debate and East Asian Security*, ed. Selig S Harrison (Washington, DC: Carnegie Endowment for International Peace, 1996), p. 7.
[64] Mitchell Reiss, *Without the Bomb: The Politics of Nuclear Nonproliferation* (New York: Columbia University Press, 1988), p. 123.
[65] United States Embassy in Japan, "U.S. Policy Assessment – Japan," United States: Secret Airgram, April 17, 1967, NSA #JU00663, pp. 4, 8.
[66] Department of Defense, "Reversion of Okinawa and the Bonins," United States: Top Secret Memorandum, August 7, 1967, NSA #JU00699, p. 1.

administrative control over the Ryukyus."[67] The civilians at the Pentagon demurred, and pointed out that since the "Bonins and other Western Pacific Islands are of little or no importance militarily," the U.S. should "negotiate the return of these islands as a package with the Ryukyus."[68] Washington was now prepared to hand back the Western Pacific Islands if an acceptable deal could be reached.

(2.3.2) Sato's Strategy Makes Progress

Prime Minister Sato came quite close to finalizing a deal in Japan's favor over Okinawa during the final stretch of President Johnson's tenure. Two moves by the Japanese were of particular importance. First, Sato employed an effective mix of proliferation threats and rhetorical nonnuclear promises at a second summit with Johnson, and managed to get the Bonin Islands back from the United States without giving up much in return. Afterwards, the U.S. intelligence community reiterated that Japanese leaders were unlikely to exercise the nuclear option in the near-term, but might make such a decision in the future. Second, Japan then refused to sign the Nonproliferation Treaty when it opened for signature in 1968, thereby increasing the likelihood of long-term proliferation while signaling that ascension was possible in exchange for the reversion of Okinawa. By the end of the Johnson Administration, Sato's diplomatic strategy had yielded dividends over the Bonin Islands and pushed the issue of Okinawa to the front burner for the incoming Nixon Administration.

Second Round of Proliferation Diplomacy in Washington Yields Concessions

[67] Joint Chiefs of Staff, "Future Use of Ryukyuan Bases," United States: Top Secret Memorandum [Excised Copy], July 20, 1967, NSA #JU00695, pp. 1-2.
[68] "Reversion of Okinawa and the Bonins," pp. 1, 9.

A second summit between Sato and Johnson in November 1967 provided the opportunity to begin negotiating the islands-for-nonproliferation deal. In the lead up to the meeting, Johnson asked his cabinet to rank "the things we want to get from Japan," and the National Security Council formulated a bargaining strategy.[69] Walt Rostow proposed they negotiate a "trade-off" between Japanese sovereignty in the Ryukyus and Bonins "in exchange for Japanese military and financial commitments that would buttress American goals."[70] Three promises were of particular importance. First, reversion was conditional on "Japanese acceptance of whatever military rights in Okinawa we need there. The trick here is that we need nuclear [weapons] rights in Okinawa and that it will be hard for the Japanese to grant them explicitly."[71] Second, "we will need to obtain, in more concrete terms, commitments from the Japanese on picking up a greater share of the financial burden for regional assistance."[72] Finally, "the question of Japan's nuclear policy," particularity "a desire to preserve its option to undertake a nuclear weapons program," necessitated "adherence to the Non-Proliferation Treaty."[73] If Japan made firm promises over military basing rights, burden sharing, and nonproliferation, the United States would return the Western Pacific Islands to their sovereign control.

President Johnson attempted to extract such concessions during a private meeting with Premier Sato on November 15th. Rather than focus on military basing rights or nonproliferation, Johnson pushed Sato to shoulder more of the economic burden within the alliance. "We would be pleased to hear any offer by Japan [for] an increased defense

[69] Buckley, *U.S.-Japan Alliance Diplomacy 1945-1990*, p. 114.
[70] Ibid.
[71] Ibid., p. 121.
[72] Department of State, "Sato Visit – Preparatory Meeting," United States: Secret Memorandum, October 13, 1967, NSA #JU00774, pp. 3, 2.
[73] Department of State, "Talking Points for the NSC Discussion on the Ryukus and Bonins," United States: Secret Memorandum, August 29, 1967, NSA #JU00708, p. 3; Department of State, "Sato Visit – Preparatory Meeting," United States: Secret Memorandum, October 13, 1967, NSA #JU00774, pp. 3, 2.

responsibility … because the American people feel that we are spread thin by heavy commitments"[74] In exchange, Johnson offered the immediate return of the Bonins Islands, with follow-up discussions over Okinawa. Sato warmed to the offer, but avoided making any actual financial outlays.

As Johnson continued to press Sato on burden sharing, the Premier steered the conversation towards nuclear proliferation and the reversion of Okinawa. "Communist China is developing nuclear weapons and Japan may soon be threatened by a nuclear attack." Sato asked Johnson to reconfirm the extended deterrent commitment "in view of the discussions on the status of Okinawa."[75] Johnson reiterated the extended deterrent pledge, but Sato then made an ominous comment. "It is especially important to avoid any mistakes in handling the question of reversion because quite frankly, any mistakes could lead to *undesirable consequences* which would adversely affect future United States-Japan relations."[76] Johnson refused to take concrete steps over Okinawa, so Sato fleshed out his threat:

> The Prime Minister said emphatically that he placed the greatest importance on the solution of the Bonins and Ryukyu problem but since Japan is not a nuclear power and does not intend to become one, he also attaches the greatest importance to Japan's fundamental policy of providing for her security under the Security Treaty … Therefore, since these security arrangements are an absolute necessity

[74] Department of State, "President Johnson-Prime Minister Sato, Private Conversation," United States: Secret Memorandum of Conversation, November 14, 1967, NSA #JU00840, p. 10.
[75] Department of State, "U.S.-Japanese Relations and Security Problems," United States: Secret Memorandum of Conversation, November 15, 1967, NSA #JU00842, p. 4.
[76] "President Johnson-Prime Minister Sato, Private Conversation," p. 9.

> for Japan, Okinawa and Bonins must be viewed by Japan in these terms. Japan … wishes to know concretely what it can do to help … to return these islands.[77]

Sato implied that the "undesirable consequences" would be a fundamental breakdown in the U.S.-Japan security pact, and the resultant acquisition of nuclear weapons by Japan. Of course, as Sato also emphasized, Japan preferred to rely on the United States for security. Yet if Johnson failed to resolve the Okinawa issue, Sato underscored that the outcome – a rift in the alliance and Japanese proliferation – would be worse off for both the United States and Japan.

Sato reiterated this position in a subsequent meeting with Defense Secretary Robert McNamara. Whereas Johnson focused on burden sharing, McNamara confronted Sato over the subtle connections between Japan's nuclear future, the alliance, and Okinawa. At the outset, McNamara asked, "How [are] the Japanese people reacting to China's nuclear strength?" Sato responded, "Japan's whole security was based on its security arrangement with the U.S. … and had no intention to make nuclear weapons." McNamara countered by pointing out that Japan's potential to acquire nuclear weapons "related directly to the question of the Ryukyus and the natural desire of the Japanese for reversion." McNamara then cut right to the core of Sato's bargaining strategy. "The Secretary said he would be frank and candid. The Ryukyus were bound to revert to Japan. The question was not one of reversion but of bases and the Mutual Security Treaty, as well as the President's statements about responding to nuclear blackmail. These all carried unwritten assumptions that Japan would act in a way which would permit the use of bases." Sato indicated he was open to a deal that included reversion, but again warned

[77] "President Johnson-Prime Minister Sato, Private Conversation," p. 11.

that failure to do so would jeopardize the alliance. "If the problem were mishandled, it could become serious and the mutual objectives of Japan and the U.S. would not be attained." In response, McNamara conceded that he "could support reversion" of the Bonin Islands, and the two agreed to work out details over Okinawa at a later date.[78]

Sato left Washington in November with a deal that favored Japan. The United States returned control of the Bonin Islands, and set a plan in motion to revert Okinawa. In return, Sato gave Johnson little. Johnson demanded Japan share the costs of Pacific security, while McNamara pushed for military basing rights and nonproliferation promises. Sato stonewalled on burden sharing, but did make a subsequent nonproliferation gesture. Upon Sato's return to Japan, the Premier announced his 'Three Non-Nuclear Principles' to the Japanese Diet in December 1967: Japan would not manufacture, possess, or permit the introduction of nuclear weapons onto Japanese soil. While this rhetorical pledge was an encouraging signal, it did not significantly enhance the ability of the public to punish Japanese leaders for producing nuclear weapons. Many in Washington saw Sato's Three Principles as a ploy to gain the upper hand in negotiations over whether nuclear-armed U.S. military forces could be stationed on Okinawa.[79]

Sato managed to get the Bonins Islands back without giving up much in return. Since the real prize was Okinawa, Sato stalled on making binding commitments, but did send an important rhetorical signal with his public nonnuclear pledge. Sato was wise not to satiate Washington's demands without a firm deal on the table for Okinawa. The more surprising outcome from this summit was that Johnson and McNamara agreed to return

[78] Department of State, "Meeting between Prime Minister Sato and Secretary McNamara," United States: Secret Memorandum of Conversation, November 18, 1967, NSA #JU00845, pp. 5-6.
[79] Buckley, *U.S.-Japan Alliance Diplomacy 1945-1990*, p. 119.

the Bonins without any commitments from Sato at all. The Premier's subsequent December pledge to the Diet did little to foreclose Japan's nuclear option, and was not mentioned as a *quid pro quo* during the November negotiations. As a result, "the United States gave more than it got over the Okinawa question. The Japanese government could hardly complain at the gains it made at the expense of the United States from Sato's visit in the autumn of 1967."[80] In contrast to 1965, Sato managed to use the subtle threat of proliferation alone to gain bargaining leverage, but soon needed to decide Japan's nuclear future.

Deal Solidifies: Nonnuclear Commitments for Okinawa's Return

In January 1968, the United States intelligence community reiterated what had now become standard conclusions about Japan's growing nuclear latency. First, Japanese leaders were not likely to make the political decision to produce nuclear weapons within the next few years. The core of this short-term assessment rested on Japan's economic and increased foreign trade dependence. "The Japanese would not wish to damage the established and highly advantageous political and economic relationship with the U.S. This relationship, in which the U.S. consistently accounts for some 30 percent of Japan's trade, may be as compelling as its security requirements in guaranteeing Japan's continued desire to align itself with the U.S."[81] Japan relied on its main suppliers of nuclear fuel and technology for critical energy imports but also for continued access to their large consumer markets. "Japanese leaders are extremely sensitive over the health of an economy so dependent on foreign trade, and they are unlikely to pursue courses of

[80] Ibid., p. 120.
[81] Central Intelligence Agency, "Main Trends in Japan's External Relations," United States: Secret National Intelligence Estimate, January 11, 1968, NSA #JT00048, p. 7.

action which might jeopardize profitable markets and critical sources of supply."[82] By 1968, this rapid growth in trade increasingly enhanced the ability of these trading partners to punish Japan if it decided to proliferate.

Second, Japanese leaders still maintained the technical ability to produce nuclear weapons, and the intelligence community believed they might exercise this option in the future. A National Intelligence Estimate focused on the threat from China and a rift in the alliance as probable causes. "In these contingencies, Japan might give serious consideration to the development of nuclear weapons."[83] To hedge against the future, the report concluded that the "Japanese will not … foreclose the option to develop nuclear weapon systems." Another assessment reached a more worrisome forecast. "It seems certain that Japanese willingness to entertain the possibility of acquiring nuclear weapons … will increase."[84] Furthermore, "the proposed Nuclear Non-Proliferation Treaty has caused the most profound soul-searching in Japan" since it "raises the possibility of permanent self denial."[85] Sato and the political leadership were unwilling to bear the short-term costs of proliferation, but at the same time, U.S. intelligence analysts expected that they would not voluntarily commit Japan to a long-term nonnuclear path or sign the NPT.

This prediction bore fruit over the next few months, as Sato revised his nonnuclear pledge and Japan refused to sign the Nonproliferation Treaty. In February 1968, Sato addressed nuclear proliferation in the Diet again, this time translating his Three Nonnuclear Principles into the less constraining Four Nuclear Policies. Japan

[82] "Main Trends in Japan's External Relations," p. 4.
[83] "Main Trends in Japan's External Relations," pp. 5-6.
[84] Department of State, "Japan and Nuclear Defense," United States: Secret Intelligence Note, January 24, 1968, NSA #JU00878, pp. 4, 6.
[85] "Main Trends in Japan's External Relations," p. 4.

would continue to support the Three Nonnuclear Principles and rely on the U.S. alliance as long as its national security was guaranteed by doing so. The addition of this escape clause further eroded the strength of Sato's nonproliferation promise, thereby heightening the threat to the United States that its key ally in East Asia might go nuclear at some indeterminate date.

The prospect of Japanese proliferation became more tangible when the Nonproliferation Treaty opened for official signature in the summer of 1968, and Japan refused to sign. Scholars and government leaders in the United States made the connection to intra-alliance bargaining at the time. George Quester noted, "Japan indeed clearly signaled that concessions might be required to win approval of the NPT."[86] U.S. Ambassador to Japan Richard Sneider pushed the link further in his final cable to Washington during the last days of the Johnson Administration. Sneider believed Japan's rejection of the NPT signaled dissatisfaction with the pace of negotiations over Okinawa. As a result, "We have reached the point of no return on the reversion issue."[87] The return of Okinawa was therefore the key to Japanese nonproliferation. Note the change from the 1967 summit meeting. The leadership in Tokyo was now making it clear that they would commit to a nonnuclear path in exchange for Okinawa, whereas before Sato relied primarily on subtle threats mixed with weak rhetorical promises. The incoming Nixon Administration would have to decide whether to finalize such a deal with the Japanese.

(2.3.3) Continuity in American Policy and Posture towards Japan

[86] Quester, "Japan and the Nuclear Non-Proliferation Treaty," p. 771.
[87] Department of State, "Trip Report: Okinawa Reversion on the Front Burner," United States: Secret Memorandum, December 24, 1968, NSA #JU01028, pp. 1-2.

In contrast to the Johnson Administration, Richard Nixon entered office along with his chief foreign policy adviser Henry Kissinger in January 1969 with more lax views on nuclear proliferation, and deep skepticism of the Nonproliferation Treaty. Since the Nixon Administration appeared to be less sensitive to proliferation, Sato should have found it more difficult to use nuclear latency as a bargaining chip to conclude the Okinawa deal. This section shows that Nixon and Kissinger upheld a similar nonnuclear preference towards Japan, and adopted the same bargaining posture set forth by the Johnson Administration.

President Nixon and Secretary of State Kissinger were well known for their ambivalence towards the Nonproliferation Treaty and guarded optimism about the spread of nuclear weapons to allies. In an early National Security Decision Memorandum (NSDM-6), they directed "there should be no efforts by the U.S. Government to pressure other nations … to sign or ratify" the NPT.[88] This policy decision was important for two reasons. Foremost, the directive represented new strategic preferences that lay at odds with the previous administration. Kissinger had long opposed the unenforceable nature of the treaty, while Nixon "argued that 'treaties don't necessarily get U.S. very much' and that if a country wanted to 'make their own weapons' they could 'abrogate the treaty without sanction.'"[89] Second, at the tactical level, the policy memo meant that Nixon himself would not apply direct pressure on other heads of state to sign the NPT. Nixon and Kissinger believed that for many countries, the NPT alone was a weak commitment device.

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[88] National Security Council, "National Security Decision Memorandum 6," United States: Secret Memorandum, February 5, 1969, Nixon Virtual Library.
[89] Frank Gavin, "Nuclear Nixon: Ironies, Puzzles, and the Triumph of Realpolitik," in *Nixon in the World: American Foreign Relations, 1969-1977*, ed. Fredrik Logevall and Andrew Preston (Oxford; New York: Oxford University Press, 2008), p. 139.

Nixon and Kissinger were also willing to pursue other geopolitical goals at the expense of nonproliferation efforts. A chief objective was to force allies in East Asia to assume the economic burden of Pacific security.[90] Under the Nixon Doctrine, treaty commitments and nuclear umbrellas remained in place, but Japan was "to be a leader in assuming the burden," even if this meant they might consider fielding an independent nuclear deterrent.[91] This view pervaded Nixon's National Security Council, and led to a sanguine assessment of Japanese proliferation. If Japan acquired nuclear weapons "to assume its own defense against China," one council staffer pondered, "would this necessarily be against our long range interests? If so, what steps, if any, would we take – could we take – to keep Japan from going nuclear?" At first glance, the Nixon Administration's stance appeared to be at odds with cutting a deal that required U.S. concessions in return for a treaty-based promise from Japan, and should have undermined Sato's ability to continue using nuclear latency as a bargaining chip.

Several factors weighed in Sato's favor, however. Nixon and Kissinger were not the first American statesmen to push nonproliferation behind other foreign policy objectives. John F. Kennedy's Administration "did little to halt proliferation," and even the advocates of more active nonproliferation policy in the Johnson Administration had to rank this preference alongside other goals.[92] For Japan, though, U.S. objectives remained relatively the same at the outset of Nixon's tenure. Johnson had pushed Sato to assume a greater share of Pacific security without fielding an independent nuclear

[90] Nixon's Guam doctrine "clearly stated that the U.S. would no longer bear the primary defense burden of its Asian allies. Implementation of the policy took the form of a general drawdown of forces in the region from 730,000 in January 1969 to 284,000 by December 1971 [7,000 troops from Japan and 20,000 from Korea]." See Victor D. Cha, "Abandonment, Entrapment, and Neoclassical Realism in Asia: The United States, Japan, and Korea," *International Studies Quarterly* 44, no. 2 (June 1, 2000), p. 273.
[91] LaFeber, *The Clash*, p. 349–350.
[92] Francis J. Gavin, "Blasts from the Past: Proliferation Lessons from the 1960s," *International Security* 29, no. 3 (December 1, 2004), p. 102.

deterrent. Nixon extended this position to its logical conclusion by placing Japan's leadership role within the context of an American conventional force drawdown from the region. The nuclear umbrella maintained U.S. security commitments and undercut incentives to proliferate among leaders in Tokyo. The Nixon Doctrine thereby remained remarkably similar to Eisenhower's New Look defense reorientation and Johnson's reliance on extended deterrence to stop the spread of nuclear weapons among allies.

Even more important than this continuity in U.S. foreign policy was the simple fact that the Nonproliferation Treaty would further lock Japan onto a nonnuclear path. As mentioned before, Japan's high dependence on trade created and enhanced a set of interlocking self-enforcing commitments once it joined the NPT. While Nixon and Kissinger aptly underscored the unenforceable nature of the regime for many countries, Japan was an important exception. If the leadership in Tokyo signed the NPT, this would allay concerns in Washington about Japanese long-term proliferation intent. In this case then, the treaty promised nonproliferation dividends to the U.S. without having to relinquish concessions over major core interests. A deal to return Okinawa in exchange for a strong nonnuclear promise and military basing rights fit squarely within the bounds of realpolitik statecraft. At a tactic level, Nixon could still uphold the letter of NSDM-6 by relying primarily on his cabinet to negotiate the specifics of the package, thereby alleviating him of the need to apply direct pressure on Sato to sign the NPT in exchange for Okinawa.

To assess the impact of such a bargain, Nixon and Kissinger requested a reevaluation of Japan's nuclear program from the intelligence community in January 1969. The reports began with the conventional wisdom. Over the next few years,

Japanese proliferation was not likely because it might harm trade relations. "Deep-seated suspicions and concerns in some neighboring countries, perhaps prompted by indications of Japanese reluctance to sign NPT, can have a restraining effect. For above all, Japan does not [repeat] not want anything to interfere with her hopes for greater prestige and substantial commerce with East Asian nations."[93] However, by delaying ascension to the NPT, Japanese politicians sought to keep the weapons option "open indefinitely."[94] The intelligence reports again underscored the central role of the NPT for the future of Japan's proliferation calculus.

The key update in the assessments for Nixon and Kissinger concerned the link between Okinawa and proliferation. Even in reports as late as January 1968, the intelligence community treated the uncertainty over Japanese proliferation intent as an issue distinct from the reversion of Okinawa. One year later, analysts were now drawing direct connections in their proliferation risk models. As one report predicted, a failed Okinawa bargain might "constitute a turning point" by stimulating "a Japanese decision to plot a more independent military course" that would "entail serious consideration of nuclear arms development."[95] Analysts pinpointed Okinawa as the conflict most likely to spiral out of control and undermined the alliance, thereby driving a Japanese decision to proliferate. Since this would be a suboptimal outcome for both allies, it was in the interest of the U.S. to resolve the issue and keep Japan nonnuclear. By January 1969, the intelligence community had coalesced around the core bargain proposed by Premier Sato: Okinawa should be returned on mutually favorable terms to ensure a nonnuclear Japan.

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[93] Department of Defense, "Response to NSSM 9: Review of the International Situation as of January 20, 1969, Volume V--Noncommunist Far East-Japan," United States: Secret Report, January 20, 1969, NSA #JA00036, p. 28.
[94] "Response to NSSM 9," p. 3.
[95] "Response to NSSM 9," p. 15.

As diplomacy over Okinawa resumed with Japan in late January 1969, the Nixon Administration adopted the Johnson Administration's bargaining strategy. Throughout the winter, Kissinger led discussions with the Japanese to determine the details of what the United States was going to get in return for reversion. As one scholar put it, "Before making major concessions on this score [Kissinger] hoped first to put Japan on the rack and screw out of its officials a deeper commitment to Asian affairs and an improvement in Japanese defense capabilities."[96] Kissinger and his team stressed that they only wanted Japan to buildup *conventional* forces necessary to assume basic defense missions. Despite a general insensitivity to global proliferation, the Nixon Administration continued to desire that Japan commit itself to a nonnuclear stance with the emerging NPT regime.

In July 1969, Kissinger sat down with his diplomatic team to formulate strategy over forthcoming negotiations with the Japanese leadership. Kissinger informed his team of a crucial update in their bargaining position. "The President has decided that we can agree to the reversion of administrative rights on Okinawa." However, agreement depended on firm Japanese concessions. "Our negotiating posture should reflect the fact that we will agree to reversion provided the price is right."[97] The price reflected the same bill presented to Sato by Johnson and McNamara in 1967: a commitment to nonproliferation, increased defense burden sharing, and ironclad military basing rights on Okinawa. As Nixon and Kissinger moved towards a high-level summit with Sato to strike a bargain in November 1969, they held steadfast to the position laid out by the previous administration.

[96] Buckley, *U.S.-Japan Alliance Diplomacy 1945-1990*, p. 122.
[97] Department of State, "Okinawa Negotiating Strategy," United States: Top Secret Memorandum and Strategy Paper, July 3, 1969, NSA #JA01092, p. 4.

(2.3.4) The Final Deal

While Nixon and Kissinger took stock of Japan's nuclear program and began preliminary discussions, Prime Minister Sato revived the proliferation threat. On January 14, 1969, Sato told Ambassador U. Alexis Johnson that Japan's Three Nonnuclear Principles were "nonsense," to the "astonishment" of those in the room. The Premier only made this oft-cited threat after lengthy talks on Okinawa started to deadlock. At the outset of the meeting with Ambassador Johnson, Sato "again emphasized the importance he attached to obtaining some agreement [over Okinawa] this year," despite the inevitable delay as the new administration took its bearings. The Ambassador countered that Japan needed to take on greater burden sharing and defense responsibility to make reversion more palatable to Americans. As Johnson continued to evade concrete action and hand wave, Sato dropped the "nonsense" threat to send a message. If the Americans continued to obfuscate the Okinawa issue, Sato reminded them that Japan merely had made weak rhetorical pledges to nonproliferation. A firm binding commitment required an agreement on full reversion.[98]

Sato's cabinet repeated this message more explicitly throughout the summer of 1969. Foreign Minister Kiichi Aichi sat down in August to discuss Japan's ascension to the NPT with Secretary William Rogers, and several "references to Okinawa arose as by products of discussion … of Aichi's explanation of [Japan's] attitude on NPT."[99] In a critical revelation, the Secretary emphasized that Nixon's updated stance towards the NPT under NSDM-6 *did not apply to Japan*. "Whatever information may have been

[98] United States Embassy in Japan, "Ambassador Johnson's Farewell Call on Prime Minister Sato," United States: Secret Cable, January 14, 1969, NSA #JU01039, pp. 1, 3.
[99] Department of State, "Secretary's Private Talk with Fonmin Aichi," United States: Secret Cable, August 3, 1969, NSA #JU01109, p. 1.

conveyed to GOJ that President not interested in this is not repeat not true [sic], and the President does indeed hope Japan will sign [the NPT]. U.S. did not want GOJ to feel it being pressured to do so, but the Secretary made clear that U.S. did hope GOJ would sign."[100] In response, Aichi emphasized to Rogers that Japan would only sign the NPT after a deal was reached on Okinawa. By the fall, U.S. intelligence sources confirmed this bargain. "Japan will probably sign the NPT [but] … a final decision, however, may well be dependent upon finding a formula … on Okinawa that Sato can accept."[101] The die was now cast. Once Nixon finalized an agreement over Okinawa, Japan would sign the NPT.

The Okinawa deal dominated the agenda of the November 1969 summit between Nixon and Sato at the White House. At the first meeting, Nixon dangled the reversion of Okinawa in an attempt to entice Japanese cooperation over trade and security issues. On trade, Nixon asked Sato to stem the flow of cheap Japanese textiles that were undercutting domestic markets in the United States. On the U.S.-Japan security relationship, defense burden sharing and nonproliferation became intertwined into a single demand. Nixon wanted Japan to develop "a significant military capability" and "assume a greater role" in the balance of power. But the President repeatedly "emphasized that he had been talking in terms of conventional military forces," and his vision of an enhanced defense role for Japan "did not mean that this should include a

[100] "Secretary's Private Talk with Fonmin Aichi," p. 3.
[101] Arms Control and Disarmament Agency, "Background – NPT Signature and Disarmament," United States: Secret Background Paper, November 1969, NSA #JU01141, p. 1.

nuclear capability."[102] If Sato promised to expand defense spending, keep the country on its nonnuclear path, and cut back textile exports, Nixon was willing to return Okinawa.

Nixon's offer was the first proposal from a U.S. President to return Okinawa on terms favorable to Japan's sovereignty. Sato praised Nixon for such a "magnanimous" decision, and made a series of initial promises and minor concessions. In contrast to his previous rumblings, Sato underscored that the government "felt very deeply that the Mutual Security Treaty between Japan and the United States should be extended for a 'considerably long period.'"[103] The Premier went on to link the rejuvenated alliance to Japan's nonnuclear position. "Japan had no other course but to rely on the United States' nuclear umbrella to insure its own security."[104] At a final meeting over Okinawa several days later, however, Sato raised Japan's strong stance "against nuclear weapons" as reason why "it was not necessary for Japan now to decide in haste to sign the NPT." Nixon then followed the letter but not the spirit of NSDM-6. "Each must do so in its own time … However, the United States would sign the NPT on Monday," and Nixon hoped Sato would soon follow Washington's lead.[105] As Secretary Rogers had made clear over summer, the United States wanted Japan to sign the NPT in exchange for Okinawa.

Sato also agreed to a vague expansion of Japan's regional security leadership role, and more tangibly, to cut back textile exports to U.S. markets. Nixon received little on both counts. Sato admitted that "Japan required additional air and naval self-defense

[102] National Security Council, "Prime Minister Eisaku Sato of Japan, The President [Part 1]," United States: Memorandum of Conversation, November 19, 1969, NSA #JT00079, pp. 8-9.
[103] "Prime Minister Eisaku Sato of Japan, The President [Part 1]," p. 4.
[104] National Security Council, "Prime Minister Eisaku Sato of Japan, The President [Part 3]," United States: Memorandum of Conversation, November 28, 1969, NSA #JT00079, p. 7.
[105] National Security Council, "Prime Minister Eisaku Sato of Japan, The President [Part 2]," United States: Memorandum of Conversation, November 21, 1969, NSA #JT00079, pp. 7, 9.

forces," and agreed to make modest but unspecified increases to its defense capability.[106] Nixon managed to extract a symbolic communiqué from the Premier that recognized South Korea and Taiwan as vital to Japan's security.[107] Unrelated to security, Sato did promise to cut back textile exports to U.S. markets. After this bargain was finalized behind closed doors, Nixon and Sato held a joint press conference to announce the return of Okinawa, but keep the parameters of the deal secret.[108] Sato returned to Tokyo in late November 1969 with a significant and symbolic victory for Japan. The Premier had successfully bargained for the return of Okinawa without giving up much except a firm pledge to nonproliferation.

With the historic agreement in place to return Okinawa, Sato followed through on his end of the deal and pushed the Diet to sign the Nonproliferation Treaty. After several months of legislative wrangling, Japan became a signatory to the NPT on February 3, 1970. In exchange for Okinawa, Japan was now starting to foreclose the nuclear weapons options. However, the Japanese government announced three conditions for ratification of the treaty. The first and third conditions echoed previous dissatisfaction with the pace of global disarmament and inequality of international safeguards, while the novel second condition "focused on the U.S.-Japan security relationship, rather than on the security of nonnuclear weapon states in general."[109] The Japanese government seemed to be setting the stage once again to wring out concessions from the United States, this time in exchange for ratification of the NPT. To be sure, Japan's ascension to the NPT

[106] "Prime Minister Eisaku Sato of Japan, The President [Part 1]," p. 10.
[107] LaFeber, *The Clash*, p. 350.
[108] On the public statement of this agreement, see Office of the White House, "Joint Communique between President Richard Nixon and His Excellency Prime Minister Sato," United States: Unclassified Press Release, November 21, 1969, NSA #JU01174.
[109] Okimoto, "Japan's Non-Nuclear Policy," pp. 314–316; Joseph Yager, "Japan," in *Nonproliferation and U.S. Foreign Policy*, ed. Richard K Betts and Joseph Yager (Washington, D.C.: Brookings Institution, 1980), p. 26.

constituted a strong nonproliferation promise, as it would be costly to reverse course at this stage. But with Okinawa scheduled to revert by 1972 amid increasingly turbulent relations, the Japanese leadership sought to delay tying the final knot in their nonnuclear promise.

In sum, Japan's threat of proliferation was ultimately successful in compelling the United States to return Okinawa when the Japanese leadership made a credible promise to remain nonnuclear, even if circumstances changed in the future. Several factors advantaged Sato's diplomatic strategy. The low but sufficient level of sensitive nuclear fuel cycle technology was being used purely for civilian applications, and Japan had already sunk costs into this civil infrastructure and tied the nuclear program down with bilateral contracts and safeguards. Sato's threat was more about the evolution of Japan's intent to proliferate down the road. Japan was also a special case where joining the NPT gave other states tremendous power to hurt it for reneging on the nonnuclear promise. Thus, at this early stage of nuclear latency, Sato could readily commit Japan to a long-term nonproliferation promise through the NPT.

(2.4) Epilogue: Keeping Promises and Shirking Burdens [1970-1976]

After the 1969 summit, Japan and the United States endured several turbulent years that sunk the alliance to its lowest point since the security treaty riots of the late 1950s. Throughout this period of frayed political relations neither ally wavered from the deal established over nonproliferation and Okinawa. Japan did not attempt to reverse its nonnuclear promises, and the United States returned Okinawa in 1972. In fact, the United States perceived Japan's nuclear commitment to be so strong within the alliance that President Nixon encouraged Premier Sato to delay ratification of the NPT to threaten

China. After Nixon left office, Japanese leaders instead used nuclear latency one last time to wring out a retrenched extended deterrent pledge from the United States before ratifying the NPT in 1976.

Jubilance over the return of Okinawa turned toxic by 1970 when Sato failed to cut back Japanese textile exports. "Sato's problem was that Japanese textile makers and, especially, their supporters in the government bureaucracy flatly refused to go along … the White House now considered Japan an 'enemy'."[110] Nixon began issuing coercive trade threats against Japanese business, and by the summer of 1971, let the U.S. dollar float to make Japanese exports more expensive.[111] In July, the President announced that Kissinger had secretly flown to Beijing to arrange a summit meeting for the following winter. The Japanese government reeled from Nixon's trade and China shocks.[112] In an ironic twist of fate, Sato's history of clever diplomacy in Washington became a domestic liability, and he lost the Premiership to a LDP rival in the summer of 1972.[113]

During this time, both sides held firm to their respective commitments over Okinawa and nonproliferation. Sato and Nixon met at the White House in January 1972 to discuss the forthcoming reversion of Okinawa. Even in the aftermath of Nixon's shocks, both leaders reaffirmed the 1969 deal. Okinawa would return to the Japanese within the year, and ascension to the NPT assuaged concerns in Washington over Tokyo's proliferation intent. Having signed the NPT, Sato asked Nixon whether the Diet should "move rapidly to ratify the NPT." Nixon no longer seemed worried about

[110] LaFeber, *The Clash*, p. 351.
[111] Ibid., p. 353.
[112] Ibid., p. 354. LaFeber also notes that during Nixon's travels in China, "the Chinese worried that Japan's growing number of nuclear facilities could turn out material for weapons," and wanted the U.S. to contain and curtail Japan's nuclear ambitions, see Ibid., p. 355.
[113] Buckley, *U.S.-Japan Alliance Diplomacy 1945-1990*, p. 131.

Japanese proliferation, and seized Sato's query as an opportunity to play Japan against China. "Japan might take its time, and thus keep any potential enemy concerned … In terms of serving Japan's interest in foreign policy he felt it better to cause its neighbors some concern, and not say specifically what it would not do."[114] In essence, Nixon encouraged Sato to delay further nonproliferation promises to threaten the Chinese. This would keep Beijing interested in dialogue with Nixon at the forthcoming February summit.

The trade war between Japanese and American business intensified during the 1970s after Sato and then a besieged Nixon left office. As the health of the alliance steadily worsened, the Japanese leadership arranged a meeting in April 1975 to exchange ratification of the NPT for a retrenched security commitment from Washington.[115] This would be last explicit bargain between the United States and Japan over the future of the nuclear program. Washington was eager to reach a deal for two reasons. First, Japan's nuclear fuel cycle made a significant leap forward when the Tokai reprocessing facility began cold testing in 1974. Japan would start to reprocess spent reactor fuel in 1977. Second, after four years of discussions in Vienna, Japan initialed a safeguard agreement with the IAEA in February 1975. "Its basic demands were met. Japan received most favored nation stSatus and was assured equality with Euratom's method of inspection."[116] With this hurdle cleared, Washington wanted the Diet to ratify the NPT as soon as possible.[117]

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[114] Department of State, "Meeting with Eisaku Sato, Japanese Prime Minister, on Friday, January 7, 1972 at 9:30 a.m. in San Clemente," Memorandum of Conversation, January 7, 1972, NSA #JU01500, p. 9.
[115] LaFeber, *The Clash*, p. 361.
[116] Reiss, *Without the Bomb*, p. 126.
[117] Endicott, "The 1975-76 Debate Over Ratification of the NPT in Japan," p. 280.

Debate over a bill to ratify the NPT in the Diet quickly became interlinked with negotiations in Washington over the alliance relationship and security pact. Prime Minister Takeo Miki arranged a meeting between Diet members and Henry Kissinger to attain a reconfirmation from the U.S. to the security treaty. Kissinger resisted and pushed Japan to assume more of the security burden in the alliance, especially in the context of the recent trade wars.[118] The Diet members proposed a deal. If Kissinger dropped the burden sharing demand while reaffirming the extended deterrent commitment, then the LDP party would submit the NPT to the Diet for ratification.[119] Once again, the NPT "became a lever used by the government to obtain a renewed commitment from the U.S.."[120] Kissinger folded on his burden sharing requests, and gave the Diet members an assurance to "continue, maintain, and strengthen" the security treaty.[121]

As promised, the Diet began deliberations over the NPT ratification bill in June 1975. Hawkish elements put up a last effort to stymie the legislation on the grounds that the NPT would "tie Japan's hands" over the nuclear option for decades. More pragmatic factions stressed ratification "was necessary to strengthen the U.S.-Japan Treaty structure."[122] The bill floundered as opposition parties froze the legislative process in the Diet, but the LDP pushed the bill through during the next session in January 1976.[123] As one observed noted at the time, "What Japan has ultimately done in this act of ratification is to reaffirm its faith in the U.S. nuclear guarantee."[124] After the final issue of burden

[118] Gerald L. Curtis, "Japanese Security Policies and the United States," *Foreign Affairs* 59, no. 4 (April 1, 1981), pp. 865–866.
[119] Endicott, "The 1975-76 Debate Over Ratification of the NPT in Japan," p. 282.
[120] Ibid., p. 288.
[121] Ibid., p. 282.
[122] Ibid., p. 285.
[123] Harrison, "Japan and Nuclear Weapons," p. 13.
[124] Endicott, "The 1975-76 Debate Over Ratification of the NPT in Japan," p. 292.

sharing under the U.S.-Japan security treaty was resolved, the Japanese government ratified the NPT, thereby making a strong nonnuclear promise to the United States.

As these four episodes demonstrate, nuclear latency conferred Japan with an advantage in alliance negotiations when the proliferation threat was backed with an adequate promise never to breakout of the ENR zone. The low level of nuclear latency made it easier for Sato and other leaders to employ a mix of hand-tying and sunk-cost tactics centered on the Nonproliferation Treaty that worked remarkably well at solving the credible commitment problem. As the Western Pacific islands returned to Japan, Sato enhanced the ability of other states to punish and reward proliferation behavior in the future, and continued to sink costs into the civil nuclear energy sector. After government leaders firmly committed the country to its nonnuclear stance in the 1970s, the Japanese nuclear industry was able to increase nuclear latency without generating a serious proliferation threat.

Chapter 5: The Persian Pendulum –

Explaining Iranian Nuclear Policy and Diplomacy

The Islamic Republic of Iran began its quest for nuclear latency during the dark years of the Iran-Iraq War. Despite resource constraints, the Iranian government poured capital into clandestine efforts to master sensitive nuclear fuel cycle technology.[1] In tandem, Iranian military entities conducted research and development work related to nuclear weapons. By the early 2000s, Tehran's investment paid off when the enrichment program began scaling up from small laboratory experiments to pilot cascades of gas centrifuges, and prepared to deploy much larger quantities still. In August 2002, Iran entered a precarious position after its covert gas centrifuge facilities at Natanz were revealed to the public. As crisis erupted over Iran's nuclear program, the regime halted its weaponization activities and moved to protect its nuclear infrastructure. Over the next decade, Tehran continued to pass technical milestones in the uranium enrichment program, but avoided making the political decision to proliferate. Instead, Iran kept open its technical option to develop nuclear weapons.

Why did Iran wait in the ENR zone rather than field nuclear weapons as quickly as possible? Although the regime claimed its nuclear program was for civil purposes, the enrichment capability generated a clear threat of proliferation. Other states increasingly sought to counterbalance, contain, and punish the Islamic Republic as its nuclear latency expanded. By 2013, biting multilateral sanctions on Iran's oil and financial sectors

[1] Since the 1990s, the annual budget of the AEOI hovers between $300 and $800 million, which is far more than most other ministries and state agencies. For more details, see Ali Vaez and Karim Sadjadpour, *Iran's Nuclear Odyssey* (Washington, DC: Carnegie Endowment for International Peace, 2013).

resulted in the first economic contraction in two decades.[2] A moderate security dilemma emerged as the Arab Gulf states bolstered military spending and dabbled in civil nuclear energy. The call for military action waxed and waned in Washington amid a constant drumbeat from Tel Aviv. Iran's vulnerable nuclear complex became the target of sabotage and assassinations. Instead of providing a deterrent, nuclear latency invited resistance and isolation. Iran bore many of the punishments associated with proliferation in return for unclear net benefits.

Two decades of conflict and isolation drove the regime to desire an Iranian nuclear weapons option as a "prudent hedge" against strategic surprise in a range of worst-case scenarios.[3] If Iran became embroiled in another regional war or faced defeat against a superior adversary, the leadership wanted the option to field a few nuclear devices. The acquisition of a nuclear weapons capacity remained central as Tehran's deterrence strategy shifted towards asymmetric warfare, indigenous modernization of weapon systems, and retaliatory capabilities such as ballistic missiles.[4] Although the regime worried about long-term survival in a "fundamentally crisis-ridden region", there was no urgent rationale to deploy nuclear weapons in response to an existential or acute threat.[5] Instead, Tehran focused on enhancing its technical breakout capacity to cast an increasingly short shadow of Persian proliferation over any future crisis.

Yet Iran's constant drive to master the nuclear fuel cycle belies important variation in how the regime progressed towards this goal. The regime often adopted a

[2] In 2013, Iran's GDP contracted about 5 percent. For a full assessment of the impact of sanctions on Iran, see Kenneth Katzman, *Iran Sanctions* (Washington, DC: Congressional Research Service, May 7, 2014), p. 52.
[3] Shahram Chubin, *Whither Iran?: Reform, Domestic Politics and National Security*, Adelphi Paper 342 (Oxford [England]: Oxford University Press for the International Institute of Strategic Studies, 2002), p. 74.
[4] Mohsen M. Milani, "Tehran's Take: Understanding Iran's U.S. Policy," *Foreign Affairs* 88, no. 4 (August 2009), pp. 46–57.
[5] Mohammad Javad Zarif, "What Iran Really Wants," *Foreign Affairs* 93, no. 3 (May/June 2014).

'pay later' approach to avoid and otherwise minimize the penalties of proliferation. During these periods, Iran emphasized that its pursuit of nuclear technology was as an aboveboard civil enterprise for peaceful purposes, and focuses on forging partnerships with foreign suppliers. Clandestine nuclear activities continued under limits to avoid detection, while exposed capabilities were brought under safeguards. On the diplomatic front with the West, Tehran favored a nuanced bargaining posture that attempted to provide a nonproliferation promise in exchange for concessions. Iran at least attempted to signal its intent to remain in the ENR zone. When the regime decided it would rather pay the price of proliferation later, Iran built up its nuclear latency in a manner designed to incur the lowest possible costs and risks.

At other times, however, Tehran was more willing to 'pay now' for advancement towards a nuclear weapons option. The periodic swings towards this cost acceptant position translated into a markedly different pace of progress for the nuclear program. Clear political and technical decisions were made to move as quickly as possible towards the production of fissile material, most notably along the uranium enrichment pathway. During such periods, the regime followed the maxim that it was better to incur punishment today to make it easier to produce a nuclear weapon tomorrow. Iran paid high costs to increase its nuclear capacity and walk back on agreements with the international community. Resistance and confrontation trumped diplomacy and tactful crisis bargaining. When the regime swung towards such a 'pay now' stance, Iran's actions made the credible commitment problem much worse.

Iran's nuclear development policy thereby resembles a pendulum. A latent nuclear weapons option constitutes the crux. The periodic swings between the 'pay later'

and 'pay now' positions capture variation in how the regime moved towards this long-term goal, with the pendulum gradually shortening as Iran built up its nuclear latency. Since this is a simple analogic device, the actual policies adopted by Tehran fall along the continuous arc of the pendulum, and hew more or less to either ideal position. The most obvious 'pay later' periods include several efforts to cut deals with the United States under the diplomatic leadership of Javad Zarif (2013-2014) and Hassan Rouhani (2003-2005), but also stem back to President Ali Akbar Rafsanjani's quest for civil nuclear partnerships (1991-1997), and the early attempts to resurrect contracts with the Europeans (1981-1985). In contrast, the 'pay now' approach typified the recent long period of hardliner dominance over Iran's nuclear posture (2005-2013), the aggressive buildup of nuclear latency in secret to acquire a uranium enrichment capacity (1997-2002), and the establishment of the clandestine centrifuge program (1985-1991).

The first part of this chapter lays out the historical origins of Iran's pendulum approach to nuclear latency. By tracing out the evolution of the nuclear program from 1979 until 2002, I show how Iran's security environment, domestic politics, and technical constraints impacted the shifts in its nuclear policy over time. These three factors repeatedly came together to push decision makers in Tehran towards either a 'pay later' or 'pay now' approach to developing a nuclear weapons option.[6] Since the pendulum continued to sway after Iran entered the ENR zone, the second half of the chapter assesses its impact on coercive diplomacy with the West from 2002 until 2014. My core argument is that the recurrent swings made it difficult for the Iranians to assure others

[6] Furthermore, both the 'pay later' and 'pay now' approaches each suggested a coherent set of policies for Iran to follow, respectively. From the outside, decision making over nuclear issues in Tehran often appeared mercurial, ambivalent, or at worst illogical because the pendulum pulled Iran in contradictory directions.

that the nuclear program would not be used for military purposes. The United States feared that a nonproliferation promise made during a 'pay later' period might do little to constrain the regime down the road. Iran's propensity to renege on arrangements during 'pay now' phases only validated these suspicions, thereby making it hard for the West to divine if Tehran would "eventually decide to build nuclear weapons."[7] Iran made various tactical gains and even managed to cut a successful interim agreement in November 2013, but a comprehensive agreement remained elusive. As a result, the pendulum precluded a solution to the credible commitment problem, and kept Iran in a precarious position.

(1) Swinging Towards a Nuclear Option

The first part of this chapter establishes the historical validity of Iran's nuclear pendulum approach to proliferation. I assess the development of the Iranian nuclear program from 1979 until 2002 to make two main points. First, although the regime wanted to acquire a nuclear weapons option, nuclear decision-making always swung between 'pay later' and 'pay now' policies. Second, Iran's geopolitical security situation, elite domestic competition in Tehran, and the pace of technical progress influenced the oscillation of this pendulum.[8] Over the course of two decades, Iranian politicians and

[7] James R. Clapper, Director of National Intelligence, Statement for the Record, "Worldwide Threat Assessment of the US Intelligence Community," Senate Select Committee on Intelligence, 29 January 2014, p. 5.

[8] The technical element subsumes the argument proposed by Jacques Hymans that "Iran's nuclear program has probably suffered much more from … mistaken technical choices and poor implementation by the Iranian nuclear establishment. There is ample reason to believe that such slipups have been the main cause of Iran's extremely slow pace of nuclear progress all along." While such mismanagement at times impacted the pace of Iran's nuclear program, I show that there are long periods when delay or more prudent but slow progress cannot be entirely attributed to technical problems. For a full articulation of Hymans' argument, see his "Botching the Bomb: Why Nuclear Weapons Programs Often Fail on Their Own-and Why Iran's Might, Too," *Foreign Affairs* 91, no. 3 (June 2012), pp. 44–53; *Achieving Nuclear Ambitions: Scientists, Politicians, and Proliferation* (Cambridge; New York: Cambridge University Press, 2012).

scientists therefore swung into the ENR zone without reaching consensus over the level of costs and risks to accrue in pursuit of nuclear latency.

(1.1) The Resurrection of Iran's Nuclear Latency (1979-1989)

The origins of Tehran's pendulum approach to nuclear development stems back to the highly constrained environment the regime found itself in during the 1980s. I examine this period in three sections. The first analyzes the evolution of strategic thought in Tehran as the country suffered deterrence failures against Iraq and the United States. The second lays out the initial attempt by the Iranians to pursue a 'pay later' approach to nuclear proliferation through the revitalization of foreign technology partnerships with Europe. The third section shows how the failure of this outreach effort led the regime to favor more risky clandestine efforts to procure nuclear technology from the black market. The regime hardened around the goal of acquiring a nuclear weapons option and moved towards an early version of the 'pay now' approach.

(1.1.1) Forged in the Crucible: Tehran's Security and Strategy in the 1980s

After disposing the Shah in 1979, the new regime led by Supreme Leader Ruhollah Khomenei attempted to export their revolutionary brand of Shia Islam throughout the region. In particular, the Iranians urged the sizeable Shia communities in Iraq to rebel against the ruling secular Sunni minority. By September 1980, Saddam Hussein moved to neutralize this threat by invading Iran. After two years of heavy fighting, the Iranians expelled the Iraqi forces from their territory, but Khomenei refused to accept a ceasefire. As war dragged on for another six years, Iraqi forces used chemical

weapons to overrun Iranian military positions. By 1988, Saddam escalated daily salvos of Scud missile strikes against population centers in Tehran and Qom to ratchet up pressure on the regime. At the same time, the United States led containment efforts to cut off military supplies and technology to Tehran, while providing support to Baghdad.[9] Iran waged a shadow war against American assets and allies in the region, and attained some tactical gains in Lebanon.[10] But Tehran's confrontation with Washington boiled over into a series of naval battles in the Persian Gulf, where outclassed Iranian forces incurred heavy losses against U.S. naval units in April 1988.[11] By the end of the summer, the cowed regime could no longer sustain the war effort against Iraq or risk further conflict with the Americans. Iran accepted defeat and turned towards rebuilding its economic and military power.

The deterioration of Iran's security situation had a major impact on strategic thinking in Tehran. The leadership believed the core problem was Iran's lack of advanced weapon systems. Since Iran could not respond in kind to Iraqi chemical weapon assaults or secure adequate stocks of ballistic missiles, Saddam was able to control the tempo and

[9] In 1983, President Reagan authorized the first comprehensive effort to contain and embargo Iranian military capabilities and technology under Operation Staunch. U.S. support for Iraq included direct economic assistance, as well as indirect military and intelligence packages. But in the later stages of the Iran-Iraq war, the U.S. did provide direct on the ground targeting packages to Saddam's forces, and thereby unknowingly helped them coordinate some of the most devastating chemical weapon attacks against Iranian positions on the al-Faw. For a comprehensive historical account, see David Crist, *The Twilight War: The Secret History of America's Thirty-Year Conflict with Iran* (New York, NY: Penguin Press, 2012).

[10] Iran's successful subconventional operations in Lebanon included attacks on U.S. and French military installations in 1983 and the infamous spree of kidnappings that netted hundreds of Western individuals, including the CIA Station Chief William Buckley. Iranian operatives did suffer several major failures, most notably the botched attack on Sunni Muslims making the pilgrimage to Mecca in Saudi Arabia.

[11] For more on the Tanker Wars between U.S. and Iranian naval forces, see Harold Lee Wise, *Inside the Danger Zone: The U.S. Military in the Persian Gulf, 1987-1988* (Annapolis, MD: Naval Institute Press, 2007).

level of punishment against Iranian military and civilian targets.[12] As Iranian forces in the al-Faw peninsula were ruthlessly overrun with coordinated chemical attacks, and terrorized civilians fled missile strikes on urban areas in 1988, the regime "lost control of events and could neither offer assurances to a frightened public nor meaningfully retaliate against Iraq's latest act of aggression."[13] Tehran also feared that direct skirmishes with U.S. forces or even diffuse subconventional attacks might spark massive conventional retaliation from Washington. Iran simply lacked the capabilities to deter aggression.

At a deep strategic level, the regime in Tehran accepted that they had failed to practice effective deterrence throughout the 1980s. The central lesson was that Iran needed options to back its coercive threats with the prospect of severe punishment. The regime wanted to prevent "a repetition of the traumatic effects of chemical weapons use" and missile strikes by "developing options that could serve as a deterrent and, if necessary, a weapon of retaliation."[14] Iran adopted a self-reliance doctrine to develop "any deterrent necessary for future contingencies," by diversifying foreign supply routes and enhancing Iran's defense production capacity.[15] The regime first championed this doctrine in the early 1980s when American containment left Iran without the equipment it needed to fight.[16] Out of necessity, the Revolutionary Guards gained considerable experience procuring arms and technology abroad through illicit and clandestine supply

[12] Shahram Chubin, *Iran's National Security Policy: Intentions, Capabilities, and Impact* (Washington, D.C.: Carnegie Endowment for International Peace, 1994), p. 21.
[13] Ray Takeyh, *Guardians of the Revolution: Iran and the World in the Age of the Ayatollahs* (New York, NY: Oxford University Press, 2009), p. 102.
[14] Chubin, *Whither Iran?*, p. 77.
[15] Ibid.
[16] Crist, *The Twilight War*, p. 102.

networks.[17] These efforts spurred the creation of military research and development (R&D) technology centers, along with indigenous weapon production facilities. By building its own military industrial complex, Tehran sought to cultivate a range of technical capabilities to prevent strategic surprise down the road.[18]

(1.1.2) Iran's Nuclear Program: From Profligate Waste to Prudent Investment

Although the clerics at first ignored the military potential of nuclear technology when they assumed power in 1979, the wartime shift towards self-reliance and advanced weapons options brought the benefits of nuclear latency into stark relief. After the Iranian revolution, the new regime inherited the Shah's burgeoning nuclear program. Even though contracts were in place with French and German firms to build a nuclear reactor infrastructure and expand the experimental laser isotope separation (LIS) enrichment program, the leadership lambasted the effort as another example of the wanton excess exhibited by the Pahlavi dynasty. In the span of a year, the Atomic Energy Organization of Iran (AEOI) was stripped of its lavish budget. Much to the chagrin of the Europeans, the revolutionaries made the unilateral decision to renege on all existing business contracts.[19] Iran's nuclear program suffered a self-inflicted blow as domestic projects were frozen and bridges burned to foreign suppliers.

By 1981, Supreme Leader Khomenei seemed to realize the error of mothballing the Shah's nuclear projects, and moved to restart work on the Iranian nuclear complex. At

[17] The Iranians created Iranian front companies, established purchasing agent networks, mastered the practices of bribery and false documentation, and learned to circumvent export control laws. See Chubin, *Iran's National Security Policy*, p. 18.
[18] Takeyh, *Guardians of the Revolution: Iran and the World in the Age of the Ayatollahs*, p. 106.
[19] David Patrikarakos, *Nuclear Iran: The Birth of an Atomic State* (New York, NY: I. B. Tauris, 2012), p. 100.

first, Ayatollah Mohammed Behesti was the lone wolf advocate of Iran's nuclear program, telling an Iranian nuclear scientist in 1979 that it was his "duty to build this bomb for the Islamic Republic."[20] As one of the most influential revolutionaries, Behesti held sway within the regime. Before his untimely assassination, Behesti's strident arguments in favor of developing Iran's nuclear latency no doubt impacted Supreme Leader Khomenei. But it took the Israeli attack on Iraq's nuclear reactor infrastructure at Osirak in 1981 to catalyze Khomenei's nuclear ambitions. The aerial strike revealed the extent of Saddam's nuclear efforts and raised serious concerns in Tehran about his intent to acquire and possibly use atomic weapons on the battlefield with Iran.[21]Alarmed by this discovery, Khomenei authorized key scientific and military entities to explore the acquisition of nuclear technology as part of Iran's emerging self-reliance doctrine.

The Islamic Republic's first attempt to develop nuclear technology combined a public campaign to resurrect civil nuclear cooperation with clandestine efforts to buildup military infrastructure. The primary emphasis of this early nuclear policy was to lobby European businesses to supply Iran with nuclear reactor technology well suited to the production of plutonium in the spent fuel. Iranian diplomats and representatives from the AEOI coordinated their efforts and opened dialogue with the IAEA over safeguards implementation to assuage potential European clients that technology transfers would be kept aboveboard within the nonproliferation regime. From the outset, the AEOI was the public face of Iran's nuclear ambitions, and pursued a diplomatic campaign to acquire civil nuclear technology from foreign suppliers. The Iranians need not pay the costs of

[20] Con Coughlin, *Khomeini's Ghost: The Iranian Revolution and the Rise of Militant Islam* (New York, NY: Ecco, 2010), p. 225.
[21] Ibid.

overt proliferation if they could just acquire nuclear technology through the legal international market.

Alongside these public efforts, the military made quiet investments in the technical infrastructure needed to realize a nuclear weapons option. The Revolutionary Guards set up a hub of defense oriented research and development workshops, with thirteen centers devoted to advanced conventional, ballistic missile, chemical, biological, and nuclear technology.[22] In 1983, the IRGC established its own special unit devoted to nuclear research and weapons technology separate from the AEOI, and assumed responsibility from the Ministry of Defense for Iran's ballistic missile program. Each project operated as an isolated compartment under strict secrecy. The Revolutionary Guards were careful to keep these weaponization efforts hidden to avoid jeopardizing the ongoing quest to procure civil nuclear reactor technology.[23]

Iran's public efforts ultimately failed to realize any significant gains in nuclear latency due to several constraints at the time. The most obvious barrier to civil nuclear cooperation with Europe was Tehran's dismal reputation. After the clerics cancelled the Shah's commercial contracts, French and German firms were wary of being burned again. The occupation of the U.S. Embassy in Tehran further undermined Iran's diplomatic standing. The Reagan Administration found receptive audiences in European capitols when they moved to freeze worldwide nuclear trade with Iran in 1984.[24] As a result, Iranian diplomats found few countries willing to supply nuclear fuel cycle facilities or technology. Most important, no government would approve the sale of

[22] Quoted in Chubin, *Iran's National Security Policy*, p. 26.
[23] Coughlin, *Khomeini's Ghost*, pp. 226–227.
[24] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 127.

nuclear reactor packages to Iran.[25] Without the ability to burn nuclear fuel in a reactor, the plutonium separation pathway was closed to Iran for the time being. Iraq compounded the situation in 1984 with a series of aerial attacks on the Busher complex. With the incomplete infrastructure in ruins and no foreign nuclear patrons on the horizon, the Islamic Republic moved away from its unsuccessful nuclear procurement policy.

(1.1.3) Secret Centrifuges: Tehran Swings Towards a More Cost and Risk Acceptant Policy

Despite these setbacks, Tehran's desire to attain the coercive threat advantages of nuclear latency only grew stronger as the war with Iraq dragged Iran into a quagmire by the mid-1980s. In April 1984, President Ali Khamenei told senior officials that a nuclear deterrent capacity was the only way to secure the "very essence of the Islamic Revolution from the schemes of its enemies."[26] Several years later, Khamenei pushed for a "tireless effort" to master nuclear energy, so that Iran could "let our enemies know that we can defend ourselves."[27] As Commander of the Revolutionary Guards, Mohsen Rezai reiterated Khamenei's sentiment, but put a finer point on the end destination of Iran's nuclear quest. "Iran needs to arm itself with anything needed for victory, and we need to have *all the technical requirements in our possession to even build a nuclear bomb, if and when needed*."[28] Similarly, Ali Akbar Rafsanjani pointed out the "decisive" effect of nuclear and advanced weapons technology during a crisis, and called on the scientific and

[25] IAEA GOV/2007/58 (15 November 2007), p. 2.
[26] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 121.
[27] Ibid.
[28] Coughlin, *Khomeini's Ghost*, p. 227.

military establishment to "fully equip" Iran with such options.[29] These statements indicate that the leadership seemed to solidify around the goal of acquiring a latent nuclear weapons capacity as the decade dragged on.

To pursue this objective, the regime pushed its public procurement plan to the backburner and focused on developing a clandestine uranium enrichment program in 1985.[30] Tehran seized upon a fortuitous opportunity to acquire gas centrifuge enrichment technology, albeit through grey and black markets.[31] By the mid-1980s, the IRGC had established illicit procurement networks for military technology in Europe, and became proficient at exploiting lax export control laws to acquire sensitive dual-use machinery and components.[32] The Iranians eventually came into contact with Abdul Qadeer Kahn's German partner in 1985. Over the next year, Kahn and associates put together a package offer for a complete 'starter kit,' that included specifications, documents, and manufacturing instructions for both gas centrifuges and the equipment to turn highly enriched uranium into atomic weapon hemispheres. The offer was reviewed and then endorsed by the highest levels of the Iranian government in February 1987. Iran now had the technical basis to pursue development of the uranium enrichment route to an atomic weapon.[33]

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[29] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 130.
[30] Ibid., p. 123.
[31] Iran also pursued laser isotope separation (LIS) technology. Iranian scientists found a German firm willing to supply equipment for LIS experiments in the 1980s, but this technology proved difficult to master without the sort of additional tacit knowledge provided by Khan and associates for the gas centrifuge package.
[32] To cite one example, Iranian agents bought a flow-forming machine from the German firm Leifeld. Such a machine is very useful for manufacturing automobile wheels, but can also precision form steel and aluminum centrifuge tubes. See David Albright, *Peddling Peril: How the Secret Nuclear Trade Arms America's Enemies* (New York: Free Press, 2010), pp. 70–81.
[33] Ibid.

After receiving the critical package from the Khan network, Iran embarked on the first phase of its journey to master gas centrifuge technology. From the outset, only the top leadership in the regime knew about the enrichment program, and ordered the work to be confined to small compartments within the AEOI.[34] These groups labored in secret at several workshops to "understand the behavior of centrifuges and their assembly, and to try to indigenously produce components."[35] In support of these efforts, teams from the AEOI returned to Europe "to procure a wide range of critical items … to make centrifuges and assemble small cascades of them."[36] The AEOI used Khan's design specifications to order pumps and valves from German manufacturing firms in 1988. Many of these orders slipped through the cracks of export controls at the time, while the IRGC likely lent its proficiency in illicit arms markets to help procure more sensitive components.

Iran risked triggering enhanced punishment if the United States or Iraq detected these clandestine efforts. Khomenei appears to have accepted this risk because Washington and Baghdad had already smothered and bombarded Iran's initial foray at Busher, respectively. The shift towards this clandestine approach attempted to surmount several hurdles. First, Iran bypassed its inability to purchase a nuclear reactor by focusing on the front end of the nuclear fuel cycle. Once the nuclear infrastructure was in place to mine, mill, convert, and enrich uranium into weapons-usable fissile material, Iran would have a viable breakout option. Second, Tehran concluded that any emerging nuclear asset

[34] Iran later claimed that no other organizations or universities participated in this early effort, see IAEA GOV/2007/58 (15 November 2007), p. 3. However, David Albright cites some former AEOI scientists who "suspected that two or three other groups were working in addition," see *Peddling Peril,* p. 79. This would make sense given that some of the R&D centers setup by the IRGC focused on nuclear technology and weaponization activities.
[35] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 125.
[36] Albright, *Peddling Peril*, p. 80.

needed to be hidden and protected. Early research and development on gas centrifuges or laser isotope separation (LIS) could be hidden in small workshops identical to light industrial facilities, and did not require building the sort of identifiable infrastructure associated with nuclear reactors and reprocessing plants. When Iran was ready to scale up, enrichment facilities could be hardened and built underground to better defend against aerial attack. Tehran's move towards 'pay now' policies by 1985 attempted to buildup sensitive nuclear fuel cycle technology as much as possible, despite the risks.

Supreme Leader Khomenei threw his unequivocal support behind Iranian nuclear latency in the summer of 1988. In July 1988, Khomenei received unpleasant news about the dire state of Iran's military forces and the possibility of economic collapse. As he contemplated accepting the ceasefire with Iraq, the Supreme Leader wrote a letter to his top leadership laying out exactly what sort of military capabilities they needed to ensure that Iran "did not find itself in the same humiliating position the next time the country went to war." Conventional military forces were obviously important, but Khomenei emphasized that acquiring "the ability to create noticeable quantities of laser and atomic weapons" should be an enduring objective.[37] Up until this point, the Supreme Leader had not issued explicit guidance on the end goal of ongoing efforts to develop nuclear technology. Key figures such as Khamenei, Rezai, and Rafsanjani already supported nuclear latency, and Khomenei's letter solidified the regime around this objective.

But how should Iran achieve this objective? Khomenei left his successors with little guidance over which policies were best suited to advance Iran's nuclear latency. Iran had pursued two nuclear development strategies with mixed results for almost eight years. Security concerns drove the leadership to restart the nuclear program, but with

[37] Letter quoted in Coughlin, *Khomeini's Ghost*, p. 242.

limited access to technology from Western governments, the top leaders in Tehran understood that Iran was quite far away from realizing a latent nuclear weapons option. At first, the regime attempted to avoid the costs and risks of proliferation through its public procurement efforts, but these did not break Iran's isolation. The swing towards the clandestine program was a natural response to the constraints at the time, as well as the fortuitous offer of illicit assistance from the Khan network. While the Iranians accepted the risks of pursuing this path, they attempted to avoid detection so their adversaries would not smother the early R&D programs.

(1.2) Iran Turns Towards Reconstruction (1989-1997)

Under the Presidential tenure of Akbar Hashemi Rafsanjani from 1989 until 1997, Iran swung firmly back towards a 'pay later' nuclear development policy. I unpack this critical period in two parts. The first explores the domestic political dynamics in Tehran that allowed President Rafsanjani to champion a coherent case for civil nuclear energy as part of Iran's post-war reconstruction plan. Although Iran embarked on a renewed quest to find foreign suppliers of nuclear technology, regional security developments led to sustained work on the clandestine programs as an insurance policy in case Rafsanjani's 'pay later' public approach failed to yield dividends. The second section details how the United States led an effective technology denial campaign to thwart Iran's efforts.

(1.2.1) Rafsanjani's Quest for Nuclear Partnerships

After the death of Supreme Leader Khomenei in June 1989, the regime turned inwards as two elite factions vied to lead and reconstruct the Islamic Republic after eight years of war. The key domestic change was the elevation of Ayatollah Ali Khamenei to Supreme Leader and Akbar Hashemi Rafsanjani to President of Iran. Rafsanjani won broad electoral support from a war weary public in the summer of 1989 by promising economic growth at home and a more practical approach to foreign relations abroad. Rafsanjani's pragmatist faction hoped to emulate China by creating a new Iranian order that "would be economically efficient, culturally tolerant, and politically autocratic."[38] Rafsanjani set out to rebuild domestic infrastructure and integrate Iran's economy into

[38] Ray Takeyh, *Hidden Iran: Paradox and Power in the Islamic Republic* (New York, NY: Council on Foreign Relations Press, 2007), p. 40.

international markets.[39] In dire need of assistance, the pragmatists sought to avoid the ire of the West, and instead courted the Europeans for technical and financial support. Under Rafsanjani's tenure, Iran waged another intensive campaign to forge civil nuclear energy partnerships.

Although the conservatives led by Ayatollah Khamenei opposed Rafsanjani's liberal policies and compliant foreign policy, they stood to gain from reconstruction and a renewed push for foreign nuclear assistance. Khamenei sat atop the apex of Iran's formal power structure. The new Supreme Leader inherited direct control of the two most powerful institutions tasked with civil and military production: the *bonyad* foundations and *pasdaran* complex.[40] The *bonyads* began as charitable foundations, but morphed into giant holding companies that controlled almost half of the Iranian economy.[41] The Revolutionary Guards expanded the military-industrial complex they founded during the war into a wide range of commercial ventures.[42] While Rafsanjani and Khamenei disagreed about the virtues of foreign trade, reconstruction allowed the *bonyads* and *pasadaran* enterprises to grow into economic empires.[43] In a similar vein, an influx of nuclear technology and scientific assistance into a civil nuclear energy program would undoubtedly help the *pasadaran* progress their military research and development efforts.[44] As a result, the conservatives and pragmatists reached a stable equilibrium that

[39] David E. Thaler et al., *Mullahs, Guards, and Bonyads* (Santa Monica, CA: RAND Corporation, 2010), p. 70.
[40] Takeyh, *Hidden Iran*, p. 34; Thaler et al., *Mullahs, Guards, and Bonyads*, p. 68.
[41] Said Amir Arjomand, *After Khomeini: Iran under His Successors* (Oxford [England]: Oxford University Press, 2009), p. 61.
[42] Ibid., pp. 59–60.
[43] Thaler et al., *Mullahs, Guards, and Bonyads*, p. 59.
[44] Khamenei and the conservatives supported this overture as it had the potential to reap nuclear fuel cycle technology at low risk and cost to Iran.

allowed Rafsanjani to implement his reconstruction policies, along with the shift towards a public nuclear hedge policy.

With support in place from the conservatives, President Rafsanjani began to make the case for an Iranian civil nuclear reactor network in October 1990. Iran desperately needed to upgrade its energy production capacity. Rolling blackouts plagued urban centers and the electric grid was severely dilapidated. Despite the long lead-time in construction, Rafsanjani argued that a nuclear reactor network would solve Iran's energy woes by supplying a stable baseload of power to grid, and allocated $800 million to the AEOI.[45] The reinvigorated program inaugurated a new nuclear technology center at Isfahan and set out to find foreign nuclear partners.[46] Rafsanjani also made a concerted effort to "address growing international concerns about a possible covert weapons program by reassuring the world that everything would be above board."[47] As AEOI representatives approached a wide range of nuclear suppliers, Iranian delegates in Vienna intensified dialogue with the IAEA, promising full implementation of safeguards and cooperation with the agency's inspection teams.

The temperate nature of Iran's civil nuclear overtures masked a growing fear in Tehran that the Islamic Republic might be caught unprepared to deal with an adversary in the future. After American forces rapidly dispatched the Iraqi military in 1991, the regime worried that they might suffer a similar fate down the road. Although Tehran's longtime foe was neutered, Operation Desert Storm made apparent the massive asymmetry in conventional force capabilities between Iran and the United States. The Iranian military concluded that they could not hope to compete on an equal footing. Over

[45] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 132.
[46] Vaez and Sadjadpour, *Iran's Nuclear Odyssey*, p. 9.
[47] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 148.

the next few years, the United Nations Special Commission (UNSCOM) uncovered hard evidence of a massive effort to develop biological and nuclear weapons in Iraq.[48] The extent of Saddam's nuclear program shocked Tehran. As a result, the Gulf War and UNSCOM revelations heightened the urgency of Tehran's quest to attain nuclear latency as a strategic equalizer and protection against future surprise.

This revived fear of the future spurred Iran to carefully progress its clandestine uranium enrichment program as insurance in case the civil nuclear plan did not come to fruition.[49] Iranian scientists had been testing gas centrifuges in secret since 1988, but made little progress until Tehran took advantage of a fresh offer from the Khan network in 1993. The regime viewed Saddam's secret program as proof that Iran could advance its own clandestine operations despite regular inspections by the IAEA. "If Saddam could trick the world into believing his nuclear ambitions were entirely peaceful, there was no reason why Iran could not follow suit."[50] Tehran may have downplayed the risks when the Khan network proposed another package of enrichment technology, and eagerly arranged the acquisition of technical blueprints, components, and support services to build 500 P-1 centrifuges between March 1994 and July 1996.[51]

Yet throughout Rafsanjani's tenure, gas centrifuge research remained confined to small workshops, lest a larger program undermine Iranian efforts to legally procure nuclear technology.[52] Jacques Hymans claims that poor management of the AEOI since

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[48] United Nations, *Note by the Secretary General*, October 8, 1997 w/att: *Letter dated 6 October 1997 from the Director General of the International Atomic Energy Agency to the Secretary General*. [S/1997/779]
[49] Alternatively, perhaps the Iranians intended to use the overt civil nuclear program as cover for the clandestine program.
[50] Coughlin, *Khomeini's Ghost*, p. 256.
[51] IAEA GOV/2004/83 (15 November 2004), p. 8.
[52] The technical alternative explanation is that the program was not quite ready to scale up yet. The pace of progress was limited by Western counter-proliferation efforts to prevent the procurement of sensitive technology and components.

1981 by Reza Amrollahi undoubtedly slowed technical progress and kept sensitive technology contained to the R&D phase.[53] But the clandestine programs were embedded within Rafsanjani's larger 'pay later' nuclear development policy that privileged aboveboard cooperation with foreign suppliers. The President did not seem particularly worried about the pace of enrichment efforts, as exhibited by his reluctance to replace Amrollahi with more competent managerial talent. If Rafsanjani's diplomacy yielded aboveboard sensitive nuclear fuel cycle technology, then there would be little need to pay the risks and costs associated with accelerating the secret nuclear programs.

(1.2.2) U.S. Responds with Containment and Technology Denial

The decision to continue clandestine enrichment efforts proved wise as Iran's civil nuclear plan threatened the Americans. Washington acknowledged that Iran suffered from electricity shortages, but pointed out that the most practical solution was to bring numerous natural gas fired power stations online. An investment in these types of power plants promised quick and cheap energy, whereas construction on nuclear reactors could stretch out well over a decade. Iran attempted to purchase reactors and technology better suited for military applications. Most worrisome, Rafsanjani wanted the complete nuclear fuel cycle, even though Iran lacked the natural uranium reserves to fuel even a single reactor for its lifetime.[54]

Declassified records suggest that the United States intelligence community detected some of Iran's illicit activities. In 1995, Washington released a report showing that Iran was "importing equipment needed to build nuclear weapons" and conducting smuggling efforts similar to those "used by Pakistani and Iraqi nuclear weapons

[53] Hymans, *Achieving Nuclear Ambitions*, pp. 255–259; Hymans, "Botching the Bomb."
[54] See also Jeffrey R. Smith, "Officials Say Iran Is Seeking Nuclear Weapons Capability: China Sale of Equipment Worth Millions Cited," *The Washington Post*, October 30, 1991, sec. A1.

programs."[55] U.S. officials also pointed out that Iranian leaders had repeatedly espoused intent to acquire a nuclear weapons option during the 1980s. In the fall of 1991, Gates referred to the remarks from Khamenei and Rafsanjani as "a significant statement" that Iran was "committed to developing nuclear weapons."[56] Several years later, a senior Iranian arms control adviser backed up this conclusion by stating that Iran was "keeping its nuclear options open."[57] Washington concluded that Tehran's renewed interest in civil nuclear partnerships was in part a ruse to import sensitive nuclear fuel cycle technology for nefarious ends.

The United States applied swift pressure on every country Iran approached to thwart Rafsanjani's quest for nuclear suppliers. As foreign governments shutdown Iran's business proposals, Iranian diplomats were caught in a moment of déjà vu. Much like the early 1980s, the Americans had again wielded their influence to prevent Iran from resurrecting the civil nuclear energy program.[58] This time, however, the end of the Cold War left China and Russia strapped for hard currency and willing to resist pressure from the United States. The Iranians thus found receptive audiences in Beijing and Moscow. With veto power in the United Nations Security Council and idle nuclear military-industrial complexes hungry for cash, Russia and China were ideal nuclear partners for Iran.

The Chinese jumped at the opportunity to build a lucrative nuclear reactor complex for Iran. China first became involved with Iran's nuclear program when they trained Iranian nuclear scientists in 1985 as part of a secret agreement. In January 1990,

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[55] Jeffrey T. Richelson, *Spying on the Bomb: American Nuclear Intelligence from Nazi Germany to Iran and North Korea* (New York, NY: W. W. Norton, 2006), p. 508.
[56] Ibid., p. 506.
[57] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 161.
[58] Ibid., p. 134.

Beijing and Tehran formalized an aboveboard relationship by signing a ten-year contract for China to construct three reactors at Isfahan and near Bushehr. Washington lamented that these reactors could produce large quantities of plutonium in the spent fuel.[59] The secret relationship continued in 1991 when China exported natural uranium under the table to Iran for experiments in uranium conversion. Iran set off alarms in Washington when it made a down payment of $850 million to China for construction to begin on the reactors in May 1995.[60] In response, the U.S. State Department pressured China to cancel the deal. While Beijing backed out of the reactor project, they did provide the Iranians with the technical documents needed to build a uranium conversion (UCF) plant on their own.[61] After several years of wrangling, Washington negotiated a deal to get ironclad assurances from Beijing in October 1997 that they would not engage in any new nuclear cooperation with Iran.[62]

The Russians followed a similar pattern. In 1992, Moscow signed a long-term agreement for nuclear cooperation with Tehran. Several years later, Minatom and the AEOI specified the scope of work required to complete one of the unfinished Bushehr reactors. Russia inked the deal for the Bushehr job in January 1995. In exchange for $800 million, the Russians would build a nuclear plant with one VVER-1000 water-cooled reactor. While the contract stipulated the plant would be under IAEA safeguards, it was

[59] The original plans were to build a 27 MW reactor well suited to produce plutonium at Isfahan, along with a uranium conversion facility, and two 300 MW pressurized water reactors at a site called Esteghlal (next to Bushehr).
[60] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, pp. 135–136.
[61] Ibid., p. 158.
[62] For details, see Barton Gellman and John Pomfret, "U.S. Action Stymied China Sale to Iran," *Washington Post*, 13 March 1998, A1. This article claims that the United States intercepted communication between the Iranians and the China Nuclear Energy Industry Corporation for the illicit sale of a controlled chemical (anhydrous hydrogen fluoride [AHF]) useful as a feeder for uranium conversion. Einhorn and Samore summoned acting Chinese Ambassador Zhou Wenzhong for a meeting to discuss assurances that the chemical sale would not proceed.

capable of producing 180kg a year of plutonium in the spent fuel. The Clinton Administration protested the deal, and shared a sensitive intelligence report with the Russians that claimed Iran's program to build nuclear weapons "would be accelerated" by the reactor project.[63] Moscow refused to outright cancel the project, but did agree to demands from Washington that all spent fuel waste be returned to Russia.[64]

Iranian diplomats responded to the denial campaign by floating the possibility that the Islamic Republic might leave the nonproliferation regime. As countries prepared for the NPT review conference in the spring of 1995, the Iranians began to debate whether they should exercise the exit clause baked into the treaty, "due to difficulties in acquiring nuclear technology from the West despite meeting NPT commitments."[65] At the review conference in April, Iran led an opposition movement against the indefinite extension of the NPT on the grounds that the United States failed to uphold its obligation to allow peaceful technology transfers under the third pillar of the treaty. The Iranians were particularly incensed that the United States had recently acquiesced to the Agreed Framework with North Korea, despite Pyongyang's provocative behavior and flagrant violations of the NPT. Tehran argued that Iran should emulate the North Korean model by developing nuclear technology on its own and presenting the Americans with an irreversible fait accompli.

Iran's long experiment with the 'pay later' approach highlights two points. First, despite sustained cooperation with the Russians and Chinese, Rafsanjani's public quest for civil nuclear energy failed to gain nuclear fuel cycle technology beyond the Chinese

[63] Steven Greenhouse, "U.S. Gives Russia Secret Data on Iran to Discourage Atom Deal," *New York Times*, April 3, 1995, sec. A9; Richelson, *Spying on the Bomb*, p. 508.
[64] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 140.
[65] Ibid., p. 153.

plans for a uranium conversion plant. Over the course of seven years, Washington stymied Iranian attempts to forge public nuclear partnerships, and even convinced Beijing and Moscow to cancel and curtail their exports, respectively.[66] Second, the effectiveness of American containment left Iran with few nuclear technology options beyond those under slow but steady clandestine development. Since the lion's share of resources and attention went to support the aboveboard foreign partnerships, Iran had not yet taken full advantage of the technical opportunities supplied by the Khan network in the mid-1990s. In particular, the secret program to enrich uranium needed more time and focused attention.

[66] As Deputy Assistant Secretary of State for Political-Military Affairs Robert Einhorn summarized in his testimony to Congress at the time, "we have successfully urged all but a very few suppliers not to engage in any nuclear cooperation with Iran … We believe the steps we have taken are real impediments to Iran's nuclear weapons aspirations. They have significantly slowed the Iranian program and posed obstacles to its ultimate success." See his statement in, "Iran and Proliferation: Is the U.S. Doing Enough?," Hearing before the Committee on Foreign Relations (Washington DC: United States Senate, 17 April 1997).

(1.3) Accelerating Into the ENR Zone (1997-2002)

President Rafsanjani's tenure ended in the summer of 1997 when Iranian voters handed a resounding but unexpected victory to the reformist Mohammed Khatami. The conservative hardliners were dismayed when Khatami won a popular mandate to expand social freedoms and build cooperative ties to the West.[67] The new President favored further moderation of Iran's foreign policy and improved relations with Europe and the United States. As a great wave of optimism swept the populace, Khatami backed some of his campaign pledges with concrete gestures to the international community.[68]

Yet the president marched in lockstep with the conservatives to aggressively accelerate Iran's sensitive nuclear fuel cycle projects. Upon assuming office, Khatami reorganized the AEOI to focus on starting uranium enrichment as quickly as possible, and diverted budgetary resources into the gas centrifuge program.[69] After several years of work in centrifuge workshops proved promising, Khatami authorized covert construction on the Natanz complex in 2001. By early 2002, Iran entered the ENR zone as AEOI scientists tested centrifuges with uranium gas, and prepared a full centrifuge cascade at the Natanz pilot fuel enrichment plant. Why did the pro-Western and moderate Khatami oversee the significant expansion of Iran's nuclear latency between 1997 and 2002? I address this puzzle by examining the geopolitical security shifts, domestic political realignments, and technical factors that drove Tehran to swing back towards a 'pay now' approach to nuclear development.

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[67] Takeyh, *Hidden Iran*, p. 49.
[68] Khatami nullified the infamous *fatwa* on Salmon Rushdie, improved relations with Europe, and made the vague but significant call for "thoughtful dialogue" between Iranians and Americans, see Christopher De Bellaigue, *The Struggle for Iran* (New York, NY: New York Review Books, 2007), pp. 1–22.
[69] Coughlin, *Khomeini's Ghost*, 300; Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 164.

In the years preceding the election of Khatami, two geopolitical shifts threatened the long-term survival of the Islamic Republic. The first was the Clinton Administration's plan to build a new regional order in the Middle East based on the prolonged isolation of Iran and Iraq. This avowed policy of Dual Containment underscored Rafsanjani's failure to usher in détente with the United States.[70] As the relationship became "increasingly rabid" between 1992 and 1996, the Iranians tried to drive the United States out of the Gulf while expanding Persian influence throughout the region.[71] In May 1995, President Clinton announced the official start of Dual Containment by banning all American trade with Iran. Tehran viewed this as a serious escalation, and hardline elements authorized Hezbollah to bomb the Khobar Towers foreign housing complex in June.[72] The Americans hardened their position, and Clinton signed the Iran-Libya Sanctions Act in August 1996 to pressure "other nations to join in Washington's embargo."[73] Containment curtailed Rafsanjani's post-war reconstruction plans and cut Iranian rearmament purchases in half. Consequently, the regime came to believe that "the United States had declared war on Iran."[74] By the late 1990s, Tehran was once again in a costly confrontation with Washington.

Second, Iran's relationship with Israel deteriorated into outright competition by the mid-1990s. During the 1980s, Tehran and Tel Aviv both opposed Soviet influence and Iraqi dominance in the Middle East. Although the Islamic leaders lambasted Zionism and supported Hezbollah and Hamas, they were careful to avoid direct conflict with

[70] Arjomand, *After Khomeini: Iran under His Successors*, pp. 143–145.
[71] Kenneth M Pollack, *The Persian Puzzle: The Conflict between Iran and America* (New York, NY: Random House, 2004), p. 266.
[72] Ibid., p. 271.
[73] Crist, *The Twilight War*, p. 391.
[74] Pollack, *The Persian Puzzle*, pp. 269, 278.

Israel. The leadership in Tel Aviv worried more about Saddam's potential to conquer Iran, attain regional dominance, and revive an Arab alliance. Israel somewhat accepted Iran as a non-Arab counterbalance against Baghdad. Operation Desert Storm and the Soviet implosion in 1991 improved the security environment for Israel and Iran, but eliminated the two common threats that had kept them in check during the 1980s. With Saddam's military capability nullified, the rise of the Iran now loomed as a threat to Israel.

Tel Aviv sought to balance against Iran by moving closer to Washington and supporting Dual Containment. The Oslo peace process with the Palestinians was central to this stratagem. Tel Aviv knew that Washington saw the Palestinian issue as a burden. With the Cold War over, Israel wanted to remain a vital asset, and negotiated the Oslo accords in 1993 and 1995 in part to reduce friction with the United States. Peace between Israel and the Arabs promised to unite Iran's regional foes and leave the Persians further isolated. Tehran perceived the Oslo process "as a grave threat," and tried to spoil these agreements by amplifying material support to Hezbollah and Hamas.[75] In turn, Israel redirected its resources to counter Iran, and encouraged the Clinton Administration to buttress containment with an influx of arms to Israel and the Sunni Arab states. Tehran now saw dual containment and the Oslo talks as intertwined strategies "aimed squarely at overthrowing the Islamic Republic."[76] By 1997, the regime wanted to shore up its nuclear program as a long-term hedge against regime change.

Amid this deterioration in Iran's security position, Khatami found it difficult to translate his progressive reformist agenda into actual policy outcomes. Despite entering

[75] Crist, *The Twilight War*, p. 394.
[76] Ibid.

office with a popular mandate to put Iranian foreign policy on a more sanguine course, the new president had to contend with "a suspicious parliament, a doctrinaire judiciary, and with Ayatollah Ali Khamenei." The conservatives and the Supreme Leader promised to push the President into "political oblivion" if his policy positions strayed too far from the reservation.[77] Khatami entered office determined "to choose his battles carefully and avoid open clashes with the conservatives." In particular, he "refrained from challenging the wide discretionary powers of the Supreme Leader, which the hard-liners jealously guarded."[78] This caution made Khatami appear weak, and allowed Khamenei to wield tremendous influence over issues of national security, including decisions about the nuclear program. Khatami cut a Faustian bargain to advance his agenda on the margins. In exchange, the Supreme Leader neutered his ability to forge nuclear policy. Unlike the Rafsanjani era, Khatami's moderation would not extend into the nuclear arena.

Khatami's election gave Khamenei the opportunity to refocus the Iranian nuclear program around the production of fissile material. The Supreme Leader was "sick of the slow pace of nuclear progress," and wanted to speed the program up.[79] Since Khatami was weak on national security, Khamenei used him to implement policy changes in the objectives and priorities of the nuclear complex. The Supreme Leader started by ordering the President to reorganize the AEOI under new leadership. Reza Amrollahi had run the AEOI for nearly decades, and allowed an unproductive array of research and develop efforts to saunter along without making tangible progress. The AEOI only managed to establish a basic technical foundation thanks to the Khan network. As instructed by

[77] De Bellaigue, *The Struggle for Iran*, p. 2.
[78] Takeyh, *Hidden Iran*, pp. 50–51.
[79] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 143.

Khamenei, Khatami sacked Amrollahi in favor of the much more competent Gholam Reza Aghazadeh.

When Aghazadeh took over the reins of the AEOI, he instructed the staff to focus exclusively on uranium enrichment and heavy water production technologies.[80] Sunk costs dictated that the Bushehr reactor had to be finished at some point, but plans to construct nuclear reactors were put on the back burner. Mastery of the most sensitive nuclear fuel cycle nodes was now the AEOI's overriding goal. When one Iranian scientist – an expert in the production of nuclear fuel – questioned the economic logic of building Iran's enrichment capacity, Aghazadeh simply replied: "We are going to do this by ourselves."[81] The scientist was transferred, and the AEOI mobilized around the indigenous production of enriched uranium.

The change in nuclear policy at the highest levels to privilege mastery of sensitive nuclear fuel cycle nodes allowed the Iranian scientific complex to seize on critical technical opportunities. In particular, the Khan network supplied an upgraded technical support and component package in 1997 to replace some poor quality centrifuge parts from previous shipments.[82] Khamenei and Khatami then allocated close to $800 million from the national budget to Aghazadeh, who funneled the majority into expanding the human and infrastructure base of the enrichment program. Scientists began to assemble and test the first Iranian P-1 based centrifuges on an experimental basis at the Kalaye Electric Company workshop in Tehran. The Iranians then fed uranium hexafluoride into a

[80] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 164.
[81] Ibid., p. 166.
[82] In initial 1995 package of rotor bellows for gas centrifuges proved to be of such poor quality that Khan had to replace them all. They also threw in design drawings for second generation P-2 centrifuges as further compensation.

centrifuge for the first time in 1999.[83] Over the next few years, AEOI staff conducted more covert tests on a handful of assembled centrifuges at Kalaye Electric, and began construction on two fuel enrichment plants at Natanz. Procurement of specialized equipment and exotic raw materials intensified as Iran prepared to assemble and install full cascades of gas centrifuges by 2002. Within the span of a few short years, Iran acquired sensitive nuclear fuel cycle technology, and swung into the ENR zone.

(2) Iran's Mixed Record of Proliferation Persuasion

Over the next twelve years, Iran made three concerted attempts to use its nuclear latency as a means of coercive diplomatic leverage against the United States. The first episode occurred after the involuntary exposure of Natanz in 2002 put Iran in a dangerous position. From October 2003 to June 2005, the Iranians swung towards a safe 'pay later' policy, and offered to implement limited constraints over the nuclear program to avoid military action from the Americans and wring concessions out of the Europeans. The ascendance of Mahmoud Ahmadinejad stalled diplomacy until October 2009, when Tehran again tried to broker a bargain with Washington during the fuel swap negotiations. Diplomacy fell into total deadlock for several years until the impact of sanctions and an electoral realignment in Tehran created a unique opportunity for Iran to stop its pendulum from swinging and commit to an interim accord over its nuclear program in November 2013. I assess each of these bargaining episodes through the lens of proliferation persuasion to explain when Iran failed and succeed to change the status quo in its favor. This comparative case study confirms that Iran was only able to cut an

[83] Chinese-sourced solid UF6 in a cylinder.

effective deal when it backed the threat of proliferation with a credible promise to remain in the ENR zone.

(2.1) Pendulum Swings Towards Safe 'Pay Later' Diplomacy (2002-2005)

On August 14th, 2002, an exiled Iranian dissident group revealed covert construction on two nuclear facilities at Natanz and Arak. In December, the United States government released satellite imagery confirming these sites contained sensitive nuclear projects, and added that Iran was "actively working to develop nuclear weapons capabilities." Independent analysts in Washington used open source data to identify Natanz as a uranium enrichment complex. Iran's secret efforts to master the nuclear fuel cycle were suddenly exposed to the world.[84]

The disclosure created three challenges that drove the regime to reconfigure its nuclear development plan around an updated 'pay later' strategy. The foremost issue was that although the exposure of the gas centrifuge facilities pushed Iran into the ENR zone, the enrichment process had not actually started yet. By the fall of 2002, the AEOI was close to mastering the front end of the nuclear fuel cycle. Research and development workshops had achieved some notable successes in the operation of single gas centrifuges with nuclear material, and production facilities were coming online to manufacture and assemble larger quantities of centrifuges. However, AEOI staff needed more time to finish construction on the PFEP and FEP at Natanz, install centrifuges into these facilities, and iron out technical glitches with the performance work levels of the

[84] David Albright and Corey Hinderstein, *Iran Building Nuclear Fuel Cycle Facilities: International Transparency Needed*, ISIS Issue Brief (Washington, DC: Institute for Science and International Security, December 12, 2002); Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 177.

centrifuges.[85] Iran had acquired sensitive nuclear technology, but remained at least several years away from realizing a latent nuclear weapons option.

The second problem for Tehran was the looming threat of preventive military or punitive action from Washington. The inclusion of Iran in President Bush's Axis of Evil speech and the U.S. invasion of Iraq to root out Saddam's nuclear latency convinced the regime in Tehran that they were next. Iranian officials were frantic in March 2003 "to let the Americans know they wanted peace."[86] Veteran diplomat Mohammad Javad Zarif finalized a proposal from Iran for a broad dialogue with the United States, and "suggested everything was on the table – including full cooperation on nuclear programs, acceptance of Israel and the termination of Iranian support for Palestinian militant groups."[87] Bush Administration officials demanded that Tehran agree to freeze and abandon its entire enrichment program as a precondition to diplomacy. Iran would have to accept total abandonment of enrichment with no centrifuges spinning. This 'zero centrifuge formula' was the natural corollary of the technology denial strategy pursued by the United States for over two decades. The Bush Administration went a step further and refused to engage in any talks with the Iranians until they unilaterally acquiesced to this demand. Even if the Americans did not execute a full-scale regime change operation, Tehran believed there was a good chance that Washington would marshal support through the United Nations Security Council for a limited military strike or coercive rollback of Iran's nuclear fuel cycle.[88]

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[85] David Albright, *Iran at a Nuclear Crossroads* (Washington, DC: Institute for Science and International Security, February 20, 2003).
[86] Dexter Filkins, "The Shadow Commander," *The New Yorker*, September 30, 2013.
[87] Glenn Kessler, "In 2003, U.S. Spurned Iran's Offer of Dialogue," *The Washington Post*, June 18, 2006, sec. World.
[88] Ray Takeyh, "Iran's Nuclear Calculations," *World Policy Journal* 20, no. 2 (July 1, 2003), pp. 22–23. Another reason Iran wanted to retain its enrichment assets was to provide cover for clandestine operations.

The third challenge stemmed from Iran's response to exposure. Tehran was caught flat-footed in August 2002, and muddled through a tactical deception campaign for over a year to protect its fragile nuclear assets. After delaying the IAEA access for six months, Tehran allowed a team led by Director General Mohammed ElBaradei to visit most of Iran's declared nuclear facilities in February 2003, including the Natanz complex. When ElBaradei queried how Iran had developed such an advanced centrifuge program, the Iranians claimed to have relied only on open source information and computer simulations. The Agency team was barred from collecting evidence or visiting additional facilities to confirm this claim.[89] Over the summer, though, the IAEA was allowed to take environmental samples that indicated serious inconsistencies in Iran's declaration. The detection of enriched uranium particles led the Agency to conclude that Iran must have received foreign technical assistance and/or been engaged in prior centrifuge tests with nuclear material.[90] In reaction to this hard evidence, Iran came clean over some aspects, but then kept revising its story as further evidence and inconsistencies came to light.[91] By September 2003, the IAEA tired of Iran's deception, and adopted a formal resolution calling on Iran to cease all enrichment activities and demanded that it clear up outstanding issues in its historical declaration. The United States threatened to refer Iran to the Security Council if they did not comply. The sum of all Tehran's fears

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If Iran kept the overt enrichment facilities safe at Natanz, it could either (a) "divert some of the resources earmarked for the large facility to a smaller covert plant" or (b) "use the excuse of the official facility to develop more advanced and powerful types of centrifuge machines. The IAEA has a number of ways to try to detect covert facilities, but in general, the larger overt facilities are, the more difficult it is to detect cheating." See Gary S. Samore, "Nuclear Rights and Wrongs: Why One Legal Term Stalled Negotiations with Iran," *Foreign Affairs Snapshot*, November 14, 2013.

[89] IAEA GOV/2003/40 (6 June 2003), pp. 2-8.

[90] IAEA GOV/2003/63 (26 August 2003), pp. 2-7.

[91] IAEA GOV/2003/69 (12 September 2003), p. 3.

came together as IAEA pressure to freeze enrichment coalesced with the credible threat of military action from Washington.

Within Tehran, moderate and hardline factions advanced two opposing policy responses to the escalating nuclear crisis. Both elite groups saw the IAEA resolution and threat of UNSC referral as a threat to national security, but offered very different prescriptions for how to keep and protect Iran's nuclear latency.[92] The moderates argued that Iran should halt the nuclear program to avoid the looming prospect of serious punishment, and unilaterally accede to the demands for increased cooperation and transparency. This extreme version of the 'pay later' approach to proliferation sought to deflect military action and punitive consequences. On the other hand, hardliners favored a confrontational cost acceptant approach.[93] If Iran ignored the IAEA and pressed ahead with its gas centrifuge program, Tehran could present a fait accompli over uranium enrichment. "The West would quickly fold and, as with North Korea, 'bribe' it to stay in the NPT."[94] Senior hardline clerics urged the regime to 'pay now' the costs of proliferation to put Iran in a stronger position to resist the West.

The domestic impasse ended in early October when Supreme Leader Khamenei backed a coercive diplomatic strategy that hewed close the 'pay later' position on the arc of Iran's nuclear pendulum. Khamenei eschewed both President Khatami's moderates and the more radical hardliners to give Hassan Rouhani the authority to negotiate an end to the nuclear crisis on Iran's behalf.[95] Although Rouhani was a traditional conservative, he rejected the extreme positions advocated by the moderates and hardliners. Instead, he

[92] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 188.
[93] De Bellaigue, *The Struggle for Iran*, p. 55.
[94] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 189.
[95] Rouhani was Secretary of the Supreme National Security Council, and had strong ties to Khamenei, see De Bellaigue, *The Struggle for Iran*, p. 59.

formulated a pragmatic bargaining posture to achieve a ranked set of goals. Foremost, Rouhani wanted to preserve existing nuclear facilities. This would require guiding Iran along a thin path to avoid total dismantlement on one side and preventive military action on the other. Second, once the crisis stabilized, Rouhani aimed to strengthen and expand Iran's nuclear latency. Third, an improvement in Iran's legal position within the IAEA would provide some legitimacy to its sensitive nuclear fuel cycle activities. Finally, Rouhani sought to use negotiations over Iran's nuclear program as a means to extract concessions from the West.[96]

The adoption of this last objective contrasted with the calls for unilateral acquiescence from the moderates. Rouhani aspired to flip the nuclear program from a liability into a point of bargaining leverage by offering limited nonproliferation promises in exchange for concessions from the West.[97] In the short term, Iran needed to compel the Europeans to underwrite Iran's security. This meant striking a deal whereby Europe promised to restrain the United States and delay referral of Iran's case to the Security Council. The deeper concession desired by the regime was complete acceptance by the West of Iran's purported right to enrich uranium. A closed IAEA nuclear file would be a significant step in this direction.

Tehran executed two policies to prepare the stage for coercive diplomacy over these goals. In private, Khamenei issued a 'halt order' to stop work on the military weaponization efforts that could not be excused as part of a civilian energy program.[98] Meanwhile, Rouhani signaled to the West that Iran was ready to resolve the nuclear

[96] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, pp. 191–193.
[97] Seyyed Hossein Mousavian, *The Iranian Nuclear Crisis: A Memoir* (Washington, D.C.: Carnegie Endowment for International Peace, 2012), p. 74.
[98] National Intelligence Council, "National Intelligence Estimate – Iran: Nuclear Intentions and Capabilities," Unclassified Public Summary, November 2007.

crisis, despite the apparent deep gulf between Iranian and American positions. Specifically, Rouhani met with ElBaradei and his team. According to Elbaradei's formal report, "Dr. Rouhani stated that a decision had been taken to provide the Agency, in the course of the following week, with a full disclosure of Iran's past and present nuclear activities. He also expressed Iran's readiness to conclude an Additional Protocol and, pending its entry into force, to act in accordance with the Protocol and with a policy of full transparency."[99] ElBaradei moved to bring the Western diplomats to the table because he "understood that Rouhani's promise carried the authority of the Supreme leader; it was therefore worth more than any number of assurances from the reformists."[100]

(2.1.1) Three Agreements but No Commitment

On October 16th, 2003, Rouhani met with ElBaradei to open a channel for diplomacy with the West. After promising full cooperation with the IAEA, Rouhani courted diplomats from France, Britain, and Germany (hereafter the EU-3) to begin negotiations at the Sa'dabad palace in Tehran. Since the United States refused to participate in direct talks with the Iranians, the Europeans acted as diplomatic surrogates. On October 21st, Iran and the EU-3 brokered the terms of the Tehran Agreement bargain. Iran agreed to suspend uranium enrichment while diplomacy continued over deeper issues, resolve outstanding issues with the IAEA, and bring the Additional Protocol into force. In exchange, the Europeans guaranteed Tehran's security against the threat of UNSC referral by the United States.

[99] See IAEA GOV/2003/75 (10 November 2003).
[100] De Bellaigue, *The Struggle for Iran*, p. 59

During the negotiations, the Iranian diplomats made clear that indefinite suspension and rollback were antithetical to the regime's goal of mastering the nuclear fuel cycle. Rouhani and his team offered only to accept the Additional Protocol and cooperate with the IAEA. As a result, the Sa'dabad discussions deadlocked over the zero centrifuge criteria advanced by the European delegates on behalf of the Americans. The Iranians broke the impasse on October 21st by promising a temporary suspension of enrichment in exchange for a security guarantee from the Europeans. Rouhani paused the discussions and called Supreme Leader Khamenei for the authorization to put this confidence building measure on the table. When the talks resumed, Rouhani told the Europeans "he was taking a huge, personal risk," but Iran accepted the principle of enrichment suspension while negotiations continued over the nuclear program. The Europeans agreed to shield Iran from Security Council referral for the time being, but the Tehran Agreement completely avoided the issue of whether Iran had the right to enrich uranium.[101]

Even though the limited promise came with the clear understanding that the suspension was not indefinite, it still incensed the hardliners. Basij paramilitaries surrounded Sa'dabad to chant protest slogans and block the European delegates from leaving the palace grounds. When the diplomats announced the successful accord at the end of the day, "Rouhani was clearly desperate to reassure the press that Iran had not wilted under Western pressure."[102] The vitriolic response from the hardline faction underscored their opposition to any effort to constrain the nuclear program, even for a temporary period. Rouhani persevered with the backing of Khamenei, and was able to

[101] Mousavian, *The Iranian Nuclear Crisis: A Memoir*, pp. 100–103; Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, pp. 197–199.
[102] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 199.

strike a viable deal that weighed in favor of the Iranians by stabilizing the nuclear crisis. The Europeans lived up to their commitment and restrained the United States, with the hope that Rouhani's confidence building measure might be the first step towards more durable nonproliferation promises from Tehran. Indeed, the IAEA noted that the Iranians started to pivot away from their previous "policy of concealment" to clear up inconsistencies, provide more information, and step towards implementing the Additional Protocol.[103]

Iran's Credibility to uphold its Promises Starts to Evaporate

Yet optimism quickly dissipated when the Iranians construed their promise to suspend enrichment in the narrowest possible terms. After the Tehran Agreement stabilized the nuclear crisis, the Iranians only stopped activities directly related to the physical enrichment of uranium, which meant a freeze on introducing UF_6 gas into the centrifuges. Rouhani ordered the acceleration of all other nuclear activities, including the manufacture and assembly of enough centrifuges for a full pilot cascade. Between November 2003 and mid-January 2004, Iran manufactured and assembled about 120 centrifuges. Construction on the Arak heavy-water plant and uranium conversion facility at Isfahan continued apace, as did the production of centrifuges.[104] According to Hossein Mousavian, Rouhani was exploiting the terms of the promise made in October "to create facts on the ground," and force the United States "to understand that halting Iran's

[103] IAEA GOV/2003/75 (10 November 2003), p. 10.
[104] IAEA GOV/2004/11 (24 February 2004), p. 11.

nuclear progress was impossible."[105] The enhancement of Iran's nuclear latency put pressure on the Europeans to cut a more comprehensive deal on Tehran's terms.

Iran's brinkmanship undermined the credibility of the Tehran Agreement as a nonproliferation promise. European diplomats balked at Rouhani's buildup as a blatant violation of the bargain, while the Iranians resorted to "quibbling over what the suspension of uranium enrichment activities means; just acquiring equipment, they argued, does not amount to uranium enrichment."[106] By mid-February 2004, Iran and the EU-3 met for a second round of negotiations in Brussels to clarify the terms of suspension. The Iranians agreed to expand the temporary suspension to their centrifuge production efforts in April, but rebuffed an offer from the Europeans for a permanent freeze in exchange for economic and technological concessions.[107] Over the next few months, Iran produced as many centrifuges as possible before terms of the Brussels Agreement came into force, and inaugurated hot testing at the uranium conversion facility in Isfahan. But by May, Iran allowed the IAEA into its centrifuge workshops and production facilities to establish a baseline for the more comprehensive freeze.[108]

Towards Paris and Deadlock

Despite the enhanced freeze under the Brussels Agreement, ambiguity over Iran's past and present nuclear activities remained an issue, and pushed Iran into conflict with the IAEA. In June 2004, the Director General reported that Iran had made "good progress" clearing up some issues, but frequently delayed inspections, provided

[105] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 206.
[106] De Bellaigue, *The Struggle for Iran*, p. 60.
[107] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 204.
[108] For more information on the technical estimates and details, see IAEA GOV/2004/11 (24 February 2004) and IAEA GOV/2004/34 (1 June 2004).

contradictory information, concealed the nuclear program's historical record, and attempted to defeat technical means of detection.[109] Three issues were particularly vexing to the IAEA. First, Iran denied requests from Vienna for agency inspectors to visit the Parchin military complex near Tehran in the summer of 2004.[110] This huge site contained hundreds of buildings used primarily for research, development, and production of conventional weapons. The IAEA wanted to visit a suspicious isolated site within Parchin that appeared to be well suited for "researching and developing high explosive components for an implosion-type nuclear weapon."[111] Second, Iran refused to clear up why they had razed buildings and scraped the earth at the Levizan-Shian site between August 2003 and March 2004, if not to try and "defeat the powerful environmental sampling capabilities of IAEA inspectors."[112] Third, outstanding questions remained about the military dimensions of Iran's centrifuge program, as well as the weaponization projects. The Iranians were continually revising their historical account of the enrichment program, while the IAEA kept discovering undisclosed research related to the production of atomic weapons components.[113]

The steady increases in nuclear latency and checkered record of transparency further eroded confidence in Iran's nonproliferation promises. The breaking point came after the IAEA Board of Governors adopted a resolution on June 18th, 2004 deploring

[109] IAEA GOV/2004/34 (1 June 2004), p. 9.
[110] IAEA GOV/2004/60 (1 September 2004), pp. 10-11.
[111] David Albright and Corey Hinderstein, *Parchin: Possible Nuclear Weapons-Related Site in Iran* (Washington, DC: Institute for Science and International Security, September 15, 2004).
[112] *ISIS Imagery Brief: Destruction at Iranian Site Raises New Questions About Iran's Nuclear Activities* (Washington, DC: Institute for Science and International Security, June 17, 2004).
[113] Outstanding issues remained over the history of Iran's efforts to import, manufacture and use centrifuges of the P-1 and P-2 design, as well as the source of uranium contamination found at various sites. Iranian defense minister Ali Shamkhani acknowledged his country's military had built centrifuges, but claimed they were for civilian use. The exposure of the Khan network during the Libya nuclear deal in December 2003 further unmasked many of Iran's purchases. Regarding weaponization activities, as late as February 2004 the IAEA discovered experiments with exotic materials (polonium-210) used in neutron source initiators for atomic weapons, see IAEA GOV/2004/11 (24 February 2004).

Iran's failure to cooperate adequately with inspectors.[114] In response, Rouhani accused the EU-3 of violating the spirit of the agreements. Several days later, Iran informed the Europeans and the IAEA on June 23rd that it planned to resume its uranium enrichment program under safeguards. By July 2004, Iran completed hot testing at the UCF at Isfahan and decided to covert 37 tons of yellowcake to uranium hexafluoride. Within two short months, Tehran had reneged on the Tehran and Brussels Agreements. According to Mousavian, there was an "impatient expectation" within the regime "that the level of cooperation with the IAEA and confidence-building measures already taken were enough for the resolution of the issue and for Iran's nuclear dossier to be taken off the agenda of the Board of Governors. Most of Iran's policymakers felt that Iran had already done more than enough for the EU3 to go through with its end of the bargain reached in the Sa'dabad statement in fall 2003 and that further compromise by the nuclear team would be unnecessary and a sign of weakness."[115] The Iranians believed minimal adherence to the existing nonproliferation regime was adequate to cut a deal. Moreover, Tehran was unwilling to implement more credible assurances of nuclear restraint precisely because the costs to the enrichment program would be too high.

On September 2004, the IAEA adopted another resolution condemning Iran, this time reviving the threat of referral to the UNSC.[116] By November, Iran reluctantly returned to the bargaining table with the Europeans in Paris. The negotiations focused on getting the Iranians to live up to the terms of the original Tehran agreement, but again avoided serious discussion of whether the West would accept an enrichment program in

[114] IAEA GOV/2004/49 (18 June 2004).
[115] Mousavian, *The Iranian Nuclear Crisis: A Memoir*, p. 135.
[116] IAEA GOV/2004/79 (18 September 2004).

Iran.[117] Since Rouhani and his team refused to consider any assurance beyond a temporary freeze over enrichment, the Europeans could not bring the Americans to the table or offer more substantial concessions. Under pressure of referral to the Security Council, Iran eventually backed down. Supreme Leader Khamenei authorized Rouhani to suspend enrichment for three months so working groups on both sides could meet "to discuss and define mutual commitments to 'firm guarantees' for Iran-EU cooperation and 'objective guarantees' of non-diversion."[118] To prevent the total breakdown in diplomacy, Iran and the Europeans agreed to a stopgap measure with the November 2004 Paris Agreement.

From January to March 2005, the Iranians proposed a series of more extensive confidence building measures, but negotiations deadlocked as the wide gulf reemerged between Washington and Tehran over what constituted an 'objective guarantee' that Iran would not proliferate in the future. The Bush Administration refused to budge from the zero enrichment criteria, while Khamenei and Rouhani held steadfast to Iran's right to enrich uranium so long as IAEA safeguards were implemented assuring no material was diverted towards nefarious ends. In the early spring, Rouhani put forward an informal proposal to resume enrichment while moving towards a more comprehensive diplomatic solution. The approach offered to include additional safeguard measures such as a permanent onsite inspector at Natanz, and a written promise that Iran would never seek to withdraw from the NPT. The Europeans remained determined to prevent "any continuation of the Iranian enrichment program." In particular, the EU-3 wanted a

[117] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 209.
[118] Mousavian, *The Iranian Nuclear Crisis: A Memoir*, p. 150.

credible and durable guarantee that Iran's nuclear program would not be used for military applications.

As Mousavian recalls, Rouhani's team recognized that the "European diplomats were seeking guarantees that would not be affected by changing political conditions." But once again, "Tehran maintained that the NPT, the Safeguards Agreement, the Additional Protocol, transparency, and cooperation with the IAEA were the best 'objective guarantees' that no diversion would occur in Iran's peaceful nuclear program. Official recognition of Iran's right was the key prerequisite for compromise … but the EU did not consider the guarantees Iran proposed as sufficient."[119] Since the regime refused to consider measures beyond the NPT that would tie their hands or otherwise restrict nuclear options down the road, diplomacy reached an impasse in advance of the upcoming Iranian elections in June 2005.[120] Rouhani managed to cut some temporary deals between October 2003 and November 2004, but a more comprehensive diplomatic accord with the West remained elusive.

(2.1.2) Theoretic Assessment: The Inadequacy of Iran's Nonproliferation Promise

The perpetual movement of Iran's nuclear pendulum helps explain why Rouhani and Khamenei pursued diplomacy and attempted to signal peaceful intent. Coercive diplomacy with nuclear latency was central to Rouhani's plan to 'pay later' for proliferation rather than incur what appeared to be potentially severe costs of punitive action at the time. Although there were moments of brinkmanship, Iran was primarily bargaining with the West to protect and enhance its vulnerable nuclear fuel cycle assets.

[119] Ibid., p. 162.
[120] Ibid.; Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 214.

Unlike North Korea or Japan, the Iranians were not leveraging the threat of proliferation to gain independent material or territorial concessions. Instead, Tehran wanted a security guarantee from Europe that would decrease the risk of preventive strike and regime change.

Rouhani's diplomatic efforts succeeded in accomplishing this narrow goal. By the summer of 2005, Iran had changed the unfavorable status quo wrought by the sudden exposure of Natanz. Even though the initial deception campaign put Iran in a dangerous position, Rouhani managed to stabilize the crisis through the Sa'dabad negotiations in Tehran. This interim deal bought time for the uranium conversion facility to be finished, along with a tenfold increase in centrifuges at Natanz.[121] Subsequent negotiations in Brussels and Paris ultimately failed to produce a more permanent bargain, but still undermined Washington's efforts to refer the case to the UNSC. Iran weathered the threat of war and enhanced its technical capabilities up to a point.[122]

Yet, as stipulated by the proliferation persuasion theory, Rouhani was unable to compel further acquiescence from the West once the limited in scope and ephemeral nature of Iran's nuclear promises became apparent. Tehran only advanced promises based on increasing transparency and the ability of the IAEA to detect diversion from declared nuclear fuel cycle facilities. That is, Iran just offered to implement safeguards, not a decrease in its nuclear latency. None of these measures altered the strategic calculus of the regime enough to convince the West that Iran would not walk back on this promise. The Iranians signaled their cooperative motives *at the time* instead of issuing a credible

[121] The number of centrifuges at Natanz increased from around 150 to over a 1000.
[122] However, Rouhani very much wanted to complete the full nuclear fuel cycle. This would change the 'whole dynamic' of the crisis: "The West would have no choice but to accept it." Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 210.

commitment that would decrease nuclear latency and stick despite future changes in Iran's domestic and international environments. The United States (and the EU-3) was not prepared to accept Iran's enrichment program without a nonproliferation promise immune to change. Furthermore, Iran's use of "minimal and legalistic interpretations to find loopholes and violate the spirit of agreements" after each round of diplomacy in Tehran, Brussels, and finally Paris severely eroded the credibility of their promises in eyes of the West.[123]

(2.2) Paying Costs to Enrich Uranium (2005-2013)

The 2005 summer elections in Iran handed Mahmoud Ahmadinejad and his hardline principalist faction control over the government.[124] Upon assuming the presidency on August 2nd, Ahmadinejad swung Iran's pendulum back towards a 'pay now' approach to building up nuclear latency. The new president abrogated the Paris Agreement by ordering the full resumption of all nuclear fuel cycle efforts, with particular emphasis on starting the enrichment process. The Iranians held steadfast to this goal despite mounting pressure from the international community. By February 2006, Iran stopped implementing the Additional Protocol as it began small-scale uranium enrichment, and the IAEA Board of Governors referred Iran's file to the United Nations Security Council. The Iranians remained defiant. In April, Ahmadinejad announced that Iran "had joined the club of nuclear countries" by enriching uranium to 3.5 percent U-235, and in subsequent months it continued producing low enriched uranium up to 5.0

[123] Yang Bonny Lin, *Bazaar Diplomacy: Examining Iran's Nuclear Bargaining Tactics* (Livermore, CA: Lawrence Livermore National Laboratory, August 2012), p. 12.
[124] The hardliners gained control over presidency, parliament, judiciary, executive, military, and security establishments.

percent U-235.[125] Within a short period of time, Iran made substantial technical progress at the cost of referral to the Security Council.[126]

A dispute emerged within the hardline faction over how to handle diplomacy in the summer of 2006. The hardliners as a group had agreed that Iran should pay the costs associated with resuming uranium conversion and then enrichment activities so as to present the West with a series of gradual faits accompli. Now despite a "decreased concern over any negative fallout," they started to divide between those willing to pursue the fuel cycle further "at all costs," and those "who wish to pursue it albeit without jeopardizing diplomatic ties."[127] Supreme Leader Khamenei and President Ahmadinejad "favored an uncompromising pursuit of continued uranium enrichment regardless of the political cost," whereas Foreign Minister Ali Larijani "believed there was something to be gained from a degree of cooperation … diplomacy should not be abandoned."[128] The hardliners were ready to pay a price for mastering and scaling up the capacity of uranium enrichment, but disagreed over what this total cost should be for Iran.

With this dispute simmering over how far to push the 'pay now' approach, the regime resorted to a tactical diplomacy designed to buy time and dilute consequences while increasing technical latency. In March in a halfhearted attempt to stall the IAEA vote, the Iranians offered to clear up outstanding issues with the history and extent of their nuclear program if the Board of Governors immediately closed Iran's nuclear file and retracted referral to the Security Council. By early June, the Americans and

[125] IAEA GOV/2006/64 (14 November 2006), p. 1.
[126] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 227.
[127] *Iran: Is There a Way Out of the Nuclear Impasse?*, Middle East Report (Brussels: International Crisis Group, February 23, 2006), pp. 6–8.
[128] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, pp. 229–230.

Europeans (P5+1) joined efforts to make another attempt at diplomacy.[129] Top U.S. State Department officials offered direct, bilateral negotiations with the Iranians on the condition that they suspend enrichment and permit AP style inspections, while the EU proposed a package of nuclear and economic incentives.[130] The Iranians repeatedly turned down these overtures throughout the summer, and again indicated that they would negotiate only after the Security Council set aside the nuclear issue and the IAEA closed the case. The West rebuffed this demand, and by September 2006 the prospect of diplomacy had faded.[131]

Over the next six months, the Iranians accelerated their enrichment activities as the Security Council imposed two rounds of sanctions and the United States threatened preventive military action. In October 2006, Iran started operating a second 164-centrifuge cascade at the Natanz PFEP, along with a six-fold increase in the quantity of uranium gas (UF6) being fed into the centrifuges.[132] On December 23rd, members of the UNSC adopted Resolution 1737, which implemented the first round of sanctions against Iran. Since Russia and China watered down the punitive bite of the resolution, Washington tried to heighten the prospect of a military strike by ordering a second carrier

[129] The term P5+1 refers to the five permanent members of the Security Council (U.S., UK, Russia, China, and France) plus Germany.

[130] "The offer includes, among other items, a five-year guaranteed reactor fuel supply, access to advanced reactor technology for new projects, promises of increased trade and investment, and expanded cooperation in other areas, including civil aviation and development of the oil and gas sector. The current EU proposal lacks clearly stated security assurances that promise Iran's territorial integrity and sovereignty will be respected in the event of a long term deal." David Albright and Jacqueline Shire, *Better Carrots, Not Centrifuges: Why Iran Must Halt Enrichment and How the U.S. Can Make It Happen* (Washington, DC: Institute for Science and International Security, July 10, 2006).

[131] "If the purpose of this response was to muddy the water, buy additional time for its delayed pilot-scale uranium enrichment program at Natanz, while giving China and Russia some ammunition for delaying discussion of sanctions at the Security Council, Iran may have succeeded." David Albright and Jacqueline Shire, *Iran's Response to the EU: Confused but Sporadically Hopeful* (Washington, DC: Institute for Science and International Security, September 11, 2006), p. 3.

[132] David Albright and Jacqueline Shire, *Latest IAEA Report on Iran: Continued Progress on Cascade Operations, No New Cooperation with IAEA* (Washington, DC: Institute for Science and International Security, November 14, 2006).

task group to complement the existing naval fleet in the Persian Gulf. Several months later, Bush Administration officials leaked to the press the "real possibility" of an attack on Iran as a third carrier strike group moved into the Gulf in February 2007. On March 24th, the Security Council passed a second round of sanctions (Resolution 1747), while the United States conducted the first joint naval and air exercise in the Persian Gulf since the 2003 invasion of Iraq.

Despite the growing costs of sanctions and the threat of preventive war, a number of countervailing factors allowed Khamenei and Ahmadinejad to push Iran's nuclear pendulum towards an even more extreme 'pay now' position. Washington's best attempts to credibly threaten military action were undermined by the quagmire in Iraq. U.S. forces were bogged down fighting the counterinsurgency. As sectarian violence wracked Baghdad and President Bush announced the surge of U.S. troops to stabilize Iraq, Tehran saw the three naval carrier fleets in the Gulf as paper tigers. On the ground in Iraq, Iranian Quds force operatives actively supported the insurgency, enhanced the lethality of attacks on U.S. soldiers, and gained heavy influence over the Shia dominated Iraqi political system. As Iraq started to morph into a de facto Iranian colony, the geopolitical game in January 2007 was radically different from the dark months after March 2003 when Tehran feared imminent regime change. In stark contrast, the Iranians boldly reveled in confrontation with the United States.

The public release of key judgments from an updated United States National Intelligence Estimate (NIE) in November 2007 further neutered American support for military action in favor of diplomacy and containment.[133] Media attention focused almost

[133] The White House instructed the National Intelligence Council (NIC) to release an unclassified five-page version of the NIE in November with "clear instructions" to "delete as little as possible." See Thomas

exclusively on the lead finding that in the fall of 2003, "Tehran halted its nuclear weapons program."[134] Numerous other judgments and nuanced ancillary estimates in the report were largely ignored. The most important qualification was that contrary to pronouncements of peaceful intent, "Iranian military entities were working under government direction to develop nuclear weapons," until the halt order in 2003. Also, this freeze only applied to "nuclear weapon design and weaponization work and covert uranium conversion-related and uranium enrichment-work." A dissenting estimate expressed only moderate confidence that Iran had frozen all clandestine activities. Iran's continued development of its declared nuclear fuel cycle led to the high confidence judgment that Tehran "at a minimum is keeping open the option to develop nuclear weapons." The NIE pinpointed the long-standing crux of Iranian nuclear policy.

The intelligence reassessment went on to identify the basic contours of Iran's nuclear development pendulum. Since Iran stopped its military projects and briefly froze enrichment in response to international pressure, the National Intelligence Council (NIC) posited that nuclear decision-making in Tehran was "guided by a cost-benefit approach rather than a rush to a weapon irrespective of the political, economic, and military costs." After starting the enrichment process, Iran reached a technical stage whereby "only an Iranian political decision to abandon a nuclear weapons objective would plausibly keep Iran from eventually producing nuclear weapons." But as the nullification of the Paris Agreement indicated, the perennial problem was that "such a decision is inherently reversible." The Iranians were clearly willing to pay the costs associated with building up

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Fingar, *Reducing Uncertainty: Intelligence Analysis and National Security* (Stanford, California: Stanford Security Studies, 2011), p. 121.

[134] All quotes are from National Intelligence Council, "National Intelligence Estimate – Iran: Nuclear Intentions and Capabilities," Unclassified Public Summary, November 2007.

a stock of LEU. The NIC suggested that a quick diplomatic solution was needed to freeze enrichment with durable and nonreversible constraint over Iran's nuclear program.[135]

Unfortunately, the resignation of Ali Larijani from the Supreme National Security Council in late October closed the diplomatic route. Without Larijani's stance of hardline pragmatism towards negotiations, Ahmadinejad and Khamenei were free to pursue an uncompromising stance and reject diplomacy with the West. Saeed Jalili replaced Larijani, and became infamous for his obdurate refusal to deviate from ideological talking points at discussions with the P5+1. Steady progress at the Natanz Fuel Enrichment Plant (FEP) during the fall of 2007 bolstered Iran's hardline position.[136] The international community levied more sanctions in 2008, but Tehran took little notice as the Russians and Chinese diluted the punitive consequences. During the last year of the Bush Administration, the Americans floated an offer to freeze sanctions if the Iranians froze enrichment. Tehran outright rejected the proposal, and remained focused on building up the stockpile of LEU at Natanz.

(2.2.1) The Fuel Swap Deal (2009-2010)

The Iranian nuclear program remained a vexing national security issue for the United States as President Barak Obama assumed office in January 2009. The President ordered Ambassador Dennis Ross and Puneet Talwar to lead a comprehensive review of U.S. policy towards Iran, along with veteran nonproliferation negotiators Gary Samore at the White House and Robert Einhorn from the State Department. The team completed the review in April, and recommended the President adopt the same dual track strategy

[135] Fingar, *Reducing Uncertainty*, p. 79.
[136] By September, around 2,000 centrifuges were spinning at Natanz. Within one month, the Iranians installed another 1,000 centrifuges at the plant.

towards Iran advocated by Rice and Burns during the second term of the Bush Administration: an emphasis on diplomacy backed by the threat of punitive sanctions. Obama hoped that diplomatic progress over the nuclear issue "would open the door to a general improvement in US-Iranian relations."[137] The end goal of the White House was to eliminate Iran's capacity to produce nuclear weapons. Given the difficulty in negotiating such an outcome, Washington continued to rely on confidence building measures and interim deals as the most realistic means of imposing constraints on Tehran.

The Obama Administration was eager to begin diplomacy as Iran's technical capacity to breakout continued to grow. By June 2009, Iran had produced almost 1,400 kilograms of LEU. Although the centrifuges were not operating at optimal performance levels, Natanz did have enough capacity to further enrich this LEU stock into enough highly enriched uranium (HEU) for a single weapon. An opportunity soon emerged for the United States to negotiate the export of this enriched uranium out of Iran. On June 2nd, Mohamed ElBaradei informed the United States and Russia that the Iranians requested help from the IAEA to find a foreign supplier of uranium fuel rods for the Tehran Research Reactor (TRR).[138] In Washington, Gary Samore and Robert Einhorn formulated a fuel swap proposal. The Americans would help secure a fuel contract for the TRR on the condition that the Iranians ship the vast majority of their enriched uranium out of the country. The core goal of the swap offer was to get the Iranians to export most of their enriched uranium stock out of the country, "so it would take them more time to

[137] Former Senior White House Official. Interview by author. Digital recording. Cambridge, MA. May 7, 2014.
[138] The Tehran Research Reactor (TRR) is a 5 megawatt-thermal (MWth) pool-type light water research reactor.

get back up to a bombs worth of material."[139] In addition to increasing Iran's breakout time, exporting the LEU would send a strong indication that the regime was serious about placing some sort of constraints over the nuclear program, while buying time for further negotiations.[140]

Unfortunately, the disputed reelection of Ahmadinejad in June 2009 and the domestic upheaval of the Green Revolution had two negative ramifications on diplomacy with the United States. First, the regime became incapacitated by the intense political infighting among the elites vying for survival and power in Tehran, and could not respond to the overtures for a fuel swap from the Obama Administration. The Green Revolution derailed early diplomacy over the nuclear program until the domestic situation stabilized in the fall. The more pernicious impact was the reinforcement of Khamenei's conviction that "Obama was no better than any other U.S. president, and that the ultimate objective of U.S. policy was to destroy the Islamic Republic." Khamenei suspected that Washington was fomenting the unrest and supporting the revolutionaries. This hardened his position towards the Obama White House over the nuclear issue. "From Khamanei's standpoint, the nuclear issue was only a wedge … we [were] using to pressure Iran."[141] The deep distrust of the Supreme Leader would return later to thwart diplomacy and undermine Iran's credibility.

The Geneva Promise and Vienna Volte-Face

[139] Former Senior U.S. Official. Interview by author. Digital recording. Washington, DC. May 15, 2014.
[140] An important aspect of the subsequent Geneva deal centered on the recognition of Iranian enrichment in return for limiting the stock to below 5 percent U-235.
[141] Former Senior White House Official. Interview by author.

After the most intense turmoil in Tehran began to subside by the end of the summer, a small team of Obama Administration officials pitched their counterparts in Moscow on the idea of the fuel swap deal. The Russians thought the proposal was a good idea, and agreed to a commercial fuel production partnership with the French for the TRR rods.[142] As information about the US-Russian proposal began to trickle down to the Iranians, President Ahmadinejad was eager to begin diplomacy. Although Ahmadinejad spearheaded the hardline rejection of diplomatic overtures for nearly four years, he now needed to sell a 'victory' over the West at home to shore up his domestic legitimacy after the fraudulent elections in June. A former senior Obama Administration official also suspected that the brutal crackdown left Ahmadinejad with "no choice but to engage."[143] On September 13th, therefore, Iran agreed to begin formal negotiations over the fuel swap proposal in Geneva the next month.

In a curious move, the Iranians revealed the existence of another secret fuel enrichment facility at Fordow before diplomacy resumed on October 1st. The United States had discovered this clandestine facility during the later years of the Bush Administration, but kept the information private. According to Gary Samore, the Obama Administration wanted to play the Fordow card diplomatically in a way that "would be most damaging and embarrassing to the Iranians, and most helpful in terms of strengthening international pressure against them, and in particular using it to maximum advantage with the Russians."[144] At some point in September, the Iranians apparently

[142] In the context of the U.S. 'reset', the Russians were willing to cooperate over Iran at the time. For an in-depth assessment, see Angela Stent, *The Limits of Partnership: U.S.-Russian Relations in the Twenty-First Century* (Princeton, New Jersey: Princeton University Press, 2014).
[143] Former Senior U.S. Official. Interview by author.
[144] Former Senior White House Official. Interview by author.

found out that Washington already knew about the covert facility.[145] Several former U.S. officials believed that Iran decided to go public with Fordow because they worried that Washington would expose them first.[146]

To this end, Iran sent an informal letter to Mohamed ElBaradei on September 21st informing the IAEA that there was an undisclosed enrichment facility under construction that they needed to discuss.[147] ElBaradei showed the letter to the American delegation at a United Nations summit meeting in New York. When Gary Samore and Robert Einhorn read the letter, they "knew immediately that it was a sly reference to Fordow, but the Iranians had not really disclosed it."[148] To prevent Iran from claiming they had notified the IAEA of the secret facility, the Obama Administration rapidly mobilized "to beat them to the punch and just expose it."[149] In a private meeting that same night, senior U.S. officials presented the evidence on Fordow to their Russian counterparts. According to one official at the meeting, Russian Foreign Minister Sergey Lavrov was "really shaken. He was angry. The Russians were very embarrassed the Iranians were pursuing this secret facility, and even though they would have liked to deny it, the evidence was just so overwhelming."[150] The decision to expose Fordow put the Iranians "on the back foot; it put them on the defensive. In particular, the Russian and Chinese were just furious that they had been lying to everyone about the program."[151] President Obama, together with British Prime Minister Brown and French President Sarkozy, soon thereafter rolled out

[145] "They were forced to admit it because they found out that we found out. It is really the same as Natanz. Natanz began life as a secret nuclear weapons facility, and only after it was disclosed did the Iranians feel compelled to declare it to the IAEA and allow inspection." Former Senior White House Official. Interview by author.
[146] Former Senior U.S. Official. Interview by author.
[147] Patrikarakos, *Nuclear Iran: The Birth of an Atomic State*, p. 253.
[148] Former Senior White House Official. Interview by author.
[149] Former Senior U.S. Official. Interview by author.
[150] Former Senior White House Official. Interview by author.
[151] Former Senior White House Official. Interview by author.

the intelligence on Fordow to the public, and international pressure on Iran reached another fever pitch. The Iranian move to come clean seemed not to work.[152]

Under renewed pressure to reach a deal, the Iranians agreed to the fuel swap proposal from the P5+1 in Geneva on October 1st, 2009.[153] At first, each side just read out formulaic talking points about various issues related to Iran's nuclear program and Fordow.[154] The lunch break afforded U.S. Ambassador William Burns a chance to approach Iranian Ambassador Saeed Jalili with an offer to speak in private. Small teams from each side met in a separate room. Robert Einhorn and Punet Talwar joined Ambassador Burns, while the Iranian team consisted of Ambassador Jalili and his deputy Ali Bagheri. Burns presented the basic concept of the fuel swap proposal they had developed with the Russians, and Jalili "was not equivocal. He accepted the proposal."[155] Einhorn stayed afterwards with Bagheri to go over the various elements of the proposal in detail to "make sure that they really understood it."[156] Bagheri confirmed that Iran would export 1,200 kilograms of LEU in return for fabricated fuel rods, agreed to cooperate with the IAEA to implement safeguards over the Fordow plant, and set a date to finalize the technical terms of the fuel swap deal several weeks later in Vienna. Although Bagheri accepted the entire package put forth by the Americans, his sole condition was that the

[152] David E. Sanger and William J. Broad, "U.S. and Allies Warn Iran Over Nuclear 'Deception,'" *The New York Times*, September 26, 2009.
[153] Javier Solana convened the opening plenary session with representatives from the P5+1 and Iran.
[154] At the outset, P5+1 offered the same 'freeze for freeze' relief condition from June 2008: if Iran halted any expansion of its enrichment activities, the P5+1 promised not to impose additional sanctions while negotiations continued. When the Americans and others expressed concern about the secret development of the fuel enrichment plant at Fordow, the Iranians brushed it off as "a perfectly innocent facility." Since Iran rejected Modified Code 3.1, Jalili claimed they were under no legal obligation to reveal this facility until the introduction of uranium. The clandestine development of a hardened facility was necessary, the Iranians claimed, to counter threats of aerial attack from the United States and Israel.
[155] Former Senior U.S. Official. Interview by author.
[156] Former Senior U.S. Official. Interview by author.

details not be made public yet "because they needed first to explain this in Tehran."[157] The American team returned to Washington with guarded optimism that an interim nuclear deal might be at hand, while the Iranians set out along the tough road to sell the proposal to the Supreme Leader.

When technical level discussions began in Vienna on October 19th, it became readily apparent that Jalili's team had been instructed to renege on the Geneva agreement.[158] To open the meeting, the U.S. team reiterated the basic principles that had been agreed upon by both sides on October 1st. "Right from the start, the Iranians walked it back ... They had every kind of excuse not to do this. It was clear they had run into a political buzzsaw at home, and just could not do the [fuel swap deal]." The chief compliant from the Iranians concerned the phased nature of the swap. Tehran was no longer comfortable sending the LEU out of the country unless they received the TRR rods at the same time, and demanded guarantees that the Americans would make reciprocal moves.[159] Desperate to save the deal, Mohamed ElBaradei drafted up a legal IAEA contract that committed Washington to support the effective implementation of the swap. Jalali and his team returned to Tehran with the contract but never responded. "It was clear there was no deal."[160] Within two short weeks, the Iranians had reneged on their first nonproliferation promise in nearly four years.

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[157] Former . Interview by author.
[158] Parties involved included: U.S., RU, FR, Iran, and the IAEA. ElBaradei chaired the meeting. The U.S. team included Dan Poneman to help work out technical implementation of the deal.
[159] "The critical point is that we always wanted the first fuel to come out right away, and we would give them fuel as soon as we possibly could, but we weren't going to delay the export of the enriched uranium until fuel rods could be done because the reality was it was going to take a long time to do the fuel rods. There was always going to be a situation where the Iranians were going to ship out their enriched uranium without getting fuel." Former Senior U.S. Official. Interview by author.
[160] Former Senior U.S. Official. Interview by author.

Walking back on the Geneva Agreement sent a strong indicator to Washington that the regime in Tehran could not uphold commitments over its nuclear program. The diplomatic repercussion of the Fordow revelation helped explain why the Iranians agreed in the first place to the fuel swap proposal. By infuriating the Russians, the exposure backfired and put pressure on the regime to cut a deal.[161] But the growing rift within the hardline faction between Ahmadinejad and Khamenei undercut the durability of any promise from the regime. Although the president instructed Jalili to reach an agreement, the Supreme Leader apparently vetoed the deal because he opposed "the idea that they would lose some of their enriched uranium."[162] The Obama White House thereby came to believe that the Iranians were not willing or able to constrain the nuclear program. As one senior official aptly concluded: "They simply were not going to do it."[163] Frustration over the Vienna about-face permeated up to President Obama, who expressed disappointment that the Iranians had failed to follow through on their end of the confidence building measure.

[161] Former Senior White House Official. Interview by author.
[162] Former Senior White House Official. Interview by author.
[163] Former Senior U.S. Official. Interview by author.

Sanctions amid Third Party Mediation

By November 2009, the administration believed there was no chance the original fuel swap deal would happen, so Obama authorized a green light for Ambassador Susan Rice to pursue multilateral sanctions at the United Nations. In order to pass a biting resolution against Iran, Rice engaged in tough negotiations with members of the Security Council. A series of quid pro quo deals with the Russians and Chinese were of particular importance. After Fordow and Geneva, Russia was quite frustrated with Iran, and was more willing to consider sanctions. China, on the other hand, benefited handsomely by filling the vacuum in Iran's energy sector left by Western divestment. Washington turned to Riyadh for assistance. By late March, Saudi Arabia guaranteed a boost in petroleum exports to China on the condition that Beijing's delegates in New York support the sanctions resolution. Ambassador Rice also received inadvertent assistance from the Iranians as they resorted to brinksmanship. On November 25th, Ahmadinejad announced a long-term intention to build ten new fuel enrichment plants. He upped the ante again several months later by enriching fuel at the Natanz pilot plant up to 20% U-235 for the TRR. Since Iran at that time lacked the production line to manufacture actual fuel rods from this material, the move smacked of a ploy to threaten the West by shortening the potential time needed to produce a weapon's worth of HEU, and gave the Obama Administration's push for sanctions a boost.

Even though the Obama White House was invested in the sanctions process, several other states continued independent efforts to resurrect the fuel swap deal and mediate a diplomatic solution between the U.S. and Iran. President Obama initially enlisted Brazilian, Turkish, and Japanese support in November as part of a last ditch

effort to convince Tehran to accept the Geneva proposal. In December 2009, the Japanese intensified their efforts to find a solution, and even went so far as to invite a high level Iranian envoy to Tokyo. But Japan shut down their efforts after it became clear by the winter of 2010 that Washington was no longer interested in diplomacy. The Turks, however, continued apace, and began to actively coordinate with the Brazilians.[164]

On April 12th, President Lula of Brazil and Prime Minister Erdoğan of Turkey met with President Obama on the sidelines of the Nuclear Security Summit in Washington DC. Obama remained skeptical that Iran would agree to impose any constraints over its nuclear program, but encouraged Lula and Erdoğan to continue discussions. "There was nothing wrong with diplomacy, but the Iranians simply could not be relied upon, Obama indicated."[165] Meanwhile, Secretary of State Hillary Clinton held a separate meeting with Turkish Foreign Minister Ahmet Davutoğlu to discuss Iran in detail. Davutoğlu pitched the original Geneva proposal from October 2009. Secretary Clinton asked Robert Einhorn to explain why this proposal had been overcome by events on ground. Einhorn laid out the technical problem. The original deal removed 1,200 of the 1,500 kilograms of LEU from Iran. By the spring of 2010, Iran had close to 2,300 kilograms of LEU, so removing 1,200 kilograms would leave them with enough material to produce HEU for an atomic weapon. Secretary Clinton emphasized that Washington would no longer accept the original proposal. If the Turks and Brazilians wanted to pursue the swap principle, they would have to update the Geneva proposal to correct for

[164] Both countries made clear to Ambassador Rice that they opposed further sanctions in the Security Council against Iran.
[165] Trita Parsi, *A Single Roll of the Dice: Obama's Diplomacy with Iran* (New Haven, CT: Yale University Press, 2013), p. 184.

Iran's technical progress over the last seven months by requiring removal of a large quantity of LEU.

The Obama White House muddied this message somewhat after the summit meeting. President Obama sent a letter to President Lula and Prime Minister Erdoğan spelling out the U.S. position on the fuel swap deal. The letter praised the Brazilians and Turks for their efforts to find a solution, and appeared to encourage them to continue diplomacy with Iran. Yet the letter also reiterated the basic message conveyed by Secretary Clinton and her team: the original Geneva deal needed to be updated. Lula and Erdoğan interpreted the letter as a signal to continue, and headed to Tehran to finalize discussions. It was soon apparent by early May 2010 that Ambassador Rice was going to get a tough sanctions resolution from the Security Council in New York. The Turks and Brazilians persuaded the Iranians that the only way to derail the looming resolution was to accept the fuel swap proposal.[166] Tehran agreed to the original terms laid out in the October 2009 deal, and announced a successful declaration with Lula and Erdoğan on May 15th. The next day, Secretary Clinton rejected the deal during her testimony to Congress.

(2.2.2) Theoretic Assessment: Why Did Washington Reject the Geneva Proposal?

Washington rejected the May 2010 deal because it no longer contained an adequate nonproliferation commitment from Tehran. In particular, my logic of commitment tactics in the ENR zone highlights how Iran's actions from October 2009 to May 2010 raised the technical sunk-cost and political hand-tying requirements for a deal with the United States.

[166] Former Senior U.S. Official. Interview by author.

On the technical front, the new deal did not increase Iran's breakout time enough to be of value to the United States. As Secretary Clinton's team explained to the Turkish delegation in April 2010, Iran's increases in the quantity and disposition of enriched uranium nullified the terms of the October 2009 swap. The Iranians enlarged their stock of 3.5% LEU from 1,500 kilograms in August 2009 to 2,300 kilograms by the spring of 2010, and further enriched some of this material to 19.75% U-235 at two centrifuge cascades in the Natanz pilot plant.[167] Washington could take little solace in a deal that left Iran with sufficient material for a quick transformation to a fission weapon. Furthermore, the logic of sunk-cost signaling stipulates that this stock of enriched uranium represented a significant investment of national resources. An agreement to give up the majority of the LEU stockpile would have sent a costly signal that revealed Tehran's intent not to produce nuclear weapons, and would have reduced its nuclear latency, thereby providing more warning and reaction time. Instead, the Iranians diluted the costs down by increasing the quantity and disposition of LEU over seven months. The Obama White House determined that the technical benchmarks in the May 2010 proposal "no longer served our confidence building goal," as it represented a costless signal from Iran.[168]

Perhaps the technical terms of the deal could have been updated to meet the higher requirements. But the United States was unwilling to consider this because the Iranians made the underlying political dynamics of the credible commitment problem much worse by walking back on the October 2009 Geneva agreement. The volte-face

[167] "The removal of 1,200 kilograms of LEU is also not as attractive today since Iran's stockpile of LEU is now likely close to 2300 kilograms. At the time of the October 2009 proposal, Iran's stockpile was about 1,500 kilograms, providing many months where Iran would not have a nuclear weapons breakout capability. Now, the removal of 1,200 kilograms leaves Iran with a LEU stock that is, or will be so within a few months, large enough to provide a breakout capability." Institute for Science and International Security, "Iran's Proposed LEU Deal: Skeptical but Awaiting Clarification," ISIS Report, May 17, 2010.
[168] Former Senior U.S. Official. Interview by author.

from Geneva to Vienna revealed that Iran's domestic institutions had undercut the ability of Ahmadinejad and Jalili to bind the regime to any sort of nonproliferation promise. Even if the United States convinced Iran to update the May 2010 proposal to meet higher technical requirements, there was no guarantee that Khamenei would not exercise his absolute veto authority down the road. The Obama Administration "knew that at least part of the Iranian political system was prepared to make an agreement, but not the part that counted the most."[169] Iran's nuclear pendulum was once again swinging away from diplomacy towards a more unrestrained position. Hand-tying actions were off the table without Khamenei's authorization.

The tragedy is that Turkey and Brazil were perfectly situated to help Iran make a self-enforcing promise as third party guarantors rather than passive mediators. If Lula and Erdoğan convinced Tehran that they would punish the regime if it broke the terms of a deal, this might have made an updated deal in May more palatable to the West. In essence, Turkey and Brazil would tie Iran's hands by making it advantageous for them to keep rather than renege on the deal. The presence of such third party guarantors could have helped counter the internal disarray within the regime and the perpetual swing of the pendulum. But Lula and Erdoğan did just the opposite by revealing their strong opposition to punitive sanctions. The White House saw their mediation with Iran as a hostile plan to derail passing the UNSC resolution, "rather than as a genuine effort on their part to reach an agreement."[170] Instead of tying hands, Turkey and Brazil provided Iran with a shield to break its promise with relative impunity.

[169] Former Senior White House Official. Interview by author.
[170] Former Senior White House Official. Interview by author.

In sum, the United States rebuffed the May 2010 proposal because Iran raised the technical requirements and offered no assurance that it would not walk back on this watered down promise. After rejecting the offer, the United States brought the sanctions resolution to a vote in the Security Council. On June 9, Resolution 1929 passed with only two 'no' votes from Turkey and Brazil. A multilateral containment regime went into effect against Iran that banned transfers of conventional and ballistic missile weapon systems, and started to block the regime's ability to use the international banking system. In July, President Obama signed unilateral sanctions aimed at cutting off Iran's imports of refined petroleum products and further limiting its access to international finances. Diplomacy hit its lowest point as these sanction kicked in. American and Iranian diplomats did not have a single meeting for the next sixteen months. After several years of pressure from Washington, the European Union instituted an embargo on Iranian oil in July 2012. By seriously restricting Iran's ability to sell its key export, the petroleum sanctions began to mount harmful costs upon the regime.

(2.3) Sanctions and Elections Prime Iran to Implement Constraints (2013-2014)

In the summer of 2012, the Obama White House attempted again to jumpstart public diplomacy with Iran over its nuclear program. At a June meeting in Moscow, the United States and the five other major powers of the P5+1 dusted off a revised version of the fuel swap deal. If Iran stopped producing 20% U-235 uranium, shut down the Fordow Fuel Enrichment Plant, and shipped its stockpile of LEU out of the country, the P5+1 would provide fuel plates for the Tehran Research Reactor, assistance with civil nuclear

safety, and much needed spare aviation parts.[171] The Iranians balked at the 'stop, shut, and ship' proposition, and instead demanded recognition of their right to enrich, as well as relief from sanctions. The talks picked up again in Almaty during the winter and spring of 2013, but lead U.S. negotiator Wendy Sherman cancelled further negotiations when the American team determined that "Iran would place little or no constraint on its current nuclear activities, while demanding that major sanctions be removed immediately."[172] Diplomacy again hit a wall over Iran's refusal to offer a credible assurance that the regime would not exercise its latent nuclear weapons option.

While the Iranians failed to broker a diplomatic deal, continued defiance did provide the nuclear program an opportunity to make several technical advances. Foremost, Iran's enrichment capacity had grown from around 8,000 IR-1 centrifuges in the summer of 2010 to 18,500 IR-1 centrifuges and 1,008 IR-2m next generation centrifuges by the summer of 2013. Iranian scientists nearly doubled the performance output of these centrifuges from the subpar level of about 3,500 kg separative work units (swu) annualized to a more optimal 6,813 kg swu per year. These performance increases allowed Iran to multiply its LEU stockpile from 2,300 kgs in 2010 into 9,700 kgs by 2013.[173] Beyond the rapidly expanding enrichment capacity, the Iranians also made steady progress on the Arak heavy water reactor complex to provide the basis for plutonium production down the road.[174] Finally, Iran's past and present efforts to develop the nonnuclear components of an atomic weapon remained of concern, especially in the

[171] Julian Borger and Saeed Kamali Dehghan, "Geneva Talks End without Deal on Iran's Nuclear Programme," *The Guardian*, November 9, 2013.
[172] Testimony of the Honorable Wendy R. Sherman, Under Secretary for Political Affairs, U.S. Department of State, "Preventing a Nuclear Iran," Hearing before the Committee of Foreign Affairs, U.S. House of Representatives (GPO, Washington DC, 15 May 2013), p. 11.
[173] IAEA GOV/2013/40 (28 August 2013).
[174] R. Scott Kemp, "Why Iran's Agreement to Modify the Arak Reactor Is More Good News than Meets the Eye," Iran Matters Belfer Center Brief, April 22, 2014 (accessed online May 27, 2014).

wake of an IAEA report confirming the presence of a structured weaponization program prior to the halt order in 2003.[175] Most worrisome, the IAEA Director General indicated that dissenting members of the Revolutionary Guards might have resumed some of their respective weapons projects.

Despite dismal diplomatic progress and Iran's growing capacity to proliferate, President Obama authorized a small team led by Deputy Secretary of State William Burns to establish a private bilateral backchannel to the Iranians in the winter of 2013.[176] For several days at the beginning of March, the two sides engaged in a series of candid and intense discussions, but the Iranians signaled that progress was not possible before the upcoming elections in the summer.[177] The Obama White House remained skeptical that the backchannel would bear fruit. But as Robert Einhorn recalled, Washington had "very good information that the sanctions were having an increasingly powerful impact and giving the Iranians incentives to reach a deal." By early 2013, economic indicators broadcasted a dismal situation. Sanctions drove Iran's oil sales down about 60% from 2011 to 2013, costing Iran about $70 billion a year in lost revenue.[178] Even when Iranian petroleum merchants could sell oil, restrictions on international banking made it difficult to access hard currency.[179] The sanctions amplified years of economic mismanagement,

[175] IAEA GOV/2011/56 (8 November 2011).
[176] On February 28th, Deputy Secretary of State William Burns flew with Jake Sullivan, Puneet Talwar, and Robert Einhorn to Oman after the Almaty nuclear talks deadlocked. The U.S. officials met with an Iranian delegation headed by Deputy Foreign Minister Ali Asghar Khaji.
[177] Laura Rozen, "Three Days in March: New Details on How US, Iran Opened Direct Talks," *Al-Monitor*, January 8, 2014 (accessed online).
[178] Iran's oil sales dropped from the sale of about 2.5 million barrels a day (annual revenue of ~$100 billion) to about 1.01 mbd in 2013 (annual revenue of ~$35 billion), see Katzman, *Iran Sanctions*.
[179] Iran was not paid in hard currency for its oil and was unable to access much of its hard currency held in accounts abroad. Although Iran's hard currency reserves were estimated to be about $100 billion, as much as $60-$80 billion could not be accessed because of sanctions.

and caused Iran to suffer its first GDP contraction in two decades.[180] As the system began to crack, Iran was ready to cut a deal to relieve these economic penalties. Washington waited to see if Tehran's pendulum would swing back towards serious diplomacy after the elections.

The first sign emerged during Iran's presidential debate on June 6th. A general exchange among the candidates about foreign policy issues "morphed unexpectedly into a mutiny on the nuclear issue. One candidate, Ali Akbar Velayati, a scion of the regime's conservative base, attacked Jalili for failing to strike a nuclear deal and for permitting U.S.-backed sanctions on Iran to increase."[181] Former nuclear negotiator Hassan Rouhani threw his support behind this critique of the 'pay now' approach to the nuclear program. "All of our problems stem from this – that we didn't make the utmost effort to prevent the [nuclear] dossier from going to the UN Security Council. It's good to have centrifuges running, providing people's lives and sustenance are also spinning." The discussion was a moment of extraordinary candor from the regime, and revealed divisions within the upper echelons over whether Iran should swing towards a more cooperative 'pay later' nuclear policy to alleviate the stress of sanctions.[182]

The debate foreshadowed a watershed change on June 14th when Rouhani was elected President of Iran. As typified by his remarks during the debate, Rouhani ran on a

[180] GDP dropped about 5% in 2013, see Katzman, *Iran Sanctions*, p. 52.
[181] Velayati: "Diplomacy isn't about toughness or stubbornness … You were in charge of the nuclear case for several years, and we haven't taken a single step forward, and the pressure has been exerted on the people." For more on the debate, see Jason Rezaian, "Iran's Presidential Debate Gets Personal," *The Washington Post*, June 7, 2013; Scott Peterson, "Stalled Nuclear Talks Fuel Sharp Exchange at Iran's Final Presidential Debate," *Christian Science Monitor*, June 8, 2013.
[182] "The amazingly candid discussion that followed Velayati's charge betrayed the Iranian establishment's awareness of the regime's increasing vulnerability. It could only be understood as an intervention -- one initiated by the regime's most stalwart supporters and intended to rescue the system by acknowledging its precarious straits and appealing for pragmatism (rather than Jalili's dogmatism). The discussion was also an acknowledgement that the sanctions-induced miseries of the Iranian public can no longer be soothed with nuclear pageantry or even appeals to religious nationalism," Suzanne Maloney, "Why Rouhani Won - And Why Khamenei Let Him," *Foreign Affairs Snapshots*, June 16, 2013.

moderate platform with the slogan 'hope and prudence,' and promised to extricate Iran from its precarious position.[183] But to avoid the fate of previous leaders who were unable to uphold deals with the West, the new president took steps to make it difficult for Khamenei or other hardliners to walk back on diplomatic agreements. Rouhani formed a coalition of powerful centrist and reformist politicians, including former presidents Rafsanjani and Khatami, as well as the skilled veteran diplomat Javad Zarif.[184] The president also cultivated "key conservatives as stakeholders in his own administration's success," and was able to "flip the right wing's national security discourse of 'resistance' on its head."[185] Former Defense Minister Akbar Torkan summed up the Rouhani doctrine: "Who can say that imposing various sanctions on the country is a revolutionary move and in line with serving the political system and the people? In our opinion, rationalism is revolutionary." Rouhani's election heralded another swing in the nuclear pendulum towards a cooperative 'pay later' position.

Washington viewed this realignment as a possible indicator that the Rouhani coalition might be willing and able to implement constraints over the nuclear program. From August to September, Under Secretary Burns and his team used the bilateral backchannel to lay the groundwork for more public diplomacy. The Americans and Iranians met five times in secret to begin developing ideas "that could be fed into the

[183] Kevan Harris, "An 'Electoral Uprising' in Iran," *The Middle East Research and Information Project*, July 19, 2013.
[184] Zarif has a long track record of successful diplomacy with the West, despite his revolutionary credentials and ties to Hezbollah. He helped craft the return of 123 Western hostages held by Iran's allies in Lebanon between 1989 and 1991, and wrote the final draft of the doomed 'grand bargain' overture statement sent to the Bush Administration in 2003.
[185] Kevan Harris, "Iran, the Twenty-First-Century Island of Stability," *The Middle East Research and Information Project*, September 28, 2013

P5+1 process."[186] By the fall, the bilateral channel started to bear fruit. On September 26th, Secretary of State John Kerry met with Zarif on the sidelines of a UN summit meeting to discuss the prospects for diplomacy. The next day, Obama and Rouhani made the first direct US-Iran presidential contact in 34 years. In Vienna, Iran's new envoy to the IAEA, Reza Najafi, met with IAEA deputy director Herman Nackaerts to resume discussions over agency's concerns about the possible military dimensions of Iran's nuclear program. Rouhani, Zarif, and Najafi signaled the regime in Tehran was serious about reaching a diplomatic solution to the nuclear issue.

(2.3.1) Cutting another Deal in Geneva: Iran Offers a Narrow but Adequate Assurance

By October 2013, the bilateral channel merged back into a reinvigorated public diplomatic track. Under Secretary of State Wendy Sherman led the first round of talks between Iran and the P5+1 in Geneva. The prime objective of the American team was to convince Tehran to implement binding constraints over the nuclear program, while the Iranians wanted relief from sanctions and acceptance of their enrichment program. In particular, the Obama Administration wanted to see specific steps to limit the pace and scope of enrichment, decrease the stockpile of enriched uranium, and increase overall transparency.[187] At the second round of talks in early November, a senior U.S. official

[186] Laura Rozen, "Exclusive: Burns Led Secret US Back Channel to Iran," *Al-Monitor*, November 24, 2013 (accessed online).

[187] In a background briefing to the press on October 13th, a senior Obama White House official noted that they were "looking for specific steps that address core issues, such as the pace and scope of its enrichment program, the transparency of its overall nuclear program, and its stockpiles of enriched uranium. In essence, we're looking for confidence-building measures that begin to address some of our priority concerns on the way to a comprehensive agreement." Special Briefing, Senior Administration Official, U.S. Department of State, "Background Briefing on P5+1 Negotiations," Geneva, Switzerland, October 14, 2013.

announced that the Iranians had begun to address some of these concerns. "One of the key shifts in the Iranian strategy we've seen with this new team is a recognition that they need to move quickly to get economic relief for their people given the political platform on which they were elected. And for the first time, we aren't seeing them use this negotiating process *simply to buy time*."[188] The U.S. offered to provide phased sanctions relief, but the negotiations stumbled over the perennial issue of whether Iran had a right to enrich uranium under the NPT.

At the third meeting on November 23rd, Iran and the P5+1 managed to reach a successful interim deal. The Joint Plan of Action (JPA) committed each side to uphold a quid pro quo bargain for six months while talks continued towards a more comprehensive pact.[189] Iran agreed to implement four central limitations over its nuclear program. First, no more uranium would be enriched to 20% U-235, and the entire stock of 20% U-235 would be diluted back down to 5% LEU within the next six months. Second, Iran would freeze the planned expansion of its centrifuge program. Third, construction would be halted on the Arak heavy water reactor complex. Fourth, the Iranians accepted highly intrusive international monitoring of their entire nuclear complex. The Natanz and Fordow facilities would be subject to *daily* inspections by the IAEA. Vienna would keep close watch on Arak and the centrifuge production facilities.[190] Tehran promised to increase the time required to produce a nuclear device, while also implementing stringent transparency measure to verify their compliance.

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[188] Senior Administration Official, Background Briefing, U.S. Department of State, "Senior U.S. Official Previewing Iran P5+1 Talks," Geneva, Switzerland, November 6, 2013.
[189] Michael R. Gordon, "Accord Reached With Iran to Halt Nuclear Program," *New York Times*, November 23, 2013.
[190] John Allen Gay, "Interpreting the New Iran Deal," *The National Interest*, November 24, 2013.

The United States promised two concessions in exchange for this nonproliferation assurance from Iran. Most important, Washington would lift some sanctions on Iran's auto industry and trade in gold and oil, as well as unfreeze financial assets held abroad. In total, Iran stood to receive a modest $6 to 7 billion in sanctions relief phased out over the length of the interim accord. The more subtle concession was the Obama Administration's tacit recognition of the Iranian enrichment capacity. The White House abandoned its long-standing 'stop, ship, and shut' goal. Washington still refused to explicitly acknowledge Tehran's 'right' to enrichment technology, but the JPA did not require Iran to cease enriching uranium up to 5% U-235 or to dismantle any of its existing centrifuges.

Two gaps remained in the Joint Plan of Action. The first concerned a number of technical details that were left undefined. Washington and Tehran avoided spelling out how exactly Iran was going to resolve its outstanding weaponization file with the IAEA, what type of advanced centrifuge research and development might be permissible, and how the enhanced inspection protocols were going to operate on the ground. The second gap was a much deeper political issue that stemmed directly from narrow assurance offered by Iran. Given the temporary nature of the JPA, each side expressed a strong desire to figure out in subsequent negotiations how to square Iran's ability to enrich uranium with a long-term assurance of peaceful use. Ambassador Zarif hit on this point a few weeks after the Geneva talks: "It is our intention that [the enrichment program] will remain exclusively peaceful but how we give [the P5+1] the necessary assurances that it will remain peaceful that may be one of the more difficult areas."[191] Under Secretary

[191] Robin Wright, "Exclusive: Iran's Foreign Minister Says Sanctions Would Kill Nuclear Deal," *Time* (accessed online March 31, 2014).

Burns echoed this sentiment on January 14th, 2014: "If at the end of the day, Iran wants to demonstrate that it is has no interest in pursuing a nuclear weapon … then it should not be impossible to reach an agreement. But it's going to take a lot of work to demonstrate the seriousness with which Iran wants to show that it has an exclusively peaceful program."[192] In essence, the JPA accepted a barely adequate technical assurance from Iran as the basis to negotiate over a much more comprehensive resolution to the credible commitment problem.

The Joint Plan of Actions entered into force on January 20th, 2014. One month later, the IAEA confirmed that Iran implemented its end of the bargain, and Washington began the phased relief of sanctions. Meanwhile, talks continued through the winter, spring, and summer of 2014 to close the remaining gaps and reach a broad agreement. The JPA proved successful for both the United States and Iran. For Washington, the JPA was "very successful in achieving its primary objectives … halting in most respects further development of Iran's capacity to produce nuclear weapons materials … [while keeping] the overall sanctions regime intact."[193] For Iran, limited sanctions relief provided useful progress for Rouhani but not enough to fundamentally change years of economic mismanagement or herald as a significant concession. Instead, the most significant immediate concession wrangled out of the JPA was the ability to continue to enrich uranium.[194] Iran had successfully compelled the United States to accept its nuclear latency for at least the duration of the interim accord.

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[192] Laura Rozen, "Burns to Al-Monitor: 'No Illusions' about Nuclear Diplomacy with Iran," *Al-Monitor*, January 14, 2014 (accessed online).
[193] Gary Samore, "The Distance Still to Go in Iran Nuclear Talks," Iran Matters Belfer Center Brief, May 19, 2014 (accessed online May 27, 2014).
[194] Mitchell B. Reiss and Ray Takeyh, "Don't Get Suckered by Iran: Fix the Problems With the Interim Accord," *Foreign Affairs Snapshot*, January 2, 2014.

(2.3.2) Theoretic Assessment: A Temporary Fix to the Credible Commitment Problem

The bargain reached between Iran and the United States in November 2013 raises some challenging questions for my theory of proliferation persuasion. When Iran's nuclear latency was at a much lower technical stage, Washington rejected a similar offer in 2005 that would have permitted enrichment under enhanced IAEA inspections, and turned down the 2010 fuel swap proposal in part because Tehran seemed incapable of keeping its own promises. Yet three years later, the United States accepted a deal predicated largely on technical constraints and intrusive monitoring, despite the significant expansion in Iran's centrifuge program and enriched uranium stockpile. What specific actions did Iran take with the Joint Plan of Action to credibly bind itself to a temporary promise of nuclear restraint? Why did this promise convince Washington that it was in Tehran's interest to stay in the ENR zone, especially when prior assurances at much lower levels of nuclear latency proved to be inadequate?

The Joint Plan of Action reflected two unprecedented changes in Iran's strategic calculus that bound the regime to the deal. First, Washington knew that sanctions were harming Tehran's vital economic interests. Phased sanctions relief promised to rollback punishment in a piecemeal and limited fashion after the Iranians demonstrated compliance. Furthermore, Iran added to the balance of funds locked up abroad for the duration of the interim accord.[195] The JPA was the first agreement that explicitly recognized the ability of the United States to hurt Iran should they walk back on the deal.

[195] Katzman, *Iran Sanctions*, p. 52.

Second, Washington did worry about a repeat of the 2009 volte-face. But after Rouhani's rapid shift towards a 'pay later' policy, the U.S. intelligence community updated its risk assessment. "President Rouhani has heralded a shift in political momentum in Iran toward the center … [he has] the support of the Supreme Leader, which has silenced some conservative critics."[196] Obama's deputy national security adviser Ben Rhodes identified a similar change: "We have an actual mandate for Rouhani … to conduct foreign policy in a different way. There is a constituency that now has some degree of power in the Iranian system that really wants to climb out of this isolation, and is willing to do things that they didn't previously do. We believe that it is real … We are willing to take the risks to get a deal."[197] Washington wagered that Rouhani represented a unique realignment in Tehran around a coalition willing and able to halt Iran's pendulum and implement temporary but durable constraints over the nuclear program.

The classic diplomatic tactic of decomposition also allowed Iran and the United States to reassure each other by slowing signaling incentives in a step-by-step fashion. Given the deep history of mistrust on both sides, the Joint Plan of Action broke down a high stakes issue into constituent parts so that Iran could implement a series of constraints in return for phased sanctions relief. In particular, the limited duration of the JPA made it easier for Zarif and Rouhani to sell the confidence building measure to skeptics in Tehran. Unlike 2005 and 2009, the regime did not have to consider an indefinite freeze on enrichment or export its scarce stock of LEU. Although Iran was at a much higher

[196] James R. Clapper, Director of National Intelligence, Statement for the Record, "Worldwide Threat Assessment of the U.S. Intelligence Community," Senate Select Committee on Intelligence, 29 January 2014, p. 14

[197] Robin Wright, "The Adversary: Is Iran's Foreign Minister for Real?," *The New Yorker*, May 26, 2014, p. 48.

level of nuclear latency, it was much easier to temporarily solve the credible commitment problem with a six-month shadow of the future.

In sum, Iran attempted multiple times to use its nuclear latency as a means of leverage against the United States. In 2003 and 2009, the periodic swings in its nuclear policy generated an impasse in negotiations followed by resistance and sanctions. At first glance, Tehran's ability to strike a deal in 2013 at a high level of latency challenges the sweet spot proposition. But my theory also stipulates that it is feasible for a challenger to navigate out of the tough spot. Tehran communicated a desire to resolve the issue, and then managed the challenging task of revealing intent to uphold promises after years of obfuscation. Despite this progress, a comprehensive resolution will remain elusive unless the domestic pendulum comes to rest at a stable position acceptable to both Tehran and Washington. Such a deal could be compatible with the Tehran's goal of maintaining a nuclear weapons option. However, the regime would need to identify a narrow range of worst-case scenarios necessitating the deployment of a nuclear deterrent, and then tie its hands over all other drivers of proliferation.

Chapter 6: Conclusion

Nuclear-capable states tend to delay or forgo exercising the nuclear weapons option provided by enrichment and reprocessing (ENR) technology. Why do states wait for prolonged periods of time with the technical capacity to produce nuclear weapons? This dissertation claims that coercive diplomacy is one critical driver of this trend: by having acquired capabilities that threaten proliferation, states can extract concessions. North Korea, Japan, and Iran ended up in the ENR zone for different reasons, but I identified clear decisions made by government leaders in Pyongyang, Tokyo, and Tehran to leverage nuclear technology as a bargaining chip. The North Koreans paused the plutonium program to barter for material concessions after the collapse of the Soviet Union. The Japanese sought to trade ascension to the Nonproliferation Treaty for the reversion of Okinawa. The Iranians periodically slowed down or froze the pace of uranium enrichment to negotiate over cooperative agreements with the West. These countries coordinated ENR technology with diplomatic moves designed to convince the United States that compliance would be rewarded with nuclear restraint.

The outcome of proliferation persuasion has a profound impact on the trajectory of a nuclear program. Successful diplomacy leads the potential proliferator to constrain its use of sensitive nuclear technology, whereas failure can result in the unrestrained production of fissile material and persuade the leadership to produce nuclear weapons. The dissertation therefore crafted a new theory of coercive diplomacy to explain when proliferation persuasion is most likely to be effective. The central argument is that nuclear latency adheres to the law of diminishing marginal utility when used to compel political gains. At a low level of nuclear latency in the ENR zone, the challenger can

bargain for concessions without having to pay high costs to solve the credible commitment problem. If the level of nuclear latency continues to increase, however, the costs of exercising restraint may exceed the value of concessions to be gained from a successful deal. Contrary to the conventional wisdom about power in world politics, less nuclear latency yields the maximum net benefits as an instrument of compellence.

To illustrate this logic in practice, I examined the efficacy of coercive threats by North Korea, Japan, and Iran as each respective nuclear program grew over time. North Korea provides a clean example of diminishing marginal utility at high levels of nuclear latency. In 1994, the United States paid North Korea to freeze operations at Yongbyon, with the expectation that Pyongyang would disable these sensitive assets down the road. The North Koreans received valuable energy subsidies without having to immediately give up the nuclear program. But once the North Koreans produced fissile material and tested a nuclear weapon in 2006, the leadership seemed to believe that the costs of trading away this nuclear force capability outweighed the concessions offered during the Six Party Talks. North Korea's nuclear program became too valuable to use as an expendable bargaining chip once it crossed the weapons threshold. For the DPRK to follow in the steps of the South Africans, Pyongyang would need a radical reversal in its calculus that devalued the role of nuclear weapons relative to economic assistance and political normalization with the international community.

In contrast, the Japanese faced few incentives to proliferate during the 1960s, so the costs of further committing the country to a nonnuclear weapons future were minimal. Japan saw little value in nuclear weapons, but like several other U.S. allies at the time, Tokyo figured it could use the new Nonproliferation Treaty as an opportunity to pressure

Washington. Once Premier Sato linked uncertainty over Japan's nuclear intentions to the reversion of Okinawa, the Japanese leadership postured the emerging civil nuclear energy program to wring concessions out of the Americans before reaffirming their role in the nonproliferation regime. Yet this episode of proliferation persuasion was nearly five decades ago. Since then, Japan built up one of the most advanced civil nuclear programs in the world. The Japanese could use this high level of nuclear latency to pressure the United States today, but walking back on historic nonproliferation commitments to make an explicit threat would entail serious costs. Tokyo is therefore unlikely to play the nuclear card unless some sort of high-stakes conflict of interest arises in the alliance that cannot be resolved through normal diplomatic channels.

At first glance, the ongoing negotiations over Iran's nuclear program seem to challenge my central claim that less is more. Iran could arguably get greater concessions from the United States in 2015 for agreeing to enrichment limits than it would have in 2004 for giving up the centrifuge program altogether. But the logic of diminishing marginal returns illustrates why some Iranians are reluctant to strike a deal that requires any sort of rollback. Given the tremendous costs paid to acquire a rapid breakout capacity over the last decade, even a modest cap on uranium enrichment entails giving up a part of what is now considered to be an extremely valuable asset. While Rouhani's coalition believes a comprehensive deal is worth this squeeze, other hardline factions contend that retaining a nuclear weapons option is much more valuable than accommodation with the West. Since this faction is backed by the veto power of the Supreme Leader, Iranian negotiators go to great lengths to demonstrate that a deal is netting Iran positive sum benefits rather than diminishing returns.

These findings bridge a gap between the political science and policy communities over the causes and consequences of nuclear latency. Government officials, intelligence analysts, and even a few scholars have long focused on detecting, assessing, and responding to the spread of nuclear fuel cycle technology below the weapons threshold. Yet the existing academic literature on nuclear proliferation "suffers from a considerable 'existential bias,' focusing almost entirely on a state's quest for a nuclear weapons capability."[1] Despite considerable advances made by this body of work in understanding the spread and impact of nuclear weapons, scholars have not paid much attention to explaining why states build latent nuclear capabilities, or how nuclear hedging impacts world politics. As a result, Scott Sagan notes that nuclear latency is still "poorly understood," while Matthew Fuhrman and Benjamin Bzach conclude that political scientists "know surprisingly little about nuclear latency," and even "lack clear answers to the most basic questions."[2] By identifying one key reason why states linger with nuclear latency and then building a model to explain the effect of this technology on interstate bargaining, this dissertation attempts to expand the boundary of knowledge in this productive new direction.

So what does this research on foreign nuclear programs mean for United States nonproliferation policy? When it comes to managing relations with nuclear-capable allies, my work suggests that the U.S. will at some point find itself the target of proliferation persuasion again. As typified by the negotiations over Okinawa, however,

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[1] Vipin Narang, *Nuclear Strategy in the Modern Era: Regional Powers and International Conflict* (Princeton, N.J.: Princeton University Press, 2014), p. 299.
[2] Scott D. Sagan, "Nuclear Latency and Nuclear Proliferation," in *Forecasting Nuclear Proliferation in the 21st Century: Volume 1 The Role of Theory*, ed. William Potter and Gaukhar Mukhatzhanova (Stanford Security Studies, 2010), 80. Sagan's apt quote also appears in Matthew Fuhrmann and Benjamin Tkach, "Almost Nuclear: Introducing the Nuclear Latency Dataset," *Conflict Management and Peace Science*, (forthcoming 2015), p. 2.

the shared interest at the core of an alliance should allow each side to reach an optimal bargain. Washington provided a lump sum payment up front in exchange for Tokyo's subsequent move to constrain the nuclear weapons option. As the regional architecture in East Asia and the Middle East changes, U.S. officials should be prepared to 'buy out' nuclear ambitions with concessions, and lock in strong nonnuclear promises from allies by maintaining extended deterrent pledges.

My research also recommends three modest updates to how the United States bargains with adversaries to prevent the spread of nuclear weapons. Foremost, an equal emphasis must be placed on technical constraints and political commitments. While U.S. negotiators should strive to lengthen an adversary's breakout timeline, an arms control deal is only useful if it includes policies to guard against future change. Despite the domestic political sensitivity of paying 'ransom,' offering a combination of rewards and punishments can enhance U.S. national security if the deal averts further increases in nuclear latency. To this end, Washington should signal a willingness to provide some rewards at the outset, lest the challenger worry about making a sticky promise without getting anything in return. Most important, the U.S. must provide the stipulated benefits for the duration of the agreement to avoid creating an excuse for the challenger to cheat or renege. At the same time, the prospect of punishment should be kept in reserve to influence the calculus of the challenger over the long term.

The prevalence of proliferation persuasion points towards a controversial remedy to a frequently noted problem in the Nonproliferation Treaty. Under Articles 1 and 2 of the treaty, states have an obligation to not manufacture nuclear weapons. But these articles do not specify exactly what activities constitute the production of a nuclear

weapon. Given the right to peaceful nuclear energy stipulated under Article 4 of the treaty, many states interpret the scope of civilian activities to include the development enrichment and reprocessing technology. The NPT does not deny the legal basis for states to enter the ENR zone, threaten international security, and gain a significant bargaining capability. As the contrast between Japan and Iran highlights, full scope safeguards and intrusive transparency measures only reveal benign intent if they give other states enhanced power to impose serious punitive damages for going nuclear. If a state wants to develop sensitive nuclear technology under the peaceful energy clause, then it must accept that the arms control policies built into the NPT do not necessarily eliminate concern – especially if it has a record of cheating – over how this latency might be used in the future. A right to enrich and reprocessing thus comes with the obligation to resolve the credible commitment problem.

Let me conclude by highlighting an avenue for further research. I made the implicit assumption in this dissertation that the target government will uphold its end of bargain after diplomacy concludes. Since my research objective was to focus on how other states bargain with nuclear technology, it seemed reasonable to assume that the United States would pay concessions to prevent proliferation. But in practice, U.S. adversaries are often reluctant to give up or constrain the nuclear option out of a fear of being burned. The United States repeatedly delayed providing agreed upon goods to the North Koreans, and the military intervention in Libya led to a gruesome fate for a brutal dictator who had previously traded away his nuclear program. Domestic turbulence in Washington periodically undermines the Obama Administration's credibility to relieve sanctions on Iran in exchange for a cap on enrichment. If a state in the ENR zone makes

it either difficult or costly to go nuclear after striking a deal, then the strength of this nonproliferation commitment may perversely create disincentives for the target to continue paying concessions.[3] Further research needs to incorporate the target's long-term calculus into the bargaining dynamic. Do powerful states face incentives to revise the initial agreement or renege on the terms after constraining the potential proliferator? How might the domestic politics of the target impact its ability to keep paying concessions over several electoral periods?

[3] I thank Todd Sescher for pointing this unique result out to me. See also the conclusion to his excellent study on coercive diplomacy. "The United States could benefit from finding ways to commit to self-restraint. Coercive diplomatic strategies are more likely to work if challengers can persuade their targets that capitulation will not invite future demands … Successful coercive diplomacy requires not only a sharp sword, but also the ability to sheathe it," Sechser, "Goliath's Curse," 654–655.

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